CITIZEN WATER ADVOCACY GROUP
GLOSSARY

Acre-foot (a.f.) – A unit for measuring the volume of water. The amount of water needed to cover an acre of land one foot deep, equal to 325, 851 gallons.

Active Management Area – A geographic area that has been designated by the state legislature as requiring active management of ground water withdrawals from pumping.

Aeromagnetic – Relating to the study of the earth's magnetic fields especially in relation to air surveys.Used to map local anomalies due to variation in rock magnetization in order to define water bearing rock units.

Algae – Aquatic one- or multi-celled plants without true stems, roots and leaves but containing chlorophyll. Algae may produce taste and odor problems in water.

Alluvium – Rock fragments resulting from erosion which may consist of clay, sand, gravel, and unconsolidated rocks; sediments of varying sizes deposited by flowing water as in a riverbed or floodplain. Usually a good porous storage medium for groundwater.

Aquatic – Adjective referring to growing in or living in or frequenting water.

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

Artificial recharge – The deliberate act of adding water to a groundwater aquifer by means of a recharge project. Artifical recharge can be accomplished via injection wells, spreading basins, or in-stream projects. (see also incidental recharge, natural recharge, recharge)

Artesian aquiver – see confined aquifer.

Artesian well – A well in which water rises to the suface without pumping from a permeable geological formation that is overlain by an impermeable formation. The water rises in the well because it is under hydraulic pressure.

Assured water supply – A term defined as a supply of water theoretically sufficient to meet the needs of a new development or customers of a municipal water supplier for 100 years.

Augmentation – Supplementing the water supply by such means as importing water from another basin or other stored water.

Average discharge – The arithmetic average of all complete surface-water flows made up of all years of record.

Bank storage – Water absorbed into the banks of a stream channel when the stage in the stream rises above the adjacent watertable in the stream bank. Water contained as bank storage returns to the channel as seepage when the stage in the stream falls below the water table in the adjacent streambank.

Base discharge – The annual data reports on surface-water supply, the discharge above which peak discharge data are published.

Base flow – Streamflow derived from groundwater seepage into the stream; water that flows on the surface independent of precipitation.

Base runoff – Sustained or fair weather runoff. In most streams, base runoff is composed largely of ground water effluent. When water runs in the natural flow in a stream, base runoff is the logical term.

Bedrock – A solid rock which underlies unconsolidated surface materials such as soil or outcrops at the surface.

Biological diversity – The variability among all living organisms and the ecological systems of which they are a part.

Biomass – Total weight, volume, or energy equivalent of organisms in a given area.

Biota – The total fauna and flora of a region; the population of living organisms in general.

Ccf (hundred cubic feet) – A unit of water used by some municipal water providers for metering and billing.purposes. 1 Ccf=748 gallons. Used to measure stream discharge.

Carnivores – A flesh-eating animal, especially flesh-eating mammals.

CFS – A unite of measure of flowing water. One cfs menas that one cubic foot of water, or 7.48 gallons, passes a given pont during a interval of one second or 449 gallons per minute.

Channel - The bed where a natural body of surface water flows.

Change in storage – Water recharged to, or discharged from, an aquifer represents a change in storage volume within the aquifer. When ground water withdrawal exceeds recharge in a basin, water is removed from storage in the aquifer.

Coliform bacteria – A common type of bacteria found in soil and water and which grows in the intestines of warm-blooded animals. They are generally not harmful, but high levels in water may indicate the presence of other harmful bacteria or viruses.

Conductivity, effective hydraulic – The rate of flow of water through a porous medium measured in gallons per day through a cross-section of one square foot under a unit hydraulic gradient.

Cone of depression – A drop in the water table around a well or wells which have been pumping groundwater. Depending on the rate of pumping and aquifer characteristics, a cone of depression can be shallow and extend only a few feet or it can extend for several miles. Since water flows downhill undergound, a cone of depression pulls water from the surrounding area into it, thus affecting the nearby water table.

Confined aquifer (artesian aquifer) – An aquifer that is completely filled with water under pressure and that is overlain by material that restricts the movement of water.

Confining bed – A body of "impermeable" material stratigraphically adjacent to one or more aquifers.

Confining layer (aquiclude) – A body of impermeable or distinctly less permeable (see permeability) material stratigraphically adjacent to one or more aquifers that restricts the movement of water into and out of the aquifers. (see confining bed)

Consumptive use – The quantity of water discharged to the atmosphere (including evapotranspiration) or incorporated in the products of the process in connection with vegetative growth, food processing, or an industrial process.

Contaminant – Any physical, chemical, biological, or radiological substance or matter in water.

Depletion – The progressive withdrawal of water from surface or groundwater reservoirs at a rate greater than that of replenishment.

Desalinization – A process of removing salts and other dissolved minerals from water.

Direct runoff – Water entering stream channels promptly after rainfall snowmelt.

Discharge – The volume of water flowing in a stream or through an aquifer past a specific point in a given period of time.

Discharge area (groundwater) – Area where surface water is discharged to the land surface, to other surface water, or to the atmosphere.

Discharge of groundwater – The process by which water leaves an aquifer.

Dissolved solids – Minerals and organic matter dissolved in water.

Diversion – A structure or facility, such as an irrigation canal, built for the purpose of taking water from its source.

Diurnal – Having a daily cycle; showing a periodic alteration of conditions with day and night.

Down gradient – The direction water flows by force of gravity.

Drainage – The process in which flowing surface water flows downhill.

Drainage area – An area of sloping land that drains water from its surface toward a wash, creek, river, lake, or ocean.

Drainage basin – A region in which the surface runoff water from precipitation eventually flows to a common stream.

Drawdown – The difference between the water level in a well before pumping and the water level in the well during pumping. Also, for flowing wells, the reduction of the pressure head as a result of the discharge of water.

Drought – A period when precipitation or runoff is so limited that natural vegetation becomes desiccated or defoliates unseasonably and crops fail to mature owing to lack of precipitation and when precipitation is insufficient to meet the needs of established human activities.

Ecology – The interrelationships between organisms and their environment and each other; the study of these interrelationships.

Ecosystem – A community of interdependent species together with their non-living environment, which is relatively self-contained in terms of energy flow.

Effluent – Water that has been collected in a sewer for subsequent treatment.

The term is also commonly used to refer to water discharged from a treatment plant.

Endangered species – Species whose numbers have become so low or whose habitats have been so drastically reduced that they are thought to be in immediate danger of extinction in the world in the foreseeable future if there is not improvement of circumstances.

Ephemeral flow – A stream that flows only in direct response to precipitation, and whose channel is at all time above the water table.

Evaporation – The process by which water is changed from a liquid state into a vapor state.

Evapotranspiration – The process by which water is discharged to the atmosphere as a result of evaporation from the soil and surface-water bodies and transpiration by plants.

Exotic biota – A species of plant or animal not native to the region.

Filtration – The process of passing water through materials with very small holes (pores) to strain out particles. Filtration can remove microorganisms including algae, bacteria and protozoa, but not viruses.

Flood – An overflow or inundation that comes from a river or other body of water and can cause damage to human activity or products.

Floodplain – The area near a water course inundated during floods. The 100-year floodplain is the area that is expected to be inundated by a flood of a magnitude that has one-in-a-hundred probability of occuring in any year.

Floodplain alluvium – Unconsolidated gravel, sand, and/or silt found beneath or on either side of a floodplain.

Flow regime – A range of stream flows with similar bed forms, resistance to flow, and mode of sediment transport.

Fluvial – Of, or relating to, or living in a stream or river, or produced by stream action.

Free surface – The upper surface of a layer of fluid where the pressure on it is equal to the external atmospheric pressure.

Gaging (gauging) station – A particular site on a stream, canal, lake, or reservoir where systematic observations of water level height or

discharge are obtained regularly by permanently installed equipment.

Gaining stream – A stream or reach of a stream that receives water from the zone of saturation; its channel lies below the water table. Also called an effluent stream.

Geomorphology – The science that deals with the development of present landforms and seeks to interpret how they formed.Usually applied to landforms produced only by erosion or deposition.

Gradient, hydraulic – The change of pressure per unit distance from one point to another in an aquifer. When an area is said to be "downgradient" it is at a lower level and water will flow in that direction.

Grazing allotments – An area of public land that is rented or leased to ranchers for the purpose of grazing animals.

Greenbelt – A protected zone of parks, parkways, farm land or natural vegetation that separates or encircles a developed commercial, industrial or residential area.

Groundwater – All the water contained in the void space within rock units in the zone of saturation.

Groundwater basin – An area enclosing a relatively distinct hydrologic body or related bodies of groundwater.

Groundwater flow system – The underground pathway by which groundwater moves from areas of recharge to areas of discharge.

Groundwater runoff – That part of the runoff which has passed into the ground, has become groundwater, and has been discharged into a stream channel as spring or seepage water.

Habitat – The place or type of site where a plant or animal naturally or normally lives and grows.

Headwaters – The initial, upper sources of tributaries and streams.

Herbaceous – Of or pertaining to grass and other plants that are not woody.

Herbivore – An animal that feeds exclusively on plants.

Homogeneity – An aquifer is homogeneous if its hydrologic properties are identical everywhere.

Hydraulic conductivity – The capacity of a rock to transmit water.

Hydraulic gradient – The change of hydraulic head per unit of distance in a given direction.

Hydraulic head – The height of the free surface of a body of water above a given subsurface point. The energy possessed by a unit weight of water at any particular point. The hydraulic head consists of three parts: 1) the elevation head defined with reference to a standard level; 2) the pressure head defined with reference to atmosheric pressure, and 3) the velocity head. Water invariably flows from points of larger hydraulic head to points of lower head down the hydraulic gradient.

Hydrogeology – The study of the interrelationships of geologic materials and processes with water, especially groundwater; the science that deals with subsurface waters; often called geohydrology.

Hydrologic budget – An accounting of the inflow to, outflow from, and storage in, a hydrologic unit, such as a drainage basin, aquifer, soil zone, lake, reservoir, or irrigation project.

Hydrologic cycle – The constant circulation of water from the sea, through the atmosphere, to the land, and its eventual return to the atmosphere by way of transpiration and evaporation from the sea and the land surfaces.

Hydrology – The science which studies the condition and behavior of water as it occurs in the atmosphere, on the surface of the land, and underground.

Impermeability – The condition of a rock, sediment, or soil that renders it incapable of transmiting fluids under pressure.

Incidental recharge – Water incidentally added to a groundwater aquifer due to human activities, such as excess irrigation water applied to fields or water discharged as waste after a use.

Infiltration – The downward movement of water from the atmosphere into soil or porous rock.

Injection well - An artificial structure (usually an existing well) used to recharge the water table by forcing water down the well.

Intermittent or seasonal stream – A stream which flows only at certain times of the year when it receives water from springs or from a surface source such as melting snow.

Irrigation – The application of water to arable lands to supply water

requirements not satisfied by precipitation.

Irrigation district – A political entity created to secure and distribute water supplies. Most irrigation districts provide water for irrigation on farms, but some which were started for agricultural purposes but now primarily serve municipal customers.

Losing stream – A stream or reach of a stream that contributes water to the zone of saturation and develops bank storage; its channel lies above the water table. Also known as an influent stream.

Monitoring – To watch, observe, or check the volume, quantity, speed and other traits of stream conditions by means of various meters, gauges, and other methods such as photography.

Mountain front recharge – Natural recharge that occurs at the base of mountains and which then infiltrates into a permeable rock unit.(see windward side)

Natural Recharge – Natural replenishment of an aquifer generally from snowmelt and storm runoff. (see also recharge, artificial recharge, incidental recharge)

Omnivores – Animals that feed on both animals and plants.

Overland flow – Runoff that flows in shallow sheets, usually after high intensity rainfall, which is not infiltratng the soil and which has not yet reached a stream channel.

Parts per million(ppm) and parts per billion (ppb) – A measure of the concentration of materials in a liquid, often used to describe the degree of contamination of water. One ppm indicates that for each one million units of water there is one unit of the contaminant. One ppb indicates that for each one billion units of water there is one unit of the contaminant.

Perched aquifer – An aquifer separated from the underlying regional groundwater system by a geologic unit having a lower hydraulic conductivity.

Perched stream – A stream that is either a losing stream or an insulated stream that is separated from the underlying ground water by a zone of aeration.

Percolation – The movement of water through the rock or soil, except the movement through large openings such as caves.

Perennial stream – A stream which flows year round and whose upper surface generally stands lower than the water table in the region adjoining the stream.

Permeability – The capacity of a rock for transmitting a fluid; a measure of the relative ease with which a porous medium can transmit a liquid.

pH – A measure of the relative acidity of water. Below 7 is increasingly acid, 7 is neutral and above 7 is increasingly alkaline.

Phreatophyte – A term that refers to plants that must have thieir root zone in the saturated zone most of the time; often used as a synonym for "riparian plant."

Porosity – The ratio of the volume of pore space in a rock or soil to the total volume.

Porosity, effective – The amount of interconnected pore space available for fluid transmission.

Potable water – Water that is suitable for drinking, from a Latin word meaning "drink."

Potentiometric surface – An imaginary surface representing the total head of groundwater and defined by the level to which water will rise in a well. The water table is a particular potentiometric surface.

Precipitation – Any or all forms of water that fall from the atmosphere, such as rain, snow, hail, and sleet.

Precipitation gauges (gages) – Devices used to determine the amount of rain or snow that falls from the atmosphere.

Pristine – Uncorrupted by human disturbance; having its original purity.

Public utility – A water or power provider owned by a government such as a city or town.

Radiometric – Of or relating to the measurement of geologic time by means of the rate of decay of radioactive elements.

Reach – A section of a river or stream, often arbitrarily designated, but usually a stretch or extent of similar physical features; also the length of a river between two gaging stations.

Recharge (ground water) – The process involved in the absorption and addition

of water to the zone of saturation; also, the amount of water added.

Reclaimed water – Tertiary-treated water available for use on turf or other facilities.

Reclamation – The dictionary says: "The act or process of restoring or recovering." Ed Abbey spelled it "wrecklamation," since the U. S. Dept. of Interior or the Army Corps of Engineers use the term to mean the transforming of natural resources to serve human purposes. Dams on rivers are the best example of this.

Regulation – Any artificial manipulation of stream flow.

Reverse osmosis – A process whereby water is forced through membranes that contain holes so small that even salts cannot pass through them. It removes microorganisms, organic chemicals and inorganic chemicals, producing very pure water.

Riparian – Pertaining to the banks of a stream.

Riparian area – A geographically delineated area with a distinct resource value. It is characterized by deeprooted plant species that depend on having roots in the water table or its capillary zone and that occurs within or adjacent to a natural perennial or intermittent stream channel or within or adjacent to a lake, pond, or marsh maintained primarily by natural water sources.

River morphology – The study of the channel dyanmics and the channel geometryof a river, including the network of tributaries within the drainage basin.

Riverine – Relating to, formed by, or resembling a river; living or situated on the banks of a river.

Runoff – That part of precipitation or snowmelt that concentrates in streams or surface-water bodies.

Safe yield – A ground water management goal which attempts to achieve and thereafter maintain a long-term balance beween the annual amount of groundwater withdrawn in an Active Management Area and the annual amount of natural and artificial recharge within a designated area. (see sustainability)

Saturated zone (zone of saturation) – A subsurface zone in which all the interstices or voids in rock unit are filled with water.

Sediment – Solid fragmental matter that most commonly originates from weathering of rocks and is transported or deposited by water, air or ice and can also be the result of chemical precipitation from solution or the result of biological activity.

Semiconfined aquifer – An aquifer that is overlain by a low permeability layer that permits water to slowly flow through it. During pumping of the aquifer, recharge to the aquifer can occur across the low permeability layer.

Species – In sexually reproducing organisms, a group of interbreeding individuals not normally able to breed with other groups.

Specific discharge – The rate of discharge of groundwater per unit area of the porous medium measured at right angles to the direction of flow.

Specific yield – The ratio of the volume of water which the rock or soil, after being saturated, will yield by gravity to the volume of the rock or soil.

Spring – A point where ground water intersects the land surface; a ground-water discharge point.

Stage – The height of a water surface above an established datum plane.

Storage, specific – The volume of water released from or taken into storage per unit volume of the porous medium per unit change in head.

Storage coefficient – The volume of water an aquifer releases from or takes into storage per unit surface area of the aquifer per unit change in head.

Streamflow – The discharge that occurs in a natural channel. Although the term discharge can be applied to the flow of a canal, the word streamflow uniquely describes the discharge in a surface stream course. The term “streamflow” is more general than runoff. Streamflow may be applied to discharge whether or not it is affected by diversion or regulation.

Stream gauges (gages) – Instruments for measuring water surface elevation which can be translated into flow, which, in turn, can be used to compute volume of water.

Storage – Water artificially impounded in surface or underground reservoirs for future use.

Sub-basin – An area which encloses a relatively hydrological distinct body of groundwater within a groundwater basin.

Subflow – Subsurface water found in alluvial deposits that are hydraulically connected to a perennial or intermittent stream such that withdrawal of this subsurface water would diminish the flow of the stream. It is the downstream flow of water through the permeable deposits that underlie a stream and that are vertically and laterally bounded by rocks or sediments of low hydraulic conductivity.

Sublimation – The process by which ice changes from its solid state directly to a vapor state.

Subsidence – Downward movement of the land surface associated with groundwater pumping, especially where such pumping exceeds safe yield and the water table has dropped. Uneven rates of subsidence over an area can lead to differential subsidence, which can cause lateral movement of the land surface, and cracks and fissures to appear. This is more likely to occur in areas where the aquifer varies in thickness, such as near the edges of groundwater basins. Subsidence is an irreversible process which diminishes the storage capacity of the aquifer-bearing rock unit.

Subsurface water – All water below the land surface, including soil moisure, capillary fringe water in the zone above the water table, and groundwater.

Surface water – Water that occurs on the land surface including ponds, lakes, streams and rivers.

Sustainability, hydrologic – The use of water in such a way that available water supports the ability of human society to endure and flourish into the indefinite future without under-mining the integrity of the hydrological cycle or the ecological systems that depend on it.

Total head – The height above a datum plane of a column of water. In a ground-water system, it is composed of elevation head and pressure head.

Transpiration – The passage of water vapor from a living organism through pores, leaves, etc. to the amosphere.

Turbidity – The reduction of transparency in water due to the presence of suspended particles, or a cloudy appearance in the water. Increased turbidity raises the risk of water-borne pathogens growing and reproducing. Turbid water is therefore more difficult to

disinfect.

Unconfined aquifer – An aquifer whose upper surface is a water table free to fluctuate under atmospheric pressure.

Underflow – The downstream flow of water through the permeable deposits that underlie a stream and that are more or less dependent on the permeabilityof the bed materials or the bedload.

Underground storage facility (USF) – A facility for artificial recharge of water supplies into an aquifer.

Unsaturated zone – A subsurface zone above the water table in which the pore spaces may contain a combination of air and water.

Water budget – An accounting of the inflow to, outflow from, and storage changes of water in a hydrologic unit.

Water table – The top water surface of an unconfined aquifer at atmospheric pressure; the upper surface of a zone of saturation.

Watershed – The region or area drained by a river and its tributaries. (see drainage basin)

Wetlands – An area that always has water at or near the surface. A natural wetland receives its water from a groundwater source and is also called a "cienega." A constructed, or artificial, wetland usually receives its water from some wastewater source, either agricultural, industrial or municpal.

Windward side – Being in or facing the direction from which the prevailing wind is blowing; the side of prevailing winds and, in Arizona, the side of an elevated land form that receives the greatest precipitation.

Withdrawal – The process of capturing or acquiring water by diversion from a surface source or pumping from a groundwater aquifer.

Zone of saturation – The zone in which the functional permeable rocks are saturated with water under hydrostatic pressure. (see saturated zone)

Zone, unsaturated – The zone between the land surface and the water table.