

Glossary

Advection	The process by which solutes are transported by the motion of flowing groundwater.
Anisotropy	The condition under which one or more of the hydraulic properties of an aquifer vary according to the direction of flow.
Antecedent conditions	The moisture conditions existing in a catchment at the onset of a storm.
Aquifer	Rock or sediment in a formation, group of formations, or part of a formation that is saturated and sufficiently permeable to transmit economic quantities of water to wells and springs.
Aquifer, confined	An aquifer that is overlain by a confining bed. The confining bed has a significantly lower hydraulic conductivity than the aquifer.
Aquifer, perched	A region in the unsaturated zone where the soil may be locally saturated because it overlies a low-permeability unit.
Aquifer, unconfined	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. Watertable aquifer is a synonym.
ARI - (Average Recurrence Interval)	<p>The average or expected value of the <i>period</i> between exceedances of a given event (eg. rainfall, discharge etc.).</p> <p>This period is a randomly distributed variable.</p>
Bailer	<p>A device used to withdraw a water sample from a small diameter well or piezometer. A bailer typically is a piece of pipe attached to a wire and having a check valve in the bottom.</p>
Basecourse	A layer of granular fill material constituting the uppermost structural element of a road pavement immediately below the wearing course.
Capillary zone	The zone immediately above the water table, where water is drawn upward by capillary attraction.
Capture trench	A trench which extends below the water table and into which the groundwater drains.
Catchment	The area which drains into a given stream or dam by way of natural ground slopes or constructed drainage systems.
Clean water	Surface runoff which has not picked up any solid or dissolved pollutants through contact with disturbed or contaminated surfaces.

Co-disposal	The combined disposal of tailings and coarse reject material.
d/s	Down stream (eg. d/s of a dam).
Dewatering	The process of removing water from a given source (eg. pit dewatering, aquifer dewatering).
Diffusion	The process by which both ionic and molecular species dissolved in water move from areas of higher concentration to areas of lower concentration.
Dirty water	Surface runoff which has picked up solid or dissolved pollutants through contact with disturbed or polluted surfaces.
Drawdown	A lowering of the water table of an unconfined aquifer or the potentiometric surface of a confined aquifer caused by pumping of groundwater from wells.
Finite-difference model	A digital computer model based upon a rectangular grid that sets the boundaries of the model and the nodes where the model will be solved.
Finite-element model	A digital ground-water-flow model where the aquifer is divided into a mesh formed of a number of polygonal cells.
Gabion	A flexible wire basket filled with stones and used to retain earth and sediment or to control scour. (Typical size: 1m wide x 1m high x 2m long)
Geotextile, geofabric, geosynthetic material	Any permeable synthetic textile material, fabric or net used with earth, soil, rock or foundations as an integral part of an engineering structure. Mainly used to improve structural and/or hydraulic properties of soil, to reinforce or stabilise embankments, as a filter layer in drainage applications or for erosion control.
Groundwater	The water contained in interconnected pores located below the water table in an unconfined aquifer or located in a confined aquifer.
Groundwater, confined	The water contained in a confined aquifer. Pore water pressure is greater than atmospheric at the top of the confined aquifer.
Groundwater, perched	The water in an isolated, saturated zone located in the zone of aeration. It is the result of the presence of a layer of material of low hydraulic conductivity, called a perching bed. Perched groundwater will have a perched water table.
Groundwater, unconfined	The water in an aquifer where there is a water table.
Grout curtain	An underground wall designed to stop ground waterflow; can be created by injecting grout into the ground, which subsequently hardens to become impermeable.
Heterogeneous	Pertaining to a substance having different characteristics in different locations. A synonym is non-uniform.

Homogeneous	Pertaining to a substance having identical characteristics everywhere. A synonym is uniform.
Hydraulic conductivity	A coefficient of proportionality describing the rate at which water can move through a permeable medium. The density and kinematic viscosity of the water must be considered in determining hydraulic conductivity.
Hydraulic gradient	The change in total head with a change in distance in a given direction. The direction is that which yields a maximum rate of decrease in head.
Hydraulic radius	A measure of waterway geometry used in hydraulic calculations. The cross sectional area of flow in a drain or pipe divided by the wetted perimeter (ie. length of wetted surface) perpendicular to the direction of flow.
Hydrogeology	The study of the interrelationships of geologic materials and processes with water, especially groundwater.
Hydrologic cycle	The circulation of water from the oceans and other waterbodies through the atmosphere to the land and ultimately back to the ocean.
Hydrology	The study of the occurrence, distribution and chemistry of all waters of the earth.
Infiltration	The flow of water downward from the land surface into and through the upper soil layers.
Isotropy	The condition in which hydraulic properties of the aquifer are equal in all directions.
Laminar flow	That type of flow in which the fluid particles follow paths that are smooth, straight, and parallel to the channel walls. In laminar flow, the viscosity of the fluid damps out turbulent motion. Contrast with turbulent flow.
Manning's coefficient (n)	A dimensionless value defining the roughness of a surface (eg. pipe wall or sides of a drain) with regards to water running across that surface. Used in hydraulic calculations such as Mannings equation.
Manning's equation	A formula used for calculating the flow in a given waterway (eg. pipe or open channel drain).
Model calibration	The process by which the independent variables of a digital computer model are varied in order to calibrate a dependent variable (eg. head) against a known value (eg. water table).
Model verification	The process by which a digital computer model that has been calibrated against a steady-state condition is tested to see if it can generate a transient response, such as the decline in the water table with pumping, that matches the known history of the aquifer.
Numerical model	A model of groundwater flow in which the aquifer is described by numerical equations with specified values for boundary conditions that are solved on a digital computer.

Phreatic surface	“Free” surface of groundwater; pressures are equal to atmospheric along this surface.
Piezometer	A non pumping well, generally of small diameter, that is used to measure the elevation of the water table or potentiometric surface. A piezometer generally has a short well screen through which water can enter.
Piezometric head	Pressure head experienced by a given body of water, comprising both static levels and inertial forces.
Piping failure	Failure of an earth dam wall caused by excessive seepage of water through the embankment.
PMF - (Probable maximum flood)	The flood caused by runoff water from the probable maximum precipitation.
PMP - (Probable maximum precipitation)	The greatest depth of precipitation for a given duration meteorologically possible for a given size storm area at a particular location at a particular time of year.
Porosity	The ratio of the volume of void spaces in a rock or sediment to the total volume of the rock or sediment.
Recharge	The process of replenishment of a water resource (recharging of aquifer, recharge of dam).
Rational method	A procedure for calculating the peak discharge from a small to medium sized catchment, resulting from a storm of a given ARI and duration.
Reno mattress	A low profile flexible wire basket filled with stones and used to control scour. (Typical size: 2 m wide x 6 m long x 0.3 m deep)
Revetment mattress	A hard surface armouring formed by using pocketed pervious fabric filled with concrete. Used to control scour.
Rip Rap	Irregular rocks of medium to large size, used for the lining of embankments, drainage channels, dam spillways etc. for prevention of erosion.
Runoff	The total amount of water flowing in a stream. It includes overland flow, return flow, interflow and baseflow.
Sediment barriers	Structures placed in a drainage channel to promote settling out of sediment until a stable flow slope is achieved between each barrier. Used for erosion prevention.
Sediment fence / silt fence	A low fence of woven geotextile designed to filter suspended solids from overland flow, (sheetflow). Used for containment of sediment in disturbed areas.
Seepage	Common term for groundwater flow, encompassing the characteristic “slow flow” processes (see laminar flow).
Sheet piling	Physical barrier applied by driving solid sheets of impermeable material into the ground.

Slurry wall	An underground wall designed to stop groundwater flow; constructed by digging a trench and backfilling it with a slurry rich in bentonite clay.
Soil matrix	Skeletal structure of soil, within which “honeycombs” of pores exist.
... % Standard compaction	An earthworks term used to specify the amount of compaction effort required (or compaction achieved) in engineered earthworks.
Surface water	Water found in ponds, lakes, inland seas, streams and rivers.
Time of concentration	The time required for rain falling at the farthest point of the catchment to flow to the point at which the discharge is being calculated. Used in hydrology calculations such as the Rational Method.
u/s	Up stream (eg. u/s of a dam).
Water table	The surface in an unconfined aquifer or confining bed at which the pore water pressure is atmospheric. It can be measured by installing shallow wells extending a few feet into the zone of saturation and then measuring the water level in those wells.
Wetlands	Areas where water is over or near the ground surface for long enough each year to maintain saturated soil conditions along with related vegetation (eg. marshes, bogs, swamps etc.).

