

Glossary of Water Terminology

Fact Sheet No. 4.717

Crop Series | Irrigation



by R. Waskom and M. Neibauer*

Water is basic to our lives and all of us are affected by how it is used and managed. In Colorado, the complexity of our water laws and our water management structure is often bewildering. It seems that water managers in Colorado have their own special language. This fact sheet offers non-technical definitions of many of the commonly used water terms to help citizens better understand the principles that govern the use of water in Colorado.

A

Absolute water right: A water right, with a specified priority date, that has been placed to a beneficial use.

Acre foot: The volume of water required to cover one acre of land to a depth of one foot (43,560 cubic feet or 325,851 gallons).

Adjudication: The judicial process through which the existence of a water right is confirmed by court decree.

Adverse use: Using decreed water owned by another appropriator.

Alluvial groundwater: Ground water that is hydrologically connected to a surface stream that is present in permeable geologic material, usually small rock and gravel.

Appropriation Doctrine: The system of water law primarily used in the western United States under which: 1. The right to water is acquired by diverting water and applying to a beneficial use; and 2. A right to water use is superior to a right developed later in time.

Appropriator: The person or persons who put water to beneficial use.

Aquifer: Underground deposits of sand, gravel, or rock saturated with water. The two major types of aquifers are confined and unconfined.

Artesian well: A well in which water under natural pressure rises to the surface without being pumped.

Augmentation plan: A court-approved plan that allows a junior water user to divert water out of priority so long as adequate replacement is made to affected stream system preventing injury to the water rights of senior users.

B

Base flow: The amount of water in a stream that results from ground water discharge.

Basin: The area of land that drains to a particular river.

Basin rank: The relative seniority of a water right as determined by its date of adjudication and the date of appropriation.

Beneficial use: The application of water necessary to accomplish the purpose of the appropriation, without waste. Some common types of beneficial use are agriculture, municipal, wildlife, recreation, and mining.

Best Management Practices (BMPs): Practices that are technically and economically feasible and for which significant water conservation or water quality benefits can be achieved.

C

California Doctrine: A legal doctrine retaining aspects of both riparian rights and the principles of prior appropriation.

Call: The request by an appropriator for water which the person is entitled to under his decree; such a call will force those users with junior decrees to cease or diminish their diversions and pass the requested amount of water to the downstream senior making the call.

Change of water right: Any change in a way a water right is used. Can be changed in type, place, time of use, point of diversion, adding points of diversion, etc. Changes of

Quick Facts

- Water in Colorado is administered under the doctrine of prior appropriation or "first in time, first in right doctrine".
- The state constitution declares that "the right to divert the unappropriated waters of any natural stream to beneficial uses shall never be denied."
- The concept of beneficial use has changed with changing public values, but includes a notion of wise use, without waste.
- Water rights in Colorado are adjudicated or recognized through the court system.

© Colorado State University Extension. 5/02. Revised 5/12.

www.ext.colostate.edu



water rights must be approved by the water court to assure that no injury occurs to other water rights.

Colorado Doctrine: The doctrine regulating water usage by priority of appropriation as opposed to riparian rights. See appropriation doctrine.

Compact: An agreement between states apportioning the water of a river basin to each of the signatory states.

Compact call: The requirement that an upstream state cease or curtail water diversions from the river system that is the subject of the compact so that downstream states' compact entitlements may be met.

Conditional water right: The legal preservation of a priority date that provides a water user time to develop his or her water right, but reserves a more senior date. A conditional right becomes an absolute right when water is actually put to beneficial use.

Conservancy district: A special taxing district, created by a vote of the district's electors, that has authority to plan, develop, and operate water supply and/or potable water projects.

Conservation district: A geographical area designated by the State Legislature for water management purposes with a board appointed by county commissioners.

Consumptive use: 1. Any use of water that permanently removes water from the natural stream system. 2. Water that has been evaporated, transpired, incorporated into products, plant tissue, or animal tissue and is not available for immediate reuse.

Cubic feet per second (cfs): A rate of water flow at a given point, amounting to a volume of one cubic foot for each second of time. Equal to 7.48 gallons per second, 448.8 gallons per minute, or 1.984 acre feet per day.

D

Decree: An official document issued by the court defining the priority, amount, use, and location of the water right.

Decreed water right: A court decision placed on a water right that is then administered by Colorado's Water Resources Department.

Depletion: The loss of water from surface water reservoirs or groundwater aquifers at a rate greater than that of recharge.

Designated ground water: Ground water which, in its natural course, is not available to or required for the fulfillment of decreed surface rights, and which is within

the geographic boundaries of a designated ground water basin.

Designated ground water basins:

Those areas of the state established by the Ground Water Commission located in the Front Range and Eastern Colorado.

Developed water: Water that is produced or brought into a water system through the efforts of people, where it would not have entered the water system on its own accord.

Diligence: Action taken towards the perfection of a conditional water right.

Direct flow right: Water diverted from a river or stream for use without interruption between diversion and use except for incidental purposes, such as settling or filtration.

Diversion: Removal of water from its natural course or location by canal, pipe, or other conduit.

Division engineer: The state engineer's principal water official in each of the seven water divisions.

Drainage basin: All the land that serves as a drainage for a specific stream or river.

Drought: An extended period with below average precipitation.

E

Effluent: Water discharged after use.

Effluent exchange: The practice of exchanging wastewater effluent for other water sources without causing injury to other water rights as a replacement source of water for diversion of water farther upstream that would otherwise have been out of priority.

Endangered Species Act: Federal law that governs how animal and plant species whose populations are dangerously in decline or close to extinction will be protected and recovered.

Erosion: Natural process in which soil and land surface is worn down or washed away by the action of water, wind, ice, or landslides.

Eutrophication: The process of surface water nutrient enrichment causing a water body to fill with aquatic plants and algae.

Evaporation: The process of changing a liquid to a gas (vapor); for example, when water turns into steam or water vapor.

Evapotranspiration (ET): Process by which water is evaporated from soil surface and water is transpired by plants growing on that surface.

Exchange: A process by which water, under certain conditions, may be

diverted out of priority at one point by replacing it with a like amount of water at another point.

Exempt uses: Any recognized uses that are not subject to administration under the priority system.

Exempt well: A well allowed to be pumped out of priority.

F

Federal reserved rights: An implied water right that occurs when the federal government withdraws its land from the public domain and reserves it for a federal purpose, the government, by implication reserves appurtenant water then unappropriated to the extent needed to accomplish the purpose of the reservation.

Firm annual yield: The yearly amount of water that can be dependably supplied from the raw water sources of a given water supply system.

Floodplain: A low area of land adjacent to a stream or other water course which is subject to flooding and holds the overflow of water during a flood. Often delineated on the basis of the 100 year storm event.

Fresh water: Low salt content water (less than 0.5 parts per thousand dissolved salts).

Futile call: A situation in which a junior priority will be permitted to continue to divert in spite of demands by a senior appropriator in the same watershed, because to curtail the junior from diversion would not be effective to produce water for beneficial use for the senior.

G

Ground water: Ground water, as opposed to surface water, is water that does not run off, and is not taken up by plants, but soaks down into an aquifer; a supply of fresh water under the earth's surface which forms a natural reservoir.

Ground Water Commission: A twelve member body created by the legislature, nine of which are appointed by the Governor to carry out and enforce the state statutes, rules, regulations, decisions, orders, and policies of the Commission dealing with designated ground water.

Ground water management district: Any district organized for the purpose of consulting with the ground water commission on all designated ground water matters within a particular district.

H

Head gate: A control structure or gate upstream of a lock or canal; A floodgate that controls the flow of water, as in a ditch.

Hydraulics: Study of practical applications of liquid in motion.

Hydrologic cycle: The cycle of water movement from the atmosphere to earth and back again through evaporation, transpiration, condensation, precipitation, percolation, runoff, and storage. See water cycle.

Hydrology: The science dealing with the waters of Earth – their distribution and movement on the surface and underground; and the cycle involving evaporation and precipitation.

I

Infiltration: Water moving into the ground from a surface supply such as precipitation or irrigation.

In-stream flow: Non-consumptive water requirements that do not reduce the water supply, such as water required for maintaining flowing streams for fish or for recreational boating.

Irrigation district: A legal entity created by statute in order to develop large irrigation projects.

Irrigation year: The irrigation year for the purposes of recording annual diversions of water for irrigation in Colorado begins November 1 and ends on October 31 of each year.

J

Junior rights: Water rights that are more recent than older or more senior rights.

L

Leaching: The process where material in the soil (such as nutrients, pesticides, etc.) are washed into lower layers of soil by the downward movement of water.

M

Minimum streamflow requirement: Water right decreed to the Colorado Water Conservation Board requiring that a set amount of water be maintained in a water course for the purpose of reasonably maintaining the environment.

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.

N

National Environmental Policy Act (NEPA): Federal law enacted to ensure the integration of natural and social sciences and environmental design in planning and decision-making for federal projects or projects on federal lands.

National Pollution Discharge Elimination System (NPDES) Permit: A permit required under Section 401 of the Clean Water Act regulating discharge of pollutants into the nation's waterways.

Native waters: Surface and underground waters naturally occurring in a watershed.

Non-consumptive use: Water drawn for use that is not consumed. For example, water withdrawn for purposes such as hydropower generation. It also includes uses such as boating or fishing where the water is still available for other uses at the same site.

Non-exempt uses: Any recognized beneficial uses of water that are administered under the priority system.

Non-exempt well: A well allowed to be used for non-exempt uses such as irrigation.

Non-native waters: Water imported or not originally hydrologically connected to a watershed or drainage basin physically or by statute; non-tributary groundwater and transmountain water are non-native.

Non-tributary ground water: Underground water in an aquifer which is situated so that it neither draws from nor contributes to a natural surface stream in any measurable degree.

Nonpoint source pollution: Pollution coming from a wide, non-specific source such as runoff from cities, farms, or forest land.

Not non-tributary ground water: Statutorily defined as ground water located within those portions of the Dawson, Denver, Arapahoe, and Laramie-Fox hills aquifers that are outside of any designated ground water basin in existence on January 1, 1985.

O

Over-appropriated: A water rights term used to describe a surface water drainage system that has more decreed water rights claims on the system than can be satisfied by the physical supply of water available.

P

Percolation: The downward movement of water in soil; the infiltration of water into the ground.

Point of diversion: A specifically named place where water is removed from a body of water.

Point source pollution: Pollution coming from a single identifiable source such as discharge pipes from industry or sewer plants or other means of conveyance including ditches, channels, sewers, and containers.

Potable: Water that is considered safe for domestic human consumption; drinkable water.

Priority: 1. The right of an earlier appropriator to divert from a natural stream in preference to a later appropriator. 2. Seniority date of a water right or conditional water right to determine their relative seniority to other water rights and conditional water rights deriving water from a common source. Priority is a function of both the appropriation date and the relevant adjudication date of the right.

Priority date: The date of establishment of a water right. The rights established by application have the application date as the date of priority.

R

Raw water: Untreated water.

Recharge: Ground water supplies are replenished, or recharged, when rain or snowmelt enters the saturation zone.

Recharge area: Reservoirs and ditches that are designed to replenish ground water depletions, due to out of priority diversions, by artificially introducing water into the ground water aquifer.

Reclaimed water: Effluent usable for irrigation or ready for release into lakes and rivers.

Reservoir: A natural or artificial place to store water; water storage created by building a dam; a pond, lake, or basin used for the storage, regulation, and control of water.

Resume: A monthly publication by the water court of a summary of water rights applications filed in the water court that month.

Return flow: The amount of water that reaches a surface or ground water source after it has been released from the point of use and thus becomes available for further reuse.

Reuse: To use again; to intercept for subsequent beneficial use, either directly or by exchange. Water that would otherwise return to the steam system.

Reverse osmosis: A water treatment method used to remove dissolved inorganic chemicals and suspended particulate matter from a water supply. Water, under pressure, is forced through a semi-permeable membrane that removes molecules larger than the pores of the membrane.

Riparian Doctrine: A legal concept in which owners of lands along the banks of a stream or body of water have the right to reasonable use of the water and a correlative right protecting against unreasonable use by others that substantially diminishes the quantity or quality of water. The right is appurtenant to the land and does not depend on prior use. Riparian rights are not recognized in Colorado.

Riparian water right: The legal right held by an owner of land contiguous to or bordering on a natural stream or lake, to take water from the source for use on the contiguous land.

River basin: The land area surrounding one river from its headwaters to its mouth; the area drained by a river and its tributaries.

River call: Usually a written document filed with the division engineer stating that as of a certain date and time, a water right holder is not receiving all of the water they are entitled to by decree, and are requesting that the Division Engineer shut down or curtail all upstream water rights junior to them until their senior right is satisfied.

S

Safe Drinking Water Act (SDWA): Federal legislation that regulates the treatment of water for human consumption. Requires testing for and elimination of contaminants for the protection of human health.

Senior rights: Water rights that have been established first and are older than junior rights.

Source water protection spring: Plan for maintaining quality of a drinking water supply. The point at which the water table meets earth's surface, causing water to flow from the ground.

State engineer: The chief executive office in the executive department of the state government who administers the adjudication decrees of court, defining water rights.

Storage water rights: Colorado law provides for "appropriation by storage" of water that will be captured in reservoirs and subsequently be put to beneficial use in priority. Storage water applications are submitted to water court for adjudication and decree similar to other water rights.

Structure: Any apparatus constructed to divert water, such as a head gate, pipe, or well.

Sublimation: The transition of water from the solid phase (snow) directly to the vapor phase without melting.

Surface water: Water on the surface of the ground (lakes, rivers, ponds, floodwater, oceans, etc.); precipitation which does not soak into the ground or return to the atmosphere by evaporation or transpiration.

Surge irrigation: A method of irrigation using computerized valves to turn the water supply on and off to move water more uniformly down the field.

T

Transbasin diversion: The conveyance of water from its natural drainage basin into another basin for beneficial use.

Transmountain diversion: The conveyance of water from one drainage basin to another across the Continental Divide.

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).

Treated water: Water that has been filtered and/or disinfected; sometimes used interchangeably with "potable" water.

Tributary: A tributary is generally regarded as a surface water drainage system which is interconnected with a river system. Under Colorado law, all surface and groundwater, the withdrawal of which would affect the rate or direction of flow of a surface stream within 100 years, is considered to be tributary to a natural stream.

Tributary ground water: Water present below the earth's surface that is hydrologically connected to a natural surface stream.

U

Unappropriated water: Water which has not been appropriated, and in which no other person has or claims superior rights and interests.

User supplied data: Data or records of water uses provided by an owner/user which has not been verified by state officials.

W

Wastewater: Water that has been used and contains unwanted materials from homes, businesses, and industries; a mixture of water and dissolved or suspended substances.

Wastewater treatment: Any of the mechanical or chemical processes used to modify the quality of wastewater in order to make it more compatible or acceptable to humans and the environment.

Water and sanitation districts: A special taxing district formed by the residents of the district for the combined purpose of providing potable water and sanitary wastewater services.

Water commissioner: State water officials, appointed by the state engineer and working under the direction of the division engineers, who perform the day-to-day administration of surface and ground water in each water district.

Water conservation: The wise use of water with methods ranging from more efficient practices in farm, home and industry to capturing water for use through water storage or conservation projects.

Water court: A special division of a District Court with a District Judge designated as and called the Water Judge to deal with certain specific water matters principally having to do with adjudication and change of point of diversion. There are seven water courts in Colorado.

Water cycle: Transition and movement of water involving evaporation, transpiration, condensation, precipitation, percolation, runoff, and storage.

Water development: The process of building diversion, storage, pumping, and/or conveyance facilities.

Water districts: Eighty geographical divisions of the state that originally were used for the granting of water rights. The districts are now largely used for administrative purposes.

Water diversion: Changing the natural flow of water to another location by using dams, canals, or pipelines.

Water divisions: The seven geographical areas of the State of Colorado corresponding to the major natural surface water drainages.

Water quality standard: Recommended or enforceable maximum contaminant levels of chemicals or substances in water. These levels are established for water used by municipalities, industries, agriculture, and recreation. Standards may also be narrative.

Water right: A right to use, in accordance with its priority, a certain amount of water.

Water storage: The locations in which water is stored. They can be above ground in lakes, rivers, and other waterways or below ground as ground water.

Water table: The upper level of ground water; the level below which soil and rock are saturated with water.

Watershed: The region draining into a river, river system or body of water; the total land area, regardless of size, above a given point on a waterway that contributes runoff water to the flow at that point; all the land that serves as a drainage for a specific stream or river.

Well: Any structure or device used for the purpose or with the effect of obtaining ground water for beneficial use from an aquifer. A shaft or hole into the Earth to tap an underground supply of water.

Wellhead Protection Program: An amendment to the federal Safe Drinking Water Act in 1986. Initiated to minimize the potential for contamination of public ground water supplies.

Wetland: An area of land that is regularly wet or flooded, such as a marsh or swamp. Other common names for wetlands are sloughs, ponds, and marshes.

X

Xeriscape: The use of plant materials and practices that minimizes landscaping water use; usually native plants; environmentally friendly form of landscaping. The term "xeriscape" was copyrighted by Denver Water in 1981.

Note: These definitions are offered to assist the public in understanding some of Colorado's most often used water terms. If you desire a legal definition, please contact a water attorney.