

GLOSSARY

Acre-foot – The quantity of water needed to cover one acre to a depth of one foot.

Adjudication – Simply stated this means “a court decision”. Applied to water law it is the judicial procedure that settles claims and quantifies rights and priorities.

Annual flood – The highest peak discharge of a stream in a water year.

Approach Velocity – Required velocity of water just upstream of measuring device to ensure proper conditions for accurate measurement.

Appropriated water – Water from a stream, reservoir, or other source reserved for a specific use under state water-right laws.

Aquifer – Rock or sediment which is saturated and sufficiently permeable to transmit economic quantities to wells and springs.

Average annual runoff (yield) – The average of water-year runoff for a total period of record; measured in volume.

Bank storage – The water that infiltrates the banks of a stream channel during high flows or floods, is stored there, and is released to the stream after the high water recedes.

Basin – A physiographic region bounded by a drainage divide; consists of a drainage system comprised of streams and often natural or man-made lakes. (Also called **drainage basin** or **watershed**.)

Beneficial use – The use of water for the benefit of the appropriator, other persons, or the public, including but not limited to agricultural (including stock water), domestic, fish and wildlife, industrial, irrigation, mining, municipal, power, and recreational uses. A beneficial use also includes the use of water for leasing under special provisions of Montana Codes Annotated 85-2-141.

Bond – A sum of money filed by a water commissioner with the clerk of district court to insure the faithful discharge of their duties.

Channelization – The artificial enlargement or realignment of a stream channel.

Cipolleti (trapezoidal) weir – A contracted weir trapezoidal in shape.

Claim – The “statement of existing water right claim” in accordance with Senate Bill 76, the adjudication statute, is a filing made to document an existing (pre-July 1, 1973) water right as ordered by the Montana Supreme Court. The statement of claim is considered prima facie evidence.

Closed basin – 1) A drainage basin having no natural outlet where surface water eventually seeps into the ground or evaporates. 2) A term also used when no more water rights are being granted in the basin in accordance with citizen petition or by legislation mandate.

Closed conduit flow – Flow (pipe flow) that occurs as the result of pressure due to head difference between the ends of the pipe.

Cone of depression – A depression in the potentiometric surface of an aquifer, typically defined or modelled as an “inverted cone” which defines the area of influence of a pumping well.

Confluence – The place where tributaries, streams, or rivers meet.

Conjunctive use – Planned management of surface water and groundwater resources as an interrelated system.

Conservation – The continuing protection and management of natural resources in accordance with principles that assure their optimum long-term economic and social benefits.

Consumptive use – Water removed from available supplies that does not return to the source. For example, water diverted from surface or groundwater that evaporates or transpires to the atmosphere due to plant use.

Continental divide – A drainage divide separating the rivers that flow toward opposite sides of a continent.

Cost allocation – The procedure for dividing total financial cost among the benefiting parties.

Creek – A small stream of water that serves as the natural drainage course for a drainage basin. The term is relative according to size. Some creeks in a humid region would be called rivers if they occurred in an arid area.

Crest – 1) The top of a dam, dike, or spillway. 2) The highest elevation reached by floodwaters flowing in a channel.

Cubic feet per second (cfs) – A unit expressing rate of discharge, typically used in measuring streamflow. One cubic foot per second is equal to the discharge in a stream of a cross section one foot wide and one foot deep, flowing with an average velocity of one foot per second; equals 448.8 gallons per minute.

Current meter – An instrument, typically using mechanical, electromagnetic or doppler technology, that measures velocity to determine discharge in a stream or ditch.

Dam – A structure of earth, rock, concrete, or other materials designed to retain water, creating a pond, lake, or reservoir.

Dead storage – The volume of water in a reservoir stored below the lowest outlet that cannot be released for downstream use.

Decree – The judgement of a court; an official order or settlement. As related to Montana water law, a court adjudication of pre-July 1, 1973 existing water rights in a particular river basin.

- Temporary preliminary decree – A listing of state-based claims in a particular river basin issued by the Montana Water Court as a temporary listing of rights pending the addition of federal water right claims.
 - Preliminary decree – a listing of state-based and federal reserved rights in a particular river basin.
 - Final decree – a finalized record and adjudication of all rights in a basin, allowing for sound administration of water rights.
- (All decrees are subject to objections and hearings before finalized)

Dike – An embankment to confine or control water. A **levee**.

Discharge – Flow of surface water in a stream or the flow of ground water from a spring, ditch, or flowing artesian well.

Ditch Rider – An employee of an irrigation district, water users' association, or some other private entity that facilitates the measurement and distribution of waters for that entity.

Ditch right – A right that allows someone to bring water through a ditch to their own land across someone else's land. Ditch rights are separate from water rights. One can have a water right without having a ditch right and vice versa, although this occurs infrequently. Ditch rights are obtained either by permission of the landowner, or by condemnation in a court with compensation. Owners of ditch rights can go onto the land of the landowner and repair and maintain the ditch, without notice. However, the access must be reasonable and necessary for maintenance of the ditch and cannot exceed the historical access.

Diversion – The transfer of water from a stream, lake, aquifer, or other source of water by a canal, pipe, well, or other conduit to another watercourse or to the land, as in the case of an irrigation system.

Diversion dam – An artificial barrier designed to enable the transfer of water from a stream into a canal, pipe, or other conveyance mechanism.

Drainage – Downward movement of water through soil or across the land surface.

Drainage area – The land area contributing runoff to a stream or other body of water, and generally defined in terms of acres or square miles.

Drainage divide – A natural ridge on the land surface which divides one drainage area from another.

Easement – A legal instrument enabling the giving, selling, taking, or use of certain property rights such as land use, without transfer of title, such as for the passage of utility lines.

Ephemeral stream – A stream that flows only part-time usually during snow melt periods or following rainstorms.

Evaporation – The process by which a liquid changes to vapor.

Evapotranspiration – The loss of water from the soil both by evaporation and by transpiration from the plants growing thereon.

Existing water rights – As defined by the Montana Water Use Act, water rights that originated before July 1, 1973, the effective date of the Montana Water Use Act.

Floot-Area Method – A quick method to approximate flow when other means are not available.

Flood – The temporary inundation of normally dry land areas resulting from the overtopping of the natural or artificial confines of a river or other body of water.

Floodplain – The land bordering a stream or river, built up of sediments from overflow of the stream or river, and subject to inundation when the stream or river is at flood stage.

Flood stage – The stage at which overflow of a stream or body of water begins.

Flow – The rate of water discharged from a source; expressed in units of volume per units of time.

Flow augmentation – The addition of water to a stream.

Flume – A shaped, open-channel flow structure that forces flow to accelerate and is used to measure flow in a channel.

Flow rate – The volume of water passing by a cross-sectional area per unit time. Typically expressed in cubic feet per second, gallons per minute, or miner's inches.

Freeboard – The vertical distance between a designed maximum water level and the top of a structure.

Free-flow condition – When the flow condition downstream of a measuring device does not influence the stage measurement at the upstream end. Free flow is critical for accurate measurements of flumes and weirs.

Gaging station – A particular site on a stream, canal, lake, or reservoir where hydrologic data is collected.

Gallons per minute – A unit expressing rate of discharge, typically used in measuring well capacity.

Gradient – Degree of incline; the steepness of a slope.

Groundwater – Any water beneath the land surface or beneath the bed of a stream, lake, or reservoir, and which is not a part of the surface water.

Headgate – A structure installed at the point of diversion to regulate flow.

Head – The height of a column of water above a reference point.

Headwaters – The source and upper reaches of a drainage.

Hydrograph – A graph showing the changes in discharge of a stream or river, or the changes in water levels of a well with the passage of time.

Hydrologic cycle – The constant circulation of water from the sea, through the atmosphere, to the land, and back to the sea by overland, subterranean, and atmospheric routes.

Influent stream – A stream that contributes water to the zone of saturation and to bank storage (losing stream).

In-line flow meter – A meter often permanently installed in a pipe or closed conduit that measures the volume of water flowing through the pipe.

Instream flows – The water left in a stream to maintain the existing water quality or aquatic resources and associated wildlife and riparian habitat.

Instream use – Uses of water within the stream channel (e.g., fish and other aquatic life, recreation, navigation, and some types of hydroelectric power production).

Interbasin transfer – The diversion of water from one drainage basin to another drainage basin.

Intermittent stream – A stream or reach of a stream that flows only at certain times of the year because losses from seepage or evaporation are greater than the available streamflow.

Irrigable land – Land possessing favorable soil, topographic, drainage, and climatic conditions, and an adequate water supply capable of economically supporting irrigation.

Irrigation – The controlled application of water to cropland, hayland, and/or pasture to supplement that supplied through nature.

Irrigation district – A quasi-public governmental organization created by petition and court decree to operate an irrigation system in a defined area that includes the operation of works, delivery of water, and administration of the organization. It is overseen by a board that is elected by the members of the district.

Irrigation system efficiency – The ratio of the consumptive use of applied irrigation water to the total amount of water diverted; expressed as a percentage.

Irrigation return flow – Irrigation water not consumed and returned to a surface or groundwater supply.

Lateral Ditch – Lateral ditches normally divert water from a main canal or ditch which has its heading from a river or natural stream channel.

Left or right bank – The left - or right-hand bank of a stream when the observer faces downstream.

Marsh-McBirney – The product name for an electromagnetic current meter commonly used in flow measurements to determine velocity.

Miner's Inches – 40 Montana statutory miner's inches is equivalent to 1 cubic foot of water per second (cfs).

Natural flow – The naturally occurring water that creates in-channel flows. Natural flows do not include water imported from other basins, water stored in a reservoir, or artificially added ground water. Natural flows may include tributary streams, springs, bank storage, and return flow.

Nappe – The falling sheet of water springing from a weir plate.

Net reservoir evaporation – The evaporation from a reservoir after making allowance for precipitation on the reservoir and for runoff that would have occurred if the land area were not covered by the reservoir.

Offstream use – Water withdrawn from a surface water source for uses such as irrigation, municipal water supply, steam electric generation, etc.

Perennial stream – A stream that flows from source to mouth throughout the year.

Period of use – The time period during each year that the holder of a valid water right is allowed to use water.

Place of Use – The location where water is used.

Point of diversion – The location at which water is physically diverted by man-made works from the source of water. Points of diversion are identified by legal descriptions in Montana water rights.

Price AA and pygmy meter – Types of mechanical velocity meters utilizing horizontally aligned “cups” spun by the stream current.

Prior Appropriation Doctrine – A legal theory of water law and a system of water rights management which allocates water between users based upon a priority of water use. It is often defined as a water system where “first in time”, is “first in right”. An individual’s right to a specific quantity of water depends on when the use began and the amount of water used at that point in time. The first person to use the water from a source established the first right, the second person could establish the next right, and so on. During dry years, the person with the first right has the first chance to use the available water. The holder of the second right (a junior right) would have the second chance, and so on. The traditional elements of a valid appropriation are:

1. Intent to apply water to a beneficial use
2. An actual diversion of water from the natural source
3. Application of the water to a beneficial use within a reasonable time
4. The right to conditions as they exist at the time appropriation

Priority date – The date a water right was first established. The priority date is used to disperse water according to seniority.

Rating table – A table listing gage heights with their corresponding discharge values. It is used in obtaining instantaneous discharges.

Reach – Any arbitrarily defined length of a stream.

Reserved water right – A water right created and implied under federal law by the reservation of land by the federal government. The federal court quantifies this as the amount of water sufficient to meet the purposes of the reservation. Federal reserve rights are associated with military reservations, the National Park Service, USFS, and other federal lands such as Indian reservations. The right is not lost by nonuse and its priority date is the date the land was reserved by federal law, executive order or treaty.

Reservoir – A man-made pond, lake, or basin that stores, regulates, or controls water.

Riprap – Rock placed along a streambank, as a protective layer to prevent erosion.

Runoff – The flow of water over the land surface and eventually in stream channels typically as a function of precipitation, snowmelt, spring discharge, or excess irrigation water.

Seepage – Water lost or gained in a stream or ditch as the result of interaction with shallow ground water through porous soils.

Sharp Crested Weir – A weir with a thin plate mounted across the notch to allow for free-flow conditions.

Snowpack – The winter accumulation of snow; measured in inches.

Spring – A naturally occurring source of water issuing from the ground.

Staff gage – Either vertical or inclined. The standard U.S. Geological Survey vertical staff gage consists of porcelain-enameled iron sections, each 4 inches wide, 3.4 feet long, and graduated every 0.02 foot. They are used to measure water-surface elevations.

Stage – The height of a water surface above some established reference point.

Stored water – Water diverted to and retained within a reservoir and then released for some beneficial use.

Stream – Any body of running water moving under gravity flow through clearly defined natural channels.

Streamflow – The discharge that occurs in a natural channel. Although the term “discharge” can be applied to the flow of a canal, the word “streamflow” uniquely describes the discharge in a surface stream.

Submergence – When used to describe the operation of a flume, submerged flow is when the resistance to flow becomes sufficient to reduce the velocity, increase the flow depth, and cause a backwater effect at the flume. When used to describe the operation of a weir, submerged flow occurs when freeflow no longer occurs over the crest and the nappe is not ventilated.

Surface water – Water above the surface of the land including, but not limited to, lakes, rivers, streams, wetlands, wastewater, flood water, and ponds.

Topographic maps – Maps with lines showing equal elevation of a region's relief; also showing natural and man-made surface features, including hills, valleys, rivers, and lakes; and man-made features such as canals, bridges, roads, cities, etc.

Totalizer – A flow meter with the built-in capability to sum or totalize volume continually.

Transpiration – The process by which water absorbed by plants, usually through the roots, is evaporated into the atmosphere from the plant surface, principally from the leaves.

Tributary – A stream that contributes its water to another stream or body of water.

Velocity Head - As it pertains to a weir, when flow approaches the crest, the water surface becomes lower due to acceleration of the flow by the force of gravity.

Volume – The amount of water in terms of gallons, acre-feet, or cubic feet.

Water budget – An accounting of the inflows and outflows of water to and from a system.

Water Master – An attorney or technical specialist employed by the Montana Water Court who is responsible for the organization of and management of objections and issues in a decree.

Water reservation – A water right granted by the Board of Natural Resources and Conservation to public entities, on behalf of the public, for existing or future beneficial uses or to maintain a minimum flow, level, or quality of water.

Water right – A legal right to use a specified amount of water for beneficial purposes.

Watershed (drainage basin) – The land area (or catchment) which captures precipitation and conveys it to a particular waterbody. It is bounded by ridges or divides. A large watershed like that of the Bitterroot River is made up of the watersheds of all its tributaries, such as Mill Creek.

Water table – The upper level of a saturated zone in an aquifer below the soil surface.

Water year – The 12-month period October 1st through September 30th, and designated by the calendar year in which it ends.

Water yield – The surface runoff from a drainage basin; precipitation minus the evapotranspiration; usually measured in cubic feet per second or acre-feet per square mile. For groundwater, the volume of water pumped from a well in a given period of time; usually measured in gallons per minute (gpm).

Weir – A structure placed in a canal, stream, or ditch to measure the rate of flow of water. In its simplest form, a weir consists of a bulkhead with an opening of fixed dimensions cut into its top edge.

Well – A pit, hole, or shaft sunk into the earth to tap an underground source of water.

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