
Water Quality Sampling Unit Vocabulary

Acute Toxicity: The ability of a substance to cause poisonous effects resulting in severe biological harm or death soon after a single exposure or dose. Also, any severe poisonous effect resulting from a short-term exposure to a toxic substance.

Acre-feet - volume measurement used for water that is equivalent to 325,851 gallons of water or enough to cover a football field in one foot of water

Algae – Plants that lack true roots, stems, and leaves. For the physical assessment described herein, algae consist of nonvascular plants that attach to rocks and debris or are free floating in the water. Such plants may be green, blue-green, or olive in color, slimy to the touch, and usually have a coarse filamentous structure.

Alkalinity – A measure of acid-neutralizing capacity of water. Bicarbonate, carbonate, and hydroxide are the primary cause of alkalinity in natural waters. Concentrations are expressed as mg/L of CaCO₃.

Aquifer - rock layer underground that stores and transports water.

Bioaccumulation: The process in which a chemical is moved through the biological food chain by being passed from one organism to another as the contaminated organism is preyed upon by another organism.

Biochemical Oxygen (BOD): A measure of the amount of oxygen consumed in the biological demand processes that break down organic matter in water. The greater the BOD, the greater the degree of pollution.

Bloom: The accelerated growth of algae and/or higher aquatic plants in a body of water. This is often related to pollutants that increase the rate of growth.

Channel: The portion of the landscape, which contains the bank and the stream bottom. It is distinct from the surrounding area due to breaks in the general slope of the land, lack of terrestrial vegetation, and changes in the composition of substrate materials.

Channelization: Straightening and deepening streams so water will move faster, a method of flood control that disturbs fish and wildlife habitats and can interfere with a waterbody's ability to assimilate waste.

Chronic Toxicity: The capacity of a substance to cause long-term poisonous human health effects. (See Acute Toxicity)

Conductivity: A measure of the electrical current carrying capacity, in mhos/cm, of 1 cm³ of water at 25° C. Dissolved substances in water dissociate into ions with the ability to conduct electrical current. Conductivity is a measure of how salty water is; salty water has high conductivity.

Cubic feet per second (cfs) - the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second

Detritus: Decaying organic material.

Discharge - volume of water (or more broadly, volume of fluid plus suspended sediment) that passes a given point within a given period of time

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Ecological Impact: The effect that a man-made or natural activity has on living organisms and their abiotic (non-living) environment.

Eddy Current: A circular water movement formed on the side of a main current. Eddies may be formed where the main stream passes obstructions (logs, rocks).

Effluent: Wastewater (treated or untreated) that flows out of a treatment plant or industrial (point source), prior to entering a water body.

Estuary: Regions of interaction between rivers and near shore ocean waters, where tidal action and river flow create a mixing of fresh and salt water.

Eutrophic: Refers to shallow, murky bodies of water that have excessive concentrations of plant nutrients resulting in increased algal production.

Eutrophication: Eutrophication is a natural process in which a body of water is enriched by nutrients such as phosphate and nitrates that are washed in through runoff. These nutrients provide nourishment for plants in the water, which in turn become food for fish and other aquatic life. The term, eutrophic, means well nourished. Eutrophication has come to mean, however, a condition in which a body of water receives an excess of nutrients from agricultural runoff or sewage and the natural process is accelerated. The excess plant growth can block sunlight from the bottom of the lake, preventing photosynthesis, which is necessary to resupply the oxygen in the water. As animals in the water die because of lack of oxygen, they decompose, a process, which removes additional oxygen from water.

Evaporation - process in which water changes from a liquid to a gas

Evapotranspiration - water loss to the atmosphere through evaporation of surface water and transpiration by plants

First order streams: streams that have no tributaries flowing into them

Flood Plain: the flat expanse of land that borders a stream and becomes covered by water when the stream overflows its banks.

Food Chain: The dependence of organisms upon others in a series for food. The chain begins with producers (plants) and ends with the largest of the consumers (carnivores).

Food Web: An interlocking pattern of several to many food chains.

Groundwater - water stored below the surface of the earth

Habitat: The area in which an organism lives.

Household Hazardous Waste: may be any discarded liquid or solid material or containers holding gases, which may have an adverse, harmful, or damaging biological effect in an organism or upon the environment itself.

Headwaters: the origins of a stream.

Impoundment: A body of water confined by a dam, dike, floodgate or other barrier.

Indicator Organism: Organisms that are sensitive to degradation in water quality and habitat. Sensitive organisms are usually driven from an area or killed as a result of some contaminant, especially organic pollution (e.g. sewage, feedlot, runoff, food waste).

Invertebrate: Animal lacking a backbone.

Lentic: Standing water systems: lakes, ponds or bogs.

Limnetic Zone: The open water portion of a pond, lake, or bog, which is too deep for rooted plants, but with enough light penetration for photosynthetic activity.

Littoral Zone: Area of shallow water where light penetrates to the bottom allowing for rooted plant growth (lake or pond).

Lotic: Running or flowing water systems: rivers and streams.

Natural Vegetative Buffer: The natural vegetative buffer refers to an area of either natural or native vegetation, which buffers the water body from terrestrial runoff, and the activities of man. In natural areas, it may be much greater than the riparian zone width. In man-altered settings, the natural vegetative buffer limit would be at the point of man's influence in the riparian zone such as a road, parking lot, pasture or crop field. It is the width of this buffer that we are most interested in measuring for purposes of quantifying potential stream impairments.

Nekton: Free swimming organisms.

Non-Point Source: Pollution sources, which are, diffuse and do not have a single point of origin or are not introduced into a receiving stream from a specific outfall. The pollutants are generally carried off the land by stormwater runoff. The commonly used categories for non-point sources are: agriculture, forestry, urban, mining, construction, dams and channels, land disposal and saltwater intrusion.

Nutrient: Any substance used by living things to promote growth. The term is generally applied to nitrogen and phosphorus in water and wastewater, but is also applied to other essential and trace elements.

Oligotrophic: A water body characterized by few nutrients entering the water body, few to no shoreline aquatic plants and rare plankton blooms.

Outfall: A designated point of effluent discharge.

Overhanging Vegetation: Vegetation that overhangs the water column and provides food and cover for fish and benthic macroinvertebrates and shades the water from solar radiation.

Periphyton: Organisms that cling to rock, plants, logs, tires, etc.

pH: the hydrogen-ion activity of water caused by the breakdown of water molecules and the presence of dissolved acids and bases.

Phosphorous: Essential nutrient to the growth of organisms and can be the nutrient that limits the primary productivity of water. In excessive amounts, from wastewater, agricultural drainage and certain industrial wastes, it also contributes to the eutrophication of lakes and other water bodies.

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.

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Point Bar: the inside (convex) bank of a stream channel bend characterized by high deposition gravel or cobble. The top of the point bar defines the floodplain. Point bars are build up during periods of flooding are usually devoid of woody vegetation.

Point Source Pollution: A point source is a single, identifiable source of pollution such as a discharge from a municipal or industrial wastewater treatment plant.

Pool: A portion of a stream where water velocity is slow and the depth is greater than the riffle, run or glide. Pools often contain large eddies with widely varying directions of flow compared to riffles and runs where flow is nearly exclusively downstream. The water surface gradient of pools is very close to zero and their channel profile is usually concave.

Profundal Zone: Area of a pond or lake lacking light penetration and photosynthesis.

Precipitation - water in liquid or solid form that falls from the atmosphere to the Earth's surface

Receiving Water: A river, stream, lake or other body of surface water into which wastewater or treated effluent is discharged.

Reservoir: Any natural or artificial holding area used to store, regulate or control water.

Riffle: A shallow portion of the stream extending across a streambed characterized by relatively fast moving turbulent water. The water column in a riffle is usually constricted and water velocity is fast due to a change in surface gradient. The channel profile in a riffle is usually straight to convex.

Riparian: Of or pertaining to the banks of a body of water.

Riparian Zone: the vegetative area on each bank of a body of water.

River - long, narrow body of water that flows through a channel to lower elevation because of gravity

River Basin: The land area drained by a river and its tributaries.

Rough Fish: Those species of fish considered to be of poor fighting quality and/or poor food quality. Most rough fish are tolerant of pollution. Examples: common carp or gar.

Run: A relatively shallow portion of a stream characterized by relatively fast moving nonturbulent flow. A run is usually too deep to be considered a riffle and too shallow to be considered a pool. The channel profile under a run is usually a uniform flat plane.

Runoff - water that flows over the land surface, usually in the form of rivers and streams

Salinity: The amounts of dissolved salts in water, generally expressed in parts per thousand (ppt).

Second order streams: streams receiving the flow from only first order streams

Sediment: Particles and/or clumps of particle sand, clay, silt, and plant or animal matter carried in water and are deposited in reservoirs and slow moving areas of streams and rivers.

Segment: Waters designated by the Texas Natural Resource Conservation Commission (TNRCC) in the Texas Surface Water Quality Standards, which include most rivers and their major tributaries, major reservoirs and lakes and marine waters. Segmented waters have designated physical boundaries, specific uses and numerical physical chemical criteria (Example: DO, temperature, fecal coliform, chloride, sulfate) in the state's water quality standards.

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Stream Bend: The curved part of a stream. A well defined bend has a deep outside area (cut bank) and shallow inside area accentuated by point bar development. Due to sharp bending, stream flow is forced to the cut bank side and eddies develop on the inside of the bend. A moderately developed bend forces some flow to the outside and has only a slight change in depth across the channel. A poorly defined bend has no noticeable change in water depth across the channel, and stream flow is generally not forced to one side.

Stream Channel: the portion of the stream in which the deepest and fastest part of the stream flows.

Submerged Vegetation: Rooted plants with almost all leaves below the water surface (e.g. alligator weed, hydrilla or elodea)

Surface water - water that flows above the Earth's surface

Surface Water Quality Standards: The designation of water bodies for desirable uses and the narrative and numerical criteria deemed necessary to protect those uses.

Tailwater: Excessive surface water drainage, normally from irrigation. Also water released from dams.

Terrance: The area of a stream bank where the vertical slope of a bank sloping away from the water column changes to a horizontal slope. It is usually identified by an abrupt change in slope and usually marks the beginning of the floodplain.

Third order streams: when at least two-second order streams combine

Tolerant Organisms: Organisms that have the capacity to grow and thrive whenever subjected to unfavorable environmental factors.

Total Dissolved Solids (TDS): The amount of material (inorganic salts and small amounts of organic material) dissolved in water.

Total Suspended Solids (TSS): A measure of the total suspended solids in water, both organic and inorganic.

Tree Canopy: The uppermost spreading branching layer of streamside trees that shades the water surface. Tree canopy is reported as percent cover and is measured with a canopy densiometer. Possible measurement range from 0% (totally open) to 100% (totally closed canopy cover).

Toxic: Capable of causing injury or death through ingestion, inhalation or skin absorption. Some toxic substances cause cancer, genetic mutations and fetal harm.

Transpiration - process in which plants release water vapor into the atmosphere

Tributary: a body of water that drains into another, typically larger, body of water.

Volatile Organic Compounds (VOC): Substances containing carbon, hydrogen, and oxygen that easily become vapors or gases.

Volatile Suspended Solids (VSS): The portion of the TSS that is lost after ignition. This represents the organic part of TSS.

Water management - field of study and professional practice that examine issues of water quantity and water quality in meeting the needs of consumers

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Water Quality Standards: Established limits of a certain chemical, physical, and biological parameters in a water body; water quality standards are established for the different designated uses of a water body (e.g. aquatic life use, contact recreation, public water supply).

Watershed: the area of land drained by a particular river or stream system.