

GLOSSARY

Act 167 Plans: Stormwater management plans partially funded by DEP and prepared by the county for DEP-designated watersheds.

ArcINFO: A conglomeration of many software programs which allow the use of manipulation, and analytical interpolation of data; a graphic interface.

ArcView: GIS and mapping software which provides data visualization, query, analysis, and integration along with the ability to create and edit geographic data.

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 wells or springs.

Argillite: A compact sedimentary rock composed largely of clay materials.

Baseflow: The component of stream flow that is maintained by groundwater discharge, rather than storm runoff.

Bedrock: Solid rock, commonly called "ledge," that underlies gravel, soil, or other surficial material.

Best Management Practice: A method, activity, maintenance procedure or other management practice for reducing the amount of pollution entering a water body.

Carbonate Rocks, Carbonates (Geologic): Rocks composed primarily of calcium carbonate or calcium magnesium carbonate; that is, limestone or dolomite.

Chapter 102: Regulations for DEP's Erosion and Sediment Pollution Control Program – Title 25.

Comprehensive Plan: Regional, state, or local documents that describe community visions for future growth. Comprehensive plans describe general plans and policies for how communities will grow and the tools that are used to guide land use decisions, and give general, long-range recommendations for community growth. Typical elements include, land use, housing, transportation, environment, economic development, and community facilities.

Conceptual Model: A general idea or understanding existing stream/aquifer system from which it is possible to mathematically simulate that system.

Confined Aquifer: An aquifer, overlain by a confining bed, in which groundwater is under pressure that is significantly greater than atmospheric pressure. The static water level in a tightly cased well in a confined aquifer will rise above the top of the aquifer.

Confining Bed (or Unit): A body of low-permeability material with low hydrologic conductivity that is stratigraphically adjacent to (above or below) one or more aquifers. The hydraulic conductivity can range from nearly zero to some value distinctly lower than that of the aquifer.

Conglomerate: A rock consisting of pebbles embedded in a finer (usually sandstone) matrix.

Delaware River Basin Commission (DRBC): Formed in 1961 by the signatory parties to the Delaware River Basin Compact (Delaware, New Jersey, New York, Pennsylvania and the U.S.), it has the responsibility of managing the water resources of the Basin.

Deposition (Geologic): The act or process of settling solid material from a fluid suspension.

Dewatering: Withdrawal of groundwater in order to proceed with activities such as mining or construction.

Diabase: A dark-colored, finely crystalline, hard igneous rock that has intruded in many places into the sedimentary rocks of the Newark-Gettysburg Basin.

Discharge (Water): The volume of water that passes a given point within a given period of time. Also, water that leaves an aquifer or the groundwater body.

Discharge Area: An area in which there are upward components of hydrologic head in an aquifer. Groundwater is flowing toward the surface in a discharge area and may escape as a spring, seep, or baseflow, or by evaporation and transpiration.

Dolomite: A rock consisting largely of calcium magnesium carbonate.

Drainage Area: The area that drains to a stream at a specified location, measured in a horizontal plane that is enclosed by a drainage divide.

Drainage Basin: A part of the surface of the earth that is occupied by a drainage system, which consists of a surface stream or body of impounded surface water together with all tributary surface streams and bodies of impounded surface water.

Drainage Divide: The rim of a drainage basin. The drainage divide, or divide, is used to denote the boundary between one drainage basin and another.

Ecosystem: The plants, animals and people living in an area together with their surroundings, such as earth and weather, considered as a system of relationships.

Evapotranspiration: Water withdrawn from a land area by evaporation from water surfaces and moist soil and by plant transpiration.

Flowpath: One of the paths followed by groundwater as it flows through the saturated zone from the area of recharge to discharge.

Gage (or Gauge): A device for indicating the magnitude or position of an element in specific units when such magnitude or position undergoes change. Examples of such elements are the elevation of a water surface, the velocity of flowing water, the pressure of water, the amount or intensity of precipitation, and the depth of snowfall.

Gaging (or Gauging): The determination of the quantity of water flowing per unit of time in a stream channel or conduit at a given point by means of current meters, rod float, weirs, or other measuring devices or measures. (See also **stream gaging**.)

Gaging (or Gauging) Station: A site on a stream, canal, lake, reservoir, or conduit where systematic observation, measurement, and recording of gage height (water surface) or discharge are obtained.

Gaining Stream: A stream or reach of a stream whose flow is being increased by inflow of groundwater.

Geographic Information System (GIS): A computer system for capturing, storing, checking, integrating, manipulating, analyzing and displaying data related to positions on the earth's surface.

Geophysical Log: A record of certain physical properties, measured by instruments and plotted against depth, for a well. It provides information on the nature of the rocks penetrated by the well and on their fluids.

Gneiss: A coarse-grained metamorphic rock made up of minerals in bands and streaks.

Granite: A coarse-grained igneous or metamorphic rock composed chiefly of orthoclase feldspar and quartz, with lesser amounts of dark minerals. Rocks similar to granite but with a somewhat different composition, or gneisses with composition similar to granite, may be called Granitic rocks.

Groundwater: Water beneath the ground surface, at various levels, that is in the zone of saturation, from which wells, springs, and groundwater runoff are supplied. (Alternate spelling: ground water)

Groundwater Discharge: Discharge of water from the saturated zone by (1) natural processes such as groundwater runoff and groundwater evapotranspiration and (2) discharge through wells and other manmade structures.

Groundwater Divide: A ridge in a water table from which the water table slopes downward on both sides. It is analogous to a divide between two drainage basins on a land surface. A groundwater divide generally is found nearly below a surface-drainage divide, but in many localities there is no relation between the two.

Groundwater Mining: The practice of withdrawing groundwater in a specific area at rates in excess of the natural recharge.

Groundwater Protected Area (GWPA): An area in southeastern Pennsylvania designated by the Delaware River Basin Commission (DRBC) within which individual groundwater withdrawals of greater than 10,000 gallons per day (gpd) must obtain a DRBC permit. (In areas outside of the GWPA, a DRBC permit must be obtained for groundwater withdrawals greater than 100,000 gpd.)

Groundwater Recharge: Water that is added to the saturated zone.

Growth Management: Government programs that control timing, location and character of land use and development.

Head, Static: The height above or below a standard datum of the surface of a column of water (or other liquid) that can be supported by the static pressure at a given point. In this report, static head is referred to simply as "head." Measurements of water levels in observation wells can be used to compute heads by referencing the measurements to the standard datum.

Holistic: Relating to or concerned with wholes or complete systems (e.g., holistic ecology views humans and the environment as a single system).

Hydraulic Conductivity: The volume of water at the existing kinematic viscosity that will move in unit time under unit hydraulic gradient through a unit area measured at right angles to the direction of flow.

Hydraulic Gradient: The change in head per unit of distance in a given direction. If not specified, the direction generally is understood to be that of the maximum rate of decrease in head.

Hydrogeologic: Pertaining to the science dealing with the occurrence and distribution of groundwater, particularly as it relates to the properties of the rock materials in which it occurs.

Hydrogeology: The branch of hydrology that deals with groundwater, its occurrence and movements, its replenishment and depletion, the properties of rocks that control groundwater movement and storage, and the methods of investigation and use of groundwater. Also called groundwater hydrology.

Hydrograph: A graph showing, for a given point on a stream or conduit, the discharge, stage, velocity, available power, or other property of water with respect to time.

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 circuit of water movement from the atmosphere to the earth and return to the atmosphere through various stages or processes such as precipitation, interception, runoff, infiltration, percolation, storage, evaporation, and transpiration. Also called water cycle.

Hydrology: The applied science concerned with the waters of the earth in all their states.

Igneous: Term applied to rocks that were formed from the molten state.

Induced Infiltration: The process by which water moves into an aquifer from an adjacent surface-water body as a result of reversal of the hydraulic gradient in response to withdrawal.

Induced Recharge: The amount of water entering an aquifer from an adjacent surface-water body by the process of induced infiltration.

Interception: The process by which precipitation is caught and held by foliage, twigs, and branches of trees, shrubs, and other vegetation, and lost by evaporation, never reaching the surface of the ground.

Interflow: The lateral movement of water in the unsaturated zone during and immediately following a precipitation event. The water moving as interflow discharges directly into a stream or lake.

Intrusive (Geologic): Term applied to igneous rock that was forced into pre-existing rock while in a molten state, as opposed to extrusive.

Joint (Geologic): A fracture plane in rock, frequently in intersecting sets.

Limestone: A sedimentary rock consisting largely of calcium carbonate.

Lithification: The process of changing unconsolidated sediment into solid rock.

Lithologic Log: Description of the geologic material collected during the drilling of wells.

Low-Flow Measurement: A stream-discharge measurement taken when flow is near minimum, and consists primarily of baseflow.

Mesozoic: A geologic era that is popularly referred to as the "Age of Dinosaurs", extending from about 240 to 66 million years before the present.

Metamorphic, Metamorphism (Geologic): Metamorphic rocks have been changed (metamorphosed) after lithification by heat, pressure, or by chemical action.

Monitor Well: A well used for repeated water sampling or for measurements of groundwater levels. (If for water level measurements, the well is usually called an **Observation Well**).

National Pollution Discharge Elimination System (NPDES): The national program for issuing, modifying, revoking and revising, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under Sections 307, 318, 402 and 495 of the Clean Water Act.

Newark-Gettysburg Basin: An elongated belt of Triassic and Jurassic rock (from the early part of the Age of Dinosaurs) extending northeastward across Pennsylvania and New Jersey. The rocks are the Newark Supergroup. The basin formed along one of a series of rifts in the Earth's crust preceding the final rifting in which North America separated from Europe and Africa. The basin includes most of the area of this study.

Newark Supergroup: A suite of Triassic and Lower Jurassic (early part of the Age of Dinosaurs) formations in the Newark-Gettysburg Basin. The rocks are mostly shale, claystone, siltstone, and sandstone that were deposited in lakes that formed in the basin. They were intruded by molten rock that solidified between beds of sedimentary rock, and also flowed out on the surface as lava.

Nonpoint Source (NPS): A source of pollutants to water that is distributed over an area rather than limited to an identifiable point, an example being fertilizers applied to lawns in a residential development.

Observation Well: A well used for repeated water-level measurements.

Ordinance: A law or rule made by a government or authority.

Paleozoic: The era of geologic time preceding the Age of Dinosaurs, extending from about 570 to 240 million years before the present. Some of the rocks in the study area were deposited during this era.

Pennridge (Study) Area: For purposes of the Pennridge Water Resources Study, the eight (8) municipalities that comprise the Pennridge School District (i.e., Bedminster, East Rockhill, Hilltown, and West Rockhill Townships and Dublin, Perkasio, Sellersville, and Silverdale Boroughs).

Pennsylvania Municipalities Planning Code (MPC or Act 247): The principal source of enabling authority for controlling land use and managing growth.

Permeability: The capability of a rock or sediment to permit the flow of fluids through its pore spaces.

Physiography: The natural features of the earth's surface, as landforms and drainage features, or the study of them.

Physiographic Province: A region delineated on the basis of its typical landforms that are usually the result of having underlying rock types, geologic history, and climate in common.

Piedmont Physiographic Province: A generally low plateau between the Coastal Plain and the Appalachian Mountains. It includes the Triassic Lowlands.

Plan, the: The *Pennridge Water Resources Plan* (this document) and its implementation activities.

Porosity: In rock or rock material, the ratio of pore space to the volume of the entire mass.

Potability: The quality of water making it fit for drinking.

Potentiometric Gradient: The rate of change in hydraulic head in a given direction.

Potentiometric Surface: An imaginary surface representing the static head of groundwater in tightly cased wells that tap a water-bearing rock unit (aquifer); or, in the case of unconfined aquifers, the water table.

Precipitation: The discharge of water from the atmosphere, either in a liquid or a solid state.

Primary (as applied to porosity or permeability): Existing from the time of the original deposition and lithification of a body of rock.

Recharge: Water that replenishes a groundwater body.

Recharge Area: An area in which there are downward components of hydraulic head (pressure) in an aquifer. Infiltration moves downward into the deeper parts of an aquifer in a recharge area.

“. . . groundwater *flows (sic)* from recharge areas to discharge areas. In a recharge area there is a component to the direction of groundwater flow near the surface that is downward. A recharge area can be defined as that portion of the drainage basin in which the net saturated flow of groundwater is directed *away* from the water table. In a discharge area there is a component to the direction of groundwater flow near the surface that is upward. A discharge area can be defined as that portion of the drainage basin in which the net saturated flow of groundwater is directed *toward* the water table.”

Runoff, Total: The total amount of water flowing in a stream. It generally refers to natural stream flow, unaffected by artificial diversion, stream channelization, storage, or other human modifications. It includes both surface water runoff (overland flow) and groundwater runoff (baseflow and interflow).

Sandstone: A sedimentary rock consisting of sand, usually quartz, cemented by various substances such as calcium carbonate, clay, iron compounds, or silica.

Saturated Zone: That part of a water-bearing material in which all voids, large and small, are ideally filled with water under pressure greater than atmospheric.

Secondary (as applied to porosity or permeability): Resulting from changes in a mass of rock after it was formed.

Sedimentary: Term applied to rocks that were formed by the deposition of sediment.

Sewage: See **wastewater**.

Shale: Rock of laminated structure formed from the consolidation of clay or other very fine material.

Siltstone: A sedimentary rock composed of particles finer than sand and coarser than clay, cemented together.

Snow Cover: The accumulated snow and ice on the surface of the ground at any time.

Snow Storage: Storage of water in the hydrologic cycle in the form of snow and ice.

Source Water Protection: The protection of water in its natural state, prior to any treatment for drinking.

Steady Flow: The flow that occurs when at any point in a flow system the magnitude and direction of the specific discharge are constant in time.

Steady State: Equilibrium water levels or heads; aquifer storage and water levels do not vary with time.

Stormwater (or storm water): Storm water runoff, snow melt runoff, and surface runoff and drainage.

Streambed Conductance: The property of a reach of stream (or river) that describes the ability to transmit or receive water from underlying sediments.

Stream Flow: Discharge that occurs in a natural channel. "Stream flow" is more general than "runoff," as stream flow may be applied to discharge whether or not it is affected by diversion or regulation.

Stream Gaging: The process of measuring the flow of a stream; often this is done periodically at a gaging station where water levels are recorded continuously.

Structure (Geologic): The attitude of the rocks in an area, or a local feature in the rock, such as a fold or a fault, produced by deformation or other geologic processes.

Study area: The region under investigation.

Subbasin: See “Subwatershed.”

Subwatershed: A drainage area or small basin located within a larger watershed.

Superfund Site: A contamination site designated for cleanup by EPA under provisions of a special fund established by Congress.

Surface water: Water above the ground surface that may infiltrate into the ground, runoff into watercourses, or be stored on the surface. Examples of surface water sources include streams, rivers, lakes, and ponds, and reservoirs.

Sustainable Development: Development with the goal of preserving environmental quality, natural resources and livability for present and future generations. Sustainable initiatives work to ensure efficient use of resources.

Transmissivity: The rate at which water is transmitted through a unit width of aquifer under unit hydraulic gradient. It is equal to the product of hydraulic conductivity and saturated thickness of the aquifer, expressed in units of feet squared per day.

Triassic Lowlands Physiographic Province: A region of the eastern United States that is underlain by sedimentary and igneous rocks of the Triassic Period (first of three periods of the Age of Dinosaurs). The area is generally low-lying, but masses of igneous rock form low mountains.

Unsaturated Zone: The zone between the land surface and the water table.

Valley And Ridge Province: An area of northeast-trending mountain ridges separated by valleys, the Folded Appalachians, in northeast Pennsylvania lying northwest of the Reading Prong.

Wastewater: The spent water of a community. It may be a combination of liquid and water-carried wastes from residential, commercial, industrial, and institutional land uses, together with any groundwater (e.g. infiltration into sewerage piping), surface water (e.g., inflow through manholes), and/or stormwater that may be present. (Synonym for sewage.)

Water Balance: A quantitative statement of the amounts of water circulating through various paths of the hydrologic cycle.

Water Budget: An evaluation of all the sources of supply and the corresponding discharges with respect to an aquifer or drainage basin.

Watershed: The region or land area that contributes to the drainage or catchment area above a specific point on a stream or river.

Water Table: The surface of a groundwater body at which the water pressure equals atmosphere pressure. It is very nearly equivalent to the upper surface of the saturated zone.

Water Table (Unconfined) Aquifer: An aquifer in which the upper surface of the saturated zone (water table) is at atmospheric pressure and is free to rise and fall.

Water-table Map: A specific type of potentiometric-surface map for an unconfined aquifer that shows lines of equal elevation of the water table.

Weathering (Geologic): The processes by which various natural agents, such as wind, ice, and water, act on rock at or near the land surface to cause it to disintegrate. Weathering is classed either as chemical or physical weathering, depending on the process.

Wellhead Protection Area (WHPA): The surface and subsurface area surrounding a water well or well field, supplying a public water system, through which contaminants are reasonably likely to move toward and reach such water well or well field.

Well Log: A record of data with respect to depth in a well. It may be a lithologic log prepared by a geologist, a driller's log of the material penetrated and fluids encountered, or a geophysical log.

Wetland: Land that has a permanently or nearly permanently wet soil, often with a shallow cover of water; a marsh or swamp.

Zoning: Classification of land in a community into different areas and districts. Zoning is a legislative process that regulates building dimensions, density, design, placement and use within each district.