

GLOSSARY

Geohydrological and Related Terms

ABIOTIC: not pertaining to living organisms; environmental features such as temperature, rainfall etc.

AEOLIAN: relating to or arising from the action of wind.

AEROBIC: a process taking place in the presence of oxygen

ALLUVIAL: sediments deposited by flowing water.

ALLUVIAL AQUIFER: an aquifer formed of unconsolidated material deposited by water, typically occurring adjacent to river channels and in buried or paleochannels.

ALLUVIUM: a general term for unconsolidated deposits of inorganic materials (clay, silt, sand, gravel, boulders) deposited by flowing water.

ANAEROBIC: a process taking place in the absence of oxygen.

ANISOTROPIC: having some physical property that varies with direction.

ANTECEDENT: a condition that exists before a particular event e.g. soil moisture conditions before a rainfall event.

AQUATIC: associated with and dependant on water e.g. aquatic vegetation.

AQUATIC ECOSYSTEMS: not defined by National Water Act (Act No. 36 of 1998), but defined elsewhere as the abiotic (physical and chemical) and biotic components, habitats and ecological processes contained within rivers and their riparian zones and reservoirs, lakes, wetlands and their fringing vegetation.

AQUICLUDE: a bed, formation or group of formations essentially impervious to water.

AQUIFER: a geological formation, which has structures or textures that hold water or permit appreciable water movement through them [from National Water Act (Act No. 36 of 1998)].

AQUIFER: strata or a group of interconnected strata comprising of saturated earth material capable of conducting groundwater and of yielding usable quantities of groundwater to borehole(s) and / or springs (a supply rate of 0.1 L/s is considered a usable quantity).

AQUIFER SYSTEM: a heterogeneous body of intercalated permeable and less permeable material that acts as a water-yielding hydraulic unit of regional extent.

AQUIFER TESTING: the process whereby an aquifer is subjected to pumping from a borehole under controlled test conditions in order to determine the hydraulic parameters of the groundwater system through its response to the stress of abstraction.

AQUIFUGE: a seldom-occurring body of rock that contains no interconnected openings and neither absorbs nor transmits water.

AQUITARD: a saturated geological unit with a relatively low permeability that retards and restricts the movement of water, but does not prevent the movement of water; while it may not readily yield water to boreholes and springs, it may act as a storage unit.

ARTESIAN AQUIFER: an adjective referring to groundwater under hydrostatic pressure; *see confined aquifer.*

ARTESIAN BOREHOLE: an adjective commonly used to describe a flowing borehole, where the piezometric level is at an elevation higher than ground level.

ATTENUATION: the breakdown or dilution of contaminated water as it passes through the earth's material.

AVAILABLE DRAWDOWN: the height of water above the depth at which the pump is set in a borehole at the time of water level measurement (m).

BACTERIA: a large group of unicellular microscopic organisms lacking chlorophyll and multiplying rapidly by simple division.

BANK STORAGE: water that percolates laterally from a river in flood into the adjacent geological material, some of which may flow back into the river during low-flow conditions.

BASEFLOW: sustained low flow in a river during dry or fair weather conditions, but not necessarily all contributed by groundwater; includes contributions from delayed interflow and groundwater discharge.

BASEFLOW INDEX: the ratio of the annual baseflow in a river to the total annual run-off.

BASIC HUMAN NEED: the least amount of water required to satisfy basic water requirements, this is currently set at 15 L/p/d.

BENEFICIAL USE: the use of the environment or any element of the environment that is conducive to the benefit of legitimate users.

BLOW YIELD: the volume of water per unit of time blown from the borehole during drilling (L/s).

BOREHOLE: includes a well, excavation, or any other artificially constructed or improved groundwater cavity which can be used for the purpose of intercepting, collecting or storing water from an aquifer; observing or collecting data and information on water in an aquifer; or recharging an aquifer [from National Water Act (Act No. 36 of 1998)].

BOREHOLE TESTING: the process whereby a borehole is subjected to pumping under controlled test conditions in order to determine the performance characteristics of a borehole.

BRACKISH: water that contains between 1 000 and 10 000 mg/L of dissolved solids.

BRINE: water that contains more than 35 000 mg/L of dissolved solids.

CAPILLARY RISE: the natural occurrence of water in contact with, but rising above, the water table; caused by the tensional forces in the pore spaces of soil, sediment and rock material. In fine grained material capillary rise amounts to 2 – 3 m, but measures only a couple of centimeters in coarser grained material.

CAPILLARY ZONE: the subsurface zone directly above the water table caused by capillary rise; also referred to as the *capillary fringe*.

CATCHMENT: the area from which any rainfall will drain into the watercourse, contributing to the runoff at a particular point in a river system; synonymous with the term *river basin*.

CHANNEL PRECIPITATION: precipitation that falls directly onto a surface water body during a precipitation event and makes an immediate (but usually small) contribution to stream flow; does not flow over or through land to reach the surface water body.

COEFFICIENT OF STORAGE: see *storage coefficient*

COMPREHENSIVE RESERVE ASSESSMENT: an assessment of the reserve based on detailed data and observation, may include numerical modeling, also referred to as a full reserve assessment.

CONE OF DEPRESSION: the cone-shaped area around a borehole that results from the lowering of the water table or piezometric surface by abstraction.

CONFINED AQUIFER: an aquifer overlain by a confining layer of significantly lower hydraulic conductivity in which groundwater is under greater pressure than that of the atmosphere; also known as an artesian aquifer.

CONFINING LAYER: a layer of low permeability material overlying an aquifer, which restricts the vertical movement of water.

CONJUNCTIVE USE: combined use of surface and groundwater.

CONNATE WATER: water entrapped in the *interstices* of sedimentary rocks at the time of deposition.

CONSERVATION: to keep or protect from harm, decay or loss, implies wise use of a resource.

CONSERVATIVE POLLUTANTS: pollutants which move readily through the aquifer with little reaction with the rock matrix and which are unaffected by biodegradation.

CONTAMINATION: the introduction of any substance into the environment by the action of man.

DEDICATED LAND: *see sacrificial land.*

DEGRADABLE POLLUTANTS: pollutants which readily breakdown.

DETACHED STREAM: *see disconnected stream.*

DIFFERENTIATED PROTECTION POLICY: recognizes that some resources require different levels of protection or even no protection at all.

DIFFUSE POLLUTION SOURCES: *see non-point sources of pollution.*

DISCHARGE AREA: an area in which subsurface water, included water in the unsaturated and saturated zones, is discharged at the land surface.

DISCHARGE RATE: the volume of water per unit of time abstracted from a borehole (L/s).

DISCONNECTED STREAM: a stream detached from and not in hydrological contact with the groundwater system below, a special case of an influent stream; also referred to as a detached stream.

DISSOLVED SOLIDS: minerals and organic matter dissolved in water.

DRAWDOWN: the difference between the observed groundwater level during pumping and the non-pumping or rest groundwater level in a borehole.

DRILL CUTTINGS: the rock chips resulting from the cutting action of the drill bit and which return to the surface in the air and water stream blown from the borehole during drilling.

ECOLOGY: the study of the interrelationships between organisms and their environment.

ECOREGION: regions within which there is a relative similarity in the mosaic of ecosystems and ecosystem components (biotic and abiotic, aquatic and terrestrial).

ECOSYSTEM: an organic community of plants and animals and the physical environment they inhabit.

ECOTONE: a transition zone between different types of ecosystems; a region of overlapping plant associations, as that between two biomes or two adjacent ecosystems.

EFFLUENT RIVER: groundwater discharges into the river.

EFFLUENT STREAM: a stream fed directly by groundwater; the surrounding water table or piezometric surface is above the stream surface; opposite of *influent stream*.

EPHEMERAL RIVERS: these rivers are generally storm-event driven and flow occurs less than 20% of the time; these rivers have a limited (if any) baseflow component with no groundwater discharge.

ENDORHEIC: term used to describe a blind or closed drainage system i.e. without any visible drainage outlet.

ESTUARY: a partially or fully enclosed body of water, which is open to the sea permanently or periodically, and within which the sea water can be diluted, to an extent that is measurable, with fresh water drained from the land [from National Water Act (Act No. 36 of 1998)].

EVAPOTRANSPIRATION: the loss of moisture from the combined effects of direct evaporation from land and sea, and transpiration from vegetation.

EXPLOITATION POTENTIAL: the rate at which groundwater can be withdrawn from a catchment without causing any detrimental impacts.

FAULT: a zone of displacement in rock formations resulting from forces of tension or compression in the earth's crust.

FINGERING: when a high-density liquid overlies a less dense liquid, or when a fluid spills onto an unsaturated granular medium, the resultant vertical flow is concentrated into discrete flowpaths (fingers) of very complex geometry. This fingering is, to some extent chaotic, and cannot be exactly reproduced by either digital or analogue simulations.

FISSURES: a general term to include natural fractures, cracks and openings in consolidated rock caused by bedding planes, joints, faults, etc.

FITNESS-FOR-USE: water quality is such that it meets the requirements for a particular use, five major groups of water users recognized as domestic, agricultural, industrial, recreational or environmental users.

FLUVIAL: relating to or arising from the action of flowing water in a river.

FLUX: rate of groundwater flow per unit width of aquifer.

FORMATION: a general term used to describe a sequence of rock layers.

FRACTURE: cracks, joints or breaks in the rock that can enhance water movement.

FRACTURE FLOW: water movement that occurs predominantly in fractures and fissures.

FRACTURE ZONE: a zone of cracks or fissures within rocks.

FRACTURED AQUIFER: an aquifer that owes its water-bearing properties to fracturing caused by folding and faulting; see *secondary aquifer*.

FRESHWATER: water that contains less than 1 000 mg/L salts.

FULL RESERVE ASSESSMENT: see comprehensive reserve assessment.

GAINING STREAM: synonymous with *effluent stream*.

GEOHYDROLOGICAL REGION: an area within a significant water resource or homogeneous response unit with similar geohydrological characteristics, which result in the area fulfilling a unique and specific role in the hydrological system.

GEOHYDROLOGICAL RESPONSE UNIT: smallest groundwater unit considered and is demarcated on the basis of homogeneous response unit and geohydrological region type.

GEOHYDROLOGY: the study of the properties, circulation and distribution of groundwater; in practice used interchangeably with hydrogeology; but in theory *hydrogeology* is the study of geology from the perspective of its role and influence in hydrology while *geohydrology* is the study of hydrology from the perspective of the influence on geology.

GROUNDWATER: water found in the subsurface in the saturated zone below the water table or piezometric surface i.e. the water table marks the upper surface of groundwater systems.

GROUNDWATER ALLOCATION: the rate at which groundwater can be withdrawn without resulting in a significant regional drop of groundwater levels in a catchment over the long-term, without inducing a deterioration of groundwater quality or without causing any other detrimental impact.

GROUNDWATER BODY: a rock or group of rocks comprising of saturated earth material.

GROUNDWATER CONTRIBUTION TO RIVER FLOW: that groundwater that discharges into effluent streams and sustains baseflow.

GROUNDWATER FLOW: the movement of water through openings and pore spaces in rocks below the water table i.e. in the saturated zone.

GROUNDWATER RESOURCE: all groundwater available for beneficial use, including man, aquatic ecosystems and greater environment.

HARD-ROCK: Igneous, metamorphic and sedimentary rocks which lack adequate primary interstices to function as a primary aquifer.

HARVEST POTENTIAL: maximum amount of groundwater that can be abstracted per square kilometer per annum without depleting the aquifers.

HEAD: *see hydraulic head.*

HEAVY METALS: those elements with atomic numbers greater than 36 in Group III through V of the Periodic Table.

HETEROGENEOUS: refers to materials having different properties at different points; diverse in character or content; in reality, all aquifers are heterogeneous, although we assume homogeneity in order to simplify their analysis; opposite of *homogeneous*.

HOMOGENEOUS: a characteristic of the geological unit in which hydraulic conductivity is independent of position or direction; opposite of *heterogeneous*.

HOMOGENEOUS RESPONSE UNIT: similar to an eco-region but is based on geohydrological considerations, groundwater systems with similar geohydrological properties and respond in a similar manner.

HYDRAULIC CONDUCTIVITY: measure of the ease with which water will pass through earth material; defined as the rate of flow through a cross-section of one square metre under a unit hydraulic gradient at right angles to the direction of flow (in m/d)

HYDRAULIC GRADIENT: the slope of the water table or piezometric surface; is a ratio of the change of hydraulic head divided by the distances between the two points of measurement.

HYDRAULIC HEAD: the height of a column of water above a reference plane.

HYDRIC SOILS: soils that are saturated or flooded long enough during the growing season to develop anaerobic conditions in its upper layers.

HYDROGRAPH: a graphical plot of hydrological measurements over a period of time e.g. water level, flow, discharge.

HYDROLOGICAL CYCLE: the continuous circulation of water between oceans, the atmosphere and land; the sun is the energy source that raises water by evapotranspiration from the oceans and land into the atmosphere, while the forces of gravity influence the movement of both surface and subsurface water.

HYDROLOGICAL YEAR: a continuous 12-month period selected to present data relative to hydrological or meteorologically phenomena; usually from 1 October to 30 September.

HYDROGEOLOGY: see *geohydrology*

HYDROLOGY: the study of the properties, circulation and distribution of water.

HYDROPHYTES: plants that take their nutrients directly from water, typically found in water or wet habitats

HYPORHEIC ZONE: the saturated and biologically active zone in the permeable substrate beneath and adjacent to a riverbed.

INFILTRATION: the downward movement of water from the atmosphere into the ground; not to be confused with *percolation*.

INFLUENT RIVER: water is discharged from the river into the groundwater system.

INFLUENT STREAM: a losing stream above the water table that discharges into the underlying groundwater system; opposite of *effluent stream*.

INTEGRATED MANAGEMENT: a management approach, which serves to co-ordinate management of the environment as a whole, as opposed to individual parts.

INTERACTING STREAM: see *intermittent stream*.

INTERFLOW: the rapid flow of water along essentially unsaturated flow paths, water that infiltrates the subsurface and moves both vertically and laterally before discharging into other water bodies.

INTERGRANULAR FLOW: flow that occurs between individual grains of rock.

INTERMITTENT RIVER: conditions range seasonally between discharge from the river into the groundwater system and discharge from the groundwater system into the river, not to be confused with an ephemeral river.

INTERMITTENT STREAM: rivers and streams whose interaction with groundwater depends on the fluctuating position of the water table, ranging from effluent streams in the wet season to influent streams in the dry season.

INTERSTICES: openings or void space in a rock capable of holding water.

ISOTROPIC: the condition of having properties that are uniform in all directions, opposite of *anisotropic*.

JUVENILE WATER: groundwater entering the hydrological cycle for the first time; it is doubtful whether any terrestrial water is truly juvenile and is totally insignificant volumetrically.

LACUSTRINE: wetlands such as dams and lakes situated in topographic depressions which have a total area greater than 8 ha.

LATRINE: a pit used for the disposal of human excreta, particularly prevalent in rural areas.

LEACHATE: any liquid, including any suspended components in the liquid that has percolated through or drained from human-emplaced materials.

LIMITED DEGRADATION POLICY: aims to maintain groundwater at as high a quality as possible, but allows contamination up to a certain set protection levels and standards.

LITHOLOGY: the physical character of rocks.

LOCAL SCALE: this scale would typically consider water users or groups of users such as farms, irrigation boards, towns, local authorities, etc.

LOSING STREAM: synonymous with *influent stream*.

MAJOR AQUIFER SYSTEM: highly permeable formations, usually with a known or probable presence of significant fracturing, may be highly productive and able to support large abstractions for public supply and other purposes, water quality is generally very good.

MESOPHYTES: plants that grow under well-balanced moisture conditions.

METEORIC WATER: water originating from rainfall, usually recent, hence actively involved in meteoric circulation, as opposed to *connate water*.

MINOR AQUIFER SYSTEM: fractured or potentially fractured rocks which do not have a high primary permeability, or other formations of variable permeability; aquifer extent may be limited and water quality variable; although these aquifers seldom produce large quantities of water, they are important both for local supplies and in supplying base flow for rivers.

NATIONAL SCALE: this scale covers the total area of South Africa and would be measured in millions of km².

NON-AQUIFERS: groundwater bodies, which are essentially impermeable, do not readily transmit water and/or have a water quality which renders it unfit for use.

NON-AQUIFER SYSTEMS: formations with negligible permeability that are generally regarded as not containing groundwater in exploitable quantities, water quality may also be such that it renders the aquifer as unusable, groundwater flow through such rocks does take place and needs to be considered when assessing the risk associated with persistent pollutants.

NON-DEGRADABLE POLLUTANTS: pollutants that do not readily breakdown.

NON-DEGRADATION POLICY: a protectionist approach, which strives to preserve all resources in their pristine state.

NON-POINT SOURCE OF POLLUTION: pollution from broad areas rather from discrete points.

OUTCROP: the occurrence of rock at the ground surface; when a rock is visible in, for instance, cliffs and quarries, the rock is said to be *exposed*.

OVERLAND FLOW: flow of water over the land surface usually originating from precipitation or snowmelt; general term used loosely to include all surface runoff.

OXIDATION: the addition of oxygen to a compound; entails the loss of an electron.

PALEOCHANNEL: a buried stream channel.

PALUSTRINE: freshwater wetland environments other than those along rivers and lakes, dominated by trees, shrubs, emergent vegetation, mosses and lichens.

PERCHED AQUIFERS: aquifers that contain perched groundwater i.e. bodies of groundwater separated from an underlying body of groundwater by an unsaturated zone.

PERCHED GROUNDWATER: an independent and unconfined volume of groundwater separated from an underlying main body of groundwater by an unsaturated zone; typically occurs above discontinuous impermeable layers.

PERCHED SPRINGS: springs fed by water in the unsaturated zone and interflow.

PERCHED WATER TABLE: localized, unconfined groundwater separated from the underlying main body of groundwater by an unsaturated zone, i.e. the local water table is not in hydraulic continuity with the regional groundwater system.

PERCOLATION: the process of the downward movement of water in the unsaturated zone under the influence of gravity and hydraulic forces; term used to differentiate from infiltration, which specially refers to the movement of water from the atmosphere into the ground.

PERENNIAL: lasting through a year or several years i.e. a river that flows all year round or a wetland that remains wet all year round.

PERMEABLE: materials that allow liquids (and gases) to flow through it.

PERMEABILITY: the ease with which a fluid can pass through a porous medium and is defined as the volume of fluid discharged from a unit area of an aquifer under unit hydraulic gradient in unit time (expressed as $m^3/m^2/d$ or m/d); it is an intrinsic property of the porous medium and is independent of the properties of the saturating fluid; not to be confused with *hydraulic conductivity* which relates specifically to the movement of water.

PHREATIC ZONE: *see saturated zone.*

PHREATOPHYTES: long rooted plants that habitually obtain water from below the water table or from the capillary fringe directly above the water table.

PIEZOMETRIC LEVEL: the elevation to which groundwater levels rise in boreholes that penetrate confined or semi-confined aquifers.

PIEZOMETRIC SURFACE: an imaginary surface representing the piezometric pressure or hydraulic head throughout all or part of a confined or semi-confined aquifer; analogous to the *water table* of an *unconfined aquifer*.

POINT SOURCE OF POLLUTION: pollution from discrete points as opposed to from broad areas.

POLLUTION: the introduction into the environment of any substance by the action of man, which is or results in significant harmful effects to man or the environment.

POLLUTION PLUME: area of degraded water in a stream or aquifer resulting from migration of a pollutant.

POOR AQUIFER SYSTEMS: *see non-aquifer systems.*

POROSITY: ratio of the volume of void space to the total volume of the rock or earth material.

POTABLE WATER: water that is safe and palatable for human use.

POTENTIOMETRIC SURFACE: *see piezometric surface.*

PRECAUTIONARY PRINCIPLE: promotes the adoption of a conservative approach, particularly in those cases where knowledge is limited or risk unknown, requires that people err on the safe side when taking decisions.

PREFERENTIAL FLOW: the preferential movement of groundwater through more permeable zones in the subsurface.

PRELIMINARY RESERVE ASSESSMENT: a preliminary assessment of the reserve based on existing data, includes the desktop, planning estimate and intermediate Reserve determination methods.

PREVENTION: to defend from harm, decay or loss, implies limited or no use of a resource.

PRIMARY AQUIFER (SA): an aquifer in which water moves through the original interstices of the geological formation.

PRIMARY AQUIFER (USA): an aquifer currently being used by a major municipal water supply system.

PRIMARY INTERSTICES: interstices that were made contemporaneously with the rock formations.

PRINCIPAL AQUIFER (USA): highly productive formations that are not intensively used as water supplies at present, are viewed as potential water supplies but their yields have not been fully established.

PRIVY: the enclosure for a toilet where this is not incorporated into a house.

QUICKFLOW: by convention, that portion of stormflow that is not part of baseflow and includes overland flow, occurs in direct response to rainfall.

RECHARGE: the addition of water to the zone of saturation, either by the downward percolation of precipitation or surface water and / or the lateral migration of groundwater from adjacent aquifers.

RECHARGE AREA: an area over which recharge occurs.

REGIONAL SCALE: this scale is equitable to surface water catchment areas and would typically be measured in thousands to hundred of thousands of km².

REGOLITH: the mantle of fragmented or loose material of residual or transported origin, comprising rock debris, alluvium, aeolian deposits, and *in situ* weathered and decomposed rock and typically overlies bedrock; it includes soil.

REHABILITATION: to restore to a former condition or status.

REMEDIATION: to restore to health, requires that impact is reduced to some acceptable level.

REMOTE STREAM: *see disconnected stream*.

RENEWABLE WATER SUPPLY: rate of supply of water available in area on an essentially permanent basis.

RESERVE: the quantity and quality of water required to supply basic needs of people to be supplied with water from that resource, and to protect aquatic ecosystems in order to secure ecologically sustainable development and use of water resources.

RESOURCE QUALITY: the quality of all aspects of a water resource including (a) the quality, pattern, timing, water level and assurance of instream flow, (b) the water quality, including the physical, chemical and biological characteristics of water, (c) the characteristic and condition of the instream and riparian habitat; and (d) the characteristics, condition and distribution of aquatic biota.

REST WATER LEVEL: the groundwater level in a borehole not influenced by abstraction; synonymous with *static water level*, but no groundwater levels are ever truly static as they continually respond to recharge, discharge and abstraction.

RIPARIAN: area of land directly adjacent to a stream or river, influenced by stream-induced or related processes.

RIVER: a physical channel in which runoff will flow; generally larger than a stream, but often used interchangeably.

ROCK: any unconsolidated or unconsolidated earth material, specifically excluding soil.

ROCK UNIT: any geological formation, or part thereof, which can be mapped and evaluated as to its general water-bearing and water quality characteristics.

RUNOFF: all surface and subsurface flow from a catchment, but in practice refers to the flow in a river i.e. excludes groundwater not discharged into a river.

SACRIFICIAL LAND: land used for spreading sewage sludge, above the normal requirements for agricultural land, regarded as land that could be impaired as a result of the spreading practice.

SAFE YIELD: amount of water that can be withdrawn from an aquifer without producing an undesired effect.

SALINE INTRUSION: replacement of freshwater by saline water in an aquifer, usually as a result of groundwater abstraction.

SALINE WATER: water that is generally considered unsuitable for human consumption or for irrigation because of its high content of dissolved solids.

SANITATION: the treatment and disposal of waste from the human body and grey water generated through household activity.

SANITARY SEAL: the seal comprising the cement grout with which the annulus between the borehole sidewall and the casing is filled to prevent the ingress of foreign material into the borehole via this space.

SATURATED ZONE: the subsurface zone below the water table where interstices are filled with water under pressure greater than that of the atmosphere.

SAVE YIELD: see exploitation potential.

SEASONAL RIVER: these rivers are driven by seasonal rainfall patterns and flow occurs between 20 % and 80 % of the time; these rivers have a limited baseflow component with little or no groundwater discharge.

SECONDARY AQUIFER: an aquifer in which water moves through secondary openings and interstices, which developed after the rocks were formed i.e. weathering, fracturing, faulting.

SECONDARY INTERSTICES: openings in the rock that were developed by processes that affected the rocks after they were formed.

SEDIMENT: particles derived from rocks or biological material that have been transported by air or water.

SEEP: a diffuse wetland area where interflow and groundwater emerges, usually at a slow rate or small volume, to become surface flow.

SEMI-CONFINED AQUIFER: an aquifer that is partly confined by layers of lower permeability material through which recharge and discharge may occur, also referred to as a *leaky aquifer*.

SIGNIFICANT WATER RESOURCES: as defined by the National Water Act of 1998 (Act 36 of 1998), relates to the size of the water resource rather than its importance, a resource is deemed to be significant if it is large enough to warrant its own Reserve determination.

SOIL: the usually thin upper surface layer of the earth's crust comprising living organisms, organic matter, decomposed rock or unconsolidated sediments, water and gases with properties attributable to the interaction of its parent material, time, climate, fauna and flora.

SOLE SOURCE AQUIFERS: an aquifer which is needed to supply 50% or more of the domestic water for a given area, and for which there are no reasonably available alternative water sources should the aquifer be impacted upon or depleted.

SPECIAL AQUIFER SYSTEM: an aquifer designated as such by the Minister of Water Affairs, after due process.

SPECIFIC CAPACITY: the rate of discharge of water well per unit of drawdown, usually expressed as $m^3/d/m$.

SPECIFIC YIELD: ratio of the volume of water that a given mass of saturated rock or soil will yield by gravity from that mass.

SPRING: a point where groundwater emerges, usually as a result of topographical, lithological or structural controls,

STATIC WATER LEVEL: see *rest water level*

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

STORMFLOW: increased runoff in a river or stream associated with a particular rainfall event or storm; includes contributions from channel precipitation, quickflow and rapid interflow.

STREAM: a small narrow river; often used interchangeably with *river*.

SUBSURFACE WATER: all water occurring beneath the earth's surface, including soil moisture, that in the vadose zone and groundwater.

SUBTERRANEAN WATER: not a widely used geohydrological term, a general term used synonymously with *subsurface water*.

SURFACE WATER: Bodies of water, snow or ice on or above the surface of the earth (such as lakes, streams, ponds, wetlands, etc.).

SURFACE RUNOFF: that part of the total runoff that travels over the ground surface to reach a stream or river channel.

SUSTAINABLE DEVELOPMENT: use, development and protection of natural resources in a way and at a rate, which allows for social, economic and cultural needs of people and communities to be met without compromising the ability to meet the needs of future generations.

TEST PUMPING: see *aquifer testing and borehole testing*.

TOTAL RUNOFF: the total volume of water that flows in a stream, including contributions from channel precipitation, quickflow, interflow and the groundwater contribution to river flow.

TRANSMISSIVITY: the rate at which a volume of water is transmitted through a unit width of aquifer under a unit hydraulic head (m^2/d); product of the thickness and average hydraulic conductivity of an aquifer.

TYPING: a process of grouping areas with similar characteristics, e.g. ecological, geological, hydrological.

UNCONFINED AQUIFER: an aquifer with no confining layer between the water table and the ground surface where the water table is free to fluctuate.

UNCONSOLIDATED SEDIMENTS: consists of fragments of weathered rock material (including clays, silts, sand, gravels and cobbles) that have not been cemented to form solid rock.

UNDERGROUND WATER: not a recognised geohydrological term; used - but not defined - in the National Water Act (Act No. 36 of 1998) and meaning is unclear; thought to be a general term referring to *subsurface water*.

UNSATURATED ZONE: that part of the geological stratum above the water table where interstices and voids contain a combination of air and water; synonymous with *zone of aeration* or *vadose zone*.

VADOSE ZONE: *see unsaturated zone*.

VIRUS: any group of submicroscopic (invisible by ordinary microscope) entities consisting of a single nucleic acid surrounded by a protein coat and capable of replication only within the cells of animals and plants.

VLEI: a colloquial South African term for wetland.

VULNERABILITY: the tendency or likelihood for contamination to reach a specified position in the groundwater system after introduction at some location above the uppermost aquifer.

WATER-BEARING: water-yielding in terms of carrying or conveying.

WATER COURSE: means a river or spring; a natural channel in which water flows regularly or intermittently; a wetland, lake or dam into which, or from which water flows; and any collection of water which the Minister may, by notice in the Gazette, declare to be a water course.

WATER RESOURCE: includes a water course, surface water, estuary, or aquifer.

WATER TABLE: the upper surface of the saturated zone of an unconfined aquifer at which pore pressure is at atmospheric pressure, the depth to which may fluctuate seasonally.

WATER YEAR: *see hydrological year*.

WELL: *see borehole*; in South Africa used to refer to a shallow large diameter hole used for abstracting groundwater; in USA synonymous with *borehole*.

WELL FIELD: a group of boreholes in a particular area usually used for groundwater abstraction purposes.

WELLPOINT: shallow, small diameter hole used to abstract groundwater from primary aquifers.

WETLAND: land which is transitional between terrestrial and aquatic systems, where the *water table* is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated *soil* [from National Water Act (Act No. 36 of 1998)].

XEROPHYTES: plants that have adapted to dry or arid conditions.

YIELD: the quantity of water removed from a water resource e.g. yield of a borehole.

ZONE OF AERATION: *see unsaturated zone*.

ZONE OF SATURATION: *see saturated zone*.