

WATER RIGHTS

Alaska Glossary of Water Terms

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A

ABANDONED WELL - well whose purpose and use have been permanently discontinued, or is in such disrepair that its intended purpose cannot be reasonably achieved.

ABANDONMENT – voluntary surrender, desertion, relinquishment or cession of property or of rights then available for appropriation by the next comer or finder. It requires (1) the intent to give up the right, and (2) an actual relinquishment of the right. Intent must be shown by clear and unequivocal acts. Abandonment is not seen very often because the requisite proof of a mental state (i.e., the intent to abandon) is very difficult to make. States do not generally actively seek out to identify abandonment. Abandonment requires 4 year's nonuse in NM; 5 years in AK, AZ, CA, NV and OR; 10 years in CO.

ACIDIC - condition of water or soil that contains a sufficient amount of acid substances to lower the pH below 7.0.

ACRE - measure of area equal to 43,560 square feet (640 acres in a Section).

ACRE-FOOT (AF) - unit commonly used to measure volume of water; equal to 43,560 cubic feet, or 325,851 gallons (will cover one acre one foot deep).

ACTIVE STORAGE CAPACITY – the amount of storage that can be released and utilized; typically the volume of water that can be stored above the reservoir release valve.

ADJUDICATION - refers to an administrative or judicial process whereby the nature, extent and relative priority of water rights are determined or decreed by a court of law. In Alaska, a stream or watershed adjudication can be initiated by the State (“administrative” adjudication) or by a water user (including the United States). The U.S. may be joined in a “judicial” adjudication if it is comprehensive and meets the requirements of the McCarran Amendment.

ADVERTISE - to provide notice, usually by publication of a legal notice in one of more newspapers, of a proposed appropriation of water, change of use of water, or an extension of time in which to submit proof of appropriation.

AGGRADATION - the accumulation of sediment, usually implying an increase in deposit thickness.

AIRLIFT (lift method) - method of extracting water from a well wherein air is forced down tubes (via a windmill and small generator, for example) and water is pushed to the surface; for shallow wells; an example is the Bowjon.

ALLUVIUM - general term for deposits of clay, silt, sand, gravel, or other particulate material deposited by a stream or other body of running water in a streambed, on a flood plain, on a delta, or at the base of a mountain.

AMOUNT – on a water right, it is the quantity of water needed to accomplish the desired activity. The amount is usually expressed in cubic feet per second (cfs), gallons per minute (gpm), miner’s inches, acre-feet (ac-ft), gallons per day (gpd), million gallons per day (mgd), or other units. Alaska uses the unit gallons per day.

APPLICATION - official request for permission to develop a source of water or to change an

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existing water right.

APPROPRIATE – to take the legal actions necessary to create a right to take water from a natural stream or aquifer for application to beneficial use.

APPROPRIATION - the right to take water from a natural stream or aquifer for beneficial use at a specified rate of flow, either for immediate use or to store for later use; usually confirmed by a water court decree or certificate issued by the water administration agency.

APPROPRIATION DOCTRINE – system of water law used in the Western States where water supplies are limited and often inadequate. Fundamental elements are that water must be diverted and used (first in time, first in right) and water applied to a beneficial use.

APPURTENANT – constituting a legal accompaniment (incidental right) attached to a principal property right and passing in possession with it (e.g., a riparian water right is appurtenant to ownership of land adjacent to a water body).

APPURTENANT TO PLACE OF USE - one of the characteristics of a water right--the location of where the water will be put to beneficial use.

AQUACULTURE – the art and science of farming organisms that live in water, such as fish, shellfish and algae.

AQUEDUCT - pipe, conduit, or channel designed to transport water from a remote source.

AQUIFER - geologic formation that stores and/or transmits water to wells and springs. A *CONFINED AQUIFER* is bounded above and below by formations of impermeable or relatively impermeable material. An *UNCONFINED AQUIFER* is made up of loose material such as sand or gravel that has not undergone settling.

ARROYO - deeply entrenched streams found in arid and semiarid regions characterized by a flat bed and nearly vertical stream banks. Typically, runoff in arroyos is ephemeral.

ARTESIAN WELL - well that typically flows without pumping because pressure within the aquifer forces water above the ground surface.

ARTIFICIAL RECHARGE - the addition of water to the ground water reservoir by man's activities, such as by irrigation or induced infiltration from streams or wells.

AWWA – American Water Works Association, the drinking water industry's trade organization; headquarters are in Denver, CO.

B

BACKFLOW PREVENTION – prevention of the flow of any foreign liquids, gases or substances into the distribution pipelines of a potable water supply; accomplished by an air gap or mechanical backflow obstacle.

BANK – sloping land adjoining a body of water. With respect to flowing waters, banks are right or left as viewed facing in the direction of the flow.

BANKFULL - the bankfull stage corresponds to the discharge at which channel maintenance is the most effective, that is, the discharge at which moving sediment, forming or removing bars, forming or changing bends and meanders, and generally doing work results in the average morphologic characteristics of channels.

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BANK STORAGE - water absorbed and stored in the banks of a stream, lake, or reservoir when the stage rises above the water table in the bank formations and stays there for an appreciable length of time. Bank storage may be returned in whole or in part as seepage back to the water body when the level of the surface water returns to a lower stage.

BASEFLOW - the part of a stream discharge that is not attributable to direct runoff from precipitation or melting snow. It is the sustained flow of streams derived from groundwater discharge (or other delayed sources such as lakes or snow fields) and may be considered as normal day-to-day flow during most of the year

BASIN - the land area that drains into a stream; an area of land that contributes water runoff to one specific delivery point (same as catchment, drainage, or watershed).

BEDROCK - solid rock that lies beneath soil, loose sediments, or other unconsolidated material.

BENEFICIAL USE - use of water for one or more of the recognized beneficial uses including but not limited to, domestic, municipal, irrigation, hydropower generation, industrial, commercial, recreation, fish propagation, and stock watering; it is the basis, measure and limit of a water right

For Alaska, the Alaska Statutes provides that beneficial use shall be the basis, measure and limit to the use of water within the state. Per AS 46.15.260, beneficial uses are: domestic, irrigation, agricultural, industrial, manufacturing, fish & shellfish processing, navigation & transportation, mining, power, public, sanitary, recreation uses, fish & wildlife, and maintenance of water quality.

BERM - narrow ledge or shelf along or extending into a stream channel

BRAIDED STREAM - complex tangle of converging and diverging stream channels separated by sandbars or islands.

BREACH - opening or a breakthrough in a dam or dike.

BYPASS FLOW - water that is allowed to flow past a diversion structure or storage facility.

C

CALL - a demand that upstream water rights with more recent (junior) priority dates than the calling right cease diverting; the exercise of a senior water right holder in "calling" for his or her water rights, requiring junior water right holders to allow water to pass to the senior right holder.

CANAL - constructed open channel for transporting water.

CAPACITY - maximum volume that can be stored in a reservoir below the primary spillway level.

CASING - tubular retaining and sealing structure that is installed in the borehole to maintain a well opening.

CENTRIFUGAL PUMP (lift method) - well lift method consisting of a surface pump having rotating impellers in a closed chamber that draw water into the pump. Water is then discharged from the pump, commonly under great pressure, by centrifugal force. Such

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pumps have maximum lift of 25 feet but can force water to considerable heights above the pump.

CERTIFICATE – in Alaska, it is the official document that serves as evidence of a perfected water right.

CHANGE - process by which a water right is changed with respect to the type, location, or amount of use. In Alaska, there is no form to change an aspect of an existing permit or certificate; the holder of the water right submits a letter to DNR to request a change.

CHANNEL - a stream or river bed; generally refers to the physical form where water commonly flows.

CHANNELIZATION - straightening and deepening a stream so water will move faster.

CHECK DAM - small dam constructed in a gully or small watercourse to decrease the streamflow velocity or to divert water from a channel.

CLEAN WATER ACT – the Federal law that establishes how the United States will restore and maintain the chemical, physical and biological integrity of the country's waters (oceans, lakes, streams and rivers, ground water and wetlands). The law provides protection for the country's waters from both point and non-point sources of pollution.

CLOSED BASIN – a basin is considered closed with respect to surface flow if its topography prevents the occurrence of visible outflow. It is closed hydrologically if neither surface nor underground outflow can occur.

CONDUIT - a 24-inch or larger diameter pipe carrying raw or potable water from or to treatment facilities, reservoirs and delivery points feeding a distribution system.

CONE OF DEPRESSION - cone-like depression of the water table formed in the vicinity of a well by withdrawal of water.

COMPACT - a formal agreement between states concerning the use of water in a river or stream that flows across state boundaries.

COMPACT CALL - the requirement that an upstream state cease or curtail diversions of water from the river system that is the subject of the compact to satisfy the downstream state's compact entitlements.

CONDITIONS OF USE – restrictions or conditions specified by the respective State water agency upon a water right. Usually these occur on water rights that are supplemental to other rights. Where there may be multiple water rights to achieve a single purpose, collectively the water rights cannot exceed state established limits, such as duty of water for irrigation.

CONFINING BED - a rock formation that will not readily transmit water and which retards or stops the free movement of water underground. Confining beds have also been called aquicludes, aquitards, or semiconfining beds.

CONFLUENCE - meeting or junction of two or more streams.

CONJUNCTIVE WATER USE - combined use of ground water and surface water.

CONSERVATION - obtaining the benefits of water more efficiently, resulting in reduced

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demand for water.

CONSUMPTIVE WATER USE - portion of water withdrawn from a surface or groundwater source that is consumed or evaporated by a particular use and does not return to its original source or another body of water. It is that amount by which the total resource is depleted.

CONVEYANCE LOSS - loss of water from a canal, conduit or ditch due to leakage, seepage, evaporation or evapotranspiration. Generally, the water is not available for further use; however, leakage from an irrigation ditch, for example, can percolate to a ground water source and be available for further use.

CREST - top of a dam, dike, spillway, or weir to which water must rise before passing over the structure.

CRITICAL WATER MANAGEMENT AREA – in Alaska, the designation of a particular geographic or hydrologic area (including either surface or ground water) to address problems of water shortage, due to over-appropriation, drought, saltwater intrusion or chemical contamination.

CUBIC FEET PER SECOND (CFS) - unit rate of discharge. One cubic foot per second is equal to the discharge through a rectangular cross-section, one foot wide and one foot deep, flowing at an average velocity of one foot per second. It is equivalent to 7.48 gallons per second or 448.8 gallons per minute.

D

DAM - artificial barrier or obstruction across a watercourse or off channel, together with appurtenant works, if any, for the purpose of storage, control or diversion of water.

DEAD STORAGE - water in a reservoir that lies below the lowest outlet and cannot be withdrawn without pumping.

DE MINIMUS – The law does not concern itself with, care for or take notice of insignificant, very small or trifling matter (actually *de minimis non curat lex*).

DECREE RIGHTS - water rights determined by a court decree.

DEGRADATION - A stream that is deepening and/or widening as sediment is removed to satisfy a deficit in sediment supply.

DEPLETION - water consumed and no longer available as a source of supply; that part of a withdrawal that has been evaporated, transpired, incorporated into crops or products, consumed by man or livestock, or otherwise removed.

DEPLETION (GROUNDWATER) - withdrawal of water from a ground water source at a rate greater than its rate of recharge.

DIKE - an embankment to confine or control water.

DIRECT FLOW (or DIRECT RIGHT) - water diverted from a river or stream for immediate use without interruption between diversion and use except for incidental purposes, such as settling or filtration. Also see STORAGE RIGHT.

DISCHARGE - rate of flow at a given instant in terms of volume per unit of time; discharge equals pumping rate, usually given in gallons per minute (GPM); stream discharge, usually

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given in cubic feet per second (CFS). With respect to underground water, discharge is the movement of water out of an aquifer. Discharge may be natural, as from springs, as by seepage or it may be artificial as by constructed drains or from wells.

DISSOLVED OXYGEN – the amount of free (not chemically combined) oxygen in water; usually expressed in milligrams per liter.

DIVERSION - 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; turning aside or alteration of the natural course of a flow of water, normally considered physically to leave the natural channel. In some states, this can be a consumptive use direct from a stream (e.g. livestock watering or wildlife); on other states, a physical diversion must consist of an action such as taking water through a canal or conduit.

DIVERT - means to remove from its natural place or location.

DIVERSION DAM - barrier built to divert part or all of the water from a stream into a different course.

DNR – The Alaska Department of Natural Resources, the agency which manages and administers the State's water resources.

DOMESTIC WATER USE – water for normal household purposes such as drinking, food preparation, bathing, washing clothes and dishes, flushing toilets and watering lawns, gardens and livestock supplied from a domestic source; also called residential water use.

DRAINAGE AREA - area or watershed that drains naturally to a particular point on a river, stream, or creek.

DRAINAGE BASIN - drainage system that consists of a surface stream or body of impounded surface water together with all tributary surface streams and bodies of impounded surface water.

DRAWDOWN - lowering of the surface of a body of water by releases of water; lowering of the elevation of the groundwater table or water level in a pumped well. At a well, it is the vertical distance between the static and the pumping level.

DROUGHT - a long period of below-average precipitation.

DUE DILIGENCE - the efforts necessary to bring an intent to appropriate water to fruition (e.g., "proving up"); actions that demonstrate a good faith intention to complete construction of the facilities (e.g., ditch, reservoir, etc.) within reasonable time.

DUTY OF WATER - quantity of water reasonably required to satisfy the irrigation water requirements of land for a length of time that is adequate to produce the maximum amount of crops ordinarily grown in that area. For example, if one has 20 acres of irrigated land and the water duty is 4.0 ac-ft/ac, the maximum amount permitted on the water right would be 80 ac-ft of water.

E

EARTH DAM - a non-overflow dam having the main section built of earth, sand or rock, and a core of impervious material such as clay or concrete; requires a spillway.

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EFFLUENT - wastewater, treated or untreated, that flows out of a treatment plant, sewer, or industrial point source, such as a pipe. Generally refers to wastes discharged into surface waters.

ELECTRIC-TAPE - a method to measure the water level in a well by insertion of a calibrated electric cord (well probe) into well. The electric circuit is closed by contact with water and the contact point is indicated by an electric meter at the surface.

ELEMENTS OF A WATER RIGHT – specific information that is part of a legal written water right. Elements are set by statute and commonly include name of owner, priority date, quantity of water, source, tributary, point of diversion, place of use, purpose of use, season of use and any other information necessary to administer the water right.

EMBANKMENT - artificial deposit of material that is raised above the natural surface of the land and used to contain, divert, or store water.

EPHEMERAL - as it relates to source dependability - small, shallow stockponds that dry up following a single storm event; streams that flow only in direct response to precipitation, lasting no more than several weeks. See PERENNIAL, INTERMITTENT.

EPHEMERAL STREAM - stream that flows only in direct response to precipitation; such flow is usually of short duration.

EROSION - wearing away and removal of materials of the earth's crust by natural means. Examples are **STREAMBANK** and **STREAMBED** (scouring of material and cutting of channel banks and beds); **SHEET** (removal of a thin layer by runoff waters); **RILL** (numerous small channels are formed); **GULLY** (widening and deepening of small channels).

EVAPORATION - the loss of water as vapor from surfaces such as streams, lakes, puddles, ponds, and soil pores.

EVAPOTRANSPIRATION - loss of water from the land through transpiration of plants and evaporation from the soil and surface water bodies.

EXCHANGE - a process by which water, under certain conditions, may be diverted out of priority at one point by replacing a like amount of water at a downstream location.

EXEMPT USES – in most states, certain surface water and ground water uses are exempt from the permitting process and do not require a water right. In Alaska, no water right is needed for consumptive uses less than 5,000 gallons per day from a single source for a single day.

EXISTING WATER RIGHT – a water right used historically and continuously prior to July 1, 1966; see **VESTED WATER RIGHT**.

EXTENSION - request for additional time to complete a water project and submit proof.

F

FECAL COLIFORM BACTERIA – bacteria that are present in the gut or the feces of warm-blooded animals; they are indicators of possible sewage pollution.

FLOODPLAIN – any land area susceptible to being inundated by floodwaters from any

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source. Relative to a stream, a floodplain is the land bordering a stream that was built up of sediment from overflow of the stream and is still subject to flooding when the stream is a flood stage.

FLOW - rate of water discharged from a source given in volume with respect to time.

FLOWING WELL - an artesian well having sufficient head to discharge water above the land surface.

FLUME - open artificially-sloped channel or chute used to convey a stream of water, commonly constructed of wood or concrete, as a device to measure flow (e.g., Parshall flume) by means of a calibrated throat or cross-section.

FORFEITURE - potential loss of a water right due to some kind of fault or negligence by the holder. In Alaska, a water right is forfeited if it is not used for five consecutive years.

FREEBOARD – for storage developments, it is the vertical distance between the designed maximum water level and the top (or crest) of the dam.

FRESHWATER - water that contains less than 1,000 mg/L (milligrams per liter) of dissolved solids; generally, more than 500 mg/L is considered undesirable for drinking and many industrial uses.

FUTILE CALL - a situation in which a junior (more recent) priority is allowed to continue to divert in spite of a downstream senior call when curtailing the junior would not produce any additional water for the senior.

G

GAGE (GAUGE) - instrument used to measure the elevation of a water surface, velocity of flowing water, or pressure of water.

GAGING STATION - particular site on a stream, canal, lake, or reservoir where systematic observations of height or discharge are obtained.

GAINING STREAM – a river, or reach of a stream/river, that gains flow from ground water seepage or from springs in, or alongside, the channel -- sometimes called an effluent stream.

GEOMORPHIC CHANNEL TYPE - a stream reach or group of reaches that respond similarly to changes in landscape forming processes, such as water runoff, erosion, and vegetation growth.

GEOPHYSICAL WELL LOGS – an indirect method of determining the depth, thickness, permeability and other characteristics of rock units in the subsurface. Applies to borehole methods, in which a geophysical probe is lowered into the well bore and a continuous graph is made of various parameters as the sensing tool is lowered into the borehole.

GRADIENT - degree of incline; slope of a streambed. Measurement units may consist of either a dimensionless proportion (percentage) or an angle based on the 360-degree circumference of a circle.

GRAVITY FLOW – the downhill flow of water through a system of pipes or channels generated by the force of gravity.

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GROUNDWATER - generally, all subsurface water as distinct from surface water; specifically, that part of the subsurface water in the saturated zone (a zone in which all voids, large and small, ideally are filled with water under pressure equal to or greater than atmospheric). Generally, water below the earth's surface but commonly applied to water in fully saturated soils and geologic formations.

GROUNDWATER BASIN - an area which may be designated so as to enclose a relatively hydrologically distinct body or related bodies of groundwater, which shall be described horizontally by surface description.

GROUNDWATER MINING - withdrawal of water from an aquifer in excess of recharge which, if continued over time, would eventually cause the underground supply to be exhausted or drop too low to be feasibly pumped.

GROUNDWATER RECHARGE - inflow or addition of water to a ground water reservoir (zone of saturation) from the surface. Infiltration of precipitation and its movement to the water table is one form of natural recharge.

GULLY - recently formed, relatively deep, channels on valley sides and floors where no well-defined channel previously existed.

GUZZLER - manmade water collecting device typically consisting of a sloping, impermeable surface designed to channel precipitation to a storage facility; used mainly for the watering of wildlife.

H

HEADGATE – a mechanism in a dam or ditch which controls water flow through the outlet.

HEADWATERS - the upper watershed area where streams generally begin; typically consists of 1st- and 2nd-order streams.

HEARING – administrative proceeding on an order entered by the State water agency or the filing of an application, protest, aggrievement or other pleading, in which parties present evidence according to rules and procedures.

HISTORIC WATER RIGHT – a legal claim or water use established and recognized under state law before statutory laws were enacted in the respective state. These claims and rights often come to light during an adjudication when a court orders all claims be filed. In Alaska, an historic water right documents an existing water use prior to July 1 1966. Also see **VESTED WATER RIGHT**.

HISTORIC FLOW – the flow that occurred and either was or would have been recorded at a gaging station.

HYDRAULIC HEIGHT - vertical dimension of a dam as measured from the natural streambed at the downstream toe to the elevation of the water surface at the crest of the primary spillway.

HYDROLOGY – study of water on the earth surface, underground and in the atmosphere.

HYDROGEOLOGY - the study of the interaction of groundwater and the surrounding soil and rock.

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HYDROGRAPH - a graph showing the stage, flow, velocity, or other property of water with respect to the passage of time. Hydrographs of wells show the changes in water levels during the period of observation.

HYDROLOGIC CYCLE - circuit of water movement from the atmosphere to the earth and return to the atmosphere through various stages or processes: precipitation, interception, runoff, infiltration, percolation, storage, evaporation and transpiration.

I

IMPERMEABLE - inability to transmit water; not easily penetrated. Unweathered granite, dense basalt, welded tuff, dense limestone and well-cemented conglomerate may be considered impermeable for practical purposes.

IMPERVIOUS – not capable of being penetrated by water.

IMPOUNDMENT - body of water confined by a dam, dike, or other barrier.

INCISION (DOWNCUTTING) - the downward cutting of a stream into the earth's surface.

INFILTRATION GALLERY – a horizontal drain made from open-jointed or perforated pipe, or a block drain, which is laid below the water table and collects groundwater. Infiltration galleries need soils that are permeable to allow sufficient water to be collected. The gallery should be surrounded with a gravel pack to improve flow towards it and to filter any large particles that might block the perforations. Infiltration galleries can be used to collect subsurface flow from rivers or from springs. Water is taken to a collection well (or sump) and then either withdrawn directly or pumped to a storage tank.

INFILTRATION RATE - the amount of water absorbed by the soil per unit of time, usually expressed in inches per hour.

INFLOW - all water that flows into or enters a hydrologic system. Examples include mountain front and stream channel recharge, artificial and incidental recharge and baseflow and underflow into a system.

INSTREAM FLOW – the location, rate and timing of flow in a stream channel that is necessary to sustain water-dependent natural resource values such as fisheries, riparian communities and recreational use. Instream flow water uses do not require a diversion of water from the stream channel and instream flow water uses generally do not consume measureable quantities of water. In Alaska, it is a non-diversionary surface water right for (1) the protection of fish and wildlife habitat, migration and propagation; (2) recreation and parks; (3) navigability and transportation; and (4) sanitation and water quality. Also see **RESERVATION OF WATER**.

INTERMITTENT - as it relates to source dependability - springs that discharge only during certain periods but at other times of the year are dry; streams with alternating surface and subsurface flow; no intermittent stockponds (see **EPHEMERAL** or **SEASONAL**).

INTERMITTENT STREAM - a stream or part of a stream that flows only at certain times of the year when it receives water from springs, snowmelt, surface run-off or other sources.

INTERRUPTED STREAM - a stream with perennial water in its upper reaches and intermittent flow in its lower reaches.

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IRRIGATED AREA - the gross area upon which water is artificially applied.

IRRIGATION – is generally the controlled application of water to arable lands to supply water requirements of crops not satisfied by rainfall.

J

JET PUMP (pump method) - well lift method consisting of a jet design surface pump that has two pipes extending from the pump into the well. One pipe, forces water down the hole under pressure while the other pipe discharges water that has been forced to the surface by the action of the jet. Jet pumps are used principally for small water supplies, such as would be used for a suburban home, farm, or small commercial establishment.

JUNIOR RIGHTS - water rights that were obtained more recently and therefore are junior in priority to older or more senior rights. (See PRIORITY).

JURISDICTIONAL DAM – falls under DNR's Dam Safety & Construction Unit. It is defined by Alaska statutes and rules as an artificial barrier for the impounding or diversion of water either 10 feet or more in height AND having a storage capacity of 50 acre-feet or more, or having a dam height of 20 feet or more.

K

KARST – a type of topography that is formed on limestone, dolomite, gypsum beds and other rocks by dissolution and is characterized by closed depressions, sinkholes, caves and underground drainage.

L

LATERAL - irrigation conveyance structure intended to convey water away from the main canal or ditch.

LEFT (OR RIGHT) BANK – the left- or right-handed side of a bank when the observer faces the direction of the flow (downstream).

LEVEE - natural or man-made earthen obstruction along the edge of a stream, lake, or river.

LOSING STREAM - stream or reach of a stream that is losing water by seepage into the ground.

M

MAINSTEM – the major reach of a river or stream formed by the smaller tributaries that flow into it.

MAXIMUM CAPACITY – maximum volume of water that can be stored in a reservoir when filled to the crest of the spillway or outlet pipe OR the maximum amount of water that can be transported in a means of conveyance (i.e., ditch, pipeline or canal).

MEASURING WEIR - shaped notch, typically rectangular, trapezoidal, or triangular, through which flowing water is measured.

MICROGRAMS PER LITER (µg/L) – a measurement describing the amount of a substance (such as a mineral, chemical or contaminant) in a liter of water. It is expressed in terms of weight per volume; one µg/L is equal to one part per billion.

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MILLIGRAMS PER LITER (mg/L) – the weight in milligrams of any substance contained in 1 liter of liquid (equivalent to parts per million for values less than 7,000 mg/L).

MINERS INCH – a volumetric a rate of water flow often used in the west, especially in Idaho. It refers to the head on an old time sluice box used for mining. The actual flow varies from state to state. In Arizona, 1 miners inch = 11.22 gpm; in California, Montana, Nevada, and Oregon, 1 miners inch = 0.025 cubic foot per second (cfs) or 1.5 cubic feet per minute [or 40 miners inches = 1 cfs]; in Utah, Idaho, Wyoming and Nebraska 1 miners inch = 0.020 cfs [or 50 miners inches = 1 cfs].

MONITORING WELL - well used to measure groundwater levels or obtain water quality samples.

MUNICIPAL WATER – water from ground water or surface water sources that is distributed to users in an incorporated area through a centralized distribution system. Once water has entered a municipal water system, it will be considered municipal water.

N

NATURAL RECHARGE – the replenishment of groundwater storage from naturally occurring surface water supplies such as precipitation and stream flow.

NONCONSUMPTIVE USE – water uses that don't deplete any portion of the amount of water applied in order to affect the use, e.g., hydropower generation, recreation, instream flow.

NON-POTABLE WATER - water not suitable for drinking (also see **POTABLE WATER**).

NON-TRIBUTARY GROUNDWATER – underground water in an aquifer that neither draws from nor contributes to a natural surface stream in any measurable degree.

O

OBSERVATION WELL - well used to monitor changes in water levels of an aquifer and obtain samples for water quality analyses.

ORDINARY HIGH WATER MARK – that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

OUTLET - point where water exits from a stream, river, lake, or artificial drain.

OVERDRAFT – withdrawals of ground water at rates perceived to be more than the amount of water naturally or incidentally recharged to the aquifer. See also **GROUNDWATER MINING**.

P

PARSHALL FLUME - device used to measure the flow of water in an open channel.

PEAK FLOW - maximum instantaneous streamflow during periods of high water runoff.

PERCHED WATER TABLE - water table of a relatively small groundwater body supported

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above the general groundwater body.

PERCOLATION - movement of water within a porous medium without a definite channel; entrance of a portion of the stream flow into the channel materials to contribute to groundwater replenishment; slow seepage of water through a filter.

PERENNIAL - as it relates to source dependability - wells where water is available continuously; springs and streams with a continuous surface discharge, stockponds where water is stored throughout the year. See **EPHEMERAL**, **INTERMITTENT**.

PERENNIAL STREAM - a stream or part of a stream with surface flow throughout the year, drying only during periods of drought.

PERFECTED WATER RIGHT - water right in which all required steps to secure a state appropriative water right have been completed; thus, the right is considered certificated, licensed or adjudicated. A perfected right is considered real property.

PERFORATION OF WELLS - holes in the casing of wells that allow water to flow into the well.

PERIOD OF USE – a specific period of time (day of month to day of month), in which one is authorized to use water. For example a ski resort is most likely limited to using water for snow making during the winter months or an irrigation right is only valid during an established irrigation season.

PERMIT – document issued by the State water agency that authorizes the diversion of water from a specific point of diversion, for a particular beneficial use, and at a particular place of use, in accordance with the conditions of approval. A permit allows the permittee to develop a water right through the application of water to beneficial use, in conformance with the permit's conditions of approval. A permit in itself does *not* constitute a water right.

pH - measure of acidity or alkalinity of water.

PISTON PUMP - well lift method consisting of a piston design surface pump used for large capacity, deep or shallow wells; includes the familiar lift and pitcher pumps common in many rural areas. The old “reciprocating” pumps and the “walking beam jacks” are of the piston type.

PIT RESERVOIR - an excavated pond; all water stored in pit created by excavation. Spillway is usually natural; little or no dam.

PIT RETENTION RESERVOIR - a combination pit and retention reservoir. Water is slowed against an embankment, sediment is trapped, and water is stored in a pit excavated below the embankment. Also included in this category are earthen ponds having rock masonry dams with pipe leading to permanent storage facilities.

PLACE OF USE (POU) - specific location documented in the water right where the water is authorized to be used.

PLAYA - flat-floored bottom of an undrained desert plains basin.

POINT OF DIVERSION (POD) - point specified in a water right from which water is diverted from a source.

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POOL - A reach of stream that is characterized by deep low velocity water and a smooth surface.

POROSITY - amount of space between soil or rock particles where water can be stored.

POTABLE WATER - water that is safe and palatable for human consumption.

PRECIPITATION – includes atmospheric hail, mist, rain, sleet and snow which descends upon the earth; the quantity of water accumulated from the above events.

PRECIPITATION RATE – the amount of water applied per unit of time, usually expressed in inches per hour.

PRESCRIPTION - method of acquisition of title or the use of water by immemorial or long-continued use.

PRIOR APPROPRIATION DOCTRINE - system for allocating water, used in most western states; "first in time is first in right" means that the first person to take a quantity of water & put it to beneficial use has a higher priority than a subsequent user.

PRIORITY - concept that the person first using water has a better right to it than those commencing use later.

PRIORITY DATE – the date a water right was established.

PROOF OF APPROPRIATION - document that attests to the amount of water withdrawn for the uses specified in the application and that it has been put to beneficial use. In Alaska, this document is called a "Statement of Beneficial Use of Water".

PROTEST - document that states opposition to the granting of a water right application.

PUBLIC TRUST DOCTRINE – doctrine where it is the responsibility of the state to hold property rights in trust for the benefit of the citizens of the state. Historically, this doctrine applied to the beds of navigable waters but has been extended to other natural resources.

PUBLIC WATER CODE – in Alaska, the Public Water Code, known as the "Alaska Water Use Act" was enacted in July 1, 1966; after this date, one must apply to DNR for a permit to appropriate surface or ground water.

PUBLIC WATER RESERVE NO 107 – An Executive Order issued by former U.S. President Calvin Coolidge that reserved water for the primary purposes of stock watering and human consumption and carries a priority date of April 17, 1926 (applicable to BLM).

PUMP LIFT - distance between the ground water table and the overlying land surface.

PUMP TEST - test that is conducted to determine aquifer or well characteristics.

PUNCTURED WELL SCREEN - screen material made of solid steel or PVC that has been punctured or otherwise modified from its original condition. Holes are usually punctured in the casing down-hole, after installation in the well bore.

Q - no terms for the letter 'Q'

R

RAMPING – controlling streamflow so that flow changes are gradual and do not adversely

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impact safety and property downstream.

RAW WATER – untreated water.

REACH – a portion of a stream between two specifically identified points on the stream. The points used to identify the upper and lower ends of a stream reach are typically points at which the stream joins another stream (see CONFLUENCE).

RECHARGE - the addition of water to an aquifer by infiltration, either directly into the aquifer or indirectly by way of another rock formation. Recharge may be natural, as when precipitation infiltrates to the water table, or artificial, as when water is injected through wells or spread over permeable surfaces for the purpose of recharging an aquifer.

RECYCLED WATER – water that is used more than one time before it passes back into the natural hydrologic system.

RES JUDICATA – a legal rule that a final judgment (rendered by a court of competent jurisdiction on the merits of the case) is conclusive as to the rights of the parties and constitutes an absolute bar to a subsequent action involving the same claim or action. Following an adjudication, all subsequent water uses and water rights are subject to the terms of that adjudication. Future uses are bound by the adjudication.

RESERVATION OF WATER – an Alaskan term to appropriate water for maintaining a specified instream flow or level of water at a specified point on a stream or water body or in a specified part of a stream or water body for specified periods of time.

RESERVED RIGHTS - category of federal water rights created when the federal government withdraws land from the public domain for a specific purpose identified in a Presidential Executive Order or within Congressional legislation. Examples include national parks, national forests, national wildlife refuges and wild and scenic rivers.

RESERVED RIGHTS DOCTRINE - legal rule that states when the federal government reserves public lands for a particular purpose, such as a national park, forest or Indian reservation, it also reserves sufficient water to accomplish that purpose; sometimes called the Winters Doctrine. Reserved rights may be either *expressly* stated or *implied*.

RESERVOIR (WITH EMBANKMENT) - stockpond/reservoir with a defined spillway; dam is made of earth, rock or other material, in or out of the channel.

RESERVOIR - pond, lake, or basin, either natural or artificial, for the storage, regulation, and control of water.

RETURN FLOW -- the amount of water that reaches a groundwater or surface water source after release from the place of use and thus becomes available for further use. In other words, that part of a diverted flow, which is not consumptively used and returns to its original source or another body of water.

RIFFLE - A reach of stream that is characterized by shallow, fast moving water broken by the presence of rocks and boulders.

RIPARIAN - pertaining to the banks of a river, stream, or other body of water as well as to plant and animal communities along such bodies of water. These areas often have a high

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density, diversity, and productivity of plant and animal species relative to nearby uplands.

RIPARIAN DOCTRINE - system for allocating water primarily in the eastern United States (states east of the Mississippi River) but also in California (sometimes called the “California Doctrine”) which gives owners of land along a stream or river an absolute prerequisite to a right to use water from that body of water.

ROCK-FILL DAM - a non-overflow type of dam which uses rock of all sizes to provide stability and an impervious membrane to insure water tightness; requires a spillway and used for small capacity ponds.

ROTARY PUMPS - well lift method consisting of a rotary design surface pump for large capacity wells. These operate on the principle that direct pressure is created by squeezing the water between specially designed runners. A relatively high vacuum may be created on the intake side so the suction lift is comparable to that for centrifugal pumps.

RUN - A reach of stream characterized by fast flowing low turbulence water.

RUN-OFF - the portion of precipitation, snowmelt or irrigation water that is not intercepted by vegetation, absorbed by land surfaces or evaporated and that flows overland into a depression, lake, stream or ocean.

S

SALINE WATER - water that contains more than 1,000 milligrams per liter of dissolved solids. It generally is considered unsuitable for human consumption and less desirable for irrigation because of its high content of dissolved solids. Salinity generally is expressed as milligrams per liter (mg/L) of dissolved solids, with 35,000 mg/L defined as seawater.

SALTWATER INTRUSION –the replacement of freshwater by saline water in an aquifer or body of water.

SEASONAL - as is relates to source dependability, springs and wells that exist only during periods of high water levels, stockponds where water is available during and after periods of seasonal precipitation but not year-round.

SEAWATER – water taken from the seas or ocean with a salinity of greater than or equal to 35 parts per thousand.

SEDIMENT - a solid particle, generally derived from rocks and minerals that is being transported or has been moved from its place of origin.

SEEPAGE - slow movement of water through small cracks or pores of a material into or out of a body of surface or subsurface water; loss of water by infiltration into the soil from a canal, ditches, laterals, reservoir or other body of water.

SEEPS - groundwater/surface water connections caused by river or stream erosion into a near-surface aquifer.

SENIOR WATER RIGHTS – rights determined by date of initiation of use; the first users are more senior to those whose rights were obtained more recently.

SHALLOW WELL - well with a pumping head of 20 feet or less.

SINUOSITY - a measure of the number of turns or curves in a stream expressed as the

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stream length (wavelength) divided by the radius of curvature.

SLOTTED PIPE - type of well screen, screen material is PVC with non-continuous openings perpendicular to the length of the pipe.

SLOTTED STEEL - type of well screen, screen material is steel with non-continuous openings perpendicular to the length of the pipe.

SPILLWAY - open or closed channel, conduit or drop structure used to convey excess water through a reservoir.

SPRING - concentrated discharge of ground water coming out at the surface as flowing water under natural conditions without the aid of man; flow may be perennial or intermittent in nature.

SPRING BOX - a structure engineered to make optimum use of a natural spring. The Spring box functions to protect the spring water from contamination, normally by surface runoff or contact with human and animals, and provides a point of collection and a place for sedimentation.

SOURCE – is the body of water from which one diverts water from the natural location or channel of the water.

STATIC LEVEL - stabilized water level in a non-pumped well beyond the area of influence of any pumping well.

STEEL TAPE - a method to measure the water level in a well by insertion of a calibrated steel tape into well; may also be used to measure total depth. Tape is calibrated in tenths of feet and is usually 300 feet long.

STOCKPOND - an impoundment (manmade or natural catchment) that stores appropriable water and that is for the sole purpose of watering livestock and /or wildlife.

STORAGE RIGHT - water artificially impounded in surface or underground reservoirs for subsequent future use; water naturally detained in a drainage basin. See DIRECT FLOW RIGHT.

STORAGE CAPACITY – the volume of water that can be stored at the elevation of the primary spillway, including both active and dead storage.

STREAM CHANNEL - natural water course of perceptible extent with definite beds and banks that confines and conducts continuously flowing water.

STREAM CLASSIFICATION - a framework for differentiating streams based on physical and/or biological characteristics.

STREAMFLOW - the discharge that occurs in a natural channel of a surface stream course.

STREAM GAGE - an instrument to measure the volume of streamflow over time, generally reported in cubic feet per second (cfs).

STRUCTURAL HEIGHT - vertical dimension of a dam as measured from the natural streambed at the downstream toe of a dam to the crest of a dam.

STREAM ORDER - a stream classification system in which the headwater channel is of

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order 1, and when two channels of the same order join, they create a channel of one higher order (e.g., 1+1=2; 1+2=2; 2+2=3; etc.).

STREAM REACH - a continuous portion of a stream between two designated points.

SUB-BASIN - a watershed that is subset of a larger watershed.

SUBMERSIBLE PUMP- well lift method wherein a small electric pump is suspended inside the well casing below the static water level, used for small stockwatering or domestic wells.

SUBSTRATE - the particles that constitute the bed of a channel.

SURFACE WATER - the waters of all sources whose surface is naturally exposed to the atmosphere: flowing in streams, canyons, ravines or other natural channels, or in definite underground channels, whether perennial or intermittent, floodwater, wastewater or surplus water, and of lakes, ponds and springs on the surface

SUSPENDED SEDIMENT - sediment that is transported in suspension by a stream; fragmental material, both mineral and organic, that is maintained in suspension in water by the upward components of turbulence and currents and (or) by colloidal suspension.

SYSTEM LOSS – an amount of water, expressed as a percentage, lost to leaks, seepage and unauthorized use.

T

TANK – a receptacle, often covered, where water is stored, as contrasted to a TROUGH, where water is used.

TEMPORARY WATER USE AUTHORIZATION (TWUA) – an Alaskan term for a short-term, revocable use of a significant amount of water for up to five consecutive years (with one extension). A TWUA is exempt from public notice; it is not a water right and there is no priority date established.

TERMINUS – the geographical beginning or end point of an instream flow water right or instream flow reservation.

TEST WELL - well hole drilled for experimental or exploratory purposes.

TOE OF DAM - junction of a dam face with the underlying natural land surface. For an embankment dam, the junction of the upstream face with ground surface is called the upstream toe--the downstream junction is called the downstream toe.

TOTAL DISSOLVED SOLIDS (TDS) – an aggregate of carbonates, bicarbonates, chlorides, sulfates, phosphates, nitrates, etc. of calcium, magnesium, manganese, sodium, potassium and other cations which form salts. High TDS concentrations exert varying degrees of osmotic pressures and often become lethal to the biological inhabitants of an aquatic environment. The common and synonymously used term to TDS is “salt”.

TRANS-BASIN DIVERSION - the conveyance of water from its natural basin into another basin.

TRANSPIRATION - the process by which water vapor is released to the atmosphere by living plants.

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TRIBUTARY - stream that joins another stream or body of water.

TROUGH - a long, narrow, generally shallow receptacle for holding water or feed for animals; a trough is where water is used as contrasted to a TANK, where water is stored.

TURBIDITY – the opaqueness or reduced clarity of a fluid due to the presence of suspended matter.

U

UNAPPROPRIATED WATER - public water of the state in streams, rivers, lakes, springs or groundwater in excess of that necessary to satisfy prior rights.

UNCONFINED AQUIFER - aquifer containing water that is not under pressure; water level in a well is the same as the water table outside the well.

UPLAND - an area of the terrestrial environment that does not have direct interaction with surface waters.

USUFRUCTUARY– the legal right to use and enjoy something belonging to another including all the profit, utility and advantage it may produce without altering its substance. In water law, the water is the property of the state. However a water right can be secured under state law that conveys the legal right to *use* the states property (water). The water right is personal property – it can be sold. But the water remains the property of and under the jurisdiction of the state. It is not an absolute property right.

V

V-NOTCH - type of weir for gaging discharge in small streams, narrow ravines or valleys.

VESTED WATER RIGHTS – historical water right whereby water was put to beneficial use prior to the state’s water code and has been used continuously until the present; these rights are usually quantified and substantiated during the adjudication process. In Alaska, a vested claim is one where water was historically and continuously used prior to July 1, 1966, the date of the Alaska Water Use Act. Also see **HISTORIC or EXISTING WATER RIGHT**.

W

WASHES - intermittent or ephemeral streams.

WASTE – amount of water in excess of the minimum needed to support the beneficial use authorized on the water right. Not well defined by state statute or rule; often overlooked and rarely enforced.

WATERBODY - any type of surface water, such as a stream, lake, or wetland.

WATER BUDGET - an accounting of the inflow to, outflow from, and storage changes of, water in a hydrologic unit.

WATER CYCLE - cycle of evaporation and condensation that controls the distribution of the Earth's water as it evaporates from bodies of water, condenses, precipitates, and returns to those bodies of water.

WATER DUTY - total volume or rate of application necessary to accomplish a specific beneficial use; e.g. the annual amount of irrigation water required to mature a particular type

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of crop or the daily amount of water required to water livestock.

WATER MARKETING - concept of water use borne out of increased demand by urban populations for water whereby a water right owner may be allowed to sell or lease their right in an open market.

WATERMASTER - person hired by a group of water right holders to distribute and oversee available water supplies.

WATER QUALITY - term used to describe the chemical, physical, and biological characteristics of water in respect to its suitability for a particular purpose.

WATER RIGHT - the right to use a specific quantity of water occurring in a water supply, on a specific time schedule, at a specific place and putting it to a specific beneficial use.

WATERSHED - a drainage divide or a drainage-basin area contributing water to a network of stream channels, a lake, or other topographic lows where water can collect.

WATER TABLE - the upper surface of the zone of saturation and the depth underground where water can be found.

WEIR – vertical structure in an open channel with a calibrated opening that measures the water's rate of flow.

WELL – an artificial horizontal or vertical excavation or opening into the ground made by digging, boring, drilling, jetting or driving for utilizing or monitoring underground waters.

WELL CAPACITY - maximum rate at which a well will yield water under given conditions

WELL DRILLER - any person duly licensed by the State that constructs a well for compensation or otherwise.

WELL INTERFERENCE - effects of neighboring pumping wells on the discharge and draw down at a particular pumping well.

WELL LOG - record that is kept during well drilling of the various formations and rock materials and the depths at which they are encountered.

WELLHEAD PROTECTION AREA - a protected surface and subsurface zone surrounding a well or well field that supplies a public water system and through which contaminants could likely reach well water.

WETLANDS - lands that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support and that (under normal circumstances do support) a prevalence of vegetation adapted for life in saturated soil conditions.

WINTERS DOCTRINE – a 1908 U.S. Supreme Court decision that established the doctrine of federal reserved water rights.

WITHDRAWAL – water removed from the ground or diverted from a surface water source for use.

X AND Y - no terms for the letters 'X' or 'Y'.

Z

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ZONE OF SATURATION – the zone in which all the connected interstices or voids in permeable rock or soil formations are filled with water under pressure equal to or greater than atmospheric pressure.