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Abandoned well	A well whose use has been permanently discontinued or which is in a state of disrepair such that it cannot be used for its intended purpose.
Abstraction	A way of saying “extraction” of groundwater.
Abutment	The part of a valley or canyon wall against which a dam is constructed. Right and left abutments are those on respective sides of an observer looking downstream.
Abutment Seepage	Reservoir water that moves through seams or pores in the natural abutment material and exits as seepage.
Acid Deposition ("acid rain")	Water that falls to or condenses on the Earth's surface as rain, drizzle, snow, sleet, hail, dew, frost, or fog with a pH of less than 5.6.
Acidic	The condition of water or soil which contains a sufficient amount of acid substances to lower the pH below 7.0.
Acre foot	The amount of water required to cover one acre to a depth of one foot. An acre-foot equals 326,851 gallons, or 43,560 cubic feet.
Adsorption	Adsorption is a solute adheres to exterior of matrix. The formation of a layer of gas, liquid, or solid on the surface of a solid or, less frequently, of a liquid.
Aeration	The addition of air to water or to the pores in soil.
Aeration zone	The zone immediately below the land surface where the pores contain both water and air, but are not totally saturated with water. Plant roots can capture the moisture passing through this zone, but it cannot provide water for wells. Also known as the unsaturated zone or vadose zone. A portion of the lithosphere in which the functional interstices of permeable rock or earth are not filled with water under hydrostatic pressure. The interstices either are not filled with water or are filled with water that is no held by capillarity.
Agricultural Pollution	The liquid and solid wastes from farming, including: runoff and leaching of pesticides and fertilizers; erosion and dust from plowing; animal manure and carcasses; crop residue; and debris.
Algae	Microscopic plants which contain chlorophyll and float or suspend in water. Excess algae growths can impact tastes and odors to potable water. Their biological activities affect the pH and dissolved oxygen of the water.
Algorithm	A step-by-step procedure for solving a problem or accomplishing some end especially by a computer
Alkali	Any of certain soluble salts, principally of sodium, potassium, magnesium, and calcium, that have the property of combining with acids from neutral salts and may be used in chemical water treatment processes.
Alkaline	The quality of being bitter due to alkaline content (pH is greater than 7).
Alkalinity	The excess of conservative cation equivalents over conservative anion equivalents; the excess of hydroxide ions (pH > 7); Alkalinity is a measure of the buffering capacity of water, or the capacity of bases to neutralize acids; the number of millequivalents of hydrogen ion that is neutralized by one liter of seawater at 20C; the capacity of a system to neutralize acid.
Alluvial	An adjective referring to alluvium.
Alluvium	Sediments consisting of silt, sand, clay, and gravel in varying proportions that are deposited by flowing water in marshes or valleys. Sediments deposited by erosional processes, usually by streams.
Anabranch	A diverging branch of a river which re-enters the main stream.
Anion	A negatively charged ion, i.e. an ion that is attracted to the anode in electrolysis
Anisotropy	The condition under which one or more of the hydraulic properties of an aquifer vary according to direction of flow.

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Annual Flood	The maximum discharge peak during a given water year
Annulus	The space between concentric objects, in this case pipe and rock. The gravel pack area.
Anthropogenic	Relating to, or resulting from the influence of human beings on nature.
API Method	A statistical method to estimate the amount of surface runoff which will occur from a basin from a given rainstorm based on the antecedent precipitation index, physical characteristics of the basin, time of year, storm duration, rainfall amount, and rainfall intensity.
Aqueduct	Man-made canal or pipeline used to transport water.
Aquiclude	A formation which contains water but cannot transmit it rapidly enough to furnish a significant supply to a well or spring. Formation that contains water that does not move (as in shale)
Aquifer	A saturated geologic formation (rock or sediment) capable of storing, transmitting and yielding reasonable amounts of groundwater to wells and springs. A water-bearing stratum of permeable rock, sand, or gravel. In fact it is a saturated underground rock or sediment formation which is sufficiently permeable to transmit water to wells and springs. Permeable layers of underground rock, or sand that hold or transmit groundwater below the water table that will yield water to a well in sufficient quantities to produce water for beneficial use.
Aquifer Storage	The ability of the aquifer to store water in interconnected pores and fractures. Aquifer storage is quantified by a values referred to as storativity and specific yield.
Aquifer storage and retrieval (ASR)	Use of a well or series of wells to inject surface water into an aquifer during wet weather or low demand periods for purposes of withdrawal and use during drought and/or high demand periods.
Aquifuge	A geologic formation which has no interconnected openings and cannot hold or transmit water. Impervious layer throgh which no infiltration takes place.
Aquitard	Semipervious, water moves slowly compared to an aquifer
Area Capacity Curve	A graph showing the relation between the surface area of the water in a reservoir, the corresponding volume, and elevation.
Area of Influence	The area covered by the drawdown curves of a given pumping well or combination of wells at a particular time.
Arid	An adjunctive applied to regions where precipitation is so deficient in quantity, or occurs at such times, that agriculture is impracticable without irrigation.
Arsenic	A naturally occurring element in the environment. Arsenic in drinking water commonly comes from natural sources in the ground, but some can come from industrial pollution. At high concentrations it can cause cancer.
Artesian aquifer	A confined aquifer which is under enough pressure to cause the water level in a drilled hole to rise above the confining layer (not above the ground?) If the water level rises above the ground, it is called a “flowing artesian well”. A vertical bore hole in which a pipe-like structure is inserted into the ground so that it withdraws water from a confined aquifer (artesian aquifer). A well tapping a confined aquifer. Water in the well rises above the top of the aquifer under artesian pressure, but does not necessarily reach the land surface; a flowing artesian well is a well in which the water level is above the land surface.
Artificial Control	A weir or other man-made structure which serves as the control for a stream-gaging station.
Artificial recharge	Putting water back into groundwater storage from surface water supplies such as irrigation, or induced infiltration from streams or wells. Includes aquifer storage

	and retrieval (ASR).
Aspect ratio	Wellscreen aspect ratio = length/radius
Attenuation	The soil's ability to lessen the amount of, or reduce the severity of groundwater contamination; "during attenuation, the soil holds essential plant nutrients for uptake by agronomic crops, immobilizes metals that might be contained in municipal sewage sludge, or removes bacteria contained in animal or human wastes. 18"
Backflow	The backing up of water through a conduit or channel in the direction opposite to normal flow.
Backwater Curve	The longitudinal profile of the surface of a liquid in a non-uniform flow in an open channel, when the water surface is not parallel to the invert owing to the depth of water having been increased by the interposition of an obstruction such as a dam or weir. The term is sometimes used in a generic sense to denote all water surface profiles; or for profiles where the water is flowing at depths greater than the critical.
Bacteria	Plural of bacterium.
Bacterium	A microscopic unicellular organism that lacks a nuclear membrane. Some can cause disease.
Bedrock	solid or fractured rock usually underlying unconsolidated geologic materials; bedrock may be exposed at the land surface
Bailer	A 10- to 20-foot-long pipe equipped with a valve at the lower end. It is used to remove slurry from the bottom or the side of a well as it is being drilled.
Bank Storage	Water absorbed and stored in the void in the soil cover in the bed and banks of a stream, lake, or reservoir, and returned in whole or in part as the level of water body surface falls.
Bankfull Elevation	An established river stage/water surface elevation at a given location along a river which is intended to represent the maximum water level that will not overflow the river banks or cause any significant damages from flooding.
Bankfull Stage	An established river stage at a certain point along a river which is intended to represent the maximum safe water level which will not overflow the river banks or cause any significant damage within the reach of the river.
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.
Basalt	A dark colored igneous (lava) rock. Basalt is differentiated from other igneous rocks by its chemical composition.
Base	A substance that has a pH value between 7 and 14.
Base Width	The time duration of a unit hydrograph.
Baseflow	The sustained flow (amount of water) in a stream that comes from groundwater discharge or seepage. Groundwater flows underground until the water table intersects the land surface and the flowing water becomes surface water in the form of springs, streams/rivers, lakes and wetlands. Baseflow is the continual contribution of groundwater to rivers and is important source of flow between rainstorms. Groundwater continues to discharge as baseflow because of the new recharge of rainwater in the landscape. Streamflow coming from groundwater seepage into a stream or river. Groundwater flows underground until the water table intersects the land surface and the flowing water becomes surface water in the form of springs, streams/rivers, lakes and wetlands. Baseflow is the continual contribution of groundwater to rivers and is an important source of flow between rainstorms. Streamflow which results from precipitation that infiltrates into the soil

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	and eventually moves through the soil to the stream channel. This is also referred to as ground water flow, or dry-weather flow.
Basin	An area having a common outlet for its surface runoff.
Basin Boundary	The topographic dividing line around the perimeter of a basin, beyond which overland flow (i.e.; runoff) drains away into another basin.
Basin Recharge	Rainfall that adds to the residual moisture of the basin in order to help recharge the water deficit. i.e; water absorbed into the soil that does not take the form of direct runoff.
Bed Load	Sand, silt, gravel, or soil and rock detritus carried by a stream on or immediately above its bed. The particles of this material have a density or grain size such as to preclude movement far above or for a long distance out of contact with the stream bed under natural conditions of flow.
Bedrock	Solid or fractured rock usually underlying unconsolidated geologic materials; bedrock may be exposed at the land surface. The solid rock that underlies all soil, sand, clay, gravel and other loose materials on the earth's surface. Unfractured bedrock is impermeable while fractured bedrock may store and transmit groundwater.
Benchmark (BM)	A permanent point whose known elevation is tied to a national network. These points are created to serve as a point of reference. Benchmarks have generally been established by the SOI or local agencies. Benchmarks can be found on SOI maps.
Best management practices (BMP's)	Structural, nonstructural, and managerial techniques recognized to be the most effective and practical means to reduce surface water and groundwater contamination while still allowing the productive use of resources. Generally, a set of standardized efficiencies for the Best management practices.
Biodegradation	Decay caused by light, temperature, humidity, and microorganisms.
Blackwater	Water that contains animal, human or food wastes.
Boundary conditions	The physical conditions at the boundaries of a system. Examples are model bottom and no-flow boundaries at the lateral aquifer terminus, fixed flux boundaries representing a fixed inflow or outflow of water across that boundary cell, and fixed head boundaries representing potentiometric head that is held constant by some external force such as a river or lake. A mathematical represetation of boundary conditions must be specified in a numerical ground water flow model. Knowledge of h on the aquifer boundaries and throughout the aquifer at a known time (called initial and boundary conditions)
Brackish	A mixture of fresh water and salt water. Water too saline to be potable, but significantly less saline than seawater. 1,000mg/l
Braided Stream	Characterized by successive division and rejoining of streamflow with accompanying islands. A braided stream is composed of anabranches.
Brine	Waters significantly more saline than seawater
Buttress Dam	Buttress dams are comprised of reinforced masonry or stonework built against concrete. They are usually in the form of flat decks or multiple arches. They require about 60 percent less concrete than gravity dams, but the increased form work and reinforcement steel required usually offset the savings in concrete. However, this type of construction is not competitive with other types of dams when labor costs are high.
Calcification	Subhumid to arid, rainfall insufficient to drive ions to water table, so CaCO3 builds up at some level depending on rainfall
Calibration	The process of using historical data to estimate parameters in a hydrologic forecast

	technique, routings, and unit hydrographs.The calibration refers to the process of adjusting estimates of aquifer characteristics used in numerical ground water models. The calibration usually attempts to minimize differences between simulated and measured characteristics such as aquifer water levels.
Capillarity	The process by which water rises through rock, sediment or soil caused by the cohesion between water molecules and an adhesion between water and other materials that "pulls" the water upward.
Capillary Fringe	The soil area just above the water table where water can rise up slightly through the cohesive force of capillary action. This layer ranges in depth from a couple of inches, to a few feet, and it depends on the pore sizes of the materials. The capillary fringe is also called the capillary zone. Saturated zone immediately above the water table where saturation is maintain by capillary tension exerted by soil pores
Capillary Potential	The work required to move a unit mass of water from the reference plane to any point in the soil column.
Capillary water	Just above the water table, in the aeration zone, is capillary water that moves upward from the water table by capillary action. This water can move slowly and in any direction. While most plants rely upon moisture from precipitation that is present in the unsaturated zone, their roots may also tap into capillary water or into the underlying saturated zone.
Capillary Zone	The soil area just above the water table where water can rise up slightly through the cohesive force of capillary action. This layer ranges in depth from a couple of inches, to a few feet, and it depends on the pore sizes of the materials. The capillary zone is also called the capillary fringe.
Catchment Area	An area having a common outlet for its surface runoff (also see Drainage Area or Basin, Watershed).
Cation	A positively charge ion, i.e. an ion that is attracted to the cathode in electrolysis.
Centrifuge	A mechanical device that uses centrifugal or rotational forces separate substances of different densities, such as solids from liquids or liquids from other liquids.
CFS (Cubic Feet per Second)	The flow rate or discharge equal to one cubic foot (of water, usually) per second. This rate is equivalent to approximately 7.48 gallons per second. This is also referred to as a second-foot.
Channel (watercourse)	An open conduit either naturally or artificially created which periodically, or continuously contains moving water, or forms a connecting link between two bodies of water. River, creek, run, branch, anabranch, and tributary are some of the terms used to describe natural channels. Natural channels may be single or braided. Canal and floodway are some of the terms used to describe artificial channels.
Channel Bank	The margins of a channel. Banks are called right or left as viewed facing in the direction of the flow.
Channel Inflow	Water, which at any instant, is flowing into the channel system form surface flow, subsurface flow, base flow, and rainfall that has directly fallen onto the channel.
Channelization	The modification of a natural river channel; may include deepening, widening, or straightening.
Chloramination	The treatment of a substance, such as drinking water, with chlorine and ammonia (chloramines) in order to kill disease-causing organisms.
Chloride (Cl?)	One of the major anions commonly found in water and wastewater. Its presence is often determined by ion chromatographic or volumetric analysis. Consumers who drink water with concentrations of chloride exceeding a secondary maximum contaminant level of 250 milligrams per liter may notice a salty taste.

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Chlorination	The treatment of a substance, such as drinking water, with chlorine in order to kill disease-causing organisms.
Chromium	A naturally occurring element found in air, soil, water and food.
Clarity	Clearness of liquid, as measured by a variety of methods.
Closed Basin	A basin draining to some depression or pond within its area, from which water is lost only by evaporation or percolation. A basin without a surface outlet for precipitation.
Coagulation	The process, such as in treatment of drinking water, by which dirt and other suspended particles become chemically ?stuck together? so they can be removed from water.
Coliform bacteria	Bacteria of the family Enterobacteriaceae, commonly found in the intestinal tracts of warm-blooded animals. In sanitary bacteriology, these organisms are defined as all aerobic and facultative anaerobic, gram-negative, nonspore-forming, rod-shaped bacteria that ferment lactose with gas and acid formation within 48 hours at 95o Fahrenheit (35o Celsius).
Collection site	A stream, lake, reservoir, or other body of water fed by water drained from a watershed.
Colluviam	The products of gravity-driven mass movement
Color	A physical characteristic describing the appearance of water (different from turbidity, which is the cloudiness of water). Color is frequently caused by fulvic and humic acids.
Condensation	The process by which water or other liquids change from gas vapor to a liquid; process that occurs when water droplets form on surfaces or around the nuclei of a particle. Stage of the water cycle when water transforms from a gas into a vapor and becomes suspended in the atmosphere, visually represented by clouds. The process in the hydrologic cycle by which a vapor becomes a liquid; the opposite of evaporation.
Cone of Depression	The zone (around a well in an unconfined aquifer) that is normally saturated, but becomes unsaturated as a well is pumped; an area where the water table dips down forming a "V" or cone shape due to a pumping well. The shape of the water table in the area immediately surrounding a pumping well. The water draws down in a radial cone-shape around the pumping well, with the deepest drawdown immediately at the well, tapering off with distance from the pumping well. The depression, roughly conical in shape, produced in a water table, or other piezometric surface, by the extraction of water from a well at a given rate. The volume of the cone will vary with the rate of withdrawal of water. Also called the Cone of Influence. The zone around a well in an unconfined aquifer that is normally saturated, but becomes unsaturated as a well is pumped, leaving an area where the water table dips down to form a cone shape. The shape of the cone is influenced by porosity and the water yield or pumping rate of the well. The land surface overlying the cone of depression is referred to as the area of influence.
Cone of Influence	The depression, roughly conical in shape, produced in a water table, or other piezometric surface, by the extraction of water from a well at a given rate. The volume of the cone will vary with rate of withdrawal of water. Also called the Cone of Depression.
Confined	Water that is separated from the atmosphere by an impermeable material
Confined Aquifer	An aquifer that is bound above and below by dense layers of rock and contains water under pressure. An aquifer which is overlain by a confining bed (aquitard) of significantly lower hydraulic conductivity which retards the vertical movement of

	water. An aquifer holding water under pressure by a layer above it that does not allow water to pass through. Due to pressure, the water level of a well in a confined aquifer will rise above the top of the aquifer. (also known as artesian or pressure aquifers) exist where the groundwater is bounded between layers of impermeable substances like clay or dense rock. When tapped by a well, water in confined aquifers is forced up, sometimes above the soil surface. This is how a flowing artesian well is formed. an aquifer which is overlain by a confining bed (aquitard) of significantly lower hydraulic conductivity which retards the vertical movement of water.
Confined Ground Water	Ground water held under an aquiclude or an aquifuge called artesian if the pressure is positive.
Confining Layer	Geologic material with little or no permeability or hydraulic conductivity. Water does not pass through this layer or the rate of movement is extremely slow.
Conjunctive Management	Managing surface and ground water as a single system.
Conjunctive Use	Combined use of surface and ground water systems to optimize resource use and minimize adverse effects of using a single source. Storing imported water in a local aquifer, in conjunction with groundwater, for later retrieval and use.
Connate water	Water trapped in sediment during deposition
Conservation Storage	Storage of water for later release for usual purposes such as municipal water supply, power, or irrigation in contrast with storage capacity used for flood control. Water is not wasting, using something wisely is a conservation. The use of water-saving methods to reduce the amount of water needed for homes, lawns, farming, and industry, and thus increasing water supplies for optimum long-term economic and social benefits.
Consolidated rock	Tightly bound geologic formation composed of sandstone, limestone, granite, or other rock.
Consumptive use	The use of a resource that reduces the supply (removing water from a source like a river, lake or aquifer without returning an equal amount). Examples include the intake of water by plants, humans, and other animals and the incorporation of water into the products of industrial or food processing.
Contaminant or pollutant	Any substance that makes water unfit for a given use. Any substance that when added to water (or another substance) makes it impure and unfit for consumption or an intended use.
Conveyance Loss	The loss of water from a conduit due to leakage, seepage, evaporation, or evapo-transpiration.
Corrosivity	An indication of the corrosiveness of water. The corrosiveness of water is described by the water?s pH, alkalinity, hardness, temperature, total dissolved solids, dissolved oxygen concentration, and Langelier saturation index.
Cost Effective	Able to at least pay for itself or make a profit.
Creek	A small stream of water which serves as the natural drainage course for a drainage basin of nominal, or small size. The term is a relative one as to size, some creeks in the humid section would be called rivers if they occurred in the arid portion. (1)The highest stage or level of a flood wave as it passes a point. (2)The top of a dam, dike, spillway, or weir, to which water must rise before passing over the structure.
Crest (Top) of Dam	The elevation of the uppermost surface of a dam excluding any parapet walls, railings, etc. The thickness or width of a dam at the level of the crest (top) of the dam. The term "thickness" is used for gravity and arch dams and "width" for other types of dams.

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Crop Consumptive Use	The amount of water used by a plant primarily in the process of transpiration (evaporative) needs. From a basin water resources perspective, this water is considered to be permanently removed from the basin, because little of the transpired water is expected to return to the same basin as precipitation.
Cross sectional area	Area perpendicular to the direction of flow.
Dam	Any artificial barrier which impounds or diverts water. The dam is generally hydrologically significant if it is
Darcy's Law	A groundwater movement equation formulated by Henry Darcy during the mid-1800's based on experiments on the flow of water through beds of sand. Darcy's Law forms the scientific basis of fluid permeability used in earth science. Discharge D = –KA(h/l), except when the Reynolds number exceeds about 10.
Dead Storage	The volume in a reservoir below the lowest controllable level.
Decomposition	The process that makes a substance more stable in its current environment
Deep Percolation Loss	Water that percolates downward through the soil beyond the reach of plant roots.
Deep Seepage	Infiltration which reaches the water table.
Deep well	A well whose pumping head is too great to permit use of a suction pump.
Degradation	The geologic process by means of which various parts of the surface of the earth are worn down and carried away and their general level lowered, by the action of wind and water.
Delineate	To indicate or represent by drawn lines
Delta	An alluvial deposit, often in the shape of the Greek letter "delta", which is formed where a stream drops its debris load on entering a body of quieter water. Fan-shaped area at the mouth of a river.
Dendritic	The form of the drainage pattern of a stream and it's tributaries when it follows a treelike shape, with the main trunk, branches, and twigs corresponding to the main stream, tributaries, and subtributaries, respectively, of the stream.
Density Current	A flow of water maintained by gravity through a large body of water, such as a reservoir or lake, and retaining its unmixed identity because of a difference in density.
Density of water	Changes with temperature and pressure. It is most dense around 39oF. Density changes proportionally with change in pressure.
Depletion	The loss of water from surface water reservoirs or groundwater aquifers at a rate greater than that of recharge. The depletion occurs when water is used faster than it is replaced; can cause a shortage of ground water.
Depletion Curve	That part of the hydrograph extending from the point of termination of the Recession Curve to the subsequent rise or alternation of inflow due to additional water becoming available for stream flow.
Deposition	The process of dropping or getting rid of sediments by an erosional agent such as a river or glacier; also called sedimentation.
Depression Storage	The volume of water contained in natural depressions in the land surface, such as puddles.
Depth of Runoff	The total runoff from a drainage basin, divided by its area. For convenience in comparing runoff with precipitation, the term is usually expressed in inches of depth during a given period of time over the drainage area or acre-feet per square mile.
Desalination	The process of removing salt from seawater or brackish water.
Detention Basins	Detention basins are normally dry, but are designed to detain surface water temporarily during, and immediately after a runoff event. Their primary function is

	to attenuate the storm flows by releasing flows at a lower flow rate. There are no gates or valves allowed on the outlet so that water can never be stored on a long-term basis. Typical detention times in such a basin would be on the order of 24 to 72 hours although some are as long as 5 to 10 days.
Detrital	Mineral/sediment/rocks derived from transport of solid grains from preexisting rocks
Detritus	(1) the heavier mineral debris moved by natural watercourses, usually in bed-load form. (2) the sand, grit, and other coarse material removed by differential sedimentation in a relatively short period of detention.
Diffusion	Movement of molecules from higher concentration to lower concentration in response to a concentration gradient. The movement of a substance from an area of high concentration to an area of low concentration.
Direct Flood Damage	The damage done to property, structures, goods, etc., by a flood as measured by the cost of replacement and repairs.
Direct Runoff	The runoff entering stream channels promptly after rainfall or snow melt. Superposed on base runoff, it forms the bulk of the hydrograph of a flood.
Discharge	The release or extraction of water from an aquifer. Typical mechanisms of natural discharge are evapotranspiration by phreatophytes, springs, and drains to surface water bodies. Pumping is a man-caused discharge. An outflow of water from a stream, pipe, groundwater aquifer, or watershed; the opposite of recharge. The rate at which water passes a given point. Discharge is expressed in a volume per time with units of L3/T. Discharge is often used interchangeably with streamflow.
Discharge Area	An area where groundwater emerges at the surface; an area where upward pressure or hydraulic head moves groundwater towards the surface to escape as a spring, seep, or baseflow of a stream. The area or zone where groundwater emerges from the aquifer. The outflow maybe into a stream, lake, spring, wetland, etc.
Discharge Curve	A curve that expresses the relation between the discharge of a stream or open conduit at a given location and the stage or elevation of the liquid surface at or near that location. Also called Rating Curve and Discharge Rating Curve.
Discharge Table	(1) A table showing the relation between two mutually dependant quantities or variable over a given range of magnitude. (2) A table showing the relation between the gage height and the discharge of a stream or conduit at a given gaging station. Also called a Rating Table.
Discharge to expel	Water that naturally moves from an aquifer to a surface stream or lake
Dispersion	An apparent diffusion that is the result of advective flow going through particles. The solute particles take different flow paths which results in a spreading out of contaminants. It is so much like diffusion that we use a diffusion coefficient. Depends on rock or sediment, & gw flow velocity.
Diversion	The taking of water from a stream or other body of water into a canal, pipe, or other conduit.
Domestic Consumption	The quantity, or quantity per capita, of water consumed in a municipality or district for domestic uses or purposes during a given period, generally one day. It is usually taken to include all uses included within the term Municipal Use of Water and quantity wasted, lost, or otherwise unaccounted for. The consumption of water primarily for household purposes, the watering of livestock, the irrigation of gardens, lawns, shrubbery, etc., surrounding a house or domicile.

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Drainage rea	An area having a common outlet for its surface runoff (also see Watershed and Catchment Area).
Drainage Basin	The land area from which surface runoff drains into a stream or lake. A part of the surface of the earth that is occupied by a drainage system, which consists of a surface stream or a body of impounded surface water together with all tributary surface streams and bodies of impounded surface water.
Drainage Density	The relative density of natural drainage channels in a given area. It is usually expressed in terms of miles of natural drainage or stream channel per square mile of area, and obtained by dividing the total length of stream channels in the area in miles by the area in square miles.
Drainage Divide	The boundary line, along a topographic ridge or along a subsurface formation, separating two adjacent drainage basins.
Drains (Relief Wells)	A vertical well or borehole, usually downstream of impervious cores, grout curtains or cutoffs, designed to collect and direct seepage through or under a dam to reduce uplift pressure under or within a dam. A line of such wells forms a "drainage curtain".
Drawdown	A lowering of the groundwater level caused by pumping. The change in potentiometric head caused by the pumping of groundwater.The lowering of the surface elevation of a body of water, the water surface of a well, the water table, or the piezometric surface adjacent to the well, resulting from the withdrawal of water therefrom.
Drought	A period of abnormally dry weather sufficiently prolonged from the lack of precipitation to cause a serious hydrologic imbalance. An extended period with little or no precipitation; often affects crop production and availability of water supplies. A prolonged period of below-average precipitation.
Drought Index	Computed value which is related to some of the cumulative effects of a prolonged and abnormal moisture deficiency. An index of hydrological drought corresponding to levels below the mean in streams, lakes, and reservoirs.
Dry Flood proofing	A dry flood proofed building is sealed against floodwaters. All areas below the flood protection level are made watertight. Walls are coated with waterproofing compounds or plastic sheeting. Openings like doors windows, sewer lines and vents are closed, wether permanently, with removable shields, or with sandbags. The flood protection level should be no more than 2 or 3 feet above the top of the foundation because the buildings walls and floors cannot withstand the pressure of deeper water.
Dry Weather Flow	Streamflow which results from precipitation that infiltrates into the soil and eventually moves through the soil to the stream channel. This is also referred to as base flow, or ground water flow.
Earthen (or Earthfill) Dam	An embankment dam in which more than 50% of the total volume is formed of compacted fine-grained material. A homogeneous earthen dam is constructed of similar earthen material throughout. These are the most common type of dam because their construction involves using materials in the natural state, requiring little processing.
Ecosystem	An interacting network of groups of organisms together with their nonliving or physical environment. In other words interacting network of biotic with abiotic componenet of nature is a ecosystem.
Effective Porosity	Dimensionless ratio of the volume of interconnected voids to the bulk volume of the aquifer matrix. Note that "total porosity" is the oids (included non-connected voids) to the bulk volume of the aquifer matrix. Difference between total and effective

	porosity reflect lithologic controls on pore structure. In unconsolidated sediments coarser than silt size, effective porosity can be less than total porosity by 2-5% (e.g. 0.28 vs, 0.30) , It is typically estimated. Typ values are: Clay 0.01 - 0.20, Sandstone 0.005 - 0.10, Silt 0.01 - 0.30, Unfract. Limestone 0.001- 0.05, Fine Sand 0.10 - 0.30, Fract. Granite 0.00005 - 0.01, Medium Sand 0.15 - 0.30, Coarse Sand 0.20 - 0.35, Gravel 0.10 - 0.35. Typically estimated. One commonly used value for silts and sands is an effective porosity of 0.25. The ASTM RBCA Standard (ASTM, 1995) includes a default value of 0.38 (to be used primarily for unconsolidated deposits). The ratio, usually expressed as a percentage, of the volume of water or other liquid which a given saturated volume of rock or soil will yield under any specified hydraulic condition, to the given volume of soil or rock.
Effective Precipitation (Rainfall)	(1) That part of the precipitation that produces runoff. (2) A weighted average of current and antecedent precipitation that is "effective" in correlating with runoff. (3) That part of the precipitation falling on an irrigated area that is effective in meeting the consumptive use requirements.
Effluent	Water flowing from a structure such as a treatment plant. Contrast with influent.
Effluent Seepage	Diffuse discharge of ground water to the ground surface.
Effluent Stream	Any watercourse in which all, or a portion of the water volume came from the Phreatic zone, or zone of saturation by way of groundwater flow, or baseflow.
Electrolyte	Is a substance which dissociates free ions when dissolved (or molten), to produce an electrically conductive medium. Because they generally consist of ions in solution, electrolytes known as ionic solutes. They are sometimes referred to in abbreviated jargon as lytes. Electrolytes generally exist as acids, bases or salts.
Eluviated	The removal of material by leaching (either by solution or suspension) from the upper soil horizons
Embankment	Fill material, usually earth or rock, placed with sloping sides and usually with length greater than height. All dams are types of embankments.
Eolian	Pertaining to the wind blown sand
Ephemeral	Lasting a short time; transient, seasonal
Equi Potential Line	A line, in a field of flow, such that the total head is the same for all points on the line, and therefore the direction of flow is perpendicular to the line at all points.
Equilibrium Drawdown	The ultimate, constant drawdown for a steady rate of pumped discharge.
Equilibrium Surface Discharge	The steady rate of surface discharge which results from a long-continued, steady rate of net rainfall, with discharge rate equal to net rainfall rate.
Equilibrium Time	The time when flow conditions become substantially equal to those corresponding to equilibrium discharge or equilibrium drawdown.
Equivalents (eq)	Are moles multiplied by ionic charge
Erosion	Wearing away of the lands by running water, glaciers, winds, and waves, can be subdivided into three process Corrasion, Corrosion, and Transportation. Weathering, although sometimes included here, is a distant process which does not imply removal of any material.
Escherichia coli (E. coli)	A gram-negative, facultatively anaerobic, nonspore-forming bacillus commonly found in the intestinal tracts of humans and other warm-blooded animals. In sanitary bacteriology, Escherichia coli is considered the primary indicator of recent fecal pollution.
Evaporation	The process by which water or other liquids change from liquids to a gas vapor; evaporation can return infiltrated water to the atmosphere from upper soil layers before it reaches groundwater or surface water, and occur from leaf surfaces

	(interception), water bodies (lakes, streams, wetlands, oceans), small puddled depressions in the landscape. The conversion of a liquid (water) into a vapor (a gaseous state) usually through the application of heat energy during the hydrologic cycle; the opposite of condensation.
Evaporation Pan	A pan used to hold water during observations for the determination of the quantity of evaporation at a given location. Such pans are of varying sizes and shapes, the most commonly used being circular or square.
Evaporation Rate	The quantity of water, expressed in terms of depth of liquid water, which is evaporated from a given surface per unit of time. It is usually expressed in inches depth, per day, month, or year.
Evaporimeter	An instrument which measures the evaporation rate of water into the atmosphere.
Evapotranspiration	The sum of evaporation plus transpiration. Combination of evaporation from free water surfaces and transpiration of water from plant surfaces to the atmosphere. Loss of water due to the combined effects of evaporation and plant transpiration.
Excess Rain	Effective rainfall in excess of infiltration capacity.
Face	The external surface of a structure, such as the surface of a dam.
Fallowing	A program to generate water by paying farmers to fallow land, i.e., not grow crops. The water not used for irrigation is then transferred to urban areas or stored for future use.
Felsic rock	Igneous rock having abundant light colored minerals; also, applied to those minerals (quartz, feldspar, feldspathoids, muscovite) as a group. It is the complement of mafic.
Fertilizer	Any chemical used to improve soil and promote plant growth.
Fill Dam	Any dam constructed of excavated natural materials or of industrial wastes.
Filtering	The soil's ability to attenuate substances which includes retaining chemicals or dissolved substances on the soil particle surface, transforming chemicals through microbial biological processing, retarding movement, as well as capturing solid particles.
Filtration	Passing water through coal, sand and gravel to remove particles.
Fishery	The aquatic region in which a certain species of fish lives.
Flash Flood	A flood which follows within a few hours (usually less than 6 hours) of heavy or excessive rainfall, dam or levee failure, or the sudden release of water impounded.
Flood Control Storage	Storage of water in reservoirs to abate flood damage.
Flood Plain	Area formed by fine sediments spreading out in the drainage basin on either side of the channel of a river as a result of the river's fluctuating water volume and velocity. The portion of a river valley that has been inundated by the river during historic floods.
Flood Prevention	Measures that are taken in order to keep flood problems from getting worse. Planning, land acquisition, river channel maintenance, wetlands protection, and other regulations all help modify development on flood plains and watersheds to reduce their susceptibility to flood damage. Preventive measures are usually administered by the building, zoning, planning and/ or code enforcement offices of the local government.
Flood Problems	Problems and damages that occur during a flood as a result of human development and actions. Flood problems are a result from 1) Inappropriate development in the floodplain (e.g., building too low, too close to the channel, or blocking flood flows); 2) Development in the watershed that increases flood flows and creates a larger floodplain, or; 3) A combination of the previous two.

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Flow rate	The time required for a volume of groundwater to move between points. Typically groundwater moves very slowly—sometimes as little as inches per year.
Flowing Artesian Well	A well drilled into a confined aquifer with enough hydraulic pressure for the water to flow to the surface without pumping.
Fluoride Ion (F-)	A halide ion. Fluoride salts are added to drinking water for fluoridation.
Formation water	Water in geologic formation (may or may not be connate)
Fracture Zone	An area which has a great number of fractures.
Free Ground Water	Unconfined ground water whose upper boundary is a free water table.
Fresh water	Sufficiently dilute to be potable, TDS<1,000mg/l. Water with less than 0.5 parts per thousand dissolved salts.
Friction Head	The decrease in total head caused by friction.
Geohydrology	That branch of hydrology relating to subsurface, or subterranean waters.
Geology	The study of science dealing with the origin, history, materials and structure of the earth, together with the forces and process operating to produce change within and on the earth
Geophysics	The study of the physical characteristics and properties of the earth; including geodesy, seismology, meteorology, oceanography, atmospheric electricity, terrestrial magnetism, and tidal phenomena.
Gray water	Domestic wastewater composed of wash water from household sinks, tubs, and washers.
Ground Water	Water in the zone of saturation where all openings in rocks and soil are filled, the upper surface of which forms the water table. Also termed Phreatic water. Groundwater is a natural resource that is used for drinking, recreation, industry, and growing crops.
Ground Water Divide	A line on a water table where on either side of which the water table slopes downward. It is analogous to a drainage divide between two drainage basins on a land surface.
Ground Water Flow	Streamflow which results from precipitation that infiltrates into the soil and eventually moves through the soil to the stream channel. This is also referred to as baseflow, or dry-weather flow.
Ground Water Hydrology	The branch of hydrology that specializes in ground water; its occurrence and movements; its replenishment and depletion; the properties of rocks that control ground water movement and storage; and the methods of investigation and utilization of ground water.
Ground Water Mining	Pumping ground water from a basin where the safe yield is very small, thereby extracting ground water which had accumulated over a long period of time.
Ground Water Outflow	That part of the discharge from a drainage basin that occurs through the ground water. The term "underflow" is often used to describe the ground water outflow that takes place in valley alluvium (instead of the surface channel) and thus is not measure at a gaging station.
Ground Water Overdraft	Pumpage of ground water in excess of safe yield.
Ground Water Runoff	That part of the 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 Basin	The underground area from which groundwater drains. The basins could be separated by geologic or hydrologic boundaries.
Groundwater Divide	The boundary between two adjacent groundwater basins, which is represented by a high point in the water table

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Groundwater flow	The movement of groundwater beneath the earth's surface
Groundwater Recharge or Replenishment	Pumping or percolating storm water runoff or imported water into an aquifer to replenish its supplies.
Hardness	The concentration of ions in water that will react with a sodium to precipitate an insoluble residue. It is usually reported as milligrams per liter of equivalent CaCO3. A characteristic of water determined by the levels of calcium and magnesium.
Hazard	Something that is dangerous; unsafe
Head	The difference between the pool height and tailwater height. Usually expressed in feet of head, or in lbs./sq. inch.
Head Loss	The decrease in total head caused by friction, entrance and exit losses.
Headward Erosion	Erosion which occurs in the upstream end of the valley of a stream, causing it to lengthen its course in such a direction.
Heterogeneity	Different characteristic in different locations
Heterogeneous	A porous medium which has different physical characteristics in different locations.
Homogeneous	A porous medium which has uniform physical characteristics everywhere. Identical characteristics everywhere - but K may be different in different directions. K is independent of position.
Humus	Organic matter (of vegetable or animal origin) in the soil
Hydraulic Conductivity	The term used to describe the permeability of water through a medium; a controlling factor on the rate at which water can move through a permeable medium The capacity of a porous medium to transmit water through a unit cross-sectional area. Indicates the ability of the aquifer material to conduct water through it. It is the combined property of the medium and the fluid. Hydraulic conductivity is dependent upon the physical properties of the porous medium and the viscosity of the water and is expressed in units of length/time. Horizontal hydraulic conductivity of the saturated porous medium. Typ values Clays: <1x10-6 cm/s, Silts: 1x10-6 - 1x10-3cm/s Silty sands: 1x10-5 - 1x10-1 cm/s, Clean sands: 1x10-3 - 1 cm/s, Gravels: > 1 cm/s. Found by using pump tests or slug tests at the site. It is strongly recommended that actual site data be used for most RNA studies. Rule of thumb: x = preferred direction, y = 1/10 of x, z = 1/100 of x.
Hydraulic Diffusivity	A property of an aquifer or confining bed defined as the ratio of the transmissivity to the storativity
Hydraulic Gradient	The slope of the potentiometric surface. In unconfined aquifers, this is equivalent to the slope of the water table. Typ values are 0.0001 - 0.05 ft/ft, Calculated by constructing potentiometric surface maps using static water level data from monitoring wells and estimating the slope of the potentiometric surface. The Vertical Gradient uses the vertical distance between screens, and usually is minor.
Hydraulic Head	The energy that causes groundwater to flow; the total mechanical energy per unit weight; the sum of the elevation head and the pressure head (1) The height of the free surface of a body of water above a given point beneath the surface. (2) The height of the water level at the headworks, or an upstream point, of a waterway, and the water surface at a given point downstream. (3) The height of a hydraulic grade line above the center line of a pressure pipe, at a given point.
Hydraulic Permeability	The flow of water through a unit cross-sectional area of soil normal to the direction of flow when the hydraulic gradient is unity.
Hydrogeologist	Individuals who study the applied science of geology and groundwater. This study includes the occurrence, distribution, and circulation of groundwater through the unending hydrologic cycle of precipitation, consequent runoff, infiltration, and

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	under ground storage; asan aquifer. It is concerned with the physical and chemical reaction of groundwater with the rest of the earth, and its relation to the life of the earth. Who study the dynamics of aquifer behaviour and characteristics of hydrogeological formations.
Hydrogeology	The study of the interrelationships of geologic materials and processes with water, especially groundwater
Hydrograph	A graph showing changes in flow or stage of a stream, river or lake over time. A graph showing the water level (stage), discharge, or other property of a river volume with respect to time.
Hydrographic Survey	An instrumental survey to measure and determine characteristics of streams and other bodies of water within an area, including such things as location, areal extent, and depth of water in lakes or the ocean; the width, depth, and course of streams; position and elevation of high water marks; location and depth of wells, etc.
Hydrologic Cycle	The natural pathway water follows as it changes between liquid, solid, and gaseous states. The paths water takes through its various states--vapor, liquid, solid--as it moves throughout the oceans, atmosphere, groundwater, streams, etc.
Hydrologic Equation	The water inventory equation (Inflow = Outflow + Change in Storage) which expresses the basic principle that during a given time interval the total inflow to an area must equal the total outflow plus the net change in storage.
Hydrologic Model	A conceptual or physically-based procedure for numerically simulating a process or processes which occur in a watershed.
Hydrologic Unit	A geographical area representing part or all of a surface drainage basin or distinct hydrologic feature such as a reservoir, lake, etc.
Hydrologists	Individuals who study the applied science of hydrology and solve hydrologic problems. This study includes the occurrence, distribution, and circulation of water through the unending hydrologic cycle of precipitation, consequent runoff, infiltration, and storage; as well as evaporation. It is concerned with the physical and chemical reaction of water with the rest of the earth, and its relation to the life of the earth.
Hydrology	The study of the occurrence, distribution, and chemistry of all waters of the earth. The applied science concerned with the waters of the earth, their occurrences, distribution, and circulation through the unending hydrologic cycle of precipitation, consequent runoff, infiltration, and storage; eventual evaporation; and so forth. It is concerned with the physical and chemical reaction of water with the rest of the earth, and its relation to the life of the earth. The scientific study of the behavior of water in the atmosphere, on the Earth's surface and underground.
Hydrosphere	The 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.
Hydroylsis	A chemical reaction of a compound with water.
Hyetograph	A graphical representation of rainfall intensity with respect to time.
Impermeable	Material that does not permit fluids to pass through it. Not allowing water to pass through.
Impermeable layer	A layer of material (such as clay) in an aquifer through which water does not pass.
Impervious	The ability to repel water, or not let water infiltrate.
Import	Water piped or channeled into an area.

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Inactive Storage Capacity	The portion of capacity below which the reservoir is not normally drawn, and which is provided for sedimentation, recreation, fish and wildlife, aesthetic reasons, or for the creation of a minimum controlled operational or power head in compliance with operating agreements or restrictions.
Induced recharge	The recharge to an aquifer that occurs when a pumping well creates a cone of depression that lowers an adjacent water table below the level of a stream or lake, causing the stream or lake to lose water to the adjacent groundwater aquifer.
Industrial Consumption	The quantity of water consumed in a municipality or district for mechanical, trade, and manufacturing purposes, in a given period, generally one day. The per capita use is generally based on the total population of the locality, municipality, or district.
Infiltration	Movement of water through the soil surface into the soil. The process of water moving from the ground surface vertically downward into the soil. Flow of water from the land surface into the subsurface.
Infiltration Capacity	The maximum rate at which water can enter the soil at a particular point under a given set of conditions.
Infiltration Capacity Curve	A graph showing the time-variation of infiltration capacity. A standard infiltration capacity curve shows the time-variation of the infiltration rate which would occur if the supply were continually in excess of infiltration capacity.
Infiltration Index	An average rate of infiltration, in inches per hour, equal to the average rate of rainfall such as that the volume of rainfall at greater rates equals the total direct runoff.
Infiltration Rate	(1) The rate at which infiltration takes place expressed in depth of water per unit time, usually in inches per hour. (2) The rate, usually expressed in cubic feet per second, or million gallons per day per mile of waterway, at which ground water enters an infiltration ditch or gallery, drain, sewer, or other underground conduit. The quantity of water that enters the soil surface in a specified time interval. Often expressed in volume of water per unit of soil surface area per unit of time.
Influent Seepage	Movement of gravity water in the zone of aeration from the ground surface toward the water table.
Influent Stream	Any watercourse in which all, or a portion of the surface water flows back into the ground namely the, vadose zone, or zone of aeration.
Injection well	A well constructed for the purpose of injecting treated water, often wastewater, directly into the ground. Water is generally forced (pumped) into the well for dispersal or storage into a designated aquifer. Injection wells are generally drilled into aquifers that are not used as a drinking water source, unused aquifers, or below freshwater levels.
Inland freshwater wetlands	Swamps, marshes, and bogs found inland beyond the coastal saltwater wetlands.
Inorganic	Pertaining to material such as sand, salt, iron, calcium salts, and other mineral materials. Inorganic substances are of mineral origin, whereas organic substances are usually of animal or plant origin and contain carbon.
Integrated management	Any combination of physical, technical, administrative, and legal practices relating to surface water and groundwater in a manner designed to increase combined benefits or achieve a more equitable apportionment of benefits from both sources. Also referred to as conjunctive use.
Interbasin Transfer	The physical transfer of water from one watershed to another.
Intermediate Zone	The subsurface water zone below the root zone and above the capillary fringe.

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Intermittent Stream	A stream that flows periodically. Compare perennial stream.
Intrinsic Permeability	It is basically a function of the size of the openings through which the fluid moves. Range from high friction (10-6) to low friction (103) values and Is representative of the properties of the porous medium alone.
Ion	An atom or group of atoms that has either lost one or more electrons, making it positively charged (cation), or gained one or more electrons, making it negatively charged (anion).
Irrigated Area	The gross farm area upon which water is artificially applied for the production of crops, with no reduction for access roads, canals, or farm buildings.
Irrigation	To supply water to crops, parks, golf courses and lawns. The controlled application of water to cropland, hay fields, and/or pasture to supplement that supplied by nature. Supplying water to agriculture by artificial means, such as pumping water onto crops in an area where rainfall is insufficient.
Isobath	An imaginary line on the earth's surface or a line on a map connecting all points which are the same vertical distance above the upper or lower surface of a water-bearing formation or aquifer.
Isohyet	A line that connects points of equal rainfall.
Isopiestic Surface	Same as piezometric surface
Isotropic	Hydraulic properties of the aquifer are equal in all directions. K is independent of direction.
Jacob Equation	HE was the first to derive the GWFE (ground water flow equation) 1940
Jacob straight line method	A graphical method using semilogarithmic paper and the Theis equation for evaluating the results of a pumping test.
Juvenile Water	Water formed chemically within the earth and brought to the surface in intrusive rock. Water's first appearance such as volcanic water.
Karst	A geologic formation of irregular limestone deposits that dissolve forming sink holes, underground streams, and caverns. It is related to areas where much of the drainage is underground in caverns, sinkholes, underground rivers, etc. Often limestone.
Laminar Flow	Streamline flow in which successive flow particles follow similar path lines and head loss varies with velocity to the first power.
Landfill	A low area of land that is filled in with layers of garbage and soil
Leach	To remove components from the soil by the action of water trickling through.
Leaching	The process by which soluble materials in the soil, such as salts, nutrients, pesticide chemicals, or contaminants, are washed into a lower layer of soil or are dissolved and carried away by water.
Length	The distance in the direction of flow between two specific points along a river, stream, or channel.
Lining	A coating of concrete, rubber, or plastic to a canal, tunnel, shaft or reservoir to provide water-tightness, prevent erosion, reduce friction, or support the periphery of the structure.
Liquid	The part of the hydrologic cycle in which molecules move freely among themselves but do not separate like those in a vapor/gaseous state.
Lithosphere	That part of the earth which is composed predominantly of rocks (either coherent or incoherent, and including the disintegrated rock materials known as soils and subsoils), together with everything in this rocky crust.
Losing stream	A stream that is losing water to (or recharging) the groundwater system. The same stream could be both a gaining stream and a losing stream, depending on the

	conditions. A surface stream or lake which is losing water by seepage into the ground.
Maximum Contaminant Level (MCL)	The highest concentration of a substance permissible in public drinking water supply as determined by the agency ISI or related to drinking water standards promulgated under the Safe Drinking Water Act. A MCL is the greatest amount of a contaminant allowed in drinking water without causing a risk to human health. According to health agencies, the maximum amount of a substance that can be present in water that's safe to drink and which looks, tastes and smells good.
Meander	The winding of a stream channel.
Meteoric Water	Water derived from precipitation.
Milligrams per Liter (mg/l)	a measure of the amount of dissolved solids in a solution in terms of milligrams of solid per liter of solution; Equivalent to part per million in water or 1mg/l=1ppm
MODFLOW	A numerical groundwater flow model code developed by the U.S.GeologicalSurvey. The code has been widely applied to aquifers throughout the United States and the world.
Molarity	This is now commonly simply called 'concentration'.
Mole	A substances formula weight expressed in grams.
Monitoring Well	A non-pumping well, generally of small diameter, that is used to measure the elevation of a water table or water quality. A piezometer is one type of monitoring well.
Monitoring well	A non-pumping well, generally of small diameter, that is used to measure the elevation of a water table or water quality. A piezometer, which is open only at the top and bottom of its casing, is one type of monitoring well.
Moraine	An accumulation of earth and stones carried by a glacier and usually deposited into a high point like a ridge
Multipurpose Reservoir	A reservoir constructed and equipped to provide storage and release of water for two or more purposes such as flood control, power development, navigation, irrigation, recreation, pollution abatement, domestic water supply, etc.
Municipal Use of Water	The various uses of water in developed urban areas, including domestic use, industrial use, street sprinkling, fire protection, etc. The term is an inclusive one, applied where the uses are varied.
Municipal water system	A network of pipes, pumps, and storage and treatment facilities designed to deliver potable water to homes, schools, businesses, and other users in a city or town and to remove and treat waste materials.
Municipal Well (public or community well)	A pumping well that serves water to more than 25 people for at least 60 days of the year
Nonpoint Source Pollution	Pollution which comes from diffuse sources such as urban and agricultural runoff.
Normal Water Surface Elevation (Normal Pool Level)	The lowest crest level of overflow on a reservoir with a fixed overflow level (spillway crest elevation). For a reservoir whose outflow is controlled wholly or partly by movable gates, siphons, or other means, it is the maximum level to which water may rise under normal operating conditions, exclusive of any provision for flood surcharge.
Normal Year	A year during which the precipitation or stream flow approximates the average for a long period of record.
Observation Well	A non-pumping well used for observing the elevation of the water table or piezometric surface. A well located some distance from a pumping well which is used to measure changes in water levels during an applied aquifer stress.

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Orifice	(1) An opening with closed perimeter, usually sharp edged, and of regular form in a plate, wall, or partition through which water may flow, generally used for the purpose of measurement or control of water. (2) The end of a small tube, such as a Pitot tube, piezometer, etc.
Outlet	An opening through which water can be freely discharged from a reservoir.
Overuse	Using more than necessary; wasteful
Overwithdrawal	Withdrawal (removal) of groundwater over a period of time that exceeds the recharge rate of the supply aquifer. Also referred to as overdraft or mining the aquifer.
Part per Billion (ppb)	A measure of the amount of dissolved solids in a solution in terms of a ratio between the number of parts of solids to a billion parts of total volume; Equivalent to microgram per liter in water or 1ppb=1 ug/l
Part per Million (ppm)	A measure of the amount of dissolved solids in a solution in terms of a ratio between the number of parts of solids to a million parts of total volume; Equivalent to milligram per liter in water or 1ppm=1 mg/l
Peak Discharge	Highest rate of discharge of a volume of water passing a given location during a given period of time (during the year, or a flood event, etc..).
Perched Aquifer	A saturated zone with in the zone of aeration that overlies a confining layer; a perched aquifer is above the main water table. A localized zone of saturation above the main water table created by an underlying layer of impermeable material, i.e. kankae pan or clay basin.
Perched Groundwater	Local saturated zones above the water table which exist above an impervious layer of limited extent.
Perched Water	A localized zone of water which sits on top of an aquitard. A perched zone is typically unconfined and at a higher elevation than the regional aquifer system. Unsaturated conditions exist below a perched unit.
Perched Water Table	The water table of a relatively small ground-water body supported above the general ground water body.
Percolation	The actual movement of subsurface water either horizontally or vertically; lateral movement of water in the soil subsurface toward nearby surface drainage feature (e.g. stream) or vertical movement through the soil to groundwater zone. The movement of water, under hydrostatic pressure, through the interstices of a rock or soil, except the movement through large openings such as caves. (1) The movement of water through the openings in rock or soil. (2) The entrance of a portion of the streamflow into the channel materials to contribute to groundwater replenishment.
Percolation Rate	The rate, usually expressed as a velocity, at which water moves through saturated granular material. The term is also applied to quantity per unit of time of such movement, and has been used erroneously to designate Infiltration Rate or Infiltration Capacity.
Perennial	Present all seasons of the year
Perennial Stream	A stream that flows all year round. Compare intermittent stream.
Permeability	The ability, or measurement of a rock's ability, to transmit fluids, typically measured in darcies or millidarcies. The ability of a material (generally an earth material) to transmit water through its pores when subjected to pressure or a difference in head. Expressed in units of volume of water per unit time per cross-sectional area of material for a given hydraulic head.
Permeability Coefficient	The rate of flow of a fluid through a cross section of a porous mass under a unit hydraulic gradient, at a temperature of 60 degrees Fahrenheit. The standard

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	coefficient of permeability used in hydrologic work in Meinzer's Units is defined as the rate of flow of water at 60 degrees Fahrenheit, in gallons per day, through a cross section of 1 sq. ft., under a hydraulic gradient of 100%. A related coefficient, which may be called the Field Coefficient of Permeability, is defined as the rate of flow of water, in gallons a day, under prevailing conditions, through each foot of thickness of a given aquifer in a width of 1 mile, for each foot per mile of hydraulic gradient.
Permeable layer	A layer of porous material (rock, soil, unconsolidated sediment); in an aquifer, the layer through which water freely passes as it moves through the ground.
Permeable	Capable of transmitting water (porous rock, sediment, or soil); the rate at which water moves through rocks or soil.
Permeameter	A laboratory instrument for determining permeability by measuring the discharge through a sample of the material when a known hydraulic head is applied.
Pervious Zone	A part of the cross section of an embankment dam comprising material of high permeability.
Pesticides	Chemicals including insecticides, fungicides, and herbicides that are used to kill living organisms
Phase shift	The phase shift describes how far to the left or right the wave slides. It is the phase shift in sinusoidal testing is just the travel time from the stressed well to the target well! The change in phase of a periodic signal with respect to a reference.
Phreatic aquifer	An unconfined or groundwater aquifer
Phreatic surface	The free surface of ground water at atmospheric pressure. Surface on which the pressure is atmospheric (water table)
Phreatic water	Water within the earth that supplies wells and springs; water in the zone of saturation where all openings in rocks and soil are filled, the upper surface of which forms the water table. Also termed Groundwater.
Phreatic Zone	The locus of points below the water table where soil pores are filled with water. This is also called the zone of saturation. Area below water table.
Phreatophyte	A plant that habitually obtains its water supply from the zone of saturation, either directly or through the capillary fringe.
Piezometer	A type of monitoring well that is open only at the top and bottom of its casing. An instrument used to measure pressure head in a conduit, tank, soil, etc. They are used in dams to measure the level of saturation.
Piezometric Level (or Surface)	Confined groundwater is usually under pressure because of the weight of the overburden and the hydrostatic head. If a well penetrates the confining layer, water will rise to this level, the piezometric level, the artesian equivalent of the water table. If the piezometric level is above ground level, the well discharges as a flowing well, artesian well, or a spring.
Playa	The flat floored bottom of an undrained desert basin that becomes at times a shallow lake.
Pollution	An alteration in the character or quality of the environment, or any of its components, that renders it less suited for certain uses. The alteration of the physical, chemical, or biological properties of water by the introduction of any substance that renders the water harmful to use.
Ponding	In flat areas, runoff collects, or ponds in depression and cannot drain out. Flood waters must infiltrate slowly into the soil, evaporate, or be pumped out.
Pore space	Openings between geologic material found underground. Also referred to as void space or interstices.

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Porosity	The ratio of the volume of void or air spaces in a rock or sediment to the total volume of the rock or sediment. The ratio of openings (voids) to the total volume of soil or rock. (the ratio of the volume of void spaces to the total volume). The % of volume that consists of openings or pores. Clay-45-55%, silt-35-50%, sand-25-40%, gravel-25-40%, sand & gravel-10-35%, glacial till-10-25%, sandstone-5-30%, limestone/dolomite-1-20%, shale-0-10%, fractured crystalline rock-0-10%, vesicular basalt-10-50%, dense solid rack. The capacity of rock or soil to hold water varies with the material. For example, saturated small grain sand contains less water than coarse gravel.
Potable	Suitable for drinking and Water safe for drinking
Potentiometric or Piezometric Head	The elevation to which water rises in a well. Potentiometric head is measured using a sounder or similar depth gauge. The Potentiometric head in a well in an unconfined aquifer is at the elevation of the water table. In a well in a confined aquifer, the potentiometric head is typically at a higher elevation than the top of the aquifer due to the confining pressure.
Precipitation	Deposition of rain, snow, sleet, dew, frost, fog, or hail. As used in hydrology, precipitation is the discharge of water, in a liquid or solid state, out of the atmosphere, generally onto a land or water surface. It is the common process by which atmospheric water becomes surface, or subsurface water. The term "precipitation" is also commonly used to designate the quantity of water that is precipitated. Precipitation includes rainfall, snow, hail, and sleet, and is therefore a more general term than rainfall. As used in hydrology, precipitation is the discharge of water, in a liquid or solid state, out of the atmosphere, generally onto a land or water surface. It is the common process by which atmospheric water becomes surface, or subsurface water. The term "precipitation" is also commonly used to designate the quantity of water that is precipitated. Precipitation includes rainfall, snow, hail, and sleet, and is therefore a more general term than rainfall.
Pumping/Injection Well	A well used for removal or injection of water from an aquifer.
Quantity of groundwater	The amount of groundwater stored in an aquifer that is available for use
Recharge	Water added to an aquifer. For example, when rainwater seeps into the ground. Recharge may occur artificially through injection wells or by spreading water over groundwater reservoirs. To increase the amount of groundwater through precipitation or surface water that absorbs into the aquifer, also called infiltration. Mechanisms of inflow to the aquifer. Typical sources of recharge are precipitation, applied irrigation water, underflow from tributary basins and seepage from surface water bodies.
Recharge Area	An area in which water infiltrates and moves downward into the zone of saturation of an aquifer; area that replenishes groundwater
Recharge rate	The quantity of water per unit of time that replenishes or refills an aquifer.
Recharge zone or area	An area where permeable soil or rock allows water to seep into the ground to replenish an aquifer.
Reservoir	A man-made facility for the storage, regulation and controlled release of water.
Return flow	Return flow: (1) That part of a diverted flow that is not consumptively used and returned to its original source or another body of water. (2) Irrigation water that is applied to an area and which is not consumed in evaporation or transpiration and returns to a surface stream or aquifer.
Reynold's Number –	Reynold's Number is a dimensionless number expressing the ratio of inertial to

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(Re)	viscous forces, is used as a criterion to distinguish between laminar & turbulent flow. Darcy's Law is valid up to a Reynolds number between 1 and 10.
Ridge lines	Points of higher ground that separate two adjacent streams or watersheds; also known as divides.
River Basin	Drainage area of a river and its tributaries.
River System	All of the streams and channels draining a river basin.
Runoff	That part of precipitation that flows toward the streams on the surface of the ground or within the ground. Runoff is composed of baseflow and surface runoff. Water that does not become absorbed by the earth but flows across the surface of the land into a stream or lake
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 replenished naturally in "wet years."
Saline	Consisting of or containing salt
Salt water	Water that contains a relatively high percentage (over 0.5 parts per thousand) of salt minerals.
Salt water intrusion	Process by which an aquifer is overdrafted creating a flow imbalance within an area that results in salt water encroaching into fresh water supply.
Saturated Thickness	The saturated depth of an aquifer. For a confined aquifer, the saturated thickness at any point in the aquifer is equal to the aquifer thickness. For an unconfined aquifer, the saturated thickness at any point is the distance from the top of the water table to the bottom of the aquifer. As aquifer recharge and discharge conditions vary in an unconfined aquifer, the saturated thickness will change.Total water bearing thickness of an aquifer.
Saturation zone	The area where water fills the spaces between soil, sand and rock underground. The portion below the earth's surface that is saturated with water is called the zone of saturation. The upper surface of this zone, open to atmospheric pressure, is known as the water table.
Seepage	(1) The slow movement of water into or out of a body of surface or subsurface water. (2) The loss of water by infiltration into the soil from a canal, ditch, lateral, watercourse, reservoir, storage facility, or other body of water, or from a field. (3) The interstitial movement of water that may take place through a dam, its foundation, or abutments.
Sheet Flow	Flow that occurs overland in places where there are no defined channels, the flood water spreads out over a large area at a uniform depth. This also referred to as overland flow.
Soil	The top layer of the Earth's surface, containing unconsolidated rock and mineral particles mixed with organic material.
Soil Moisture	Water contained in the upper regions near the earth's surface. Water contained in the aeration or unsaturated zone.
Specific Capacity (SC)	Specific Capacity (SC) is the yield or discharge of the well divided by the drawdown of the well at that specific discharge. gpm/ft of dd.
Specific Discharge (q)	The flow rate (velocity) thru a measurable area (?). an apparent velocity calculated from Darcy's law; represents the flow rate at which water would flow in an aquifer if the aquifer were an open conduit (rather than traveling around sand particles). Also called Darcy Flux and Darcy Velocity.
Specific Retention	Specific Retention affects storativity in an unconfined aquifer but not in a confined aquifer

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Specific Storage (SS)	This is also called the elastic storage coefficient. Usually only applies to confined aquifers (specific yield is the equivalent for unconfined aquifers?). The amount of water released from or taken into storage per unit volume of a porous medium per unit change in head. Also known as the compressibility factor. Normal values are 0.0001 ft -1 or less. Units are length -1. SS will always be<0.0001 ft-1 in confined aquifer per Dave lecture 10-16-02. S = SS • b (or storativity divided by screen length).
Specific Yield	Specific Yield–the ratio of the volume of water which will drain from a porous medium by gravity to the volume of the porous medium. This applies more to unconfined aquifers? Units are %. Normal values are similar in range to storativity. Also, it is similar in some ways to effective porosity. Driscall - Clay 1-10%, sand 10-30%, gravel 15-30%, sandstone 5-15%, shale 0.5-5%, limestone 0.5-5%, sometimes used to describe the storativity (or specific storage) of an unconfined aquifer. Per Fetter, "The ratio of the volume of water a rock or soil will yield by gravity drainage to the volume of the rock or soil. Gravity drainage may take several months to occur." The ratio of the water which will drain freely from the material to the total volume of the aquifer formation. This value will always be less than the porosity.
Spillway	A structure over or through which excess or flood flows are discharged. If the flow is controlled by gates, it is a controlled spillway, if the elevation of the spillway crest is the only control, it is an uncontrolled spillway. Some various types of spillways include Auxiliary or Emergency Spillway A secondary spillway designed to operate only during exceptionally large flood flows. Allows inflows from large storms to be released from the reservoir before the water level raises high enough to overtop the dam. Fuse Plug Spillway An auxiliary or emergency spillway comprising a low embankment or a natural saddle designed to be overtopped and eroded away during flood flows.
Spillway Crest	The elevation of the highest point of a spillway.
Spring	A natural discharge of groundwater at the land's surface. An issue of water from the earth; a natural fountain; a source of a reservoir of water. The emergence of groundwater at the land surface, usually at a clearly defined point; it may flow strongly or just ooze or seep out.
Static water level	(1) Elevation or level of the water table in a well when the pump is not operating. (2) The level or elevation to which water would rise in a tube connected to an artesian aquifer or basin in a conduit under pressure.
Storage	(1) Water artificially impounded in surface or underground reservoirs for future use. (2) Water naturally detained in a drainage basin, such as ground water, channel storage, and depression storage.
Storage coefficient (S)	Storage coefficient (S) – see storativity
Storage tank	storage tank: container that stores potentially hazardous chemicals above or below ground
Storativity (S)	Storativity is dimensionless (also coefficient of storage) (from 127, Storativity=specific storage x aquifer thickness). The volume of water an aquifer releases from or takes into storage per unit surface area of the aquifer per unit change in head. It is dimensionless. It is equal to the product of specific storage and aquifer thickness. It is more relevant in confined aquifers. In an unconfined aquifer, the storativity is equivalent to the specific yield. It indicates relationship between change in quantity of water stored and corresponding change in head. Normal values are 0.02 to 0.03. Storativity can be obtained from an aquifer test and working backward from matching the Theis Curve. Driscoll says unconfined aquifer range

	from 0.01 to 0.3, and confined aquifer range from 10 -5 to 10–3 . Dave said in 10-16-02 lecture, "S=Ss x b, usually 0.00001
Streamflow	Water flowing in the stream channel. It is often used interchangeably with discharge.
Subsidence	Sinking down of part of the earth's crust due to underground excavation, such as the removal of groundwater. A depression of the land surface as a result of groundwater being pumped. Cracks and fissures can appear in the land. Subsidence is virtually an irreversible process.
Surface Runoff	The runoff that travels overland to the stream channel. Rain that falls on the stream channel is often lumped with this quantity.
Surface Water	Water that flows in streams and rivers and in natural lakes, in wetlands, and in reservoirs constructed by humans. Water found in ponds, lakes, streams, rivers, and inland seas. Water above the surface of the land, including lakes, rivers, streams, ponds, floodwater, and runoff.
Sustained Overdraft	Long-term withdrawal from the aquifer of more water than is being recharged.
Temporary wetland	A type of wetland in which water is present for only part of the year, usually during wet or rainy seasons; also known as vernal pools.
Theis equation	Theis equation is an equation for the flow of ground water in a fully confined aquifer.
Theis type curve	Theis type curve is a plot on logarithmic paper of well function W(u) as a function of 1/(u).
Theodolite	An instrument used in surveying to measure horizontal and vertical angles with a small telescope that can move in the horizontal and vertical planes.
Thermal spring	Heated groundwater that naturally flows to the land surface.
Thiem equation	Thiem equation is used for steady-state flow in a confined aquifer. One pumping well and one piezometer. (find list of assumptions elsewhere)
Threshold Runoff	The runoff in inches from a rain of specified duration that causes a small stream to slightly exceed bankfull. When available, flood stage is used instead of slightly over bankfull.
Topography	The contour of the land surface; the arrangement of the land surface including its relief and the position of its natural and man-made features
Tortuosity	The actual length of a ground-water path, which is sinuous in form, divided by the straight-line distance between the ends of the flow path. Tortuosity (τ) = n 1/3 Schwartz Fund. of G.W.pg449, τ = le/l (long route over straight route) per Dave Evans 9-16-03. to correct velocity use: Driscoll pg83, GW & Well, actual velocity = measured velocity/ porosity.
Total Dissolved Solids(TDS)	The amount of dissolved constituents present in water or wastewater, usually expressed in milligrams per liter and analyzed as filterable residue, as determined using approved methods.
Transmissivity (T)	Transmissivity is the rate at which water of a prevailing density and viscosity is transmitted through (i.e. flow per unit width of aquifer per unit hydraulic gradient) a unit width of an aquifer or confining bed under a unit hydraulic gradient. A measure of the amount of water that can be transmitted horizontally through a unit width by the full saturated thickness of the aquifer under a hydraulic gradient of 1. It is a function of properties of the liquid, the porous media, and the thickness of the porous media. Units are l2/t. It can be obtained from an aquifer test and working backward from matching the Theis Curve. It can be estimated by multiplying K time bed thickness. – indicates aquifers ability to transmit water through its entire

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	thickness (conductivity x thickness). the rate of flow of water through a vertical strip of aquifer which is one unit wide and which extends the full saturated depth of the aquifer. Transmissivity is expressed in units of length2/time. Because the saturated thickness of an unconfined aquifer changes as aquifer storage changes in response to variation to aquifer recharge and discharge,Â transmissivity of the unconfined aquifer will change. The rate of flow of water through a vertical strip of aquifer which is one unit wide and which extends the full saturated depth of the aquifer. Transmissivity is related to Hydraulic Conductivity by the relationship. The flow capacity of an aquifer measured in volume per unit time per unit width. Equal to the product of permeability times the saturated thickness of the aquifer. A measure of the capability of the entire thickness of an aquifer to transmit water. Also known as coefficient of transmissivity.
Transpiration	The process by which plants take up water through their roots and then give off water vapor through their leaves (open stomata).Water discharged into the atmosphere from plant surfaces.
Turbidity	The thickness or opaqueness of water caused by the suspension of matter. A cloudy condition in water due to suspended silt or organic matter. The turbidity of rivers and lakes increases after a rainfall.
Unconfined	Water that is in direct contact vertically with the atmosphere through open spaces in permeable material
Unconfined aquifer	Unconfined aquifer is an aquifer in which there are no confining beds between the zone of saturation and the surface. There will be a water table in an unconfined aquifer. An aquifer that is not under pressure. An aquifer with continuous layers of permeable soil and rock that extends from the land surface to the base of the aquifer. The water table forms the upper boundary of the aquifer. An aquifer in which the water table is at or near atmosphere pressure and is the upper boundary of the aquifer. Because the aquifer is not under pressure the water level in a well is the same as the water table outside the well.
Unconsolidated rock	Loosely bound geologic formation composed of sands and gravel.
Unsaturated zone	See aeration zone.
Vadose Zone	The locus of points just above the water table where soil pores may either contain air or water. This is also called the zone of aeration and area above the water table .
Valve	A device fitted to a pipeline or orifice in which the closure member is either rotated or moved in some way as to control or stop flow.
Vapour	The state of water in the hydrologic cycle in which individual molecules are highly energized and move about freely; also known as gas/gaseous.
Vector	Vector has magnitude and direction. A vector may be considered a first-rank tensor.
Wastewater	Water that contains unwanted materials from homes, businesses, and industries; a mixture of water and dissolved or suspended substances.
Wastewater treatment	Any of the mechanical or chemical processes used to modify the quality of wastewater in order to make it more compatible or acceptable to humans and the environment.
Water (H2O)	An odorless, tasteless, colorless liquid made up of a combination of hydrogen and oxygen. Water forms streams, lakes, and seas, and is a major constituent of all living matter.
Water bearing rocks	Several types of rocks can hold water, including: sedimentary deposits (sand and gravel), channels in carbonate rocks (limestone), lava tubes or cooling fractures in igneous rocks, and fractures in hard rocks.

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Water Cycle	The continuous circulation of water from the atmosphere to the earth and back to the atmosphere including condensation, precipitation, runoff, groundwater, evaporation, and transpiration. The never-ending movement of water through the atmosphere, ground and back again; also called the hydrologic cycle. See hydrologic cycle.
Water Pollution	The alteration of the constituents of a body of water by man to such a degree that the water loses its value as a natural resource.
Water quality	The chemical, physical, and biological characteristics of water with respect to its suitability for a particular use.
Water quality standards	Recommended or enforceable maximum contaminant levels of chemicals or materials (such as chlorobenzene, nitrate, iron, arsenic) in water. These levels are established for water used by municipalities, industries, agriculture, and recreationists.
Water Table	The water surface in an unconfined aquifer; the level below which the pore spaces in the soil or rock are saturated with water; the upper surface of the zone of saturation. The level below the earth's surface at which the ground becomes saturated with water. The water table is set where hydrostatic pressure equals atmospheric pressure. The elevation of the water in an unconfined aquifer and the top of the saturation zone. The top of an unconfined aquifer; indicates the level below which soil and rock are saturated with water. The upper surface of the saturation zone.
Water Table Contour	A line in a groundwater map that connects points of equal groundwater elevation
Watershed	The land area from which surface water and groundwater drains into a stream system; the area of land that generates total runoff (surface flow, interflow, and baseflow) for a particular stream system. Land area from which water drains toward a common watercourse in a natural basin. The land area from which surface runoff drains into a stream, channel, lake, reservoir, or other body of water; also called a drainage basin.
Well filter	Well filter is a term used in the Van der Kamp paper (1976) that I think is synonymous with screen or gravel pack
Wetlands	Lands where water saturation is the dominant factor in determining the nature of soil development and the types of plant and animal communities. Other common names for wetlands are sloughs, ponds, and marshes. An 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.
Withdrawal	Water removed from a surface or groundwater source for use.
Zone of Aeration	The locus of points just above the water table where soil pores may either contain air or water. This is also called the vadose zone. The zone between the land surface and the water table in which the pore spaces between soil and rock particles contain water, air, and/or other gases
Zone of Saturation	The locus of points below the water table where soil pores are filled with water. This is also called the phreatic zone.The zone in which the pore spaces between soil and rock particles are completely filled with water. The water table is the top of the zone of saturation.