

CONCEPTS AND DEFINITIONS

Acre-foot (acre-ft) - the volume of water required to cover 1 acre of land (43,560 square feet) to a depth of 1 foot. Equal to 325,851 gallons or 1,233 cubic meters. *U.S. Geological Survey, Water Science Glossary of Terms*, <http://ga.water.usgs.gov/edu/dictionary.html#G>

Base flow - sustained flow of a stream in the absence of direct runoff. It includes natural and human-induced streamflows. Natural base flow is sustained largely by ground-water discharges. *U.S. Geological Survey, Water Science Glossary of Terms*
<http://ga.water.usgs.gov/edu/dictionary.html#G>

Cubic feet per second (cfs) - a rate of the flow, in streams and rivers, for example. It is equal to a volume of water one-foot high and one-foot wide flowing a distance of one foot in one second. One "cfs" is equal to 7.48 gallons of water flowing each second. As an example, if a car's gas tank is 2 feet by 1 foot by 1 foot (2 cubic feet), then gas flowing at a rate of 1 cubic foot/second would fill the tank in two seconds. A flow of 1cfs for a day approximately equals the volume of 1 Olympic size swimming pool per day.

Datum – a point, line, or surface used as a reference, as in surveying.

Discharge - the volume of water that passes a given location within a given period of time. Usually expressed in cubic feet per second. Also referred to as “streamflow.” *U.S. Geological Survey, Water Science Glossary of Terms*, <http://ga.water.usgs.gov/edu/dictionary.html#G>

Drainage Basin - The land area drained by a river and its tributaries; also called the watershed or drainage area

Evapotranspiration – a collective term that includes water discharged to the atmosphere as a result of evaporation from the soil and surface-water bodies and by plant transpiration.

Flood (generally) - A general and temporary condition of partial or complete inundation of normally dry land areas from the overflow, the unusual and rapid accumulation, or the runoff of surface waters from any source. An overflow of water onto lands that are used or usable by man and not normally covered by water. Floods have two essential characteristics: The inundation of land is temporary; and the land is adjacent to and inundated by overflow from a river, stream, lake, or ocean. *U.S. Geological Survey, Water Science for Schools, Water Science Glossary of Terms*, <http://ga.water.usgs.gov/edu/dictionary.html>

Flood (for flood insurance purposes) - A general and temporary condition of partial or complete inundation of two or more acres of normally dry land area or of two or more properties (at least one of which is the policyholder's property) from: Overflow of inland or tidal waters; Unusual and rapid accumulation or runoff of surface waters from any source; or Mudflow; or Collapse or subsidence of land along the shore of a lake or similar body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels that result in a flood as defined above.

Flood attenuation – combined processes such as infiltration, storage, and slow release that reduce surface water elevations during floods, but prolong the duration of the flood events.

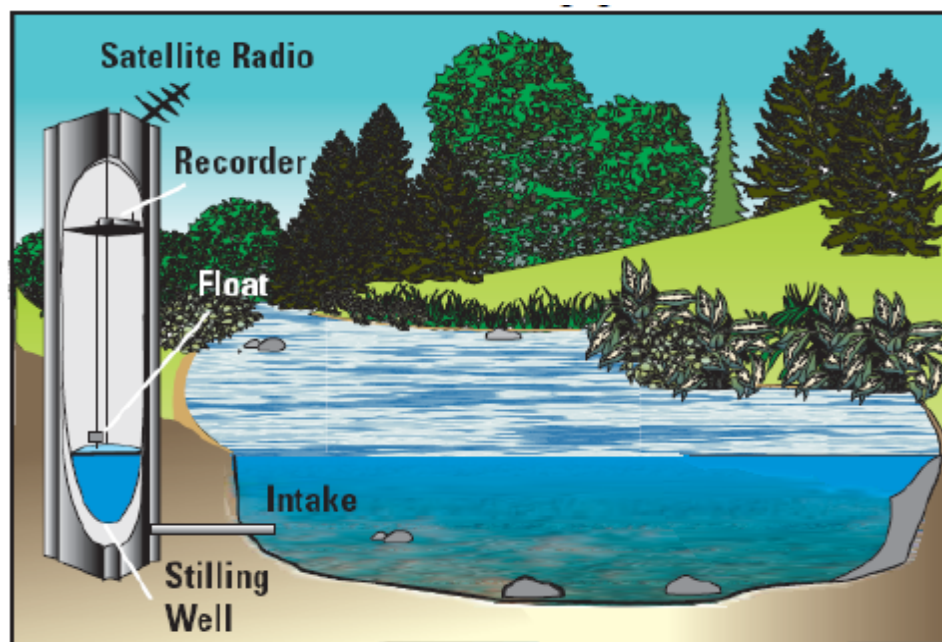
Flood peak - the highest value of the stage or discharge attained by a flood; thus, peak stage or peak discharge. Langbein, W.B., and Iseri, K.T., 1960, *General introduction and hydrologic definitions, Manual of Hydrology: Part 1. General surface-water techniques: U.S. Geological Survey Water-Supply Paper 1541-A*, 29 p., accessed September 6, 2008, at <http://pubs.er.usgs.gov/usgspubs/wsp/wsp1541A>

Flood plain - a strip of relatively flat and normally dry land alongside a stream, river, or lake that is covered by water during a flood. U.S. Geological Survey, *Water Science for Schools, Water Science Glossary of Terms*, <http://ga.water.usgs.gov/edu/dictionary.html>
The active flood plain is continually formed by sediment suspended and delivered by the stream, and it floods frequently. Sherwood, J.M., and Huitger, C.A., 2005, *Bankfull Characteristics of Ohio Streams and Their Relation to Peak Streamflows. U.S. Geological Survey Scientific Investigations Report 2005-5153*, <http://pubs.usgs.gov/sir/2005/5153/>

Fluvial processes – processes associated with water flowing in a defined channel; of or pertaining to rivers.

Gaging station - a site on a stream, lake, reservoir or other body of water where observations and hydrologic data are obtained. The U.S. Geological Survey measures stream discharge at gaging stations. U.S. Geological Survey, *Water Science Glossary of Terms* <http://ga.water.usgs.gov/edu/dictionary.html#G>

A gaging station on a stream or river is often called a “streamgage.” The USGS operates a network of about 8,000 gages nationwide and about 190 gages in Indiana. Data are transmitted from streamgages in near real-time and also are stored long term.

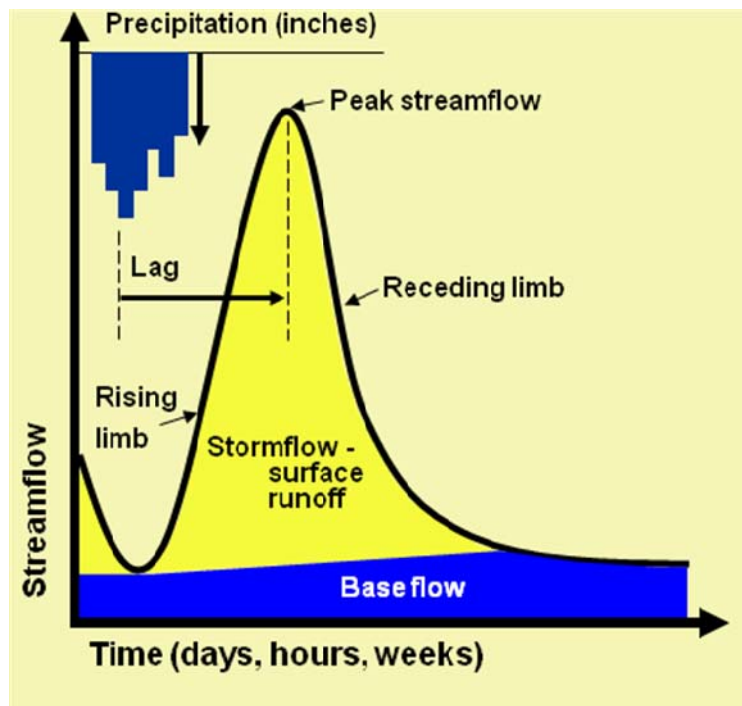


Schematic of USGS streamgage

Geomorphology – the study of the evolution and configuration of landforms.

Ground water - Groundwater is water below the surface of the landscape. Groundwater begins with rain and snow melt that seeps or infiltrates into the ground. Rain and snow melt that seeps into the ground continues downward under the force of gravity until it reaches a depth where water fills all of the openings (pores) in the soil or rock. *Raymond, L.S., 1988, "What is groundwater," New York State Water Resources Institute Bulletin No. 1, Cornell University, accessed at the Marquette County Community Information System, <http://www.mqinfo.org/planningeduc0019.asp>*

Hydrograph - a graph of streamflow with time. A hydrograph can be separated into components based on the source of the water. Surface runoff from precipitation causes streamflow (and water level, also called stage) to rise, peak, and then recede. Lag is the time between the peak precipitation and the peak streamflow. *Science in Your Watershed, General Introduction and Hydrologic Definitions, <http://water.usgs.gov/wsc/glossary.html>*



Hydrograph conceptual sketch. *Bigelow Laboratory for Ocean Sciences, How Our Rivers Run http://www.bigelow.org/virtual/water_sub2.html*

Hydrologic Cycle – the cycle that controls the distribution of Earth’s water as it evaporates from bodies of water, condenses, precipitates, and returns to those bodies of water.

Hydrologic Unit Code - The Water Resources Council developed a hierarchical classification of hydrologic drainage basins in the United States. 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.

Infiltration - flow of water from the land surface into the subsurface. *U.S. Geological Survey, Water Science Glossary of Terms*, <http://ga.water.usgs.gov/edu/dictionary.html#G>

Insurable Structure (or “eligible building” for flood insurance purposes) - A structure with two or more outside rigid walls and a fully secured roof that is affixed to a permanent site.

Land use - present and historical uses of land, such as for agriculture, mining, recreation and grazing. *U.S. Geological Survey, Geologic Glossary*, <http://geomaps.wr.usgs.gov/parks/misc/glossaryt.html>

Lowest Floor - The lowest floor of the lowest enclosed area (including a basement). An unfinished or flood-resistant enclosure, usable solely for parking of vehicles, building access, or storage in an area other than a basement area, is not considered a building's lowest floor provided that such enclosure is not built so as to render the structure in violation of requirements.

National Flood Insurance Program (NFIP) - The federal program that makes flood insurance available to owners of property in participating communities nationwide through the cooperative efforts of the Federal Government and the private insurance industry.

Outwash – water worked sediments typically composed of sand, gravel, cobbles, and boulders; sand and gravel deposited by meltwater streams in front or beyond the margin of active glacial ice.

Physiography - the terrain texture, rock type, and geologic structure and history. *U.S. Geological Survey, Physiographic regions*, <http://tapestry.usgs.gov/physiogr/physio.html>

Precipitation – Return of water from the atmosphere to earth in liquid or frozen form. *U.S. Geological Survey, The water cycle (water science for schools)*, <http://ga.water.usgs.gov/edu/watercycle.html>

Recharge (groundwater) – the process by which water is absorbed and added to the zone of saturation.

Recurrence interval - the average interval of time within which the given flood will be equaled or exceeded once. *Langbein, W.B., and Iseri, K.T., 1960, General introduction and hydrologic definitions, Manual of Hydrology: Part 1. General surface-water techniques: U.S. Geological Survey Water-Supply Paper 1541-A, 29 p., accessed September 6, 2008, at* <http://pubs.er.usgs.gov/usgspubs/wsp/wsp1541A>

Repetitive Loss - Flood-related damages sustained by a structure on two separate occasions during a 10-year period ending on the date of the event for which the second claim is made, in which the cost of repairing the flood damage, on the average, equaled or exceeded 25% of the market value of the structure at the time of each such flood event.

Riparian – of, on, or relating to the banks of a natural course of water.

Runoff - That part of the precipitation, snow melt, or irrigation water that appears in uncontrolled surface streams, rivers, drains or sewers. Runoff may be classified according to

speed of appearance after rainfall or melting snow as direct runoff or base runoff, and according to source as surface runoff, storm interflow, or ground-water runoff. *U.S. Geological Survey, Water Science Glossary of Terms*, <http://ga.water.usgs.gov/edu/dictionary.html#G>

Sinuous – characterized by many curves or turns; winding.

Substantial Damage - Damage of any origin sustained by a structure whereby the cost of restoring the structure to its before damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.

Substantial Improvement - Any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the "start of construction" of the improvement. This term includes structures that have incurred "repetitive loss" or "substantial damage" regardless of the actual repair work performed. The term does not include improvements of structures to correct existing violations of state or local health, sanitary, or safety code requirements or any alteration of a "historic structure", provided that the alteration will not preclude the structures continued designation as a "historic structure".

Thalweg – deepest point of the stream bottom a line connecting the deepest point along a stream channel.

Topography - graphic representation of the surface features of a place or region on a map, indicating their relative positions and elevations.

Weir – a dam placed across a river or canal to raise or divert the water, as for a millrace, or regulate or measure the flow.

Water quality - a term used to describe the chemical, physical, and biological characteristics of water, usually in respect to its suitability for a particular purpose. *U.S. Geological Survey, Water Science Glossary of Terms*, <http://ga.water.usgs.gov/edu/dictionary.html#G>

Watershed - an area of land that drains all the streams and rainfall to a common outflow point, such as the outflow of a reservoir, mouth of a bay, or any point along a stream channel. The word watershed is sometimes used interchangeably with "drainage basin." *USGS, Water Science for Schools – What is a Watershed?* <http://ga.water.usgs.gov/edu/watershed.html>

Wetland - areas where water covers the soil, or is present either at or near the surface of the soil all year or for varying periods of time during the year, including during the growing season. Water saturation (hydrology) largely determines how the soil develops and the types of plant and animal communities living in and on the soil. Wetlands may support both aquatic and terrestrial species. The prolonged presence of water creates conditions that favor the growth of specially adapted plants (hydrophytes) and promote the development of characteristic wetland (hydric) soils. Inland wetlands are most common on floodplains along rivers and streams (riparian wetlands), in isolated depressions surrounded by dry land (for example, playas, basins, and "potholes"), along the margins of lakes and ponds, and in other low-lying areas where the

groundwater intercepts the soil surface or where precipitation sufficiently saturates the soil (vernal pools and bogs). Inland wetlands include marshes and wet meadows dominated by herbaceous plants, swamps dominated by shrubs, and wooded swamps dominated by trees. *U.S. Environmental Protection Agency, What are Wetlands?*
<http://www.epa.gov/owow/wetlands/vital/what.html>

Common Acronyms:

BFE – Base Flood Elevation
BMP- Best Management Practices
CFS – Cubic Feet per Second
DA – Drainage Area
FEMA – Federal Emergency Management Agency
FIS – Flood Insurance Study
HUC – Hydrologic Unit Code
IDEM - Indiana Department of Environmental Management
IDHS – Indiana Department of Homeland Security
IDNR – Indiana Department of Natural Resources
ISJ – Indiana Silver Jackets
LLL – Legal Lake Level
MRBC – Maumee River Basin Commission
NBR Elkhart River – North Branch Elkhart River
NGVD – National Geodetic Vertical Datum
NOAA – National Oceanic and Atmospheric Administration
SPI – Standard Precipitation Index
USACOE – United States Army Corps of Engineers
USGS – United States Geological Survey