

# Water Glossary



## Water Glossary – A

**Abandoned water right:** A water right which was not put to beneficial use for a number of years, generally five to seven years.

**Abandoned well:** A well which is no longer used. In many places, abandoned wells must be filled with cement or concrete grout to prevent pollution of ground water bodies.

**Absolute:** The micron rating of a filter. It indicates that any particle larger than a specific size will be trapped within the filter.

**Absorb:** To take in.

**Absorption:** When a solid takes up molecules into its structure.

**Accretion:** A gradual increase in land area adjacent to a river

**Acid aerosol:** Very small liquid or solid particles that are acidic and are small enough to become airborne.

**Acid mine drainage:** Low pH drainage water from certain mines usually caused by the oxidation of sulfides to sulfuric acid. Mine drainage can also contain high concentration of metal ions.

**Acid rain:** Rainfall with a pH of less than 7.0. One source is the combining of rain and sulfur dioxide emissions, which are a by-product of combustion of fossil fuels. Also referred to as acid deposition and wet deposition.

**Acidity:** The quantitative capacity of water to neutralize a base, expressed in ppm or mg/L calcium carbonate equivalent. The number of hydrogen atoms that are present determines this. It is usually measured by titration with a standard solution of sodium hydroxide.

**Acre-foot (acre-ft):** The volume of water required to cover 1 acre of land (43,560 square feet) to a depth of 1 foot.

**Activated carbon adsorption:** The process of pollutants moving out of water and attaching on to activated carbon.

**Activated sludge:** Oxygen dependent biological process that serves to convert soluble organic matter to solid biomass, that is removable by gravity or filtration.

**Active groups:** Really fixed ions bolted on to the matrix of an ion exchanger. Each active group must always have a counter-ion of opposite charge near itself.

**Adhesion:** The molecular attraction asserted between the surfaces of bodies in contact. Compare cohesion.

**Adjudication:** A court proceeding to determine all rights to the use of water on a particular stream system or ground water basin.

**Adsorption:** The adhesion of a substance to the surface of a solid or liquid. Adsorption is often used to extract pollutants by causing them to be attached to such adsorbents as activated carbon or silica gel. Hydrophobic, or water-repulsing adsorbents, are used to extract oil from waterways in oil spills.

**Advanced oxidation process:** One of several combination oxidation processes. Advanced chemical oxidation processes use (chemical) oxidants to reduce COD/BOD levels, and to remove both organic and oxidisable inorganic components. The processes can completely oxidize organic materials to carbon dioxide and water, although it is often not necessary to operate the processes to this level of treatment.

**Advanced wastewater treatment:** Any treatment of sewage that goes beyond the secondary or biological water treatment stage and includes the removal of nutrients, such as phosphorus and nitrogen and a high percentage of suspended solids. This treatment is more stringent than secondary treatment, and requires an 85 percent reduction in conventional pollutant concentrations or a significant reduction in non-conventional pollutants.

**Aerated lagoon:** A water treatment pond that speeds up biological decomposition of organic waste by stimulating the growth and activity of bacteria, which are responsible for the degradation.

**Aeration:** The mixing or turbulent exposure of water to air and oxygen to dissipate volatile contaminants and other pollutants into the air

**Aeration tank:** A tank that is used to inject air into water.

**Aerobic:** A process that takes place in the presence of oxygen, such as the digestion of organic matter by bacteria in an oxidation pond.

**Aerosol:** Very small liquid or solid particles dispersed in air.

**Affinity:** The keenness with which an ion exchanger takes up and holds on to a counter-ion. Affinities are very much affected by the concentration of the electrolyte surrounding the ion exchanger.

**Agglomeration:** A process of bringing smaller particles together to form a larger mass.

**Aggressive water:** Water which is soft and acidic and can corrode plumbing, piping, and appliances

**Agricultural irrigation:** Water distribution systems and practices in agriculture.

**Agriculture water use:** Includes water used for agricultural irrigation and nonirrigation purposes. Irrigation water use includes the artificial application of water on lands to assist in the growing of crops, plants, and pasture, or to maintain vegetative growth in recreational lands, parks, and golf courses. Nonirrigation water use includes water used for livestock, fish farming, and other farm needs. Livestock water use includes water used for stock watering, feedlots, and dairy operations.

**Air heat exchange:** Cooling method, involving no water loss, during which a fan blows air past finned tubes carrying recirculating cooling water.

**Algae:** Simple rootless plants that grow in sunlit waters in relative proportion to the amounts of nutrients available. They can affect water quality adversely by lowering the dissolved oxygen in the water. They are food for fish and small aquatic animals.

**Algae blooms:** Rapid growth of algae on the surface of lakes, streams, or ponds; stimulated by nutrient enrichment.

**Aliquot:** A measured portion of a sample taken for analysis. One or more aliquots make up a sample.

**Alkali:** Any strongly basic substance of hydroxide and carbonate, such as soda, potash, etc., that is soluble in water and increases the pH of a solution.

**Alkalinity:** The measurement of constituents in a water supply which determine alkaline conditions. The alkalinity of water is a measure of its capacity to neutralize acids. See pH.

**Alluvium:** Sediments deposited by erosion processes, usually by streams.

**Aluvision:** A sudden or perceptible change in a river's margin, such as a change in course or loss of banks due to flooding.

**Anaerobic:** A process that takes place in the absence of oxygen, such as the digestion of organic matter by bacteria in a UASB-reactor.

**Animal specialties:** Water use associated with the production of fish in captivity except fish hatcheries, fur-bearing animals in captivity, horses, rabbits, and pets. See also livestock water use.

**Anion:** A negatively charged ion that results from the dissociation of salts, acids or alkali's in solution.

**Annular space:** The space between two concentric cylindrical objects, one of which surrounds the other, such as the space between the walls of a drilled hole and a casing.

**Aquaculture:** Farming of organisms that live in water, such as fish, shellfish, and algae.

**Aquatic:** Growing in, living in, or frequenting water

**Aquatic ecosystem:** Basic ecological unit composed of living and nonliving elements interacting in an aqueous milieu.

**Aqueous:** Something made up of water.

**Aqueous solubility:** The maximum concentration of a chemical that dissolves in a given amount of water.

**Aquiclude:** A formation which, although porous and capable of absorbing water slowly, will not transmit water fast enough to furnish an appreciable supply for a well or a spring.

**Aquiculture:** The raising or fattening of fish in enclosed ponds. Compare mariculture.

**Aquifer:** A geologic formation, group of formations, or part of a formation that contains sufficient saturated permeable material to yield significant quantities of water to wells and springs.

**Arid:** Describes regions where precipitation is insufficient in quantity for most crops and where agriculture is impractical without irrigation.

**Aromatics:** A type of hydrocarbon that contains a ring structure, such as benzene and toluene. They can be found for instance in gasoline.

**Artesian aquifer:** A geologic formation in which water is under sufficient hydrostatic pressure to be discharged to the surface without pumping.

**Artesian well:** A water well drilled into a confined aquifer where enough hydraulic pressure exists for the water to flow to the surface without pumping.

**Artesian zone:** A zone where water is confined in an aquifer under pressure so that the water will rise in the well casing or drilled hole above the bottom of the confining layer overlying the aquifer.

**Assimilation:** The ability of water to purify itself of pollutants.

**Assimilative capacity:** The capacity of natural water to receive wastewaters or toxic materials without negative effects and without damage to aquatic life or humans who consume the water.

**Atmosphere:** The layer of gases surrounding the earth and composed of considerable amounts of nitrogen, hydrogen, and oxygen.

**Atmospheric water:** Water present in the atmosphere either as a solid (snow, hail), liquid (rain) or gas (fog, mist).

**Attenuation:** The process of reduction of a compound's concentration over time. This can be through absorption, adsorption, degradation, dilution or transformation.

**Attrition:** The action of one particle rubbing against the other in a filter media or ion exchange bed that can in time cause breakdown of the particles.

**Available chlorine:** A measure of the amount of chlorine available in chlorinated lime, hypochlorite compounds, and other materials.

**Average annual recharge:** Amount of water entering the aquifer on an average annual basis. Averages mean very little for the Edwards because the climate of the region and structure of the aquifer produce a situation in which the area is usually water rich or water poor.

## Water Glossary – B

- **Back Pressure:** Pressure that can cause water to backflow into the water supply when a user's waste water system is at a higher pressure than the public system.
- **Backflow:** The flow of water in a medium in a direction opposite to normal flow. Flow is often returned into the system by backflow, if the wastewater in a purification system is severely contaminated.
- **Backsiphonage:** Reverse seepage of water in a distribution system
- **Backwashing:** Reversing the flow of water through a home treatment device filter or membrane to clean and remove deposits.
- **Bacteria:** Microscopically small single-cell organisms, that reproduce by fission of spores.
- **Bacterial water contamination:** The introduction of unwanted bacteria into a water body.
- **Barrage:** Any artificial obstruction placed in water to increase water level or divert it. Usually the idea is to control peak flow for later release
- **Base:** An alkaline substance that has a pH that exceeds 7.5.
- **Bed Load:** Sediment particles resting on or near the channel bottom that are pushed or rolled along by the flow of water.
- **Beneficial use:** The amount of water necessary when reasonable intelligence and diligence are used for a stated purpose; Texas law recognizes the following uses as beneficial: (1) domestic and municipal uses, (2) industrial uses, (3) irrigation, (4) mining, (5) hydroelectric power, (6) navigation, (7) recreation, (8) stock raising, (9) public parks, and (10) game preserves.
- **Benthic zone:** The lower region of a body of water including the bottom.

- **Bicarbonates:** Salts containing the anion  $\text{HCO}_3^-$ . When acid is added, this ion breaks into  $\text{H}_2\text{O}$  and  $\text{CO}_2$ , and acts as a buffer.
- **Binder:** Chemicals that hold short fibers together in a cartridge filter.
- **Bioaccumulation (bioconcentration):** A term used to describe a process that occurs when levels of toxic substances increase in an organism over time, due to continued exposure.
- **Biochemical Oxygen Demand (BOD):** The amount of oxygen (measured in mg/L) that is required for the decomposition of organic matter by single-cell organisms, under test conditions. It is used to measure the amount of organic pollution in wastewater.
- **Biocide:** A chemical that is toxic to microorganisms. Biocides are often used to eliminate bacteria and other single-cell organisms from water.
- **Biodegradable:** Capable of being broken down by living organisms into inorganic compounds.
- **Biodegradable pollutants:** Pollutants that are capable of decomposing under natural conditions.
- **Biofilm:** Population of various microorganisms, trapped in a layer of slime and excretion products, attached to a surface.
- **Biological contaminants:** Living organisms such as viruses, bacteria, fungi, and mammal and bird antigens that can cause harmful health effects to humans.
- **Biological diversity (biodiversity):** The variety of different species, the genetic variability of each species, and the variety of different ecosystems that they form.
- **Biological oxidation:** Decomposition of complex organic materials by microorganisms through oxidation.
- **Biologically activated carbon:** Activated carbon that supports active microbial growth, in order to aid in the degradation of organics that have been absorbed on its surface and in its pores.
- **Biomagnification (biological magnification):** A cumulative increase in the concentrations of a persistent substance in successively higher levels of the food chain.
- **Biomonitoring:** A test used to evaluate the relative potency of a chemical by comparing its effect on a living organism with the effect of a standard population on the same type of organism
- **Bioremediation:** A process that uses living organisms to remove pollutants
- **Biosolids:** A nutrient-rich organic material resulting from the treatment of wastewater. Biosolids contain nitrogen and phosphorus along with other supplementary nutrients in smaller doses, such as potassium, sulfur, magnesium, calcium, copper and zinc. Soil

that is lacking in these substances can be reclaimed with biosolids use. The application of biosolids to land improves soil properties and plant productivity, and reduces dependence on inorganic fertilizers

- **Biosphere:** The earth and all its ecosystems
- **Biota:** Collectively, the plants, microorganisms, and animals of a certain area or region.
- **Biotransformation:** Conversion of a substance into other compounds by organisms; including biodegradation.
- **Blackwater:** Wastewater from toilet, latrine, and aqua privy flushing and sinks used for food preparation or disposal of chemical or chemical–biological ingredients
- **Blind spots:** Any place on a filter medium where fluids cannot flow through.
- **Blinding:** A build–up of particles in a filter medium, that prevents fluids from flowing through.
- **Blinds:** Water samples containing a chemical of known concentration given a fictitious company name and slipped into the sample flow of the lab to test the impartiality of the lab staff
- **Block–rate pricing:** Method of charging on the basis of the volume of water used.
- **Blowdown:** The water drawn from boiler systems and cold water basins of cooling towers to prevent the buildup of solids
- **BOD:** Biochemical Oxygen Demand. A measure of the amount of oxygen required to neutralize organic wastes
- **BOD5:** The amount of dissolved oxygen consumed in five days by bacteria that perform biological degradation of organic matter.
- **Bog:** A type of wetland that accumulates appreciable peat deposits. It depends primarily on precipitation for its water source and is usually acidic and rich in plant matter, with a conspicuous mat or living green moss.
- **Boiling point:** The temperature at which a liquid boils. It is the temperature at which the vapor pressure of a liquid equals the pressure on its surface. If the pressure of the liquid varies, the actual boiling point varies. For water it is 212 degrees Fahrenheit or 100 degrees Celsius
- **Bottled water:** Water that is sold in plastic containers for drinking water and/ or domestic use.
- **Boundary water:** A river or lake that is part of the boundary between two or more countries or provinces that have rights to the water.

- **Brackish water:** Water that is neither falls in the category of salt water, nor in the category of fresh water. It holds the middle between either one of the categories.
- **Breakpoint chlorination:** Addition of chlorine to water until there is enough chlorine present for disinfection of water.
- **Breakthrough:** Crack or break in a filter bed that allows the passage of floc or particulate matter through a filter.
- **Brine:** Highly salty and heavily mineralized water containing heavy metal and organic contaminants.
- **Buffer:** A substance that reacts with hydrogen or hydroxyl ions in a solution, in order to prevent a change in pH.
- **Buoyancy:** The tendency of a body to float or rise when immersed in a fluid; the power of a fluid to exert an upward force on a body placed in it.

## Water Glossary – C

- **Cake:** Solid dewatered residue on a filter media after filtration.
- **Calcium carbonate:**  $\text{CaCO}_3$  – a white precipitate that forms in water lines, water heaters and boilers in hard water areas; also known as scale
- **Calcium hypochlorite:** A chemical that is widely used for water disinfection, for instance in swimming pools or water purification plants. It is especially useful because it is a stable dry powder and can be made into tablets.
- **Calorie:** Amount of energy required to raise the temperature of 1 gram of water 1 degree Celsius
- **Candle filter:** A relatively coarse aperture filter, designed to retain a coat of filter medium on an extended surface.
- **Capillary action:** Water that at some point rises higher than that portion of its surface, not in contact with the solid surface. This is due to adhesion, cohesion and surface tension where later touches a solid.
- **Capillary zone:** Soil area above the water table where water can rise up slightly through the cohesive force of capillary action. See phreatophytes
- **Capillary membranes:** Membranes about the thickness of a human hair, used for Reverse Osmosis, nanofiltration, ultrafiltration and microfiltration.
- **Carbamates:** A class of new-age pesticides that attack the nervous system of organisms

- **Carbonate hardness:** Hardness of water caused by carbonate and bicarbonate by-products of calcium and magnesium.
- **Carbonates:** The collective term for the natural inorganic chemical compounds related to carbon dioxide that exist in natural waterways
- **Carcinogen:** Any dissolved pollutant that can induce cancer.
- **Cartridge filter:** Disposable filter device that has a filter range of 0.1 micron to 100 microns.
- **Casing:** A tubular structure intended to be watertight installed in the excavated or drilled hole to maintain the well opening and, along with cementing, to confine the ground waters to their zones of origin and prevent the entrance of surface pollutants
- **Catalyses:** Chemical that increases the rate of a reaction but does not take a direct part in the reaction, so that it is still intact after the reaction has taken place.
- **Catch basin:** A sedimentation area designed to remove pollutants from runoff before being discharged into a stream or pond.
- **Cation:** A negatively charged ion, resulting from dissociation of molecules in solution.
- **Cavern:** A large underground opening in rock (usually limestone) which occurred when some of the rock was dissolved by water. In some igneous rocks, caverns can be formed by large gas bubbles
- **Cement grout:** A mixture of water and cement in the ratio of not more than 5–6 gallons of water to a 94 pound sack of Portland cement which is fluid enough to be pumped through a small diameter pipe
- **Center pivot system:** Method of agricultural irrigation consisting of a single sprinkler lateral with one end anchored to a fixed pivot structure and the other end continuously moving around the pivot while applying water
- **Centrifugation:** A separation process, which uses the action of centrifugal force to promote accelerated settling of particles in a solid–liquid mixture.
- **CERCLA:** Comprehensive Environment Response, Compensation and Liability Act. Also known as SUPERFUND. The Act gave EPA the authority to clean up abandoned, leaky hazardous waste sites
- **Certificate of water right:** An official document which serves as court evidence of a perfected water right
- **CFU:** Colony Forming Units. This is a measure that indicates the number of microorganisms in water.

- **Check dam:** A small dam constructed in a gully or other small water course to decrease the streamflow velocity, minimize channel erosion, promote deposition of sediment and to divert water from a channel
- **Check valve:** A valve that allows water to stream in one direction and will then close to prevent development of a back-flow.
- **Chelating agents:** Organic compounds that have the ability to draw ion from their water solutions into soluble complexes.
- **Chemical Oxygen Demand (COD):** The amount of oxygen (measured in mg/L) that is consumed in the oxidation of organic and inorganic matter, under test conditions. It is used to measure the total amount of organic and inorganic pollution in wastewater. Contrary to BOD, with COD practically all compounds are fully oxidized.
- **Chemical pollution:** Introduction of chemical contaminants into a water body.
- **Chemical weathering:** Attack and dissolving of parent rock by exposure to rainwater, surface water, oxygen, and other gases in the atmosphere, and compounds secreted by organisms. Contrast physical weathering
- **Chiseling of compacted soils:** Loosening the soil, without inverting and with a minimum of mixing of the surface soil, to shatter restrictive layers below the normal plow depth that inhibit water and air movement or root development
- **Chloramines:** A chemical complex that consists of chlorine and ammonia. It serves as a water disinfectant in public water supplies in place of chlorine because chlorine can combine with organics to form dangerous reaction products. In which forms chloramines exist depends on the physical/ chemical properties of the water source.
- **Chlorinated hydrocarbons:** Hydrocarbons that contain chlorine. These include a class of persistent insecticides that accumulate in the aquatic food chain. Among them are DDT, aldrin, dieldrin, heptachlor, chlordane, lindane, endrin, Mirex, hexachloride, and toxaphene.
- **Chlorinated solvent:** An organic solvent containing chlorine atoms that is often used as aerosol spray container, in highway paint, and dry cleaning fluids.
- **Chlorination:** A water purification process in which chlorine is added to water for disinfection, for the control of present microorganisms. It is also used in the oxidation of compound impurities in water.
- **Chlorine demand:** The difference between the amount of chlorine added to water, sewage, or industrial wastes and the amount of residual chlorine remaining at the end of a specific contact period. Compare residual chlorine

- **Chlorine–contact chamber:** The part of a water treatment plant where effluent is disinfected by chlorine.
- **Chute spillway:** The overall structure which allows water to drop rapidly through an open channel without causing erosion. Usually constructed near the edge of dams
- **Circulate:** To move in a circle, circuit or orbit; to flow without obstruction; to follow a course that returns to the starting point
- **Cistern:** A tank used to collect rainwater runoff from the roof of a house or building
- **Clarity:** The clearness of a liquid.
- **Climate:** Meteorological elements that characterize the average and extreme conditions of the atmosphere over a long period of time at any one place or region of the earth's surface.
- **Climate change:** The slow variations of climatic characteristics over time at a given place.
- **Climatic cycle:** The periodic changes climate displays, such as a series of dry years following a series of years with heavy rainfall
- **Climatic year:** A period used in meteorological measurements. The climatic year in the U.S. begins on October 1
- **Closed loop cooling tower:** Water–conserving cooling tower system in which water used for cooling is recycled through a piping system that cools the water; the water is cooled as air exchanges heat with the pipes
- **Cloudburst:** A torrential downpour of rain, which by its spottiness and relatively high intensity suggests the bursting and discharge of water from a cloud all at once
- **Coagulation:** In water treatment, the use of chemicals to make suspended solids gather or group together into small flocs
- **Coalescence:** Liquid particles in suspension that unite to create particles of a greater volume.
- **Coastal zone:** Lands and waters near the coast, whose uses and ecology are affected by the sea.
- **Cohesion:** A molecular attraction by which the particles of a body are united throughout the mass whether like or unlike. Compare adhesion
- **Cold vapor:** Method to test water for the presence of mercury
- **Coliform bacteria:** A group of bacteria used as an indicator of sanitary quality in water. Exposure to these organisms in drinking water causes diseases such as cholera.
- **Coliform index:** A rating of the purity of water based on a count of coliform bacteria.

- **Collector sewers:** Pipes to collect and carry wastewater from individual sources to an interceptor sewer that will carry it to a treatment facility.
- **Collector well:** A well located near a surface water supply used to lower the water table and thereby induce infiltration of surface water through the bed of the water body to the well.
- **Colloids:** Finely divided solids which will not settle but which may be removed by coagulation or biochemical action
- **Combined sewer:** A sewer system that carries both sanitary sewage and stormwater runoff. When sewers are constructed this way, wastewater treatment plants have to be sized to deal with stormwater flows and oftentimes some of the water receives little or no treatment. Compare separate sewer
- **Commercial water use:** Water for motels, hotels, restaurants, office buildings, other commercial facilities, and institutions. The water may be obtained from a public supply or may be self supplied. See also public supply and self– supplied water.
- **Community water system:** A public water system which serves at least 15 service connections used by year–round residents or regularly serves at least 25 year–round residents.
- **Completion:** Sealing off access of undesirable water to the well bore by proper casing and/or cementing procedures
- **Composite sample:** A series of water samples taken over a given period of time and weighted by flow rate.
- **Composite sample, weighted:** A sample composed of two or more portions collected at specific times and added together in volumes related to the flow at time of collection. Compare grab sample
- **Compounds:** Two or more different elements held together in fixed proportions by attractive forces called chemical bonds.
- **Concentrate:** The totality of different substances that are left behind in a filter medium after filtration.
- **Concentration:** Amount of a chemical or pollutant in a particular volume or weight of air, water, soil, or other medium
- **Concentration process:** The process of increasing the number of particles per unit volume of a solution, usually by evaporating the liquid.
- **Condensate:** Water obtained by condensation of water vapor.

- **Condensation:** The process by which a vapor becomes a liquid or solid; the opposite of evaporation. In meteorological usage, this term is applied only to the transformation from vapour to liquid.
- **Condensation:** The change of state from a gas to a liquid. Compare evaporation, sublimation
- **Conductivity:** The amount of electricity the water can conduct. It is expressed in a chemical magnitude. Please use also our information about TDS and conductivity.
- **Conduit:** A natural or artificial channel through which fluids may be conveyed
- **Cone of depression:** Natural depression in the water table around a well during pumping
- **Confined aquifer:** An aquifer that lies between two relatively impermeable rock layers
- **Confining bed or unit:** A body of impermeable or distinctly less permeable material stratigraphically adjacent to one or more aquifers
- **Confluent growth:** In coliform testing, abundant or overflowing bacterial growth which makes accurate measurement difficult or impossible
- **Conjunctive management:** Integrated management and use of two or more water resources, such as an aquifer and a surface water body
- **Connate growth:** Water trapped in the pore spaces of a sedimentary rock at the time it was deposited. It is usually highly mineralized
- **Conservation:** The continuing protection and management of natural resources in accordance with principles that assure their optimum long-term economic and social benefits.
- **Consolidated formation:** Naturally occurring geologic formations that have been lithified (turned to stone). The term is sometimes used interchangeably with the term "bedrock." commonly, these formations will stand at the edges of a bore hole without caving
- **Consumptive use:** The difference between the total quantity of water withdrawn from a source for any use and the quantity of water returned to the source; e.g., the release of water into the atmosphere; the consumption of water by humans, animals, and plants; and the incorporation of water into the products of industrial or food processing.
- **Contact recreation:** Activities involving a significant risk of ingestion of water, such as wading by children, swimming, water skiing, diving and surfing. Compare noncontact recreation.
- **Contact time:** The length of time a substance is in contact with a liquid, before it is removed by filtration or the occurrence of a chemical change.

- **Contaminant:** Any physical, chemical, biological, or radiological substance or matter that has an adverse affect on air, water, or soil.
- **Contamination:** The introduction into water of sewage or other foreign matter that will render the water unfit for its intended use
- **Continuous flow system:** The continuous use, by an industry, of deionized water to remove contaminants from products and equipment
- **Conventional sewer systems:** Systems that were traditionally used to collect municipal wastewater in gravity sewers and convey it to a central primary or secondary treatment plant, before discharge on receiving surface waters.
- **Conveyance loss:** Water that is lost in transit from a pipe, canal, conduit, 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.
- **Cooling pond:** Usually a manmade water body used by power plants or large industrial plants that enables the facility to recirculate once–through cooling water. The water levels in the pond are usually maintained by rainfall or augmented by pumping (withdrawal of) water from another source (fresh, saline, or reclaimed).
- **Cooling tower:** A large tower or stack that is used for heat exchange of once–through cooling water generated by steam condensers. Hot water from the plant is sprayed into the top of the tower and exchanges heat with the passing air as it falls. The water is then collected at the bottom of the tower and used again. A small amount of water is lost (consumed) through evaporation in this process. See cooling water or once–through cooling.
- **Cooling tower makeup:** Water added to the recirculating cooling tower water stream to compensate for water evaporation losses
- **Cooling water:** Water used for cooling purposes, such as of condensers and nuclear reactors.
- **Cooling water blowdown:** Procedure used to reduce total dissolved solids by removing a portion of poor–quality recirculating water
- **Cooling water drift:** Unevaporated water carried out of a cooling tower by the airflow; it has the same composition as the recirculating water
- **Cooling water evaporation:** Cooling water recycling approach in which water loses heat when a portion of it is evaporated
- **Correlative rights:** Rights that are coequal or that relate to one another, so that any one owner cannot take more than his share

- **Creek:** A small stream of water which serves as the natural drainage course for a drainage basin. The term is relative according to size. Some creeks in a humid region would be called rivers if they occurred in an arid area
  - **Crest:** The top of a dam, dike, or spillway, which water must reach before passing over the structure; the summit or highest point of a wave; the highest elevation reached by flood waters flowing in a channel
  - **Critical low flow:** Low flow conditions below which some standards do not apply. The impacts of permitted discharges are analyzed at critical low-flow
  - **Cross flow filtration:** A process that uses opposite flows across a membrane surface to minimize particle build-up.
  - **Cryptosporidium:** A microorganism in water that causes gastrointestinal illness in humans. It is commonly found in untreated surface water and can be removed by filtration. It is resistant to disinfectants such as chlorine.
  - **Cubic foot per second (CFS):** The rate of discharge representing a volume of one cubic foot passing a given point during 1 second. This rate is equivalent to approximately 7.48 gallons per second, or 1.98 acre-feet per day
  - **Cubic metre per second (m<sup>3</sup>/s):** A unit expressing rate of discharge, typically used in measuring streamflow. One cubic meter per second is equal to the discharge in a stream of a cross section one meter wide and one meter deep, flowing with an average velocity of one meter per second.
  - **Cultural eutrophication:** Decline of the oxygen rate in water, which has serious consequences for aquatic life, caused by humans.
  - **Current:** The portion of a stream or body of water which is moving with a velocity much greater than the average of the rest of the water. The progress of the water is principally concentrated in the current. See thalweg
  - **Cycle:** The length of time a filter can be used before it needs cleaning, usually including cleaning time.
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## Water Glossary – D

- **Dam:** A structure of earth, rock, concrete, or other materials designed to retain water, creating a pond, lake, or reservoir.
- **Dealkalinisation:** Any process that serves to reduce the alkalinity of water.

- **Decant:** To draw off the upper layer of liquid after the heaviest material (a solid or another liquid) has settled.
- **Decarbonation:** The process of removing carbon dioxide from water, using contact towers or air scrubbers.
- **Decomposition:** The break down of organic matter by bacteria and fungi, to change the chemical structure and physical appearance of matter.
- **Decreasing block rate:** Pricing that reflects per-unit costs of production and delivery that go down as customers consume more water.
- **Defluoridation:** The removal of fluoride from drinking water to prevent teeth damage.
- **De-foaming agents:** Chemicals that are added to wastewater discharges to prevent the water from foaming when it is discharged into a receiving water body.
- **Degasification:** The process of removing dissolved gasses from water, using vacuum or heat.
- **Deionisation:** Process that serves to remove all ionized substances from a solution. Most commonly is the exchange process where cations and anions are removed independently of each other.
- **Deionized water:** Common industrial water used to remove contaminants from products and equipment.
- **Delivery/release:** The amount of water delivered to the point of use and the amount released after use; the difference between these amounts is usually the same as the consumptive use. See also consumptive use.
- **Delta:** A fan-shaped alluvial deposit at a river mouth formed by the deposition of successive layers of sediment.
- **Demand:** The numerical expression of the desire for goods and services associated with an economic standard for acquiring them.
- **Demineralization:** A process to remove minerals from water, usually the term is restricted to ion exchange processes.
- **Demiwater:** Demineralized water. Water that is treated to be contaminant-, mineral- and salt free.
- **Denitrification:** Removal of nitrate and nitrate product from water to produce a quality that answers common water standards.
- **Density:** The weight of a certain amount of water. It is usually expressed in kilograms per cubic metre.

- **Dental fluorosis:** Disorder caused by excessive absorption of fluorine and characterized by brown staining of teeth.
- **Depletion:** Loss of water from surface water reservoirs or groundwater aquifers at a rate greater than that of recharge.
- **Deposit:** Something dropped or left behind by moving water, as sand or mud.
- **Depression storage:** The storage of water in low areas, such as ponds, and wetlands.
- **Depth filtration:** Treatment process in which the entire filter bed is used to trap insoluble and suspended particles in its voids as water flows through it.
- **Desalination:** The removal of salts from water. The three primary types of desalination are: (1) distillation, (2) electrodialysis processes, and (3) reverse osmosis processes.
- **Desorption:** The opposite of adsorption; the release of matter from the adsorption medium, usually to recover material.
- **Detection limit:** The lowest level that can be determined by a specific analytical procedure or test method.
- **Detention time:** The actual time that a small amount of water is in a settling basin or flocculating basin. In storage reservoirs, it means the length of time water will be stored.
- **Detergent:** A water-soluble cleansing agent, other than soap.
- **Dewater:** The separation of water from sludge, to produce a solid cake.
- **Dewatering:** The deliberate attempt to lower the ground-water level in or below land surface for selected purposes such as agricultural, construction, mining or other activities. For mining operation, dewatering usually is accomplished by pumping the water out of the ground and discharging to a surface-water body. However, some dewatering involves gravity feeding water from the surficial aquifer into a deeper aquifer through recharge wells.
- **Diatomaceous:** Consisting of or abounding in diatoms, a class of unicellular or colonial algae having a silicified cell wall that persists as a skeleton after death.
- **Diffuser:** A component of the ozone contacting system in an ozone generator that allows diffusion of an ozone containing gas.
- **Diffusion:** The movement of gas molecules or aerosols into liquids, caused by a concentration gradient.
- **Digester:** A closed tank for wastewater treatment, in which bacterial action is induced to break down organic matter.
- **Diluting water:** Distilled water that has been stabilized, buffered, and aerated. Used in the BOD test.

- **Dioxin:** Any of a family of compounds known chemically as dibenzo-p-dioxins. Concern about them arises from their potential toxicity and contamination in commercial products.
- **Direct run-off:** Water that flows from the ground surface directly into streams, rivers, and lakes.
- **Discharge:** In the simplest form, discharge means outflow of water. The use of this term is not restricted as to course or location, and it can be used to describe the flow of water from a pipe or from a drainage basin. Other words related to it are runoff, streamflow, and yield.
- **Discharge permit:** A permit issued by a state or the federal government to discharge effluent into waters of the state or the United States. In many states both State and federal permits are required.
- **Disinfectants:** Fluids or gasses to disinfect filters, pipelines, systems, etc.
- **Disinfection:** The killing of the larger portion of the harmful and objectionable bacteria in the sewage. Usually accomplished by introduction of chlorine, but more and more facilities are using exposure to ultraviolet radiation, which renders the bacteria sterile.
- **Disinfection byproducts:** Halogenated organic chemicals formed when water is disinfected.
- **Dispersion:** The movement and spreading of contaminants out and down in an aquifer.
- **Displacement:** Distance by which portions of the same geological layer are offset from each other by a fault.
- **Dissolve:** The process by which solid particles mix molecule by molecule with a liquid and appear to become part of the liquid.
- **Dissolved air flotation (DAF):** A procedure of induced flotation with very fine air bubbles or 'micro bubbles', of 40 to 70 microns.
- **Dissolved oxygen (DO):** Amount of oxygen gas dissolved in a given quantity of water at a given temperature and atmospheric pressure. It is usually expressed as a concentration in parts per million or as a percentage of saturation.
- **Dissolved solids:** Inorganic material contained in water or wastes. Excessive dissolved solids make water unsuitable for drinking or industrial uses. See TDS.
- **Dissolved solids (DS):** Very small pieces of organic and inorganic material contained in water. Excessive amounts make water unfit to drink or limit its use in industrial processes.
- **Distillation:** Water treatment method where water is boiled to steam and condensed in a separate reservoir. Contaminants with higher boiling points than water do not vaporize and remain in the boiling flask.

- **Distilled water:** Water that has been treated by boiling and condensation to remove solids, inorganics, and some organic chemicals.
- **Diversion:** The transfer of water from a stream, lake, aquifer, or other source of water by a canal, pipe, well, or other conduit to another watercourse or to the land, as in the case of an irrigation system.
- **Domestic use:** The quantity of water used for household purposes such as washing, food preparation, and bathing.
- **Domestic wastewater facility:** Facilities that receive or dispose of wastewater derived principally from residential dwellings, business or commercial buildings, institutions, and the like. Can also include some wastewater derived from industrial facilities. May also be referred to as a municipal wastewater facility.
- **Domestic water use:** Water for household purposes, such as drinking, food preparation, bathing, washing clothes and dishes, flushing toilets, and watering lawns and gardens. Also called residential water use. The water may be obtained from a public supply or may be self supplied. See also public supply and self-supplied water.
- **Drainage area:** Of a stream at a specified location is that area, measured in a horizontal plane, enclosed by a topographic divide from which direct surface runoff from precipitation normally drains by gravity into the stream above the specified location.
- **Drainage basin:** See: Watershed.
- **Dredgeate:** The material excavated from lake, river, or channel bottoms during dredging.
- **Dredging:** The removal of material from the bottom of water bodies using a scooping machine. This disturbs the ecosystem and causes silting that can kill aquatic life.
- **Driller's well log:** A log kept at the time of drilling showing the depth, thickness, character of the different strata penetrated, location of water-bearing strata, depth, size, and character of casing installed.
- **Dripstone:** Deposits of calcium carbonate that include stalactites, stalagmites, columns, and cave pearls.
- **Drop tubes:** Devices that can be added to a center pivot system to achieve greater efficiency in agricultural irrigation.
- **Drought:** Although there is no universally accepted definition of drought, it is generally the term applied to periods of less than average precipitation over a certain period of time. In south Texas ranchers say drought begins as soon as it stops raining.
- **Dry cooling:** Cooling-down process using steam, to eliminate the loss of water.

- **Dry deposition:** Emissions of sulfur and nitrogen oxides that, in the absence of water in the atmosphere (i.e., rain), settle to the ground as particulate matter.
- **Duplicates:** Two separate samples with separate containers taken at the same time at the same place.
- **Dyke:** An artificial embankment constructed to prevent flooding.
- **Dystrophic lakes:** Acidic bodies of water that contain many plants but few fish, due to the presence of great amounts of organic matter.

## Water Glossary – E

- **Ecosphere:** Total of all the ecosystems on the planet, along with their interactions; the sphere of air, water, and land in which all life is found.
- **Ecosystem:** A system formed by the interaction of a group of organisms and their environment.
- **Edwards aquifer:** An arch-shaped belt of porous, water bearing limestone composed of the Comanche Peak, Edwards, and Georgetown formations trending from west to east to northeast through Kinney, Uvalde, Medina, Bexar, Comal, Hays, Travis, and Williamson counties.
- **Edwards outcrop:** Where the Edwards and associated limestone formations are found at the surface. This area is also referred to as the Recharge Zone.
- **Effective porosity:** The portion of pore space in saturated permeable material where the movement of water takes place.
- **Effective precipitation:** The part of precipitation which produces runoff; a weighted average of current and antecedent precipitation "effective" in correlating with runoff. It is also that part of the precipitation falling on an irrigated area which is effective in meeting the requirements of consumptive use.
- **Effluent:** The sewage or industrial liquid waste that is released into natural water by sewage treatment plants, industry, or septic tanks.
- **Ejector:** A device used to inject a chemical solution into wastewater during water treatment.
- **Electrical charge:** The charge on an ion, declared by its number of electrons. A  $\text{Cl}^-$  ion is in fact a Cl atom which has acquired an electron, and a  $\text{Ca}^{++}$  ion is a Ca atom, which has lost two electrons.

- **Electrodialysis:** A process which uses an electrical current and an arrangement of permeable membranes to separate soluble minerals from water. It is often used to desalinate salt or brackish water.
- **Electrolyte:** Substance that dissociates into ions when it dissolves in water.
- **Elutriation:** Freeing sludge of its mother liquor by washing it with water.
- **Emulsifier:** A chemical that helps suspending one liquid in another.
- **Emulsion:** Dispersion of one liquid in another liquid, occurs when a liquid is insoluble.
- **Endangered species:** One having so few individual survivors that the species could soon become extinct in all or part of its region.
- **End-of-pipe techniques:** Techniques for water purification that serve the reduction of pollutants after they have formed.
- **Enrichment:** When the addition of nutrients, such as nitrogen and phosphorus, from sewage effluent or agricultural runoff to surface water, greatly increases algal growth.
- **Enteric viruses:** A category of viruses related to human excreta found in waterways.
- **Environment:** All of the external factors, conditions, and influences that affect an organism or a community.
- **Environmental assessment:** The critical appraisal of the likely effects of a proposed project, activity, or policy on the environment, both positive and negative.
- **Environmental monitoring:** The process of checking, observing, or keeping track of something for a specified period of time or at specified intervals.
- **EPA:** Environmental protection agency.
- **Epilimnion:** Warm, less dense top layer in a stratified lake. Compare hypolimnion.
- **Erosion:** The wearing down or washing away of the soil and land surface by the action of water, wind, or ice.
- **Escarpment:** The topographic expression of a fault.
- **Escherichia coli (E. coli):** Coliform bacterium that is often associated with human and animal waste and is found in the intestinal tract. It is used by health departments and private laboratories to measure the purity of water.
- **Estuarine waters:** Deepwater tidal habitats and tidal wetlands that are usually enclosed by land but have access to the ocean and are at least occasionally diluted by freshwater runoff from the land (such as bays, mouths of rivers, salt marshes, lagoons).
- **Estuarine zone:** Area near the coastline that consists of estuaries and coastal saltwater wetlands.

- **Estuary:** Regions of interaction between rivers and nearshore ocean waters, where tidal action and river flow create a mixing of fresh water and saltwater. These areas may include bays, mouths of rivers, salt marshes, and lagoons. These brackish water ecosystems shelter and feed marine life, birds, and wildlife.
- **Euphotic zone:** Surface layer of an ocean, lake, or other body of water through which light can penetrate. Also known as the zone of photosynthesis.
- **Eutrophic:** Having a large or excessive supply of plant nutrients (nitrates and phosphates). Compare oligotrophic.
- **Eutrophic lake:** Shallow, murky bodies of water that have excessive concentrations of plant nutrients causing excessive algal production.
- **Eutrophication:** The natural process by which lakes and ponds become enriched with dissolved nutrients, resulting in increased growth of algae and other microscopic plants.
- **Evaporation:** Process by which water is changed from a liquid into a vapor. See also evapotranspiration and transpiration.
- **Evaporation ponds:** Areas where sewage sludge is dumped and dried.
- **Evapotranspiration:** A collective term that includes water discharged to the atmosphere as a result of evaporation from the soil and surface-water bodies and as a result of plant transpiration. See also evaporation and transpiration.
- **External cost:** Cost of production or consumption that must be borne by society; not by the producer.
- **Extinction:** Complete disappearance of a species because of failure to adapt to environmental change.

## Water Glossary – F

- **Facultative bacteria:** Bacteria that can live under aerobic or anaerobic conditions.
- **Faucet aerator:** Device that can be installed in a sink to reduce water use.
- **Fecal coliform:** The portion of the coliform bacteria group which is present in the intestinal tracts and feces of warm-blooded animals. A common pollutant in water.
- **Fen:** A type of wetland that accumulates peat deposits. Fens are less acidic than bogs, deriving most of their water from groundwater rich in calcium and magnesium.
- **Fermentation:** The conversion of organic matter to methane, carbon dioxide and other molecules by anaerobic bacteria.

- **Fermentation, anaerobic:** Process in which carbohydrates are converted in the absence of oxygen to hydrocarbons (such as methane).
- **Field capacity:** The amount of water held in soil against the pull of gravity.
- **Filter:** A device used to remove solids from a mixture or to separate materials. Materials are frequently separated from water using filters.
- **Filter medium:** The permeable material that separates solids from liquids passing through it.
- **Filtrate:** A liquid that has passed through the filter medium.
- **Filtration:** The mechanical process which removes particulate matter by separating water from solid material, usually by passing it through sand.
- **First draw:** The water that comes out when a tap is first opened. It is likely that it has the highest level of lead contamination from weathering of pipelines.
- **First in time, first in right:** Sentence indicating that older water rights have priority over more recent rights if there is not enough water to satisfy all rights.
- **Fission:** Reproduction of microorganisms by means of cell division.
- **Fixed ground water:** Water held in saturated material that it is not available as a source of water for pumping.
- **Floc:** A flocculent mass that is formed in the accumulation of suspended particles. It can occur naturally, but is usually induced in order to be able to remove certain particles from wastewater.
- **Flocculation:** Large scale treatment process involving gentle stirring whereby small particles in flocs are collected into larger particles so their weight causes them to settle to the bottom of the treatment tank.
- **Flood:** The temporary inundation of normally dry land areas resulting from the overflowing of the natural or artificial confines of a river or other body of water.
- **Flood damage:** The economic loss caused by floods, including damage by inundation, erosion, and/or sediment deposition. Damages also include emergency costs and business or financial losses. Evaluation may be based on the cost of replacing, repairing, or rehabilitating; the comparative change in market or sales value; or the change in the income or production caused by flooding.
- **Flood forecasting:** Prediction of stage, discharge, time of occurrence, and duration of a flood, especially of peak discharge at a specified point on a stream, resulting from precipitation and/or snowmelt.

- **Flood fringe:** The portion of the floodplain where water depths are shallow and velocities are low.
- **Flood irrigation:** Irrigation systems that control the water table with lateral supply ditches. These include open field ditch systems (furrows), semi-closed conveyance systems, subsurface conduit systems, crown flood systems, and continuous flood systems. Also includes seepage or subsurface irrigation systems. The efficiencies of these flood irrigation systems range from 20 to 80 percent, however, an average of 60 percent is commonly used for estimating water requirements. May also be referred to as subsurface irrigation.
- **Flood peak:** The highest magnitude of the stage of discharge attained by a flood. Also called peak stage or peak discharge.
- **Floodplain:** Any normally dry land area that is susceptible to being inundated by water from any natural source. This area is usually low land adjacent to a stream or lake.
- **Floodproofing:** Any combination of structural and nonstructural additions, changes, or adjustments to structures that reduce or eliminate flood damage.
- **Floodway:** The channel of a river or stream and those parts of the adjacent floodplain adjoining the channel that are required to carry and discharge the base flood.
- **Flora:** Plant population of a region.
- **Flotation:** A solids-liquid or liquid-liquid separation procedure, which is applied to particles of which the density is lower than that of the liquid they are in. there are three types: natural, aided and induces flotation.
- **Flow:** The rate of water discharged from a source; expressed in volume with respect to time, e.g., cubic meter/s, liter per minute (Lpm).
- **Flow augmentation:** The addition of water to a stream, especially to meet instream flow needs.
- **Flux:** The rate at which a Reverse Osmosis Membrane allows water to pass through it.
- **Food chain:** A sequence of organisms, each of which uses the next, lower member of the sequence as a food source.
- **Food web:** The complex intermeshing of individual food chains in an ecosystem.
- **Forbay:** The water behind a dam.
- **Forfeited water right:** A water right canceled because of several consecutive years of nonuse.
- **Fouling:** The deposition of organic matter on the membrane surface, which causes inefficiencies.

- **Fragmentation:** The subdivision of a solid in fragments. The fragments will then adhere to the nearest surface.
- **Free groundwater:** Water in interconnected pore spaces in the zone of saturation down to the first impervious barrier, moving under the control of the water table slope.
- **Freezing:** The change of a liquid into a solid as temperature decreases. For water, the freezing point is 32 f or 0°C.
- **Fresh:** salt water interface or the region where fresh water and salt water meet. In the edwards region, it is commonly referred to as the "bad water line", although it is a zone and not a line.
- **Freshwater:** Water that contains less than 1,000 milligrams per liter (mg/L) of dissolved solids; generally, more than 500 mg/L of dissolved solids is undesirable for drinking and many industrial uses.
- **Frost:** A covering of minute ice crystals on a cold surface.
- **Furrow diking:** Water-saving agricultural irrigation practice in which a long, narrow groove or trench is made in the earth by a plow. The dike is usually placed at one end of the field to collect runoff.

## Water Glossary – G

- **Gaging station:** The site on a stream, lake or canal where hydrologic data is collected.
- **Gallon:** A unit that is now almost entirely out of date. It is equivalent to 3.785 liters.
- **Gallon:** A unit of volume. A U.S. gallon contains 231 cubic inches, 0.133 cubic feet, or 3.785 liters. One U.S. gallon of water weighs 8.3 lbs.
- **Geohydrology:** A term which denotes the branch of hydrology relating to subsurface or subterranean waters; that is, to all waters below the surface.
- **Geologic erosion:** Normal or natural erosion caused by geological processes acting over long geologic periods and resulting in the wearing away of mountains, the building up of floodplains, coastal plains, etc.
- **Geopressured reservoir:** A geothermal reservoir consisting of porous sands containing water or brine at high temperature or pressure.
- **Geyser:** A periodic thermal spring that results from the expansive force of super heated steam.
- **Giardia:** A microorganism that is commonly found in untreated surface water and can be removed by filtration. It is resistant to disinfectants such as chlorine.

- **Glacier:** A huge mass of ice, formed on land by the compaction and re-crystallization of snow, that moves very slowly downslope or outward due to its own weight.
- **Grab sample:** A sample taken at a given place and time. Compare composite sample.
- **Granular activated carbon:** Pure carbon heated to promote "active" sites which can adsorb pollutants. Used in some home water treatment systems to remove certain organic chemicals and radon.
- **Gray water:** Domestic wastewater composed of washwater from kitchen sinks, bathroom sinks and tubs, clothes washers, and laundry tubs.
- **Greenhouse effect:** The warming of the earth's atmosphere caused by a build-up of carbon dioxide or other trace gases; it is believed by many scientists that this build-up allows light from the sun's rays to heat the earth but prevents a counterbalancing loss of heat.
- **Greywater:** Wastewater from clothes washing machines, showers, bathtubs, hand-washing, lavatories and sinks that are not used for disposal of chemical or chemical-biological ingredients.
- **Groundwater:** Generally all subsurface water as distinct from surface water; specifically, that part of the subsurface water in the saturated zone (a zone in which all voids are filled with water) where the water is under pressure greater than atmospheric.
- **Groundwater discharge:** Ground water entering coastal waters, which has been contaminated by land-fill leachates, deep well injection of hazardous wastes and septic tanks.
- **Groundwater disposal:** Wastewater that is disposed of through the ground either by injection or seepage. This includes the following discharge methods; absorption beds, injection wells, drainfields, percolation ponds, rapid infiltration basins, spray fields, and land application systems. Land application systems or reuse systems are considered a ground-water disposal as treated wastewater used to irrigate is generally intended to filter down through the soil.
- **Groundwater hydrology:** The branch of hydrology that deals with groundwater; its occurrence and movements, its replenishment and depletion, the properties of rocks that control groundwater movement and storage, and the methods of investigation and utilization of ground water.
- **Groundwater law:** The common law doctrine of riparian rights and the doctrine of prior appropriation as applied to ground water.
- **Groundwater recharge:** The use of reclaimed wastewater, by surface spreading or direct injection, to prevent saltwater intrusion into freshwater aquifers, to store the reclaimed

water for future use, to control or prevent ground subsidence, and to augment non-potable or potable ground water aquifers.

- **Groundwater reservoir:** An aquifer or aquifer system in which ground water is stored. The water may be placed in the aquifer by artificial or natural means.
- **Groundwater runoff:** The portion of runoff which has passed into the ground, has become ground water, and has been discharged into a stream channel as spring or seepage water.
- **Groundwater storage:** The storage of water in groundwater reservoirs.
- **Gully:** A deeply eroded channel caused by the concentrated flow of water.
- **Gully reclamation:** Use of small dams of manure and straw; earth, stone, or concrete to collect silt and gradually fill in channels of eroded soil.

## Water Glossary – H

- **Habitat:** The native environment where a plant or animal naturally grows or lives.
- **Hail:** A form of precipitation which forms into balls or lumps of ice over 0.2 inch in diameter. Hail is formed by alternate freezing and melting as precipitation is carried up and down in highly turbulent air currents.
- **Half-life:** The time required for a pollutant to lose one-half of its original concentration.
- **Hard water:** Water containing a high level of calcium, magnesium, and other minerals. Hard water reduces the cleansing power of soap and produces scale in hot water lines and appliances.
- **Hardness (water):** Condition caused by dissolved salts of calcium, magnesium, and iron, such as bicarbonates, carbonates, sulfates, chlorides, and nitrates.
- **Hardpan:** A shallow layer of earth material which has become relatively hard and impermeable, usually through the deposition of minerals. In the Edwards region hardpans of clay are common.
- **Hazardous waste:** Waste that poses a risk to human health or the environment and requires special disposal techniques to make it harmless or less dangerous.
- **Head:** The pressure of a fluid owing to its elevation, usually expressed in feet of head or in pounds per square inch, since a measure of fluid pressure is the height of a fluid column above a given or known point.

- **Headgate:** The gate that controls water flow into irrigation canals and ditches. A watermaster regulates the headgates during water distribution and posts headgate notices declaring official regulations.
- **Heat exchanger:** A component that is utilized to remove heat from or add heat to a liquid.
- **Heat of vaporization:** The amount of heat necessary to convert a liquid (water) into vapor.
- **Heavy metals:** Metals that have a density of 5.0 or higher and a high elemental weight. Most are toxic to humans, even in low concentrations.
- **Heavy water:** Water in which all the hydrogen atoms have been replaced by deuterium.
- **Henry's Law:** A way of calculating the solubility of a gas in a liquid, based on temperature and partial pressure, by means of constants.
- **Holding pond:** A small basin or pond designed to hold sediment laden or contaminated water until it can be treated to meet water quality standards or be used in some other way.
- **Homeowner water system:** A water system that supplies piped water to a single residence.
- **Humidification:** The addition of water vapor to air.
- **Hydraulic conductivity:** The rate at which water can move through a permeable medium.
- **Hydraulic gradient:** In general, the direction of groundwater flow due to changes in the depth of the water table.
- **Hydrocarbon:** Organic compounds that are built of carbon and hydrogen atoms and are often used in petroleum industries.
- **Hydroelectric plant:** Electric power plant in which the energy of falling water is used to spin a turbine generator to produce electricity.
- **Hydroelectric power water use:** The use of water in the generation of electricity at plants where the turbine generators are driven by falling water. Hydroelectric water use is classified as an instream use in this report.
- **Hydroelectricity:** Electric energy produced by water-powered turbine generators.
- **Hydrogen sulfide (H<sub>2</sub>S):** A gas emitted during organic decomposition by a select group of bacteria, which strongly smells like rotten eggs.
- **Hydrogeology:** The science of chemistry and movement of groundwater.
- **Hydrograph:** A chart that measures the amount of water flowing past a point as a function of time.
- **Hydrologic cycle:** The constant circulation of water from the sea, through the atmosphere, to the land, and back to the sea by over-land, underground, and atmospheric routes.

- **Hydrologic unit:** Is a geographic area representing part or all of a surface drainage basin or distinct hydrologic feature.
- **Hydrology:** The science of waters of the earth; water's properties, circulation, principles, and distribution.
- **Hydrometer:** An instrument used to measure the density of a liquid.
- **Hydrophilic:** Having an affinity for water.
- **Hydrophobic:** Having an aversion for water.
- **Hydropower:** Electrical energy produced by falling water.
- **Hydrosphere:** Region that includes all the earth's liquid water, frozen water, floating ice, frozen upper layer of soil, and the small amounts of water vapor in the Earth's atmosphere.
- **Hydrostatic head:** A measure of pressure at a given point in a liquid in terms of the vertical height of a column of the same liquid which would produce the same pressure.
- **Hydrostatic pressure:** Pressure exerted by or existing within a liquid at rest with respect to adjacent bodies.
- **Hygroscopic nuclei:** Piece of dust or other particle around which water condenses in the atmosphere. These tiny droplets then collide and coalesce, with as many as 10,000 nuclei contributing to formation of a raindrop.
- **Hypochlorite:** An anion that forms products such as calcium and sodium hypo chlorite. These products are often used for disinfection and bleaching.
- **Hypolimnion:** Bottom layer of cold water in a lake. Compare epilimnion.
- **Hypoxic waters:** Waters with dissolved oxygen concentrations of less than 2 mg/L, the level generally accepted as the minimum required for life and reproduction of aquatic organisms.

## Water Glossary – I

- **Ice:** A solid form of water.
- **Imhoff cone:** A clear, cone-shaped container used to measure the volume of settle able solids in a specific volume of water.
- **Immiscibility:** The inability of two or more solids or liquids to readily dissolve into one another.
- **Impermeable:** Material that does not permit fluids to pass through.

- **Impervious:** The quality or state of being impermeable; resisting penetration by water or plant roots. Impervious ground cover like concrete and asphalt affects quantity and quality of runoff.
- **Impoundment:** A body of water such as a pond, confined by a dam, dike, floodgate or other barrier. It is used to collect and store water for future use.
- **Impurities:** Particles or other objects that cause water to be unclear.
- **Inchoate water right:** An unperfected water right.
- **Increasing block rate:** Pricing that reduces water use by structuring water rates to increase per-unit charges as the amount used increases.
- **Indicator:** Any biological entity or process, or community whose characteristics show the presence of specific environmental conditions or pollutants.
- **Indicator organisms:** Microorganisms, such as coliforms, whose presence is indicative of pollution or of more harmful microorganism.
- **Indicator tests:** Tests for a specific contaminant, group of contaminants, or constituent which signals the presence of something else (ex., coliforms indicate the presence of pathogenic bacteria).
- **Indirect discharge:** Introduction of pollutants from a non-domestic source into a publicly owned wastewater treatment system. Indirect dischargers can be commercial or industrial facilities whose wastes enter local sewers.
- **Industrial wastewater facility:** Facilities that produce, treat or dispose of wastewater not otherwise defined as a domestic wastewater; includes the runoff and leachate from areas that receive pollutants associated with industrial or commercial storage, handling, or processing.
- **Industrial water use:** Water used for industrial purposes such as fabrication, processing, washing, and cooling, and includes such industries as steel, chemical and allied products, paper and allied products, mining, and petroleum refining. The water may be obtained from a public supply or may be self supplied. See also public supply and self-supplied water.
- **Infiltration:** The movement of water into soil or porous rock. Infiltration occurs as water flows through the larger pores of rock or between soil particles under the influence of gravity, or as a gradual wetting of small particles by capillary action.
- **Inflow:** The entry of extraneous rainwater into a sewer system from sources other than infiltration, such as basement drains, sewer holes, storm drains, and street washing.
- **Influent:** The stream of water that enters any system or treatment unit.

- **Inhibitor:** chemical that interferes with a chemical reaction, such as precipitation.
- **Injection:** The introduction of a chemical or medium into the process water to alter its chemistry or filter specific compounds.
- **Inland freshwater wetlands:** Swamps, marshes, and bogs found inland beyond the coastal saltwater wetlands.
- **Inorganic:** Matter other than plant or animal and not containing a combination of carbon, hydrogen, and oxygen, as in living things.
- **Instream flow:** The amount of flow required to sustain stream values, including fish, wildlife, and recreation.
- **Instream use:** Water that is used, but not withdrawn, from a ground- or surface-water source for such purposes as hydroelectric power generation, navigation, water-quality improvement, fish propagation, and recreation. Sometimes called non-withdrawal use or in-channel use.
- **Integrated resource planning:** The management of two or more resources in the same general area; commonly includes water, soil, timber, grazing land, fish, wildlife, and recreation.
- **Interbasin transfer:** The diversion of water from one drainage basin to one or more other drainage basins.
- **Interbasin transfer:** The physical transfer of water from one watershed to another; regulated by the Texas Water Code.
- **Intermittent flow system:** Alternating use, by an industry, of deionized water to remove contaminants from products and equipment.
- **Intermittent stream:** One that flows periodically. Compare perennial stream.
- **Interstate water:** According to law, interstate waters are defined as (1) rivers, lakes and other waters that flow across or form a part of state or international boundaries; (2) waters of the Great Lakes; (3) coastal waters whose scope has been defined to include ocean waters seaward to the territorial limits and waters along the coastline (including inland streams) influenced by the tide.
- **Interstices:** The void or empty portion of rock or soil occupied by air or water.
- **Ion:** An atom in a solution that is charged, either positively (cations) or negatively (anions).
- **Ion exchange:** The replacement of undesirable ions with a certain charge by desirable ions of the same charge in a solution, by an ion-permeable absorbent.

- **Irrigation:** The controlled application of water to cropland, hayland, and/or pasture to supplement that supplied through nature.
- **Irrigation district:** A cooperative, self-governing public corporation set up as a subdivision of the State government, with definite geographic boundaries, organized and having taxing power to obtain and distribute water for irrigation of lands within the district; created under the authority of a State legislature with the consent of a designated fraction of the landowners or citizens.
- **Irrigation efficiency:** The percentage of water applied, and which can be accounted for, in the soil moisture increase for consumptive use.
- **Irrigation field practices:** Techniques that keep water in the field, more efficiently distribute water across the field, or encourage the retention of soil moisture.
- **Irrigation management strategies:** Strategies to monitor soil and water conditions and collect information that helps in making decisions about scheduling application or improving the efficiency of the irrigation system.
- **Irrigation return flow:** Water which is not consumptively used by plants and returns to a surface or ground water supply. Under conditions of water right litigation, the definition may be restricted to measurable water returning to the stream from which it was diverted.
- **Irrigation scheduling:** Careful choice of irrigation application rates and timing to help irrigators maintain yields with less water.
- **Irrigation system modification:** An addition to or an alteration of an existing irrigation system or the adoption of a new one.
- **Irrigation water:** Water which is applied to assist crops in areas or during times where rainfall is inadequate.
- **Irrigation water use:** Artificial application of water on lands to assist in the growing of crops and pastures or to maintain vegetative growth in recreational lands such as parks and golf courses.
- **Isohyet:** Line that connects points of equal rainfall.
- **Isotherm:** Line that connects points of equal temperature.

## Water Glossary – J

- **Jar test:** A laboratory test procedure with differing chemical doses, mix speeds, and settling times, to estimate the minimum or ideal coagulant dose required to achieve water quality goals.

- **Jet stream:** A long narrow meandering current of high-speed winds near the tropopause blowing from a generally westerly direction and often exceeding a speed of 250 miles per hour.
- **Jetteau:** A jet of water.
- **Jetter:** One (as a geyser) that sends out a jet.
- **Jetty:** A structure (as a pier or mole of wood or stone) extending into a sea, lake, or river to influence the current or tide or to protect a harbor.
- **Jökulhlaup:** Destructive flood that occurs as the result of the rapid ablation of ice by volcanic activity beneath the ice of a large glacier.

## Water Glossary – K

- **Kalema:** A violent surf that occurs on the coast of the Guinea region, West Africa.
- **Kame:** A short ridge, hill, or mound of stratified drift deposited by glacial meltwater.
- **Kame terrace:** A terrace of stratified sand and gravel deposited by streams between a glacier and an adjacent valley wall.
- **Kilowatt (kw):** A unit of electrical power equal to 1000 watts or 1.341 horsepower.
- **Kilowatt hour (kwh):** One kilowatt of power applied for one hour.
- **Kinetic Energy:** Energy possessed by moving water.
- **Kinetic rate coefficient:** A number that describes the rate at which a water constituent such as a biochemical oxygen demand or dissolved oxygen rises or falls.

## Water Glossary – L

- **Laboratory water:** Purified water used in the laboratory as a basis for making up solutions or making dilutions. Water devoid of interfering substances.
- **Lag time:** The time from the center of a unit storm to the peak discharge or center of volume of the corresponding unit hydrograph.
- **Lagoon:** (1) A shallow pond where sunlight, bacterial action, and oxygen work to purify wastewater. (2) A shallow body of water, often separated from the sea by coral reefs or sandbars.
- **Lake:** Any inland body of standing water, usually fresh water, larger than a pool or pond; a body of water filling a depression in the earth's surface.

- **Laminar flow:** A flow in which rapid fluctuations are absent.
- **Land Application:** Discharge of wastewater onto the ground for treatment or reuse.
- **Landscape impoundment:** Body of reclaimed water which is used for aesthetic enjoyment or which otherwise serves a function not intended to include contact recreation.
- **Landscape irrigation:** Water conservation through landscaping that uses plants that need little water, thereby saving labor and fertilizer as well as water.
- **Langelier Index (LI):** An index reflecting the equilibrium pH of a water with respect to calcium and alkalinity; used in stabilizing water to control both corrosion and scale deposition.
- **Large water system:** A water system that services more than 50,000 customers.
- **Leachate:** Water containing contaminants which leaks from a disposal site such as a landfill or dump.
- **Leaching:** The removal of soluble organic and inorganic substances from the topsoil downward by the action of percolating water.
- **Leak detection:** Systematic method of using listening equipment to survey the distribution system, identify leak sounds, and pinpoint the exact locations of hidden underground leaks.
- **Leakage:** A species of ions in the feed of an ion exchanger present in the effluent.
- **Lentic system:** A nonflowing or standing body of fresh water, such as a lake or pond. Compare lotic system.
- **Levee:** A natural or man-made earthen obstruction along the edge of a stream, lake, or river. Usually used to restrain the flow of water out of a river bank.
- **Light absorption:** The amount of light a certain amount of water can absorb over time.
- **Lime:** Common water treatment chemical. Lime can be deposited on walls of showers and bathrooms, after lime has reacted with calcium to form limestone.
- **Limestone:** Rock that consists mainly of calcium carbonate and is chiefly formed by accumulation of organic remains.
- **Limiting factor:** Factor such as temperature, light, water, or a chemical that limits the existence, growth, abundance, or distribution of an organism.
- **Limnology:** Scientific study of physical, chemical, and biological conditions in lakes, ponds, and streams.
- **Liquid:** A state of matter, neither gas nor solid, that flows and takes the shape of its container.

- **Liter:** The basic unit of measurement for volume in the metric system; equal to 61.025 cubic inches or 1.0567 liquid quarts.
- **Liter per minute (Lpm):** [unit of flow](#).
- **Littoral zone:** Area on or near the shore of a body of water.
- **Livestock water use:** Water for livestock watering, feed lots, dairy operations, fish farming, and other on-farm needs. Livestock as used here includes cattle, sheep, goats, hogs, and poultry. Also included are animal specialties. See also rural water use and animal specialties water use.
- **Lotic system:** A flowing body of fresh water, such as a river or stream. Compare lentic system.
- **Low-flow plumbing:** Plumbing equipment that uses less water than was considered standard prior to January 1, 1994.
- **Low-flow showerhead:** A showerhead that requires 2.5 gallons of water per minute or less, as compared to the 4.5 gallons of water required by most older standard showerheads.
- **Low-flush toilet:** A toilet that requires 1.6 gallons of water per flush or less, as compared to the 3.5–5 gallons of water required to flush most older standard toilets.

## Water Glossary – M

- **Makeup water:** Water added to the flow of water used to cool condensers in electric power plants. This new water replaces condenser water lost during passage of the cooling water through [cooling towers](#) or discharged in [blowdowns](#).
- **ariculture:** Cultivation of fish and shellfish in estuarine and coastal areas. Compare aquiculture.
- **Marsh:** A type of wetland that does not accumulate appreciable peat deposits and is dominated by herbaceous vegetation. Marshes may be either fresh water or saltwater and tidal or non-tidal.
- **Maximum Contaminant Level (MCL):** The maximum level of a contaminant allowed in water by federal law. Based on health effects and currently available treatment methods.
- **Mechanical aeration:** Use of mechanical energy to inject air into water to cause a waste stream to absorb oxygen.
- **Mechanical flotation:** A term used in the mineral industry to describe the use of dispersed air to produce bubbles that measure 0.2 to 2 mm in diameter.

- **Media:** Materials that form a barrier to the passage of certain suspended solids or dissolved liquids in filters.
- **Median streamflow:** The rate of discharge of a stream for which there are equal numbers of greater and lesser flow occurrences during a specified period.
- **Medium-size water system:** A water system that serves 3,300 to 50,000 customers.
- **Megawatt:** A unit of electricity equivalent to 1000 kilowatts.
- **Melting:** The changing of a solid into a liquid.
- **Meltwater:** Water that comes from the melting ice of a glacier or a snowbank.
- **Membrane:** A thin barrier that allows some compounds or liquids to pass through, and troubles others. It is a semi-permeable skin of which the pass-through is determined by size or special nature of the particles. Membranes are commonly used to separate substances.
- **Mermaid:** A fabled marine creature usually represented as having the head, trunk, and arms of a woman and a lower part like the tail of a fish.
- **Mesotrophic:** Reservoirs and lakes which contain moderate quantities of nutrients and are moderately productive in terms of aquatic animal and plant life.
- **Metabolize:** Conversion of food, for instance soluble organic matter, to cellular matter and gaseous by-products through a biological process.
- **Meteoric water:** New water derived from the atmosphere.
- **Metering:** Use of metering equipment that can provide essential data for charging fees based on actual customer use.
- **Method blank:** Laboratory grade water taken through the entire analytical procedure to determine if samples are being accidentally contaminated by chemicals in the lab.
- **MFS:** Micro Filtration System, it serves full automatic solid/ liquid separation.
- **Microbial growth:** The multiplication of microorganisms such as bacteria, algae, diatoms, plankton, and fungi.
- **Micrograms per liter:** Micrograms per liter of water. One thousands micrograms per liter is equivalent to 1 milligram per liter. This measure is equivalent to parts per billion (ppb).
- **Micro-irrigation:** Irrigation systems that apply water directly to, or very near, the soil surface, either above the ground or into the air, in discrete drops, continuous drops, small streams, mist, or sprays. These include drip systems, spray systems, jet systems, and bubbler systems. Also referred to as drip, low pressure or low volume irrigation. The efficiencies of these micro-irrigation systems range from 75 to 95 percent, however, an average of 80 percent is commonly used for estimating water requirements.

- **Micron:** A unit to describe a measure of length, equal to one millionth of a metre.
- **Microorganisms:** Organisms that are so small that they can only be observed through a microscope, for instance bacteria, fungi or yeasts.
- **Migration:** The movement of oil, gas, contaminants, water, or other liquids through porous and permeable rock.
- **Milligrams per liter – mg/L:** Milligrams per liter of water. This measure is equivalent to parts per million (ppm).
- **Million gallons per day (Mgal/d):** A rate of flow of water.
- **Mineral Water:** Contains large amounts of dissolved minerals such as calcium, sodium, magnesium, and iron. Some tap waters contain as many or more minerals than some commercial mineral waters. There is no scientific evidence that either high or low mineral content water is beneficial to humans.
- **Minimum streamflow:** The specific amount of water reserved to support aquatic life, to minimize pollution, or for recreation. It is subject to the priority system and does not affect water rights established prior to its institution.
- **Mining water use:** Water use for the extraction of minerals occurring naturally including solids, such as coal and ores; liquids, such as crude petroleum; and gases, such as natural gas. Also includes uses associated with quarrying, well operations (dewatering), milling (crushing, screening, washing, floatation, and so forth), and other preparations customarily done at the mine site or as part of a mining activity. Does not include water used in processing, such as smelting, refining petroleum, or slurry pipeline operations. These uses are included in industrial water use.
- **Miscibility:** The ability of two liquids to mix.
- **Mist:** Liquid particles measuring 40 to 500 micrometers, are formed by condensation of vapour. By comparison, fog particles are smaller than 40 micrometers.
- **Mixture:** Various elements, compounds or both, that are mixed.
- **Model:** A simulation, by descriptive, statistical, or other means, of a process or project that is difficult or impossible to observe directly.
- **Molecules:** Combinations of two or more atoms of the same or different elements held together by chemical bonds.
- **Monitoring of water:** Monitoring of water use by an industry, using metering for example, to provide baseline information on quantities of overall company water use, the seasonal and hourly patterns of water use, and the quantities and quality of water use in individual processes.

- **Municipal discharge:** Discharge of effluent from wastewater treatment plants, which receive wastewater from households, commercial establishments, and industries in the coastal drainage basin.
- **Municipal sewage:** Sewage from a community which may be composed of domestic sewage, industrial wastes or both.
- **Municipal Sludge:** Semi liquid residue that remains from the treatment of municipal water and wastewater.

## Water Glossary – N

- **NAPLS:** Nonaqueous phase liquids; i.e., chemical solvents such as trichloroethylene (TCE) or carbon tetrachloride – often toxic. Many of the most problematic NAPLS are DNAPLS – dense nonaqueous phase liquids.
- **Natural flow:** The rate of water movement past a specified point on a natural stream. The flow comes 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 man–controlled modifications to land use. Natural flow rarely occurs in a developed country.
- **Natural resource:** Any form of matter or energy obtained from the environment that meets human needs.
- **Navigable waters:** Traditionally, waters sufficiently deep and wide for navigation by all, or specific sizes of, vessels.
- **Navigational water use:** Water utilized as a means of commercial (and sometimes recreational) transportation. Includes water used to lift a vessel in a lock, or maintain a navigable channel level. Navigational water use is considered a nonconsumptive instream use of water and is generally not measured.
- **Net water use:** Water withdrawals plus or minus water transfers. In most counties, the net water use and water withdrawals are equal. However, in counties involved in water transfers (imports and exports), the net water use represents the actual amount of water used regardless of the amount of water withdrawn.
- **Neutralization:** The addition of substances to neutralize water, so that it is neither acid, nor basic. Neutralization does not specifically mean a pH of 7.0, it just means the equivalent point of an acid–base reaction.
- **Neutron probe:** Type of probe used to monitor soil moisture conditions to help determine when water should be applied.

- **Neutrons:** Uncharged building blocks of an atom that play a part in radio-activity. They can be found in the nucleus.
- **NIPDWR:** National interim primary drinking water regulations.
- **Nitrification:** A biological process, during which nitrifying bacteria convert toxic ammonia to less harmful nitrate. It is commonly used to remove nitrogen substances from wastewater, but in lakes and ponds it occurs naturally.
- **Nitrogen:** A plant nutrient that can cause an overabundance of bacteria and algae when high amounts are present, leading to a depletion of oxygen and fish kills. Several forms occur in water, including ammonia, nitrate, nitrite or elemental nitrogen. High levels of nitrogen in water are usually caused by agricultural runoff or improperly operating wastewater treatment plants. Also see phosphorous.
- **Non-Community water system:** A public water system which provides piped water for human consumption to at least 15 service connections or which serves at least 25 individuals at least 60 days out of the year but which is not a community water system. The difference between a community water system and a non-community water system is that the former serves inhabitants whereas the latter serves transients or non-residents who otherwise do not inhabit the building served by the system.
- **Nonconsumptive use:** Using water in a way that does not reduce the supply. Examples include hunting, fishing, boating, water-skiing, swimming, and some power production. Compare consumptive use.
- **Noncontact recreation:** Recreational pursuits not involving a significant risk of water ingestion, including fishing, commercial and recreational boating, and limited body contact incidental to shoreline activity. Compare contact recreation.
- **Non-point source:** Source of pollution in which wastes are not released at one specific, identifiable point but from a number of points that are spread out and difficult to identify and control. Compare point source.
- **Nonporous:** Something which does not allow water to pass through it. Compare porous.
- **Non-potable:** Not suitable for drinking. Compare potable.
- **Non-renewable resources:** Natural resources that can be used up completely or else used up to such a degree that it is economically impractical to obtain any more of them; e.g., coal, crude oil, and metal ores.
- **Nonthreshold pollutant:** Substance or condition harmful to a particular organism at any level or concentration.

- **Non-Transient Non-Community water system:** A public water system that is not a community water system and that regularly serves at least 25 of the same persons over a 6 month period.
- **NPDES permit:** Permit issued under the National Pollutant Discharge Elimination System for companies discharging pollutants directly into the waters of the United States.
- **NTU:** Nephelometric turbidity units.
- **Nucleus:** The center of an atom, that contains protons and neutrons and carries a positive charge.
- **Nuisance Contaminant:** Constituents in water, which are not normally harmful to health but may cause offensive taste, odor, color, corrosion, foaming, or staining.
- **Nutrient:** As a pollutant, any element or compound, such as phosphorus or nitrogen, that fuels abnormally high organic growth in aquatic ecosystems (e.g., eutrophication of a lake).
- **Nutrient Pollution:** Contamination of water resources by excessive inputs of nutrients. In surface waters, excess algal production is a major concern.

## Water Glossary – O

- **Offstream use:** Water withdrawn or diverted from a ground- or surface-water source for public-water supply, industry, irrigation, livestock, thermoelectric power generation, and other uses. Sometimes called off-channel use or withdrawal.
- **Oligotrophic:** Having a low supply of plant nutrients. Compare eutrophic.
- **Oligotrophic lake:** Deep, clear lakes with low nutrient supplies. They contain little organic matter and have a high dissolved oxygen level.
- **Once-through cooling water:** Water (fresh or saline) that is withdrawn from a river, stream or other water body (manmade or natural), or a well, that is passed through a steam condenser one time, and then returned to the river or stream or other water body some distance from the intake. Once-through cooling water is used to exchange the heat from the steam condensers to the cooler water.
- **Open system:** System in which energy and matter are exchanged between the system and its environment, for example, a living organism.
- **Organic:** (1) Referring to or derived from living organisms. (2) In chemistry, any compound containing carbon.
- **Organic chemicals:** Chemicals containing carbon.

- **Organic matter:** Substances of (dead) plant or animal matter, with a carbon–hydrogen structure.
- **Organism:** A living thing.
- **Orogeny:** Period of mountain–building.
- **Orographic precipitation:** Rainfall that occurs as a result of warm, humid air being forced to rise by topographic features such as mountains. Precipitation on the Edwards plateau is slightly higher because of the orographic effect of the escarpment and hills.
- **Osmosis:** Water molecules passing through membranes naturally, to the side with the highest concentration of dissolved impurities.
- **Other water use:** Water used for such purposes as heating, cooling, irrigation (public–supplied only), lake augmentation, and other nonspecific uses. The water can be obtained from a public supply or be self–supplied.
- **Outcrop:** Exposed at the surface. The Edwards limestone outcrops in its recharge zone.
- **Outfall:** The place where a wastewater treatment plant discharges treated water into the environment.
- **Outfall:** The place where a wastewater treatment plant discharges treated water into the environment.
- **Outwash:** A deposit of sand and gravel formed by streams of meltwater flowing from a glacier.
- **Overflow rate:** One of the guidelines for design of the settling tanks and clarifiers in a treatment plant to determine if tanks and clarifiers are used enough.
- **Oxidation:** A chemical reaction in which ions are transferring electrons, to increase positive valence.
- **Oxidation pond:** A man–made body of water in which waste is consumed by bacteria.
- **Oxidation–reduction potential:** The electric potential required to transfer electrons from the oxidant to the reductant, used as a qualitative measure of the state of oxidation in water treatment systems.
- **Oxygen demanding waste:** Organic water pollutants that are usually degraded by bacteria if there is sufficient dissolved oxygen (DO) in the water.
- **Oxygen depletion:** The reduction of the dissolved oxygen level in a water body.
- **Ozonation:** A new technology using a form of oxygen, instead of chemicals, to treat cooling water.

- **Ozone:** An unstable oxidizing agent, that consists of three oxygen atoms and can be found in the ozone layer in the atmosphere. It is produced by electrical discharge through oxygen or by specifically designed UV-lamps.
- **Ozone generator:** A device that generates ozone by passing a voltage through a chamber that contains oxygen. It is often used as a disinfection system.

## Water Glossary – P

- **Parameter:** A variable, measurable property whose value is a determinant of the characteristics of a system such as water. Temperature, pressure, and density are examples of parameters.
- **Partial pressure:** That pressure of a gas in a liquid, which is in equilibrium with the solution. In a mixture of gases, the partial pressure of any one gas is the total pressure times the fraction of the gas in the mixture (by volume or number of molecules).
- **Particle size:** The sizes of a particle, determined by the smallest dimension, for instance a diameter. It is usually expressed in micron measurements.
- **Particulate loading:** The mass of particulates per unit volume of water.
- **Parts per billion (ppb):** Expressed as ppb; a unit of concentration equivalent to the  $\mu\text{g/l}$ .
- **Parts per million (ppm):** The number of "parts" by weight of a substance per million parts of water. This unit is commonly used to represent pollutant concentrations. Large concentrations are expressed in percentages.
- **Pasteurization:** The elimination of microorganisms by heat applies for a certain period of time.
- **Pathogen:** Microorganisms which can cause disease.
- **Pathogenic microorganisms:** Microorganisms that can cause disease in other organisms or in humans, animals, and plants.
- **Pathogens:** Disease-producing microorganisms.
- **Peak flow:** In a wastewater treatment plant, the highest flow expected to be encountered under any operational conditions, including periods of high rainfall and prolonged periods of wet weather.
- **Peak/off-peak rates:** Rates charged in accordance with the most and least popular hours of water use during the day.
- **Per capita use:** The average amount of water used per person during a standard time period, generally per day.

- **Percent saturation:** The amount of a substance that is dissolved in a solution compared to the amount that could be dissolved in it.
- **Perched water table:** Groundwater standing unprotected over a confined zone.
- **Percolating waters:** Waters passing through the ground beneath the Earth's surface without a definite channel.
- **Percolation:** The movement of water through the subsurface soil layers, usually continuing downward to the groundwater or water table reservoirs.
- **Perennial stream:** One that flows all year round. Compare intermittent stream.
- **Perfected water right:** A water right which indicates that the uses anticipated by an applicant, and made under permit, were made for beneficial use. Usually it is irrevocable unless voluntarily canceled or forfeited due to several consecutive years of nonuse.
- **Permafrost:** Perennially frozen layer in the soil, found in alpine, arctic, and antarctic regions.
- **Permeability:** The ability of a water bearing material to transmit water. It is measured by the quantity of water passing through a unit cross section, in a unit time, under 100 percent hydraulic gradient.
- **Persistence:** Refers to the length of time a compound stays in the environment, once introduced.
- **Pesticide:** A substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest. Also, any substance or mixture of substances intended to regulate plant or leaf growth. Pesticides can accumulate in the food chain and/or contaminate the environment if misused.
- **pH:** Numeric value that describes the intensity of the acid or basic (alkaline) conditions of a solution. The pH scale is from 0 to 14, with the neutral point at 7.0. Values lower than 7 indicate the presence of acids and greater than 7.0 the presence of alkalis (bases). Technically speaking, pH is the logarithm of the reciprocal (negative log) of the hydrogen ion concentration (hydrogen ion activity) in moles per liter.
- **Phase:** A state of matter. This can be solid, liquid or gaseous.
- **Phosphorous:** A plant nutrient that can cause an overabundance of bacteria and algae when high amounts are present, leading to a depletion of oxygen and fish kills. High levels of phosphorous in water are usually caused by agricultural runoff or improperly operating wastewater treatment plants. Also see nitrogen.
- **Photosynthesis:** The manufacture by plants of carbohydrates and oxygen from carbon dioxide and water in the presence of chlorophyll, using sunlight as an energy source.

- **Phreatophytes:** Plants that send their roots into or below the capillary zone to use ground water.
- **Physical and chemical treatment:** Processes generally used in wastewater treatment facilities. Physical processes are for instance filtration. Chemical treatment can be coagulation, chlorination, or ozon treatment.
- **Physical weathering:** Breaking down of parent rock into bits and pieces by exposure to temperature and changes and the physical action of moving ice and water, growing roots, and human activities such as farming and construction. Compare chemical weathering.
- **Phytoplankton:** Usually microscopic aquatic plants, sometimes consisting of only one cell.
- **Piezometric surface:** The imaginary surface to which groundwater rises under hydrostatic pressure in wells or springs.
- **[Pit Gauge or US Pit Gage](#):** a device to measure the depth of corrosion. A pit gauge can take various forms, in the most basic as a simple lever and pointer or more accurate units using a dial or digital indicator to provide the measurement displacement. Pit depth gauge, depth gauge, bridging bar.
- **Pilot tests:** The testing of a cleanup technology under actual site conditions in a laboratory in order to identify potential problems before implementation.
- **Plankton:** Tiny plants and animals that live in water.
- **Plate tectonics:** Refers to the folding and faulting of rock and flow of molten lava involving lithospheric plates in the earth's crust and upper mantle.
- **Plenum flushes:** Rinsing procedure that discharges deionized water from the rim of a flowing bath to remove contaminants from the sides and bottom of the bath.
- **Plug:** Cement, grout, or other material used to fill and seal a hole drilled for a water well.
- **Plume:** The area taken up by contaminant(s) in an aquifer.
- **Pluvial:** Pertaining to precipitation.
- **POE-treatment:** Point-Of-Entry treatment. Total water treatment at the inlet to an entire building or facility.
- **Point source:** Source of pollution that involves discharge of wastes from an identifiable point, such as a smokestack or sewage treatment plant. Compare nonpoint source.
- **Polar substance:** A substance that carries a positive or negative charge, for instance water.
- **Pollutant:** A contaminant at a concentration high enough to endanger the life of organisms.

- **Pollution:** Undesireable change in the physical, chemical, or biological characteristics of the air, water, or land that can harmfully affect the health, survival, or activities of human or other living organisms.
- **Polychlorinated biphenyls (PCBs):** A group of chemicals found in industrial wastes.
- **Pond:** A small natural body of standing fresh water filling a surface depression, usually smaller than a lake.
- **POP's:** Persistent Organic Pollutants, complex compounds that are very persistent and difficultly biologically degradable.
- **Pore:** An opening in a membrane or medium that allows water to pass through.
- **Porous:** Something which allows water to pass through it. Compare nonporous.
- **Potable water:** Potable water is considered safe for human consumption and is often referred to as drinking water. Freshwater that exceeds these chloride and dissolved solids limits is often referred to as slightly saline, brackish, or nonpotable water and is either diluted with fresher water or treated through a desalination process to meet potable–water standards for public supply.
- **Potential:** The ability of one chemical to increase the effect of another chemical.
- **Potentiometric surface:** The surface to which water in an aquifer can rise by hydrostatic pressure.
- **POU–treatment:** Point–Of–Use treatment. Water treatment at a limited number of outlets in a building, for less than the whole building.
- **ppb – parts per billion:** Number of parts of a chemical found in one billion parts of a solid, liquid, or gaseous mixture. Equivalent to micrograms per liter (ug/l).
- **ppm – parts per million:** Number of parts of a chemical found in one million parts of a solid, liquid, or gaseous mixture. Equivalent to milligrams per liter (mg/l).
- **Precipitate:** A solid which has come out of an aqueous solution. (ex., iron from groundwater precipitates to a rust colored solid when exposed to air).
- **Precipitation:** Water falling, in a liquid or solid state, from the atmosphere to a land or water surface.
- **Precipitation process:** The altering of dissolved compounds to insoluble or badly soluble compounds, in order to be able to remove the compounds by means of filtration.
- **Preservative:** A chemical added to a water sample to keep it stable and prevent compounds in it from changing to other forms or to prevent microorganism densities from changing prior to analysis.

- **Pressure sewers:** A system of pipes in which water, wastewater, or other liquid is pumped to a higher elevation.
- **Pre-treatment:** Processes used to reduce or eliminate wastewater pollutants from before they are discharged.
- **Price at equilibrium:** Where supply and demand curves intersect. The price at equilibrium is what allocates resources.
- **Price gouging:** Excessive water rate increases that are unfair to water customers.
- **Pricing/rate structure:** System used by water utility managers to charge customers for water usage.
- **Primary wastewater treatment:** First step in wastewater treatment where screens and sedimentation tanks are used to remove most materials that float or settle. Primary treatment removes about 30 percent of carbonaceous biochemical oxygen demand from domestic sewage.
- **Priority date:** The date of establishment of a water right. It is determined by adjudication of rights established before the passage of the water code. The rights established by application have the application date as the date of priority.
- **Process water:** Water that serves in any level of the manufacturing process of certain products.
- **Product water:** Water that has passed through a water treatment plant and is ready to be delivered to consumers.
- **Profundal zone:** A lake's deep-water region that is not penetrated by sunlight.
- **Protons:** Positively charged building blocks of an atom that are centered in the nucleus.
- **Protozoa:** Large microorganisms, which consume bacteria.
- **Public supply:** Water withdrawn by public and private water suppliers and delivered to users. Public suppliers provide water for a variety of uses, such as domestic, commercial, thermoelectric power, industrial, and public water use. See also commercial water use, domestic water use, thermoelectric power water use, industrial water use, and public water use.
- **Public water system:** A system that provides piped water for human consumption to at least 15 service connections or regularly serves 25 individuals.
- **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. See also public supply.

- **Public-supply deliveries:** Water provided to users through a public-supply distribution system.
- **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. Public-water use also includes system water losses (water lost to leakage) and unusable water discharged from desalination or lime-softening facilities. Also referred to as utility-water use.
- **Puddle:** A small pool of water, usually a few inches in depth and from several inches to several feet in its greatest dimension.
- **Pump:** A device which moves, compresses, or alters the pressure of a fluid, such as water or air, being conveyed through a natural or artificial channel.
- **Pumped hydroelectric storage:** Storing water for future use in generating electricity. Excess electrical energy produced during a period of low demand is used to pump water up to a reservoir. When demand is high, the water is released to operate a hydroelectric generator.
- **Purge:** To force a gas through a water sample to liberate volatile chemicals or other gases from the water so their level can be measured.
- **Purgeable organics:** Volatile organic chemicals which can be forced out of the water sample with relative ease through purging.
- **Putrefaction:** Biological decomposition of organic matter; associated with anaerobic conditions.
- **Pyrogen:** Substance that is produced by bacteria and is fairly stable. It causes fever in mammals.

## Water Glossary – Q

- **Qualitative water assessment:** Analyses of water used to describe the visible or aesthetic characteristics of water.
- **Quantitative water assessment:** Use of analyses of water properties and concentrations of compounds and contaminants in order to define water quality.
- **Quarry water:** The moisture content of freshly quarried stone, esp. if porous.
- **Quicksilver water:** A solution of mercury nitrate used in gilding.
- **Quickwater:** The part of a stream that has a strong current; an artificial current or bubbling patch of water just astern of a moving boat.

## Water Glossary – R

- **Radioactive:** Having the property of releasing radiation.
- **Rain:** Water falling to earth in drops that have been condensed from moisture in the atmosphere.
- **Rain gage:** Any instrument used for recording and measuring time, distribution, and the amount of rainfall.
- **Raw sewage:** Untreated wastewater and its contents.
- **Raw water:** Intake water before any treatment or use.
- **RCRA:** Resource Conservation and Recovery Act – federal legislation requiring that hazardous waste be tracked from "cradle" (generation) to "grave" (disposal).
- **Reaeration:** Renewing air supplies in the lower layers of a reservoir in order to raise oxygen levels.
- **Recarbonization:** Process in which carbon dioxide is bubbled into treatment water in order to lower the pH.
- **Receiving waters:** A river, ocean, stream, or other watercourse into which wastewater or treated effluent is discharged.
- **Recharge:** The processes involved in the addition of water to the zone of saturation; also the amount of water added.
- **Recharge Area:** An area where rainwater soaks through the ground to reach an aquifer.
- **Recharge zone:** The area where a formation allows available water to enter the aquifer. Generally, that area where the edwards aquifer and associated limestones crop out in kinney, uvalde, medina, bexar, comal, hays, travis, and williamson counties and the outcrops of other formations in proximity to the edwards limestone, where faulting and fracturing may allow recharge of the surface waters to the edwards aquifer.
- **Recirculating cooling water:** Recycling cooling water to greatly reduce water use by using the same water to perform several cooling operations.
- **Recirculation:** Recycling water after it is used. Often it has to pass a wastewater purification system before it can be reused.
- **Reclaimed wastewater:** Wastewater treatment plant effluent that has been diverted for beneficial use before it reaches a natural waterway or aquifer.
- **Reclaimed water:** Wastewater that is treated and reused to supplement water supplies.

- **Recurrence interval:** Average amount of time between events of a given magnitude. For example, there is a 1% chance that a 100-year flood will occur in any given year.
- **Recyclable:** Refers to such products as paper, glass, plastic, used oil, and metals that can be reprocessed instead of being disposed of as waste.
- **Recycled water:** Water that is used more than one time before it passes back into the natural hydrological system or is discharged into a wastewater system. Also referred to as recirculated water.
- **Redox:** Shortened term for reduction/ oxidation reactions. Redox reactions are a series of reactions of substances in which electron transfer takes place. The substance that gains electrons is called oxidizing agent.
- **Reduction:** A chemical reaction in which ions gain electrons to reduce their positive valence.
- **Regeneration:** Putting the desired counter-ion back on the ion exchanger, by displacing an ion of higher affinity with one of lower affinity.
- **Renewable resource:** Natural resource (e.g., tree biomass, fresh water, fish) whose supply can essentially never be exhausted, usually because it is continuously produced.
- **Reserve Capacity:** Extra treatment capacity built into wastewater treatment plants and sewers to be able to catch up with future flow increases due to population growth.
- **Reserves:** Amount of a particular resource in known locations that can be extracted at a profit with present technology and prices.
- **Reservoir:** A pond, lake, tank, or basin (natural or human made) where water is collected and used for storage. Large bodies of groundwater are called groundwater reservoirs; water behind a dam is also called a reservoir of water.
- **Resident population:** The number of persons who live in a State who consider the State their permanent place of residence. College students, military personnel, and inmates of penal institutions are counted as permanent residents. According to this definition, tourist and seasonal or part-time residents are considered nonresident population.
- **Residential water use:** See domestic water use.
- **Residual chlorine:** The available chlorine which remains in solution after the demand has been satisfied. Compare chlorine demand.
- **Residue:** The dry solids remaining after the evaporation of a sample of water or sludge.
- **Resistance block:** Type of soil moisture probe used to monitor soil moisture conditions to help determine when water should be applied.
- **Resolution:** The breaking of an emulsion into its individual components.

- **Resource:** A person, thing, or action needed for living or to improve the quality of life.
- **Retrofit:** Replacement of existing equipment with equipment that uses less water.
- **Return flow:** The water that reaches a ground- or surface-water source after release from the point of use and thus becomes available for further use.
- **Reuse:** See recycled water.
- **Reuse system:** The deliberate application of reclaimed water for a beneficial or other useful purpose. Reuse may encompass landscape irrigation (such as golf courses, cemeteries, highway medians, parks, playgrounds, school yards, nurseries, and residential properties), agricultural irrigation (such as food and fruit crops, wholesale nurseries, sod farms and pasture grass), aesthetic uses, ground-water recharge, environmental enhancement of surface water and wetland restoration, fire protection, and other useful purposes.
- **Reverse osmosis:** A water treatment method whereby water is forced through a semipermeable membrane which filters out impurities.
- **Right of free capture:** The idea that the water under a person's land belongs to that person and they are free to capture and use as much as they want. Also called the "law of the biggest pump".
- **Rinse sink:** Apparatus used to remove debris and contaminants from products and equipment.
- **Rinsewater:** Water used to remove debris and contaminants from products and equipment.
- **Riparian water right:** The legal right held by an owner of land contiguous to or bordering on a natural stream or lake, to take water from the source for use on the contiguous land.
- **Riparian zone:** A stream and all the vegetation on its banks.
- **River:** A natural stream of water of substantial volume.
- **River basin:** A term used to designate the area drained by a river and its tributaries.
- **Runoff:** The amount of precipitation appearing in surface streams, rivers, and lakes; defined as the depth to which a drainage area would be covered if all of the runoff for a given period of time were uniformly distributed over it.
- **Rural water use:** Term used in previous water-use circulars to describe water used in suburban or farm areas for domestic and livestock needs. The water generally is self-supplied, and includes domestic use, drinking water for livestock, and other uses, such as dairy sanitation, evaporation from stock-watering ponds, and cleaning and waste disposal. See also domestic water use, livestock water use, and self-supplied water.

## Water Glossary – S

- **Safe water:** Water that does not contain harmful bacteria, toxic materials, or chemicals, and is considered safe for drinking.
- **Safe yield:** The annual amount of water that can be taken from a source of supply over a period of years without depleting that source beyond its ability to be naturally refilled.
- **Saline water:** Water that contains more than 1,000 milligrams per liter of dissolved solids.
- **Salinity:** Amount of dissolved salts in a given volume of water.
- **Saltwater intrusion:** The invasion of fresh surface water or groundwater by saltwater.
- **Sand filtration:** Sand filtration is a frequently used and very robust method to remove suspended solids from water. The filtration medium consists of a multiple layer of sand with a variety in size and specific gravity. Sand filters can be supplied in different sizes and materials both hand operated and fully automatically.
- **Sanitary landfill:** Landfill that is lined with plastic or concrete or located in clay-rich soils to prevent hazardous substances from leaking into the environment.
- **Sanitary sewers:** Underground pipes that carry off only domestic or industrial waste, not storm water.
- **Saturated zone:** The area below the water table where all open spaces are filled with water.
- **Saturation:** The condition of a liquid when it has taken into solution the maximum possible quantity of a given substance at a given temperature and pressure.
- **Scale:** The precipitate that forms on surfaces in contact with water as the result of a physical or chemical change.
- **Screening:** Use of screens to remove coarse floating and suspended solids from sewage.
- **Seal:** The impermeable material, such as cement grout bentonite, or puddling clay placed in the annular space between the borehole wall and the casing of a water well to prevent the downhole movement of surface water or the vertical mixing of artesian waters.
- **Seasonal rate structure:** Rate structure that bills all water consumed during the summer or peak season at a higher rate than during the other seasons.
- **Secondary treatment:** Second step in most waste treatment systems, in which bacteria break down the organic parts of sewage wastes; usually accomplished by bringing the sewage and bacteria together in trickling filters or in the activated sludge process. Compare primary treatment, tertiary treatment. Compare primary treatment, tertiary treatment.

- **Secondary wastewater treatment plant:** A facility that reduces pollutants and suspended solids to a greater level than that achieved by a primary treatment plant; the water goes through additional treatment processes, producing "cleaner" wastewater.
- **Sediment:** Fragmented organic or inorganic material derived from the weathering of soil, alluvial, and rock materials; removed by erosion and transported by water, wind, ice, and gravity.
- **Sedimentary cycle:** Biogeochemical cycle in which materials primarily are moved from land to sea and back again.
- **Sedimentation:** The deposition of sediment from a state of suspension in water or air.
- **Sediments:** Soil, sand, and minerals washed from land into water, usually after rain.
- **Seep:** A spot where water contained in the ground oozes slowly to the surface and often forms a pool; a small spring.
- **Seiche:** A periodic oscillation, or standing wave, in an enclosed water body the physical dimensions of which determine how frequently the water level changes.
- **Self-supplied water:** Water withdrawn from a surface- or ground-water source by a user rather than being obtained from a public supply.
- **Semi-confined aquifer:** An aquifer partially confined by soil layers of low permeability through which recharge and discharge can still occur.
- **Semipermeable:** A medium that allows water to pass through, but rejects dissolved solids, so that it can be used to separate solids from water.
- **Separate sewer:** A sewer system that carries only sanitary sewage, not stormwater runoff. When a sewer is constructed this way, wastewater treatment plants can be sized to treat sanitary wastes only and all of the water entering the plant receives complete treatment at all times. Compare combined sewer.
- **Separation:** The isolation of the various compounds in a mixture.
- **Septic tank:** Tank used to hold domestic wastes when a sewer line is not available to carry them to a treatment plant; part of a rural on-site sewage treatment system.
- **Settleable solids:** In sewage, suspended solids that will settle when the sewage is brought to a quiet state for a reasonable length of time, usually two hours.
- **Settling:** The process of sinking of a substance sinking in water. This occurs when the substance does not dissolve in water and its density is larger than that of water.
- **Settling pond:** A holding pond for wastewater where heavier particles sink to the bottom for removal and disposal.

- **Sewage:** The waste and wastewater produced by residential and commercial establishments and discharged into sewers.
- **Sewage contamination:** The introduction of untreated sewage into a water body.
- **Sewage sludge:** Sludge produced in a public sewer.
- **Sewage system:** Pipelines or conduits, pumping stations, force mains, and all other structures, devices, and facilities used for collecting or conducting wastes to a point for treatment or disposal.
- **Sewer:** A channel or conduit that carries wastewater and storm water runoff from the source to a treatment plant or receiving stream.
- **Sewerage:** The entire system of sewage collection, treatment, and disposal.
- **Silt:** Fine particles of sand or rock that can be picked up by the air or water and deposited as sediment.
- **Siltation:** The deposition of finely divided soil and rock particles upon the bottom of stream and river beds and reservoirs.
- **Sleet:** Precipitation which is a mixture of rain and ice.
- **Slickensides:** A smooth striated polished surface produced on rock by movement along a fault.
- **Sludge:** A semi-solid residue from any of a number of air or water treatment processes.
- **Snow:** Precipitation in the form of branched hexagonal crystals, often mixed with simple ice crystals, which fall more or less continuously from a solid cloud sheet. These crystals may fall either separately or in cohesive clusters forming snowflakes.
- **Soft water:** Any water that does not contain large concentrations of the dissolved minerals calcium or magnesium.
- **Softening:** The removal of calcium and magnesium from water to reduce hardness.
- **Soil erosion:** The processes by which soil is removed from one place by forces such as wind, water, waves, glaciers, and construction activity and eventually deposited at some new place.
- **Solidification:** Removal of wastewater from a waste or changing it chemically to make it less permeable and susceptible to transport by water.
- **Solubility:** The amount of mass of a compound that will dissolve in a unit volume of water.
- **Solute:** Any substance derived from the atmosphere, vegetation, soil, or rock that is dissolved in water.
- **Solvent:** Substances (usually liquid) capable of dissolving or dispersing one or more other substances.

- **Source protection:** Protection of a water source by a small utility, ranging from simple sanitary surveys of a watershed to the development and implementation of complex land use controls, in an effort to avoid water contamination.
- **Sparger:** A device that introduces compressed air into a liquid.
- **Sparging:** Injection of air below the water table to strip dissolved volatile organic compounds and to facilitate aerobic biodegradation of organic compounds.
- **Specific conductance:** A measure of the ability of a water to conduct an electrical current. Specific conductance is related to the type and concentration of ions in solution and can be used for approximating the dissolved solids concentration in water. In general, for the San Antonio River basin, conductivity  $\times 0.6$  approximates tds. People monitoring water quality can measure electrical conductivity quickly in the field and estimate tds without doing any lab tests at all. See tds.
- **Specific heat:** The amount of heat required to raise the temperature of a kilogram of a substance (water) by 1 degree Celsius.
- **Spillway:** The channel or passageway around or over a dam through which excess water is diverted.
- **Spoils:** Dirt or rock that has been removed from its original location, destroying the composition of the soil in the process, as with strip-mining or dredging.
- **Spray irrigation:** Application of finely divided water droplets to crops using artificial means.
- **Spring:** An area where groundwater flows naturally onto the land surface.
- **Sprinkler irrigation:** A pressurized irrigation system where water is distributed through pipes to the field and applied through a variety of sprinkler heads or nozzles. Pressure is used to spread water droplets above the crop canopy to simulate a rainfall.
- **Standard industrial classification (SIC) codes:** Four-digit codes established by the Office of Management and Budget and used in the classification of establishments by type of activity in which they are engaged.
- **Standard solution:** Any solution in which the concentration is known.
- **Stoke's Law:** A method to calculate the rate of fall of particles through a fluid, based on density, viscosity and particle size.
- **Storm sewer:** A system of pipes (separate from sanitary sewers) that carry only water runoff from building and land surfaces.

- **Stormwater discharge:** Precipitation that does not infiltrate into the ground or evaporate due to impervious land surfaces but instead flows onto adjacent land or water areas and is routed into drain/sewer systems.
- **Stream:** Any body of running water moving under gravity flow through clearly defined natural channels to progressively lower levels.
- **Stream segment:** Refers to the surface waters of an approved planning area exhibiting common biological, chemical, hydrological, natural, and physical characteristics and processes. Segments will normally exhibit common reactions to external stress such as discharge or pollutants.
- **Streamflow:** The discharge that occurs in a natural channel. Although the term "discharge" can be applied to the flow of a canal, the word "streamflow" uniquely describes the discharge in a surface stream. The term "streamflow" is more general than the term "runoff", as streamflow may be applied to discharge whether or not it is affected by diversion or regulation.
- **Sublimation:** The transition of water directly from the solid state to the gaseous state, without passing through the liquid state; or vice versa. Compare condensation, evaporation.
- **Submetering:** Use of separate meters to indicate individual water use in apartments, condominiums, and trailer homes, while the entire complex of units continues to be metered by the main supplier.
- **Subsidence:** Sinking down of part of the earth's crust due to underground excavation, such as removal groundwater.
- **Supply:** A schedule that shows the various quantities of things offered for sale at various prices at a point in time. Compare demand.
- **Surface impoundment:** An indented area in the land's surface, such a pit, pond, or lagoon.
- **Surface irrigation:** Application of water by means other than spraying such that contact between the edible portion of any food crop and the irrigation water is prevented.
- **Surface tension:** The elastic-like force in a body, especially a liquid, tending to minimize, or constrict, the area of the surface.
- **Surface water:** All water naturally open to the atmosphere (rivers, lakes, reservoirs, streams, impoundments, seas, estuaries, etc.); also refers to springs, wells, or other collectors that are directly influenced by surface water.

- **Surface–water disposal:** Refers to the release of reclaimed water or treated effluent directly into a surface water body (including marshes or wetlands). This does not include water discharged into ponds for holding or percolation purposes.
- **Surge irrigation:** The intermittent application of water to irrigation pathways. This method pulses water down the furrow and creates more uniform irrigation.
- **Suspended solids (SS):** Defined in waste management, these are small particles of solid pollutants that resist separation by conventional methods. Suspended solids (along with biological oxygen demand) are a measurement of water quality and an indicator of treatment plant efficiency.
- **Sustainable development:** Development that ensures that the use of resources and the environment today does not restrict their use by future generations.
- **Sustainable management:** Method of exploiting a resource that can be carried on indefinitely. Removal of water from an aquifer in excess of recharge is, in the long term, not a sustainable management method.
- **Sustained overdraft:** Long term withdrawal from the aquifer of more water than is being recharged.
- **Swamp:** A type of wetland that is dominated by woody vegetation and does not accumulate appreciable peat deposits. Swamps may be fresh water or saltwater and tidal or nontidal.
- **Synergism:** The combined action of several chemicals, which produces a total effect greater than the effects of the chemicals separately.

## Water Glossary – T

- **Tailwater recovery system:** System modification to achieve greater efficiency in agricultural irrigation by collecting runoff for reuse in irrigation.
- **Tail–water runoff:** Unused irrigation water or rain water that is collected at the base or end of an irrigated system or field in a ditch or impoundment. This water may be reused again for irrigation purposes, be left to evaporate, percolate into the ground, receive treatment, and (or) be discharged to surface–water bodies.
- **Total dissolved solids (TDS):** The sum of all inorganic and organic particulate material. TDS is an indicator test used for wastewater analysis and is also a measure of the mineral content of bottled water and groundwater. There is a relationship between TDS and conductivity. People monitoring water quality can measure electrical conductivity

quickly in the field and estimate TDS without doing any lab tests at all. See specific conductance.

- **Temperature:** The degree of hotness or coldness.
- **Tensiometer:** Type of soil moisture probe used to monitor soil moisture conditions to help determine when water should be applied.
- **Tertiary treatment:** Removal from wastewater of traces of organic chemicals and dissolved solids that remain after primary treatment and secondary treatment.
- **TH:** Total Hardness. The sum of calcium and magnesium hardness, expressed as a calcium carbonate equivalent.
- **Thalweg:** The line of maximum depth in a stream. The thalweg is the part that has the maximum velocity and causes cutbanks and channel migration.
- **Thermal gradient:** Temperature difference between two areas.
- **Thermal pollution:** The impairment of water quality through temperature increase; usually occurs as a result of industrial cooling water discharges.
- **Thermal pollution:** An increase in air or water temperature that disturbs the climate or ecology of an area.
- **Thermocline:** Fairly thin zone in a lake that separates an upper warmer zone (epilimnion) from a lower colder zone (hypolimnion).
- **Thermoelectric power:** Electrical power generated by using fossil fuel (coal, oil, natural gas or biomass), geothermal, or nuclear energy.
- **Thermoelectric power water use:** Water used in the process of the generation of thermoelectric power. The water may be obtained from a public supply or may be self-supplied. See also public supply and self-supplied water.
- **THM:** Trihalomethanes. Toxic chemical substances that consist of a methane molecule and one of the halogen elements fluorine, bromine, chlorine and iodine attached to three positions of the molecule. They usually have carcinogenic properties.
- **Threshold level:** Level established as the average rate of water use.
- **Threshold pollutant:** Substance that is harmful to a particular organism only above a certain concentration, or threshold level.
- **Tiered pricing:** Increasing block-rate pricing.
- **Time-of-day pricing:** Pricing that charges users relatively higher prices during utilities' peak use periods.

- **Titration:** An analytical technique to determine how much of a substance is present in a water sample by adding another substance and measuring how much of that substance must be added to produce a reaction.
- **Toilet displacement device:** Object placed in a toilet tank to reduce the amount of water used per flush; for example, weighted plastic jugs filled with water or toilet dams that hold back a reservoir of water when the toilet is flushing.
- **Total solids:** All the solids in wastewater or sewage water, including suspended solids and filterable solids.
- **Toxic:** Harmful to living organisms.
- **Toxic water pollutants:** Compounds that are not naturally found in water at the given concentrations and that cause death, disease, or birth defects in organisms that ingest or absorb them.
- **Toxicity reduction evaluation (TRE):** A study conducted to determine the source(s) of toxicity in a discharge effluent so that these sources can be controlled sufficiently to allow a discharger to comply with their permit limits.
- **Toxicity test:** The means to determine the toxicity of a chemical or an effluent using living organisms. A toxicity test measures the degree of response of an exposed test organism to a specified chemical or effluent.
- **Tragedy of the Commons:** The idea that no one takes responsibility for things that everybody owns.
- **Transmission lines:** Pipelines that transport raw water from its source to a water treatment plant.
- **Transmissivity:** Refers to the rate at which limestone allows the transmission of water. Limestone can be highly porous, but not very transmissive if the pores are not connected to each other. Technically speaking, it is the rate at which water is transmitted through a unit width of aquifer under unit hydraulic gradient. Transmissivity is directly proportional to aquifer thickness, thus it is high where the edwards is thick and low where it is thin, given the same hydraulic conductivity.
- **Transpiration:** Process by which water that is absorbed by plants, usually through the roots, is evaporated into the atmosphere from the plant surface. See also evaporation and evapo–transpiration.
- **Treated (wastewater) effluent:** Water that has received primary, secondary, or advanced treatment and is released from a wastewater facility after treatment.
- **Treatment plant:** A structure built to treat wastewater before discharging it into the environment.

- **Tributary:** A stream that contributes its water to another stream or body of water.
- **Trickling filter:** A wastewater treatment unit that contains medium material with bacteria. The stream of wastewater is trickled over the medium and the bacteria break down the organic wastes. Bacteria are collected on the filter medium.
- **Troposphere:** The layer of atmosphere closest to the Earth, extending seven to ten miles above the surface, containing most of the clouds and moisture.
- **TS:** Total Solids. The weight of all present solids per unit volume of water. It is usually determined by evaporation. The total weight concerns both dissolved and suspended organic and inorganic matter.
- **Tsunami:** A Japanese term that has been adopted to describe a large seismically generated sea wave capable of considerable destruction in certain coastal areas, especially where sub-marine earthquakes occur.
- **Tube settler:** Device using bundles of tubes to let solids in water settle to the bottom for removal by sludge.
- **Turbid:** Thick or opaque with matter in suspension. Rivers and lakes may become turbid after a rainfall.
- **Turbidity:** Cloudiness caused by the presence of suspended solids in water; an indicator of water quality.
- **Turbulent flow:** A flow that contains many rapid fluctuations.

## Water Glossary – U

- **Ultra-violet (UV) oxidation:** A process using extremely short wave-length light that can kill micro-organisms (disinfection) or cleave organic molecules (photo oxidation) rendering them polarized or ionized and thus more easily removed from the water.
- **Unclassified waters:** Those waters for which no classification has been assigned and which have not been identified in Appendix A of 31 Texas Administrative Code, Chapter 307.10 of Title 31 (relating to definitions).
- **Unconsolidated formations:** Naturally occurring earth formations that have not been lithified. Alluvium, soil, gravel, clay, and overburden are some of the terms used to describe this type of formation.
- **Undercurrent:** A current below the upper currents or surface of a fluid body.
- **Underdrain:** A concealed drain with openings through which the water enters when the water table reaches the level of the drain.

- **Underflow:** Movement of water through subsurface material.
- **Underground storage tank:** A tank located all or partially underground that is designed to hold gasoline or other petroleum products or chemical solutions.
- **Undertow:** The current beneath the surface that sets seaward or along the beach when waves are breaking on the shore.
- **Underwater:** Under the surface of the water; lying, growing, performed, worn, or operating below the surface of the water, as underwater caverns, underwater operation of a submarine.
- **Unit surcharge:** A surcharge imposed for all water use above a threshold level for excess consumption established based on average per capita or per-household consumption.
- **Unloading:** The release of the contaminant that was captured by a filter medium.
- **Unsaturated Zone:** The area above the water table where soil pores are not fully saturated with water.
- **Upflow:** An upward flow.
- **Upwater:** Ultra pure water creation demands a specialised way of working. A number of techniques are used amongst others; membrane filtration, ion exchanges, sub micron filters, UV and ozone systems. The produced water is extremely pure and contains none to very low concentrations of salts, organic/ pyrolytic components, oxygen, suspended solids and bacteria.
- **Urban runoff:** Storm water from city streets and adjacent domestic or commercial properties that may carry pollutants of various kinds into the sewer systems and/or receiving waters.
- **USGS:** United States Geological Survey.
- **Utility:** Public water service provider.
- **UV:** Ultra Violet. Radiation that has a wavelength shorter than visible light. It is often used to kill bacteria and destroy ozone.

## Water Glossary – V

- **Vapor:** The gaseous phase of substances that are liquid or solid at atmospheric temperature and pressure, e.g., steam.
- **Vaporize:** Conversion of a liquid into vapor.
- **Venturi:** A channel that serves the measurement of water flows.

- **Vested water right:** The right granted by a state water agency to use either surface or ground water.
- **Virgin flow:** The streamflow which exists or would exist if man had not modified the conditions on or along the stream or in the drainage basin.
- **Viruses:** The smallest life forms known, that are not cellular in nature. They live inside the cells of animals, plants and bacteria and often cause disease. They are made up of a chromosome surrounded by a protein shell.
- **Viscosity:** The syrupiness of water and it determines the mobility of the water. When the temperature rises, the viscosity degrades; this means that water will be more mobile at higher temperatures.
- **VOC:** Volatile Organic Compound. Synthetic organic compounds which easily vaporize and are often carcinogenic.
- **Void:** The pore space or other openings in rock. The openings can be very small to cave size and are filled with water below the water table.

## Water Glossary – W

- **Wafer fabrication rinse sink:** Apparatus used during manufacturing to rinse debris and contamination from the circular configuration of semiconductor chips.
- **Waste disposal system:** A system for the disposing of wastes, either by surface or underground methods; includes sewer systems, treatment works, and disposal wells.
- **Wastewater:** Water containing waste including greywater, blackwater or water contaminated by waste contact, including process-generated and contaminated rainfall runoff.
- **Wastewater infrastructure:** The plan or network for the collection, treatment, and disposal of sewage in a community.
- **Wastewater treatment:** The processing of wastewater for the removal or reduction of contained solids or other undesirable constituents.
- **Wastewater treatment plant:** A facility containing a series of tanks, screens, filters, and other processes by which pollutants are removed from water.
- **Wastewater-treatment return flow:** Water returned to the hydrologic system by wastewater-treatment facilities.

- **Water:** The liquid that descends from the clouds as rain; forms streams, lakes, and seas, and is a major constituent of all living matter. It is an odorless, tasteless, colorless, very slightly compressible liquid.
- **Water audit:** Program involving sending trained water auditors to participating family homes, free of charge, to identify water conservation opportunities such as repairing leaks and installing lowflow plumbing and to recommend changes in water use practices to reduce home water use.
- **Water conservation:** Activities designed to reduce the demand for water, improve efficiency in use, and reduce losses and waste of water.
- **Water contamination:** Impairment of water quality to a degree that reduces the usability of the water for ordinary purposes or creates a hazard to public health through poisoning or the spread of diseases.
- **Water cycle:** Natural pathway water follows as it changes between liquid, solid, and gaseous states; biogeochemical cycle that moves and recycles water in various forms through the ecosphere. Also called the hydrologic cycle.
- **Water management:** The study, planning, monitoring, and application of quantitative and qualitative control and development techniques for long-term, multiple use of the diverse forms of water resources.
- **Water monitoring:** The process of constant control of a body of water by means of sampling and analyses.
- **Water pollution:** Industrial and institutional wastes and other harmful or objectionable material in sufficient quantities to result in a measurable degradation of the water quality.
- **Water quality:** A term used to describe the chemical, physical, and biological characteristics of water with respect to its suitability for a particular use.
- **Water quality criteria:** Scientifically derived ambient limits developed and updated by EPA, under section 304(a)(1) of the Clean Water Act, for specific pollutants of concern. Criteria are recommended concentrations, levels, or narrative statements that should not be exceeded in a waterbody in order to protect aquatic life or human health.
- **Water quality guidelines:** Specific levels of water quality that, if reached, are expected to render a body of water suitable for its designated use. The criteria are based on specific levels of pollutants that would make the water harmful if used for drinking, swimming, farming, fish production, or industrial processes.
- **Water quality standards:** Laws or regulations, promulgated under Section 303 of the Clean Water Act, that consist of the designated use or uses of a waterbody or a segment of a waterbody and the water quality criteria that are necessary to protect the use or

uses of that particular waterbody. Water quality standards also contain an antidegradation statement. Every State is required to develop water quality criteria standards applicable to the various waterbodies within the State and revise them every 3 years.

- **Water quality–based toxics control:** An integrated strategy used in NPDES permitting to assess and control the discharge of toxic pollutants to surface waters. There are two approaches: the whole–effluent approach involves the use of toxicity tests to measure discharge toxicity; the chemical specific approach involves the use of water quality criteria or State standards to limit specific toxic pollutants directly.
- **Water recycling:** Reuse of water for the same application for which it was originally used.
- **Water reuse:** Using wastewater or reclaimed water from one application for another application. The deliberate use of reclaimed water or wastewater must be in compliance with applicable rules for a beneficial purpose (landscape irrigation, agricultural irrigation, aesthetic uses, ground water recharge, industrial uses, and fire protection).
- **Water solubility:** The maximum possible concentration of a chemical compound dissolved in water.
- **Water storage pond:** An impound for liquid wastes designed to accomplish some degree of biochemical treatment.
- **Water supply system:** The collection, treatment, storage, and distribution of potable water from source to consumer.
- **Water surcharge:** Imposition of a higher rate on excessive water use.
- **Water system:** A river and all its branches.
- **Water table:** Level below the earth's surface at which the ground becomes saturated with water. The surface of an unconfined aquifer which fluctuates due to seasonal precipitation.
- **Water table aquifer:** An aquifer confined only by atmospheric pressure (water levels will not rise in the well above the confining bed).
- **Water transfer:** Artificial conveyance of water from one area to another across a political or hydrological boundary. This is referred to as an import or export of water from one basin or county to another.
- **Water use:** 1) In a restrictive sense, the term refers to water that is actually used for a specific purpose such as domestic use, irrigation, or industrial processing. 2) More broadly, water use pertains to human's interaction with and influence on the hydrologic cycle, and includes elements such as water withdrawals, deliveries, consumptive use, wastewater releases, reclaimed wastewater, return flow and instream use.

- **Water use efficiency:** Employing water-saving practices to reduce costs and to slow the depletion of the water supply to ensure future water availability.
- **Water well:** Any artificial excavation constructed for the purpose of exploring for or producing ground water.
- **Water year:** The 12-month period, usually October 1 through September 30. The water year is designated by the calendar year in which it ends and which includes 9 of the 12 months. Thus, the year ending September 30, 1998 is called the 1998 Water Year.
- **Waterfall:** A sudden, nearly vertical drop in a stream, as it flows over rock.
- **Waterlogging:** Saturation of soil with irrigation water so the water table rises close to the surface.
- **Watermaster:** An employee of a water department who distributes available water supply at the request of water right holders and collects hydrographic data.
- **Water-resources region:** Designated natural drainage basin or hydrologic area that contains either the drainage area of a major river or the combined drainage areas of two or more rivers; of 21 regions, 18 are in the conterminous United States, and one each are in Alaska, Hawaii, and the Caribbean. (See map on inside of front cover.)
- **Water-resources subregion:** The 21 designated water-resources regions of the United States are subdivided into 222 subregions. Each subregion includes that area drained by a river system, a reach of a river and its tributaries in that reach, a closed basin(s), or a group of streams forming a coastal drainage system.
- **Watershed:** Land area from which water drains toward a common watercourse in a natural basin.
- **Watthour (Wh):** An electrical energy unit of measure equal to one watt of power supplied to, or taken from, an electrical circuit steadily for one hour.
- **Weather:** Day to day variation in atmospheric conditions. Compare climate.
- **Weir:** A spill over device used to measure or control water flows.
- **Well:** A pit, hole, or shaft sunk into the earth to tap an underground source of water.
- **Well capping:** Capping of abandoned artesian wells whose rusted casings spill water in a constant flow into drainage ditches.
- **Wet deposition:** See acid rain.
- **Wetland:** Area that is regularly wet or flooded and has a water table that stands at or above the land surface for at least part of the year, such as a bog, pond, fen, estuary, or marsh.

- **Wettability:** The relative degree to which a fluid will spread into solid surface in the presence of other immiscible fluids.
- **Whole-effluent toxicity:** The aggregate toxic effect of an effluent measured directly by a toxicity test.
- **W-Index:** An index of water efficiency used as a device for evaluating residential water savings and as a management tool to motivate water-saving practices. The index provides a calculated numerical value for each dwelling unit, derived from the number and kind of water-saving features present, including indoor and outdoor water savers and water harvesting or recycling systems.
- **Winter/summer ratio:** Comparison of metered water use during the winter period to consumption during the corresponding summer period. A higher rate or surcharge is imposed for water consumption above the average winter use.
- **Withdrawal:** Water removed from the ground or diverted from a surface-water source. The amount of water withdrawn may not equal the amount of water used due to water transfers or the recirculation or recycling of the same water. For example, a power plant may use the same water multiple times but withdraw a significantly different amount.
- **Withdrawal use:** The act of removing water from surface water or groundwater sources in order to use it.

## Water Glossary – X

- **Xenobiotic:** Any biological substance, displaced from its normal habitat; a chemical foreign to a biological system.
- **Xeriscape landscaping:** An innovative, comprehensive approach to pollution prevention and water use efficiency that incorporates all of the following: planning and design, soil analysis, appropriate plant selection, practical turf areas, efficient irrigation, use of mulches, and appropriate maintenance.

## Water Glossary – Y

- [Yes, I want to advertise on this site](#)
- **Yield:** the quantity of water expressed either as a continuous rate of flow (cubic feet per second, etc.) or as a volume per unit of time. It can be collected for a given use, or uses, from surface or groundwater sources on a watershed.

## Water Glossary – Z

- **Zero discharge water:** The principle of 'zero discharge' is recycling of all industrial wastewater. This means that wastewater will be treated and used again in the process. Because of the water reuse wastewater will not be released on the sewer system or surface water.
- **Zeta potential:** An electrokinetic measurement which can be used for the control of coagulation processes.
- **Zone of aeration:** A region in the Earth above the water table. Water in the zone of aeration is under atmospheric pressure and will not flow into a well.
- **Zone of saturation:** The space below the water table in which all the interstices (pore spaces) are filled with water. Water in the zone of saturation is called groundwater.
- **Zooplankton:** Tiny aquatic animals eaten by fish.
- **Zwitter ions:** Act as cations or as anions according to the environment in which they find themselves. In water technology they are usually organic macromolecules.