



State of Rhode Island Water Resources Board
A unit of Division Statewide Planning
235 Promenade Street, Suite 230
Providence, RI 02908
(401) 222-7901 Fax: (401) 222-2083

Glossary of Terms

To accompany The Ripple Effect: Understanding Rhode Island Water Capacity & Availability: A Presentation to the Special Legislative Commission to Study the Entire Area of Land Use, Preservation, Development, Housing, Environment, and Regulation, May 2, 2024.

Aquifer: An underground geological formation of sand, soil, gravel, and rock able to store and yield water.

Cone of Depression: The zone around a well in an unconfined aquifer that is normally saturated, but becomes unsaturated as a well is pumped, leaving an area where the water table dips down to form a cone shape. The shape of the cone is influenced by porosity and the water yield or pumping rate of the well. The land surface overlying the cone of depression is referred to as the area of influence.

Confined Aquifer: An aquifer that exists where the groundwater is bounded between layers of impermeable substances like clay or dense rock. When tapped by a well, water in confined aquifers is forced up, sometimes above the soil surface. This is how a flowing artesian well is formed. Also known as artesian or pressure aquifers.

Confining Layer: Geologic material with little or no permeability or hydraulic conductivity such as clay or dense rock. Water does not pass through this layer, or the rate of movement is extremely slow.

Contamination: Substances in air, soil or water that makes it impure and unfit for consumption or an intended use and can cause harm to human health or the environment. Contaminants can be naturally occurring or caused by humans.

Drawdown: A lowering of the groundwater level caused by pumping.

Flow Rate: The time required for a volume of groundwater to move between points. Groundwater typically moves very slowly—sometimes as little as inches per year.

Fresh Water: Water with less than 0.5 parts per thousand dissolved salts.

Groundwater: Water contained under the ground's surface, located in the spaces between soil particles and in the cracks of sand, gravel, and rock; a natural resource and source of water for drinking, irrigation, recreation, and industry.

Groundwater Basin: The underground area from which groundwater drains. The basins could be separated by geologic or hydrologic boundaries.

Groundwater Divide: The boundary between two adjacent groundwater basins, which is represented by a high point in the water table.

Groundwater Flow: The movement of groundwater beneath the earth's surface

Hydrogeology: The study of the interrelationships of geologic materials and processes with water, especially groundwater.

Hydrologic Cycle: The never-ending movement of water through the atmosphere, ground and back again through its various states (vapor, liquid, solid); also known as the water cycle.

Hydrologic Unit Code (HUC): The United States is divided and sub-divided into successively smaller hydrologic units which are classified into four levels: regions, subregions, accounting units, and cataloging units. The hydrologic units are arranged or nested within each other, from the largest geographic area (regions) to the smallest geographic area (cataloging units). Each hydrologic unit is identified by a unique hydrologic unit code (HUC) consisting of two to eight digits based on the four levels of classification in the hydrologic unit system.

Integrated Management: Any combination of physical, technical, administrative, and legal practices relating to surface water and groundwater in a manner designed to increase combined benefits or achieve a more equitable apportionment of benefits from both sources. Also referred to as conjunctive use.

***Large or Major Public Water Supplier:** A water supplier that obtains, transports, purchases or sells more than fifty million gallons of water per year.

Maximum Contaminant Level (MCL): Designation given by the U.S. Environmental Protection Agency (EPA) to drinking water standards promulgated under the Safe Drinking Water Act. A MCL is the greatest amount of a contaminant allowed in drinking water without causing a risk to human health.

Monitoring Well: A non-pumping well, generally of small diameter, that is used to measure the elevation of a water table or water quality. A piezometer, which is open only at the top and bottom of its casing, is one type of monitoring well.

Municipal Water System: A network of pipes, pumps, and storage and treatment facilities designed to deliver potable water to homes, schools, businesses, and other users in a city or town and to remove and treat waste materials.

Nonpoint Source Pollution: Pollution discharged over a wide land area, not from one specific location. This type of pollution is caused by sediment, nutrients, organic and toxic substances originating from land use activities which are carried to lakes and streams by surface runoff. It occurs when rainwater, snowmelt, or irrigation washes off plowed fields, city streets, or suburban backyards. As this runoff moves across the land surface, it picks up soil particles and pollutants, such as nutrients and pesticides.

Overwithdrawal: Withdrawal (removal) of groundwater over a period of time that exceeds the recharge rate of the supply aquifer. Also referred to as overdraft or mining the aquifer.

Permeable/Permeability: Capable of transmitting water (porous rock, sediment, or soil); the rate at which water moves through rocks or soil.

****PFAS:** Per- and polyfluoroalkyl substances (PFAS) are a group of man-made chemicals that includes PFOA, PFOS, GenX, and many other chemicals. Examples of where PFAS can be found include cleaners, textiles, leather, paper and paints, fire-fighting foams, and wire insulation. Certain PFAS can accumulate and stay in the human body for long periods of time. There is evidence that exposure to PFAS can lead to adverse health outcomes in humans.

Plume: An underground pattern of contaminant concentrations in groundwater created by the movement of groundwater beneath a contaminant source. Contaminants spread mostly laterally in the direction of groundwater movement. The source site has the highest concentration, and the concentration decreases away from the source.

Point Source Pollution: Pollution discharged from any identifiable point, including pipes, ditches, channels, sewers, tunnels, and containers of various types.

Pollution: An alteration in the character or quality of the environment, or any of its components, that renders it less suited for certain uses. The alteration of the physical, chemical, or biological properties of water by the introduction of any substance that renders the water harmful to use. See also contamination.

Porosity: The ratio of the volume of void or air spaces in a rock or sediment to the total volume of the rock or sediment. The capacity of rock or soil to hold water varies with the material. For example, saturated small grain sand contains less water than coarse gravel.

Potable Water: Water of a quality suitable for drinking.

Recharge: Water added to a groundwater aquifer. For example, when rainwater seeps into the ground. Recharge may occur naturally through precipitation or surface water or artificially through injection wells or by spreading water over groundwater reservoirs. See also infiltration.

Recharge Zone or Area: An area where permeable soil or rock allows water to seep into the ground to replenish an aquifer.

Remediation: Containment, treatment, or removal of contaminated groundwater. May also include containment, treatment, or removal of contaminated soil above the water table.

Runoff: Water that flows over the land to surface streams, rivers, and lakes.

Safe Yield: The annual amount of water that can be taken from a source of supply over a period of years without depleting that source beyond its ability to be replenished naturally in "wet years." Also known as sustainable yield.

Saltwater Intrusion: Process by which an aquifer is overdrafted creating a flow imbalance within an area that results in saltwater encroaching into fresh water supply.

Septic System: A system used to treat household sewage and wastewater by allowing the solids to decompose and settle in a tank, then letting the liquid be absorbed by the soil in a drainage field. Septic systems are used when a sewer line is not available to carry wastes to a sewage treatment plan. Also called an onsite wastewater treatment system.

***Service Area:** The geographic boundary within which service connections to customers of a water supply system are committed by charter of the water commission, board, or authority.

***Small Water System:** a water system that serves three thousand three hundred (3,300) persons or fewer.

Sole Source Aquifer: An aquifer that supplies 50% or more of the drinking water of an area.

***Source:** The raw water upon which a public water supply system depends and refers to both groundwater and surface water.

Source Water Protection: Voluntary action taken to prevent the pollution of drinking water sources, including groundwater, lakes, rivers, and streams. Source water protection is developing and implementing a plan to manage land uses and potential contaminants. To be effective, source water protection should be directed to major threats to the drinking water source identified in the source water assessment. As part of the source water protection plan, a contingency plan for use in the event of an emergency is developed. Source water protection for groundwater is also called wellhead protection.

***State Guide Plan:** The goals, policies, and plans or plan elements for the physical, economic, and social development of the State, adopted by the State Planning Council in accordance with R.I. Gen. Laws § 42-11-10.

Stormwater: Runoff generated when precipitation from rain and snowmelt flows over land or impervious surfaces and does not percolate into the ground. As the water flows over the land or impervious surfaces such as streets, parking lots, and rooftops, it accumulates debris, chemicals, sediment, or other potential pollutants that could adversely affect water quality if the runoff is discharged into water bodies untreated.

Surface Water: Water above the surface of the land, including lakes, rivers, streams, ponds, floodwater, and runoff.

Unconfined Aquifer: An aquifer in which the water table is at or near atmosphere pressure and is the upper boundary of the aquifer. Because the aquifer is not under pressure the water level in a well is the same as the water table outside the well.

Unconsolidated Rock: Loosely bound geologic formation composed of sands and gravel.

***Water Availability:** The maximum amount of water that can dependably be supplied, taking into account limitations imposed by hydraulic or other considerations. In determining the available water, estimates of the safe yield of surface reservoirs and/or well capacity of groundwater sources shall be utilized as appropriate. Water committed by another water supplier through interconnections may be included in the determination of available water. Once accounted for in a water system's calculation of available water, the same volume of water may not be accounted for in another supplier's calculation of available water. Temporarily inactive, abandoned, and emergency water supply sources shall not be included unless approved by the Board. System storage shall not be included in the calculation of available water.

Water Quality: The chemical, physical, and biological characteristics of water with respect to its suitability for a particular use.

***Water Supply System Management Plan:** The plan that is prepared by major public water systems with content prescribed by R.I. Gen. Laws Chapter 46-15.3 and submitted to the Water Resources Board pursuant to the Rules and Procedures for Water Supply System Management Planning.

***Water Supplier:** Any municipality, municipal department, agency, district, authority, or other entity engaged in or authorized to engage in the supply, treatment, transmission, or distribution of drinking water on a wholesale or retail sales basis.

Water Table: The top of an unconfined aquifer; indicates the level below which soil and rock are saturated with water. The top of the saturation zone.

***Watershed:** Those land areas, which because of their topography, subsurface characteristics, and drainage patterns, act as collectors of raw water, which replenish or recharge surface and ground water supply sources.

Well: A bored, drilled, or driven shaft, or a dug hole whose depth is greater than the largest surface dimension and whose purpose is to reach underground water supplies to inject, extract or monitor water.

Well Field: An area in which productive wells are drilled.

Wellhead Protection Area: A protected surface and subsurface zone surrounding a well or well field supplying a public water system to keep contaminants from reaching the well water.

Wetlands: Areas where water saturation is the dominant factor in determining the nature of soil development and the types of plant and animal communities. Other common names for wetlands are sloughs, ponds, and marshes.

Withdrawal: The removal of water from a surface or groundwater source for use.

Source of groundwater terms: <https://groundwater.org/glossary/>

Source of HUC definition and information: <https://water.usgs.gov/GIS/huc.html>

*Source of water resource management terms: Water Resources Board Rules and Procedures for Water Use and Efficiency for Major Public Water Suppliers (490-RICR-00-00-1) and Rules and Procedures for Water Supply System Management Planning (490-RICR-00-00-2).
<https://rules.sos.ri.gov/Organizations/SubChapter/490-00-00>

**Source of PFAS definition: <https://www.epa.gov/assessing-and-managing-chemicals-under-tsca/risk-management-and-polyfluoroalkyl-substances-pfas>