

Glossary

Alluvium – Clay, silt, sand, gravel, or similar remnant material that has been deposited by running water.

Alluvial fan – A cone-shaped alluvial deposit made by a stream where it issues from a mountain upon a plain or by a tributary stream at its junction with the main stream.

Anadromous fish habitat – River or stream environment suitable for fish who return from the ocean to spawn.

Anisotropy – Property of an aquifer system with physical and hydrologic properties that vary directionally.

Anticline – A geologic fold that is convex upward and whose core contains stratigraphically older rocks.

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

Aquifer flux – The directional volumetric flow or discharge of groundwater per unit length, within an aquifer.

Aquifer recharge/discharge – The process by which groundwater enters or leaves an aquifer.

Aquifer system – The hydrologic interaction and relationship between multiple aquifer layers.

Aquifer test – The process of applying a hydraulic stress to an aquifer in order to determine hydrologic properties. Aquifer testing generally involves extracting or injecting water and measuring the resulting change in aquifer head.

Base-case model – Initial model run representing current aquifer conditions from which all subsequent model runs are compared.

Boundary conditions – Spatially defined constraints imposed on the MODFLOW groundwater flow equation at the locations of aquifer boundaries such as rivers, drains, and wells.

Calibration – The process by which modeling parameters such as aquifer hydraulic conductivity and specific-storage are estimated, based on observations of aquifer head and aquifer flux.

Columbia River Basalt Group – A series of Miocene-age lava flows with interbedded sediments that underlie the Columbia Plateau and model study area.

Confined aquifer – An aquifer in which the groundwater is isolated from the atmosphere at the point of discharge by impermeable geologic formations.

Fracture zone – A zone of bedrock that exhibits increased fracturing, often due to folding or faulting.

Glaciofluvial deposits – Deposits produced by meltwater streams flowing from melting glacier ice.

Grande Ronde Basalt – Oldest, most voluminous, and areally extensive formation of basalt in the Columbia River Basalt Group in the Black Rock area.

Groundwater – Subsurface water that resides in saturated pore spaces of a rock formation.

Ground-water modeling – Computer-based process of calculation by which numerical methods are used to represent and describe the subsurface movement of groundwater.

Head (hydraulic) – A specific measurement of water pressure or total energy per unit weight, above a datum elevation.

Heterogeneous – A non-uniform aquifer condition in structure or composition.

Hydraulic conductivity – A material (and fluid) property that describes the ease with which water can move through connected pore spaces or fractures in a geologic formation.

Hydraulic connection – The capacity for water to move between discrete locations within an aquifer system.

Hydraulic gradient – The change in hydraulic head between two or more points in an aquifer.

Hydrogeology – Science that deals with subsurface water and the related geologic aspects of surface water.

Hydrograph – A graph showing stage, flow, velocity, or other characteristics of water with respect to time.

Hydrologic model – A computer-based process of calculation by which numerical methods are used to represent and describe surface water or groundwater systems and their interactions.

Hydrologic test – A test conducted to determine aquifer hydraulic properties including hydraulic conductivity and specific-storage.

Hydrology – The science that deals with the properties, distribution, and circulation of water on and below the earth's surface, and in the atmosphere.

Infiltration – The movement of surface water through soil or porous rock.

Leakance parameter – A MODFLOW modeling parameter describing the rate at which water will move between a surface water body, such as a stream or lake, and the underlying aquifer.

Loess – Wind-blown silt.

Model domain – The modeling area of interest, bounded by model boundary conditions.

Model cells – Discretized aquifer volumes used to numerically approximate the solution to the governing groundwater flow equation of the MODFLOW model. The collection of model cells within the model domain is the model grid.

Model layer(s) - Model representation of aquifer layers.

Model run – A single model application incorporating a unique set of model parameter values representing aquifer hydraulic conductivity and specific-storage values.

Permeability – A hydrologic property that describes the rate at which groundwater can move through an aquifer. Permeability may be extrinsic or intrinsic. Intrinsic permeability is a property of the aquifer medium alone. Extrinsic permeability is a property of the medium and the fluid and is used (in this report) interchangeably with hydraulic conductivity.

Overburden – A general geologic term that includes all of the unconsolidated sediments that overlie a bedrock formation.

Reservoir seepage – The subsurface infiltration of reservoir water occurring beneath and along the sides of the reservoir. Reservoir seepage is the sum of the increase in ground-water discharge to creeks, drains, and springs, and the increase in groundwater storage in all model layers.

Reservoir stage - The elevation of water in a reservoir relative to a datum.

Saddle Mountains Basalt – The youngest basaltic formation of the Columbia River Basalt Group.

Spatial resolution – A model characteristic determined by the size and distribution of cells in the MODFLOW model grid.

Spatial distribution – The distribution of parameters with respect to space.

Specific storage – The amount of water that a given aquifer volume will expel when a unit change in hydraulic head is applied to it, while it remains fully saturated. Specific-storage is a property of confined aquifers.

Specific yield – A ratio representing the volumetric fraction of total bulk volume that an aquifer will yield when all the water is allowed to drain out of it under the force of gravity. Specific yield is a property of unconfined aquifers.

Steady-state model – A model of an aquifer system in equilibrium (or in balance) with respect to groundwater inflow and outflow; i.e. an aquifer model in which groundwater head and flux conditions are unchanging in time.

Stratigraphy – Classifying rock and geologic materials into separate formations based on their physical, geochemical, and paleomagnetic polarity differences and in geologic age from oldest to youngest.

Stress period – A MODFLOW model time period within which all aquifer stresses are fixed.

Syncline – A geologic fold in which the strata dip inwards from both sides toward the axis, concave in shape.

Time step – The basic discretization of time in a transient or time-dependent MODFLOW model.

Transient model (time-dependent) – A model of an aquifer system that is not in equilibrium with respect to groundwater inflow and outflow. Also an aquifer model in which groundwater head and flux conditions are changing with time.

Wanapum Basalt – Basaltic formation of the Columbia River Basalt Group that overlies the Grande Ronde Basalt and underlies the Saddle Mountains Basalt.

Yakima Fold Belt – The southwest portion of the Columbia Plateau that is characterized by folded topography.

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