

## **Glossary of Idaho Water-related Definitions:**

**Abandonment:** The discontinuance of the use of a well or other underground resource access.

**Acre-foot (AF):** The volume of water required to cover one acre to a depth of one foot (equal to 325,851 gallons).

**Active Storage:** The water volume in a reservoir stored for irrigation, water supply, power generation, flood control, or other purposes but does not include flood surcharge. Active storage is the total reservoir capacity in acre-feet, less the inactive and dead storage.

**Adfluvial:** Fish that seasonally migrate from lakes to streams for spawning for their entire lives.

**Adjudication:** A process generally delineated along watershed or basin lines that examines the validity of all water rights and claims, and certifies valid claims in a state court. **Process:** When an adjudication of a particular source is commenced, IDWR is required to notify the water users of the commencement of the adjudication, and notify the water users that they are required to file notices of claims for their water rights with IDWR. IDWR then investigates the notices of claims and prepares a report that is filed with the court. Claimants of water rights are notified of the filing of the report, and objections to the report may be filed with the court by anyone who disagrees with the findings in the report. If no objection is filed to a water right described in the report, then the court decrees the water right as described in the report. If an objection is filed to a water right described in the report, then the court determines the water right after a hearing and decrees the water right.

**Adjudicated water right:** A water right for which the defining parameters required by law have been determined and decreed by a court of law.

**Advertisement:** The action taken by the Director to provide notice, usually by publication of a legal notice in one or more newspapers, of a proposed appropriation or other notice required in administration of his duties and responsibilities. (See IDAPA 37.03.08.)

**Aeration:** A process by which water becomes charged with air directly from the atmosphere. Dissolved gases, such as oxygen, are then available for reactions in water.

**Agency Action:** Agency action means:

- a. The whole or part of a rule or order;
- b. The failure to issue a rule or order; or
- c. An agency's performance of, or failure to perform, any duty placed on it by law.

**Algae:** Non-vascular (without water-conducting tissue or tubes) aquatic plants that occur as single cells, colonies, or filaments.

**Allocation:** The process of legally encumbering specific amounts of the water resource for application to specific beneficial uses.

*Glossary of Idaho Water-related Definitions*

**Alluvial Plain:** A plain resulting from the depositing of alluvium by water. In the southwestern United States most alluvial plains are formed by streams having a considerable grade, and hence are generally referred to as alluvial slopes.

**Alluvium:** Soil material, such as sand, silt, or clay that has been deposited by natural processes in river channels, floodplains, and fans at the foot of mountain slopes.

**Alteration:** A term usually used in reference to *Idaho Code Title 42, Chapter 38*, the Stream Protection Act. An alteration is any human-directed activity that obstructs, diminishes, destroys, alters, modifies, relocates, or changes the natural existing shape of the stream channel within or below the mean high water mark. It includes removal of material from the stream channel and emplacement of material or structures in or across the stream channel where the material or structure has the potential to affect flow in the channel as determined by the director of the Idaho Department of Water Resources. Generally, any activity using mechanized equipment that moves or overturns gravel or earth in a stream.

**Ambient:** The Idaho Ground Water Quality Plan defines ambient as “the water quality at a specific location at the time sampled.” As data does not exist to determine natural background water quality prior to human impact, the characterization objective of the Statewide Program is to determine ambient ground water quality.

**Amendment:** A change in point of diversion, place, period or nature of use or other substantial change in the method of diversion or use of a permitted water right. (See IDAPA 37.03.02.)

**Amendment Fee:** The additional fee payable at the time of filing an amendment to a claim, as provided in Idaho Code § 42-1409(4), see IDAPA 37.03.01.)

**Anadromous:** Fish species, such as salmon, that are born in fresh water, spend most of their adult life in the ocean, and return to fresh water to reproduce.

**Anaerobic:** Describes the processes that occur in the absence of molecular oxygen and describes the condition of water that is devoid of molecular oxygen.

**Animal Unit Month (AUM):** The amount of grazing required to sustain a 1,000-pound cow, a horse, or five sheep for one month.

**Annual Sustained Yield:** A term typically used in forestry that means the yield harvested in a given year is equivalent to the replacement during that same time period.

**Annular Space:** The space between two concentric cylindrical objects, one of which surrounds the other, such as the space between the walls of a drilled hole (well bore) and a casing or between a temporary surface casing and a permanent casing.

**Appendix C-Table:** See **Water Appendix C-Table**.

**Appropriate or appropriation:** To obtain the right to divert and use the public waters of the State of Idaho.

**Appropriation Doctrine:** The system of water law adopted by most Western States. The basic principles of the appropriation doctrine are: 1) that a private right to use water can be acquired only by diverting the water and applying it to a beneficial use; 2) the first in time of beneficial use is the first in right and the right is maintained only by use.

**Aquaculture:** The cultivation of fish under controlled conditions for commercial, conservation, and recreation purposes. (See IDAPA 37.03.01.)

**Aquaculture Fee:** The variable fee payable for aquaculture use, as provided in Idaho Code § 42-1414(2)(c), which is calculated for each cfs and fraction thereof to the nearest dollar.

**Aquatic:** Pertaining to water. Usually refers to plants or animals occurring, growing, or living in water.

**Aquicide:** Relatively impermeable stratum that does not transmit water fast enough to supply a well or spring.

**Aquifer:** Any body of porous saturated material, such as rock, sand, gravel, etc., capable of transmitting ground water and yielding economically significant quantities of water to wells and springs.

**Aquitard:** An underground, saturated zone of low permeable rock, sand, or gravel that separates aquifer zones and will not provide significant quantities of water to a well or spring.

**Area-Wide Optimization Program (AWOP):** An effort to improve performance of facilities that treat surface water to provide drinking water by optimizing technologies already in place. AWOP emphasizes particle removal and disinfection.

**Artesian Well:** An artesian well is a well that penetrates a confined aquifer. The water level in these wells rises above the upper surface of the aquifer due to the pressure in the confined aquifer. If the water pressure is great enough, the well will overflow.

**Artificial Ground Water Recharge:** A deliberate and purposeful activity or project that is performed in accordance with Idaho Code § 42-234(2), and that diverts, distributes, injects, stores or spreads water to areas from which such water will enter into and recharge a ground water source in an area having a common ground water supply.

**Assemblage (Aquatic):** An association of interacting populations of organisms in a given water body (e.g., a fish assemblage encompasses all of the fish species in a water body).

**Attainable Use:** A beneficial use that, with improvement, a water body could support in the future.

**Available Water-holding Capacity:** The capacity of a soil to hold water in a form available to plants. Amount of moisture held in soil between field capacity, or about one-third atmosphere of tension, and the wilting coefficient, or about 15 atmospheres of tension.

**Avoided Cost:** Certain large utilities, generally those engaged in interstate transmission of electricity, as defined at 15 U.S.C. 79b(a)(3)(B), must pay their avoided costs to qualifying facilities (usually non-utilities or small generators) operating under the Public Utilities Regulatory Policies Act (PURPA) of 1978 (16 U.S.C. § 823a et seq.) when purchasing needed power. Avoided cost represents an estimate of the cost to the electric utility of the electric energy which, but for the purchase from such co-generator or small power producer, such utility would generate itself or purchase from another source, see 16 U.S.C. § 824a-3(d).

**Back-pressure:** The pressure maintained on equipment or systems through which a fluid flows.

**Bank Stability:** The resistance of a stream bank to erosion.

**Bank Full Depth:** The depth of water in a stream measured from the surface to the channel bottom when the water surface is even with the top of the stream bank (high water mark). See Flood Prone Width.

**Basalt:** A fine-grained igneous extrusive volcanic rock, commonly dark in color and composed mainly of minerals rich in magnesium and iron.

**Base Flood Elevation:** The Base Flood (BF) is referred to as the one hundred (100) year flood and is a measure of flood magnitude based on probability. The base flood has a one percent chance of occurring or being exceeded in any given year, with the Base Flood Elevation (BFE) being the level of flooding reached during the BF or the one hundred (100) year flood event. (See IDAPA 37.03.07.)

**Base flow:** In hydrology, a level of stream flow sustained during dry weather by groundwater discharging into the stream.

**Basin Advisory Group (BAG):** A group of individuals whose role is to advise DEQ on water quality objectives in a specific river basin. The role of BAGs is outlined in Idaho Statutes 39-3613 through 39-3616.

**Basis of Claim:** The method used to establish a water rights claim. Examples include prior decree, posted notice, beneficial use (historical) method, license, and permit.

**Bedload:** Material (generally sand-sized or larger sediment) that is carried along a streambed by rolling or bouncing.

**Beneficial Use:** The uses of water that are deemed by law to provide legitimate bases for a water right. The state may assign or designate beneficial uses for particular Idaho water bodies to support. The Idaho legislature designates uses for water bodies. Pursuant to Rules of the Department of Environmental Quality (DEQ), IDAPA 58.01.02.003(8), "Water Quality Standards and Wastewater Treatment Requirements," a beneficial use includes any of the various uses which may be made of the water of Idaho, including, but not limited to, domestic water supplies, industrial water supplies, agricultural water supplies, navigation, recreation in and on the water, wildlife habitat, and aesthetics. The beneficial use is dependent upon actual

use, the ability of the water to support a non-existing use either now or in the future, and its likelihood of being used in a given manner. The use of water for the purpose of wastewater dilution or as a receiving water for a waste treatment facility effluent is not a beneficial use. Idaho water quality standards require that surface waters of the state be protected for beneficial uses, wherever attainable (IDAPA 58.01.02.050.02). These beneficial uses are interpreted as existing uses, designated uses, and “presumed” uses as briefly described in the following paragraphs:

A) Existing Uses: Existing uses under the CWA are “those uses actually attained in the water body on or after November 28, 1975, whether or not they are included in the water quality standards.” The existing in stream water uses and the level of water quality necessary to protect the uses shall be maintained and protected (IDAPA 58.01.02.003.35, .050.02, and 051.01 and .053). Existing uses include uses actually occurring, whether or not the level of quality to fully support the uses exists.

B. Designated Uses: Designated uses under the CWA are “those uses specified in water quality standards for each water body or segment, whether or not they are being attained.” Designated uses are uses that are officially recognized by the state. In Idaho, these uses include aquatic life support, recreation in and on the water, domestic water supply, and agricultural use. Water quality must be sufficiently maintained to meet the most sensitive use. Designated uses may be added or removed using specific procedures provided for in state law, but the effect must not be to preclude protection of an existing higher quality use such as cold water aquatic life or salmonid spawning. Designated uses are specifically listed for water bodies in Idaho in tables in the Idaho water quality standards (See IDAPA 58.01.02.003.22 and .100; and IDAPA 58.01.02.109-160 in addition to citations for existing uses).

C. Presumed Uses: In Idaho, most water bodies listed in the tables of designated uses in the water quality standards do not yet have specific use designations. These undesignated uses are to be designated. In the interim, and absent information on existing uses, DEQ presumes that most waters in the state will support cold water aquatic life and either primary or secondary contact recreation (IDAPA 58.01.02.101.01). To protect these presumed use water bodies, DEQ will apply the numeric cold water and primary or secondary contact recreation criteria to undesignated waters. If in addition to these presumed uses an additional existing use applies (e.g., salmonid spawning), the additional numeric criteria for salmonid spawning would additionally apply (e.g., intergravel dissolved oxygen and temperature) because of the requirement to protect levels of water quality for existing uses. However, if cold water is not found to be an existing use, for example, an applicable use designation is needed before other aquatic life criteria (such as seasonal cold) can be applied in lieu of cold water criteria (IDAPA 58.01.02.101.01).

**Beneficial Use Reconnaissance Program (BURP):** A program for conducting systematic biological and physical habitat surveys of water bodies in Idaho. BURP protocols address lakes, reservoirs, and small (wadeable) streams and rivers.

**Benthic Invertebrates:** Organisms that typically live on the bottom of streams and lakes.

**Benthic Organic Matter:** The organic matter on the bottom of a water body.

**Best Management Practices:** State-of-the-art practices to protect and enhance water quality that are efficient and effective, practical, economical, and environmentally sound. The goal of best management practices is to minimize soil erosion.

**Board:** Idaho Water Resources Board (IWRB).

**Board's Water Supply Bank:** The water exchange market operated directly by the Board to facilitate marketing of water rights. (See IDAPA 37.02.03.)

**Bonneville Power Administration (BPA):** A federal agency under the U.S. Department of Energy that serves the Pacific Northwest by operating an extensive electricity transmission system and marketing wholesale electrical power at cost from federal dams, one non-federal nuclear plant, and other non-federal hydroelectric and wind energy generation facilities. See [www.bpa.gov](http://www.bpa.gov).

**BOPE:** An abbreviation for Blow Out Prevention Equipment that is attached to a well casing in a geothermal well in order to prevent a blow out of the drilling mud.

**Boxplot:** Boxplots are statistical graphs, providing information on data median, variation (interquartile range), skewness and anomalous values. See Total Dissolved Solids.

**Bulletin:** The Idaho administrative bulletin established in Chapter 52, Title 67, Idaho Code.

**Bull trout:** The common name for *Salvelinus confluentus*, a char native to the Pacific Northwest and Canada.

**Bureau of Land Management (BLM):** An agency within the U.S. Department of the Interior that administers 261 million surface acres of America's public lands, which are located primarily in 12 western states. See [www.blm.gov](http://www.blm.gov).

**BWBZ:** Bottom of water-bearing zone in a well.

**Bypass Reach:** A reach of a stream with lowered water as a result of diversion and conveyance of water outside the channel. Typically water is returned to the channel after beneficial use is made of it.

**Capacity Measurement:** The maximum volume of water impounded in the case of reservoirs or the maximum rate of diversion from the source as determined by actual measurement of the system during normal operation. (See IDAPA 37.03.02.)

**Cascade:** A section of a stream with a highly turbulent series of short falls, small scour basins or plunge pools, and very rapid water movement where the gradient of the channel exceeds eight percent.

**Certified Water Right Examiner:** An employee of the Department, or a representative of the permit holder who is a professional engineer or professional geologist, qualified and registered in the State of Idaho who has the knowledge and experience necessary to satisfactorily complete water right field examinations as determined by the Director, and who has been appointed by the IWDR Director as a certified water right examiner. A certified water right examiner is commonly termed a field examiner, water right examiner, or examiner. (See IDAPA 37.03.02.)

**CF/S:** See cubic feet per second.

**Chute:** In a stream, a narrow, confined channel through which water flows rapidly and smoothly.

**Claim:** There are different types of possible water rights claims in Idaho:

1. Statutory Claims: a request to IDWR to make a record of an existing beneficial use right. However, these records are merely affidavits of the water users, and do not result in a license, decree, or other confirmation of the water right.
2. Notice of a Claim: A notice filed with IDWR in water rights adjudications. An adjudication is a court action for the determination of existing water rights, which results in a decree that confirms and defines each water right.
3. Shares Claim: Some persons have the right to receive water that is represented by shares in a ditch company. In such cases, the ditch company has the appropriation, and the water users have a right to receive water from the ditch company.
4. Municipal, Irrigation District, and Utility Claims: Persons who receive water from a city, an irrigation district, or a water utility company (such as United Water of Idaho) have a legal right to claim a certain amount of water from those entities. As in a shares Claim, the water user may have a right to receive water from the entity, usually contingent upon payment of a fee, but does not have an appropriation.

**Clean Water Act (CWA):** The Federal Water Pollution Control Act, as last reauthorized by the Water Quality Act of 1987. It establishes a process for states to use to develop information on, and control the quality of, the nation's water resources.

**Closed Conduit Flowmeters:** Devices that measure water flow through closed conduits or pipes. Standard types used in Idaho include: 1) differential head, 2) force velocity, 3) ultrasonic, 4) vortex, and 5) electro-magnetic.

**Coefficient of storage (storage coefficient):** The volume of water an aquifer releases from or takes into storage per unit surface area of the aquifer per unit change in head.

**Coefficient of transmissibility (transmissivity):** The rate at which water is transmitted through a unit width of the aquifer under a unit hydraulic gradient.

**Cold Water Aquatic Life:** A beneficial use as defined in Idaho's water quality standards. Water quality that is appropriate for the protection and maintenance of a viable aquatic life community for coldwater species.

**Colluvium:** Soil material, rock fragments, or both, moved by creep, slide, or local wash and deposited the base of steep slopes.

**Commercial Business:** Non-manufacturing business, such as retail and distribution.

**Commercial Water Use:** Water used for motels, hotels, restaurants, office buildings, other commercial facilities, and institutions. The water may be obtained from a public supply or may be self supplied. *See also* public supply and self-supplied water.

**Common Ions:** Commonly occurring charged atom or group of atoms. Examples are calcium, magnesium, chloride and sulfate.

**Comprehensive State Water Plan:** The plan adopted by the Board pursuant to section 43-1734A, Idaho Code, or a component of such plan developed for a particular water resource, waterway or waterways and approved by the legislature. (See Idaho State Water Plan.)

**Conductor Pipe:** The first and largest diameter string of casing to be installed in a well. This casing extends from land surface to a depth great enough to keep surface waters from entering and loose earth from falling in the hole and to provide anchorage for blow out prevention equipment prior to setting surface casing.

**Confluence:** The flowing together of two or more bodies of water.

**Conjunctive Administration:** When two (2) or more water sources are to be administered as a single water system, diversion pursuant to junior rights from one water source shall be regulated as provided by these rules to provide water to senior rights from the other water source.

**Conservation:** Increasing the efficiency of energy and water use, production, or distribution.

**Consumptive Irrigation Requirement:** The consumptive use less the contribution by rainfall toward the production of irrigated crops.

**Consumptive Use:** The portion of the volume of water diverted under a water right that is transpired by vegetation, evaporated from soils, converted to non-recoverable water vapor, incorporated into products, or otherwise does not return to the waters of the state. Consumptive use does not include any water that falls as precipitation directly on the place of use unless it is captured, controlled, and used under an appurtenant water right (Idaho Code § 42-202B(1).)

**Contaminant:** Any chemical, ion, radionuclide, synthetic organic compound, microorganism, waste or other substance which does not occur naturally in ground water or which naturally occurs at a lower concentration.

**Contamination:** The direct or indirect introduction into the natural ground water of any physical, chemical, biological or radioactive material which may: a) cause a violation of State Drinking Water Standards; or b) adversely affect the health of the public; or c) adversely affect a designated and protected use of the State's ground water. Contamination includes the

introduction of heated water or cooled water into the ground water if the alteration of ground water temperature renders the ground water less suitable for beneficial use.

**Contested Case:** A proceeding that results in the issuance of an order.

**Continuously Flowing Water:** A sufficient flow of water that could provide for migration and movement of fish, and excludes those reaches of streams that, in their natural state, normally go dry at the location of the proposed alteration. IDWR assumes, subject to information to the contrary, that USGS quadrangle maps accurately depict whether a stream reach is continuously flowing, at the location of the proposed alteration. Such exclusion does not apply to minor flood channels that are a part of a stream that is continuously flowing in the reach where the alteration is located. Also, such exclusion does not apply to streams that may be dry as a result of upstream diversion or storage of water. (See IDAPA 37.03.07.)

**Conveyance Works:** The ditches, pipes, conduits or other means by which water is carried or moved from the point of diversion to the place of use. Storage works, if any, such as a dam can be considered part of the conveyance works. (See IDAPA 37.03.02.)

**Coordinator:** The Administrative Rules Coordinator prescribed in Idaho Code § 67-5202.

**Critical Ground Water Area:** Any ground water basin, or designated part thereof, not having sufficient ground water to provide a reasonably safe supply for irrigation of cultivated lands, or other uses in the basin at the then current rates of withdrawal, . . . as may be determined and designated, from time to time, by the Director. (Idaho Code § 42-233a.)

**Cubic Feet per Second (CF/S):** A unit of measure for the rate of discharge of water. One cubic foot per second is the rate of flow of one square foot of water that is flowing at mean velocity of one foot per second. It is equal to 448.8 gallons per minute, or 1.98 acre-foot per day.

**Culinary Supply:** Water meeting all applicable safe drinking water requirements suitable for residential and commercial use.

**Cumulative Effects:** The combined environmental or social impacts that accrue over time and space from a series of similar or related individual actions, contaminants, or projects. Although each action may seem to have a negligible impact, the combined effects can be severe.

**Dam:** Any artificial barrier together with appurtenant works, which is or will be ten (10) feet or more in height or has or will have an impounding capacity at maximum storage elevation of fifty (50) acre-feet or more. Height of a dam is defined as the vertical distance from the natural bed of the stream or watercourse at the downstream toe of the barrier, as determined by the Director, or from the lowest elevation of the outside limit of the barrier, if it is not across a stream channel or watercourse, to the maximum water storage elevation.

**Dam Classifications:** Size and Risk Classifications (2005)

1. Size:

- **Small:** 20 feet high or less and a storage capacity of less than 100 acre-feet of water. 244 dams are currently listed as small.

- **Intermediate:** More than 20 but less than 40 feet high or with a storage capacity of 100 to 4,000 acre-feet of water. 198 dams are currently listed as intermediate.
  - **Large:** 40 feet high or more or with a storage capacity of more than 4,000 acre-feet of water. 104 dams are currently listed as large.
2. **Risk:** This classification is used by IDWR to classify potential losses and damages anticipated in down-stream areas that could be attributable to failure of a dam during typical flow conditions.
- **Low Risk:** No permanent structures for human habitation; minor damage to land, crops, agricultural, commercial or industrial facilities, transportation, utilities or other public facilities or values. 340 dams are currently listed as low risk.
  - **Significant Risk:** No concentrated urban development, one or more permanent structures for human habitation that are potentially inundated with flood water at a depth of 2 ft. or less or at a velocity of 2 ft. per second or less. Significant damage to land, crops, agricultural, commercial or industrial facilities, loss of use and/or damage to transportation, utilities or other public facilities or values. 136 dams are currently listed as significant risk.
  - **High Risk:** Urban development, or any permanent structure for human habitation which are potentially inundated with flood water at a depth of more than 2 ft. or at a velocity of more than 2 ft. per second. Major damage to land, crops, agricultural, commercial or industrial facilities, loss of use and/or damage to transportation, utilities or other public facilities or values. 91 dams are currently listed as high risk.

**Dead Storage:** The water volume in the bottom of a reservoir stored below the lowest outlet that is generally not withdrawn from storage.

**Decree:** A written decision by a court of law. Water right disputes are sometimes taken to court for resolution – the resultant description of the water rights in question are known as “decreed” water rights.

**Deep Injection Well:** An injection well that is more than eighteen (18) feet in vertical depth below land surface, and is identical to the statutory phrase, “waste disposal and injection well.”

**Delivery Call:** A request from the holder of a water right for administration of water rights under the prior appropriation doctrine. Usually, a demand made by the holder of a senior-priority surface or ground water right against the holder of a junior-priority ground water right in an area having a common ground water supply.

**Delivery Call For Curtailment Of Pumping:** The holder of a senior-priority surface or groundwater right will be prevented from making a delivery call for curtailment of pumping of any well used by the holder of a junior-priority ground water right where use of water under the junior-priority right is covered by an approved and effectively operating mitigation plan.

**Depth Datum:** The zero-depth reference for well logging. A location on or above the surface (land or water) at which an elevation can be determined for depth reference. The elevation of this datum will be the reference for all depth measurements made in the well bore. The depth datum for a well could be a mechanical point on a drill rig, ground level, the derrick floor, or any other chosen reference point.

**DEQ:** See Division of Environmental Quality.

**Detections:** Detections are sample analysis results where concentrations were greater than the laboratory detection limit for that constituent. Non-detects (<n) have undetermined concentrations less than detection limit 11.

**Dewatering:** Elimination of water from a lake, stream, river, or reservoir.

**Director:** The Director of the Idaho Department of Water Resources (IDWR) or the director's duly authorized designee.

**Discharge:** The processes by which water is removed from the zone of saturation or the quantity of water that is removed from the zone of saturation.

**Diversion:** 1) Taking water from a stream or other body of water into a canal, pipe, or other conduit. 2) The physical structure for the removal of water from a stream channel.

**Diversionary Use:** Total water withdrawn from a stream or other natural source.

**Diversion Works:** Standard measuring devices placed at the opening of a diversion system. Lockable diversion works are typically a screw-valve metal headgate at the creek and a weir in the ditch near the headgate to allow practical adjustment and measurement by the Watermaster.

**Division of Environmental Quality (DEQ):** An agency of the State of Idaho created by the Idaho Environmental Protection and Health Act (Idaho Code §39-101 et. seq.) to ensure clean air, water, and land in the state and protect Idaho citizens from the adverse health impacts of pollution. As a regulatory agency, DEQ enforces various state environmental regulations and administers a number of federal environmental protection laws including the Clean Air Act, the Clean Water Act, and the Resource Conservation and Recovery Act.

**Document:** Pursuant to IDAPA 37.01.01, any proclamation, executive order, notice, rule or statement of policy of an agency.

**Domestic Water Use:** The use of water as described in Idaho Code § 42-111. Domestic use can be for home, livestock, and for any other purposes in connection with a home, including irrigation of up to one-half acre of land. The total use cannot exceed 13,000 gallons per day. Domestic use can also be for other small uses such as commercial or business establishments, if the total diversion rate does not exceed 0.04 cubic feet per second and a diversion volume of 2,500 gallons per day.

**Double Log Specification:** Double log specification is one where both the dependent and an independent variable are transformed into logs. (Greene WH. 1990. *Econometric Analysis*. NY: Macmillan Publishing, New York).

**Drawdown:** The difference at a given point, between the static water level and the pumping water level.

**Dredge or Placer Mining:** Any dredge or other placer mining operation to recover minerals with the use of a dredge boat or sluice washing plant whether fed by bucket line as a part of such dredge or by a separate dragline or any other method including, but not limited to, suction dredges which are capable of moving more than two (2) cubic yards per hour of earth material. (See IDAPA 37.03.08.)

**Drilling Permit:** A drilling permit must be obtained from the Department of Water Resources before the construction, modification or abandonment of any well greater than 18 feet in depth. The Drilling Permit describes general conditions of approval and provides for specific conditions, which may be applicable in a particular locality or situation, i.e., Contamination Area, Area of Drilling Concern, Critical Groundwater Area, or Ground Water Management Area. The Drilling Permit authorizes the construction or modification of a well, but does not authorize water diversion, use, or injection.

**Drinking Water Standard:** Drinking water standards are established by the EPA and have been adopted as Idaho State Standards for public drinking water by DEQ. In the Statewide Program they serve as a basis for appraising water quality. The standards consist of a minimum contaminant level (MCL) established for each constituent listed. Primary MCLs are established to protect against adverse health effects and are enforceable on public drinking water supplies. Secondary MCLs are established for aesthetic reasons such as taste, color or odor and are not enforceable on public drinking water supplies. An action level for selected constituents triggers the need for water or distribution treatment after the concentration of a percentage of samples exceeds the action level.

**Drop Structures, Sills and Barbs:** Physical obstructions placed within a stream channel for the purpose of stabilizing the channel by decreasing stream gradient and velocity and by dissipating stream energy.

**Drought:** A prolonged period of dryness that is a normal part of almost every climate and is actually defined in many different ways. (See *Idaho Drought Plan*, 2001, online at IDWR.)

- Meteorological drought is usually an expression of current precipitation's departure from the average precipitation recorded over a specific period of time. This definition is region-specific and based on an understanding of the climatic patterns typical for an area.
- Agricultural drought occurs when the soil moisture is not sufficient to meet a specific crop's requirements at a particular time. Agricultural drought generally occurs after meteorological drought, but before hydrological drought.
- Hydrological drought refers to deficiencies in surface and subsurface water supplies. Stream flow, lake, reservoir, and ground water levels decline when precipitation is reduced over an extended period of time. Thus, hydrological measurements are not the earliest indicators of drought.
- Socioeconomic drought occurs when water supply shortages negatively impact people, either individually or collectively (drought definitions based on Wilhite & Glantz 1985).

**Drywell:** An injection well completed above the water table so that its bottom and sides are typically dry except when receiving fluids.

**DTW:** Depth to water in a well.

**Dual-Based Claims:** In some cases, the federal government has claimed one right under two theories: a state law basis and a federal law basis. Both theories will be reported on one form for that single water right. In most cases, the priority dates are different and will be listed separately. The federal law basis is separately indicated in a box.

**Dual Users:** Households using a public water system and either a private irrigation system or private well.

**Durban Watson Statistic:** A test performed to check for serial correlation of the error terms. (Greene W. 1990).

**Duty of Water:** The quantity of water necessary when economically conducted and applied to land without unnecessary loss that results in successfully growing crops. (See IDAPA 37.03.02.)

**Ecosystem:** A complex system composed of a community of flora and fauna, taking into account the chemical and physical environment with which the system is interrelated.

**Ephemeral Stream:** A stream or portion of a stream that flows only in direct response to precipitation. It receives little or no water from springs and no long continued supply from melting snow or other sources. Its channel is at all times above the water Appendix C-Table. (American Geologic Institute, 1962).

**Elasticity:** The percentage change in the dependent variable that results from a one-percentage change in an independent variable.

**Electric power system:** Physically connected electric generating, transmission, and distribution facilities operated as a unit under one control.

**Elevated:** A designation of the presence constituents other than nitrate that exceed 50 percent of an MCL, but less than the MCL. However, nitrate levels above 20 percent are considered elevated, see Nitrate.

**Elevation:** The distance measured above or below a specific depth reference. In well logging, it is the vertical distance between the depth datum used for depth measurements in the well bore and sea level (with appropriate sign). See Depth Datum.

**Endangered species:** Any species that is determined by the U.S. Fish and Wildlife Service to be in danger of extinction throughout all or a significant portion of its range, see 16 U.S.C. 1532(6).

**Endangered Species Act (ESA):** A federal statute that invokes protection for the species listed under the law (16 U.S.C. §1531, et. seq.). Either the U.S. Fish and Wildlife Service or the U.S. National Marine Fisheries Service may designate animals and plants as “endangered or threatened.” There are other designations for “experimental populations.” Listed populations receive the highest protection possible, with penalties for taking, harming, or injuring an individual or its environment. Special procedures apply to government projects in areas where

listed species may be present. Section 7 (16 U.S.C. § 1536) requires that the government take no action that may jeopardize the continued existence of any endangered or threatened species or adversely modify its critical habitat. Where the federal government is involved in a water project (either by building it or issuing a permit or license), the Endangered Species Act may prohibit the government from proceeding if the loss of water will be harmful to such species.

**Evapo-transpiration:** The loss of moisture by evaporation from land, water surfaces, and transpiration from plants.

**Examination or Field Examination:** An on-site visit to determine the extent of application of water to beneficial use and to determine compliance with terms and conditions of the water right permit. (See IDAPA 37.03.02.)

**Exceedence Flows:** “Exceedence” describes the percentage of time for which an observed stream-flow is greater than or equal to a defined stream-flow. Exceedence is used when stream-flow data are not normally distributed (i.e. on a bell-shaped curve). Most streams flows are not normally distributed because high flow events can skew the data making the mean flow greater than the median flow. Low-flow events have high exceedence percentages, and high-flow events have low exceedence percentages. Low-flow events have a high exceedence percentage because most of the time, observed flows exceed the low flow. Similarly, high-flow events have low exceedence percentages because most observed flows are lower than the high-flow levels.

**Exchange:** A broad term used to describe several different water diversion and distribution scenarios. It is often used to describe situations where water is diverted under one source with a valid water right and injected and commingled with water in another source, ditch or natural channel in exchange for diverting an equal amount of water at a different location from the same ditch or channel containing the commingled water. Example, a user diverts water from a river to a canal at point A and then by means of a well, injects ground water into the river at point B which is 5 miles downstream from Point A. Where water is injected at the upstream point and diverted downstream, stream flow losses, if any, should be evaluated. Exchange is also used to describe situations where two or more valid water rights are swapped. For example, user A with well A and ground water right #1 irrigates land one-half mile above where user B diverts right #2. The stream channel between A and B's land experiences losses and A's well is situated close enough to B's land that it can be used to irrigate B's land. Under exchange user A agrees to divert B's surface water right to A's land in exchange for allowing user B to irrigate his land with A's ground water well and right.

**Expansion:** The diversion and/or use of more water than originally allowed by a water right measured by either rate or volume. The application of water to a tract of land larger than the original tract is presumed to be an expansion. (See IDAPA 37.03.02.)

**Exploratory Well:** A well drilled for the discovery and/or evaluation of geothermal resources either in an established geothermal field or in unexplored areas. Exploratory well does not include holes six (6) inches in diameter or less if they are used for gathering geotechnical data such as, but not limited to, heat flow, earth temperature, temperature gradient and/or seismic measurements, provided said holes are not greater than one thousand (1000) feet in depth below land surface and provided the material medium is not intended to be encountered.

**Federal Energy Regulatory Commission (FERC):** Established in 1977 (replacing the Federal Power Commission, see Pub. L. 95-91) with the primary responsibility of ensuring the Nation's consumers adequate energy supplies at just and reasonable rates and providing regulatory incentives for increased productivity, efficiency, and competition. Its primary functions are to establish and enforce rates and regulations regarding interstate aspects of the electric, natural gas, and oil industries. It also issues licenses for non-Federal hydroelectric plants and certifies small power production and cogeneration facilities.

**Field Report:** The form provided by the Department upon which the examiner records the data gathered and describes the extent of diversion of water and application to beneficial use. The report is fully termed beneficial use field report and is also termed a field examination report. (See IDAPA 37.03.02.)

**Fire-Fighting Purposes:** The use of water in times of emergency: to extinguish an existing fire on private or public lands, facilities, or equipment; to prevent an existing fire from spreading to private or public lands, facilities or equipment within the vicinity of and endangered by an existing fire; and by fire-fighting personnel engaged in fighting an existing fire. Fire-fighting purposes does not include the use of water to prevent a fire from occurring in the future, the use of water for domestic purposes in regularly maintained firefighting stations, or the storage of water for fighting future fires. (See IDAPA 37.03.01.)

**Fishery Enhancement Structure:** A structure deliberately placed within the waterway to improve fish habitat.

**Fixed Charge:** A financial charge levied which is independent of the amount used.

**Floodplain:** Land that may be submerged by floodwaters. The floodplain built up by stream deposition. The 100-year floodplain identifies the land in the floodplain subject to a one percent or greater chance of flooding in any given year.

**Flood Prone Width:** The width of the water's surface at twice the **Bank Full Depth**.

**Flood Surcharge:** A variable volume of water temporarily detained in the upper part of a reservoir, in the space (or part thereof) that is filled by excess runoff or flood water, above the maximum storage elevation. Flood surcharge cannot be retained either because of physical or administrative factors, but is passed through the reservoir and discharged by the spillway(s) until the reservoir level has been drawn down to the maximum storage elevation.

**Floodway:** The channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the 100-year flood can be carried without substantial increases in flood height.

**Flume:** A measuring device having a constricted section, or throat, between an upstream converging section and downstream diverging section. Discharge is determined by measuring the depth of water at a proper location in the flume and then referring to appropriate tables. Standard flumes commonly used in Idaho include Parshall and trapezoidal flumes. Flumes are used where the channel has relatively little slope and the water cannot be backed up significantly as it must be when a weir is installed.

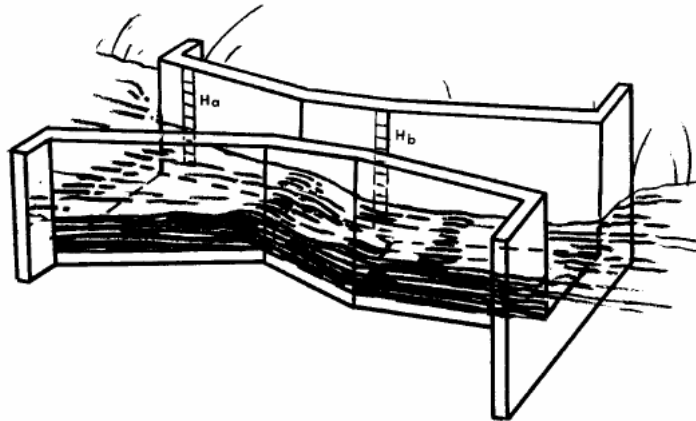


Figure 7.5: Parshall flume

**Fluvial:** 1) Fish whose life history takes place entirely in streams; they migrate to smaller streams for spawning. 2) Pertaining to or living in streams or rivers or produced by the action of flowing water.

**Freeze:** The occurrence of a temperature of  $0^{\circ}$  C ( $32^{\circ}$  F) or lower in a thermometer shelter approximately 5 feet above ground surface.

**Fresh Water:** Very low in dissolved salts. Sometimes used comparatively with respect to normal seawater, which has 35,000 parts of dissolved salts per million (3.5%).

**Friable:** Easily crumbled or pulverized.

**Futile Call:** A delivery call made by the holder of a senior-priority surface or ground water right that, for physical and hydrologic reasons, cannot be satisfied within a reasonable time of the call by immediately curtailing diversions under junior-priority ground water rights or that would result in waste of the water resource. When curtailment of junior upstream surface water rights will not make water available for delivery and use to senior downstream surface water rights, without unreasonable waste as determined by the Director, a Watermaster can be empowered to decline to curtail the junior water rights in a futile effort to deliver water to the senior rights.

**Gaging Station:** A site on a stream, canal, lake or reservoir where systematic observations of stage and discharge are made.

**Geology:** The science that relates to the study of the structure, origin, history, and development of the earth as revealed in the study of rocks, formations, and fossils

**Geothermal:** The natural heat energy of the earth. Usually, the term refers to water that is heated underground, and retains at least some of that heat at land surface or at the bottom of a well.

**Geothermal Area:** The same general land area which in its subsurface is underlain or reasonably appears to be underlain by geothermal resources from or in a single reservoir, pool, or other source or interrelated sources, as such area or areas may be designated from time to time by the Director.

**Geothermal Field:** An area designated by the Director that contains a well or wells capable of commercial production of geothermal resources.

**Geothermal Resource:** The natural heat energy of the earth, the energy in whatever form which may be found in any position and at any depth below the surface of the earth, present in, resulting from, or created by, or which may be extracted from such natural heat and all minerals in solution or other products obtained from the material medium of any geothermal resource. Geothermal resources are found and usually declared to be *sui generis*, being neither a mineral resource nor a water resource but they are also found and hereby declared closely related to and possibly affecting and affected by water and mineral resources in many instances.

**Geothermal Resources Act:** Idaho statute defining any ground water having a bottom-hole temperature of greater than 100°C as a “geothermal resource.” Geothermal resources are put into a classification separate from water resources or mineral resources, and permits separate from those resources must be obtained for their extraction and use. (Idaho Code Title 42, Chapter 40.)

**Geothermal Steam Act of 1970:** Federal statute that requires geothermal leasing on National Forest System lands be subject to the consent of the United States Department of Agriculture (USDA), Forest Service, rather than the Department of Interior (Bureau of Land Management). The leases are subject to conditions prescribed by the USDA to protect the lands for the purpose for which they were withdrawn or acquired. (Title 30 U.S.C. §§ 1001-1025.)

**Glide:** A portion of a stream with slow-moving, relatively shallow water.

**Gross Alpha:** Radioactivity given off as alpha particles during the radioactive decay process. Gross alpha is measured in picocuries per liter (pCi/l).

**Gross Beta:** Radioactivity given off as beta particles during the radioactive decay process. Gross beta is measured in picocuries per liter (pCi/l).

**Ground Water:** Any water of the state that occurs beneath the surface of the earth in a saturated geological formation of rock or soil. Generally, ground water is 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 are filled with water). (Idaho Code § 42-230.)

**Ground Water Management Area:** Any ground water basin or designated part thereof that the director of the department of water resources has determined may be approaching the conditions of a critical ground water area. (See Idaho Code § 42-233b.)

**Ground Water Quality Standards:** Standards found in IDAPA 58.01.11, “Ground Water Quality Rule,” § 200.

**Habitat:** The place or type of natural site where a plant or animal normally lives and grows.

**Hardness:** A measurement of ground water chemistry, calculated from calcium and magnesium concentrations [(calcium times 2.5) plus (magnesium times 4.1)]. Hardness is sometimes measured in grains. One grain of hardness per gallon is equal to 17.1 mg/l.

**Head:** The elevation difference between surfaces of water, usually upstream and downstream of a turbine or pump. The differential pressure causing flow in a fluid system, usually expressed in terms of the height of a liquid column that the pressure supports.

**Headwaters:** The beginning of a natural watercourse in perceptible extent with definite beds and banks that confine and conduct continuously and intermittently flowing waters (from *Rules and Regulations Pertaining to the Idaho Forest Practices Act*, IDL, 1988).

**Highwater Line (mark):** The line that separates aquatic vegetation from terrestrial vegetation. The line that the water impresses on the soil by covering it for sufficient periods of time to deprive the soil of its terrestrial vegetation and destroy its value for commonly accepted agricultural purposes (Idaho Code § 42-3802).

**Household:** A household includes all persons who occupy a housing unit. A housing unit is a house, an apartment, a mobile home, a group of rooms, or a single room that is occupied as separate living quarters.

**Heteroscedasticity:** A problem associated with the error term in the estimated regression equation in cross-section analysis, where the errors associated with each observation have different variances. Typically, the variance is proportional to one of the independent variables, making the observations with the larger variances less reliable than the ones with the smaller variance. (Greene W., 1990.)

**Holder Of A Water Right:** The legal or beneficial owner or user pursuant to lease or contract of a right to divert or to protect in place surface or ground water of the state for a beneficial use or purpose.

**Hot-water System:** A system that is dominated by a circulating liquid that transfers most of the heat and largely controls subsurface pressures. Characterized by hot springs that discharge at the surface.

**Hydric Soil:** A soil that formed under conditions of saturation, flooding or ponding long enough during the growing season to develop anaerobic conditions in the upper part.

**Hydrogeologic Subareas:** Geologically similar units derived from previously defined Idaho ground water basins. These units are the primary basis for analysis of ground water quality data

from the Statewide Program. Refer to Idaho Statewide Ground Water Quality Monitoring Program Network Design (Neely, 1994).

**Hydrograph:** A graph showing elevation of the water table with respect to time.

**Hydrologic Basin:** The area of land drained by a river system, a reach of a river and its tributaries in that reach, a closed basin, or a group of streams forming a drainage area (also see watershed).

**Hydrologic (Water) Cycle:** The cycling of water from the atmosphere to the earth (precipitation) and back to the atmosphere (evaporation and plant transpiration). Atmospheric moisture, clouds, rainfall, runoff, surface water, ground water, and water in soil are all part of the hydrologic cycle.

**Hydraulic Head:** The force per unit area exerted by a column of liquid at a height above a depth (and pressure) of interest. Fluids flow down a hydraulic gradient, from points of higher to lower hydraulic head. Although head refers to distance or height, it is used to express the pressure resulting from the weight of a body of liquid since the weight is directly proportional to the height.

**Hydrology:** A science dealing with the properties, distribution, and circulation of water.

**Hydrophytes:** Plants able to live either in water itself or in very moist soils.

**Hydropower Project:** Any development which uses a flow of water as a source of electrical or mechanical power, or which regulates the flow of water for the purpose of generating electrical or mechanical power. A hydropower project development includes all powerhouses, dams, water conduits, transmission lines, water impoundments, roads, and other appurtenant works and structures. (Idaho Code § 42-1731(5); IDAPA 37.03.08.)

**Idaho Batholith:** A body of intrusive igneous (volcanic) rock in central Idaho about 250 miles long and a maximum of 100 miles wide. It is approximately 100 million years old.

**Idaho Code:** Idaho laws, as written by the state legislature and approved by the governor. A complete list of Idaho Statutes is available on the internet at: [www3.state.id.us/idstat/](http://www3.state.id.us/idstat/).

- TITLE 42 IRRIGATION AND DRAINAGE — WATER RIGHTS AND RECLAMATION
  - CHAPTER 1 APPROPRIATION OF WATER — GENERAL PROVISIONS
  - CHAPTER 2 APPROPRIATION OF WATER — PERMITS, CERTIFICATES, AND LICENSES — SURVEY
  - CHAPTER 6 DISTRIBUTION OF WATER AMONG APPROPRIATORS
  - CHAPTER 7 HEADGATES AND MEASURING DEVICES
  - CHAPTER 8 DISTRIBUTION OF STORED WATER
  - CHAPTER 9 DISTRIBUTION OF WATER TO CONSUMERS
  - CHAPTER 13 LATERAL DITCH WATER USERS' ASSOCIATIONS
- TITLE 18 CRIMES AND PUNISHMENTS
  - CHAPTER 43 IRRIGATION WORKS

**Idaho Department of Fish and Game (IDFG):** A state agency run by a commission that is responsible for establishing regulations and other needed controls on fishing, hunting, trapping and management of wildlife in line with the state's wildlife policy; approving IDFG budgets for submission to the legislature; holding public hearings, and making decisions on the management of the state's wildlife.

**Idaho Department of Lands (IDL):** IDL is specifically charged under Idaho Code Title 58 with responsibility for the public trust protection of the beds and banks of navigable streams and lakes. The Department of Lands is the lead agency in administering the state's surface, dredge, and placer mining laws under Idaho Code Title 47. Under Idaho Code Title 38, the Department of Lands also administers laws associated with forest practices on state and private land. The Department of Lands participates in the state anti-degradation policy as the lead agency administering forest management practices.

**Idaho Department of Parks and Recreation (IDPR):** IDPR participates in water quality policy by recommending appropriation of in-stream flows for recreational and aesthetic protection and commenting on proposals affecting the quality of Idaho's water recreational facilities. Department of Parks and Recreation administers a waterways improvement fund for the purpose of improving boating facilities. The Department of Parks and Recreation also administers the land and water conservation fund that acquires recreational lands.

**Idaho State Water Plan Objectives:** Five objectives formulated for the conservation, development, management, and optimum use of all unappropriated water resources and waterways of Idaho in the public interest, see Idaho Code § 42-1734A.

1. Water Management - Encourage and promote the quantification of water use and all water rights within the state. Encourage and promote integrated, coordinated, and adaptable water resource management, and the prudent stewardship of water resources. Encourage state protection of waterways or water bodies with outstanding fish and wildlife, recreation, geologic or aesthetic values where protection should take precedence over development.
2. Public Interest - Ensure that the needs and wishes of the public are appropriately considered in decisions involving water resources of the state.
3. Economic Development - Encourage optimum economic development of the water resources, with due regard for prior water rights, that promotes the integration and coordination of the use of water, the augmentation of existing supplies, and the protection of designated waterways [Idaho Code 42-1734A(1)(b)].
4. Environmental Quality - Maintain, and where possible enhance water quality and water-related habitats. Study and examine the quality of rivers, streams, lakes and ground water [Idaho Code 42-1734(15)], and assure that due consideration is given to the needs of fish, wildlife, and recreation in managing the water resources of the state.
5. Public Safety - Encourage and promote programs that will assure life and property within the state are not threatened by the management or use of our water resources.

**Idaho Water Resource Board (IWRB):** A constitutional water agency within the Idaho Department of Water Resources consisting of eight appointed members pursuant to the provisions of Article 15, Section 7 of the Idaho Constitution (Idaho Code § 42-1732). Duties

and authorities include comprehensive basin planning, protected rivers designations, minimum stream flow program, water project financing, water supply banks and water rentals. The Department of Water Resources is responsible for withdrawing some rivers from development on the basis of their special recreational or natural qualities. The agency is also responsible for ambient groundwater quality monitoring network and a computerized groundwater information system. The safety of dams, which includes mine tailings retention dams, promulgating well construction standards, and managing the safety of injection wells falls within IDWR's authority.

**Igneous Rock:** Rock formed from a melt or magma by cooling and solidification. The solidification may occur beneath the surface of the earth from magma (intrusive) or at the surface from lava (extrusive or volcanic). If the solidification occurred at depth, the rock is called "plutonic;" if formed from magma erupted onto the surface, it is called "volcanic."

**Immunoassay:** An enzyme-based field screening technique for detecting pesticides and other compounds in water and soil.

**Impacted:** Constituent with an elevated concentration, not naturally occurring and directly related to human activities.

**Impermeable:** Preventing the passage of fluid. A formation may be porous yet impermeable if there is an absence of connecting passages between the voids within it.

**Incidental Stock Water:** When stock water is not specifically included for a water right that includes irrigation, a portion of the quantity described for irrigation use may be diverted and used, from the same point of diversion and at the same place of use as the irrigation use, for purposes of maintaining a reasonable water supply for stock watering use during the period of use for irrigation described in the water right.

**Incremental Price:** A price that is charged per unit of use.

**Independent Power Producers:** Non-utility owned electric power generators.

**Industrial Business:** A business that manufactures products.

**Industrial Water Use:** Water used for industrial purposes such as fabrication, processing, washing, and cooling, and includes such industries as steel, chemical and allied products, paper and allied products, mining, and petroleum refining. The water may be obtained from a public supply or may be self supplied. See also public supply and self-supplied water.

**Influent:** A tributary stream.

**Injection Well:** Any special well, converted producing well, or reactivated or converted abandoned well employed for injecting material into a geothermal area or adjacent area to maintain pressures in a geothermal reservoir, pool, or other source, or to provide new material or to serve as a material medium therein, or for reinjecting any material medium or the residue thereof, or any by-product of geothermal resource exploration or development into the earth.

**Interim Protected River:** A waterway designated pursuant to Idaho Code § 42-1734D or 42-1734-H that is protected for up to two (2) years while a component of the Comprehensive State Water Plan is prepared for that waterway. (See IDAPA 37.03.08.)

**Intermediate String or Casing:** The casing installed within the well to seal out brackish water, caving zones, etc., below the bottom of the surface casing. Such strings may either be lapped into the surface casing or extend to land surface.

**Intermittent Stream:** 1) A stream that flows only part of the year, such as when the ground water Appendix C-Table is high or when the stream receives water from springs or from surface sources such as melting snow in mountainous areas. The stream ceases to flow above the streambed when losses from evaporation or seepage exceed the available stream flow. 2) A stream that has a period of zero flow for at least one week during most years.

**Interstate Waters:** Waters that flow across or form part of state or international boundaries, including boundaries with Indian nations.

**Irrigation:** The watering of cropland. Residential lawn and garden uses are not considered “irrigation” in the context of water rights issued by the state of Idaho.

**Irrigation Return Flow:** Non-point source water (above and below ground) that leaves a field following the application of irrigation water and eventually flows into streams.

**Junior Priority Rights:** A water right priority date later in time than the priority date of other water rights being considered.

**Juvenile Water:** Water that is derived from the interior of the earth and has not previously existed as atmospheric or surface water.

**Kilowatt (KW):** Unit of electric power equal to 1,000 watts, or about 1.34 horsepower.

**Kilowatt Hour (KWH):** Unit of energy equal to that expended by one kilowatt in one hour.

**Lateral Ditch:** A ditch that supplies water to two or more users. Lateral ditches normally divert water from a main canal or ditch which has its heading from a river or natural stream channel.

**Lava plain:** A broad stretch of nearly level to gently undulating surface underlain by basaltic flows.

**Lease:** To convey by contract a water right to the Board’s water supply bank or stored water to a rental pool operated by a local committee. (See IDAPA 37.02.03.)

**Legal Subdivision:** A tract of land described by the government land survey and usually is described by government lot or quarter-quarter, section, township and range. A lot and block of a subdivision plat recorded with the county recorder may be used in addition to the government lot, quarter-quarter, section, and township and range description. (See IDAPA 37.03.02.)

**License:** A certificate issued by the Director in accordance with Idaho Code § 42-219 confirming the extent of diversion and beneficial use of water that has been made in conformance with the permit conditions. (See IDAPA 37.03.02.)

**License Examination Fee:** The fee required in Idaho Code § 42-221K. Also termed an examination fee. (See IDAPA 37.03.02.)

**Limnology:** The scientific study of fresh water, especially the history, geology, biology, physics, and chemistry of lakes.

**Listed Species:** Refers to animals and plants listed under the Endangered Species Act.

**Load or Loading:** The quantity of a substance entering a receiving stream, usually expressed in pounds or kilograms per day or tons per year. Loading is the product of flow (discharge) and concentration.

**Loam:** Moderately-coarse, medium and moderately fine-textured soils that include such textural classes as sandy loam, fine sandy loam, very fine sandy loam, silt loam, clay loam, sandy clay loam, and silty clay loam.

**Local Committee:** The committee that has been designated by action of the Board to facilitate marketing of stored water by operating a rental pool pursuant to Idaho Code § 42-1765. (See IDAPA 37.02.03.)

**Low-head Dam:** A dam with less than 20 meters (66 ft.) of head.

**Mainstem:** The main channel of a river.

**Material Injury:** Hindrance to or impact upon the exercise of a water right caused by the use of water by another person as determined in accordance with Idaho Law, as set forth in Rule 42. Factors the Director may consider in determining whether the holders of water rights are suffering material injury and using water efficiently and without waste include, but are not limited to, the following:

- 1) the amount of water available in the source from which the water right is diverted;
- 2) the effort or expense of the holder of the water right to divert water from the source;
- 3) whether the exercise of junior-priority ground water rights individually or collectively affects the quantity and timing of when water is available to, and the cost of exercising, a senior-priority surface or ground water right. (This may include the seasonal as well as the multi-year and cumulative impacts of all ground water withdrawals from the area having a common ground water supply);
- 4) if for irrigation, the rate of diversion compared to the acreage of land served, the annual volume of water diverted, the system diversion and conveyance efficiency, and the method of irrigation water application;
- 5) the amount of water being diverted and used compared to the water rights;
- 6) the existence of water measuring and recording devices;
- 7) the extent to which the requirements of the holder of a senior-priority water right could be met with the user's existing facilities and water supplies by employing reasonable

diversion and conveyance efficiency and conservation practices; provided, however, the holder of a surface water storage right shall be entitled to maintain a reasonable amount of carry-over storage to assure water supplies for future dry years. In determining a reasonable amount of carry-over storage water, the Director shall consider the average annual rate of fill of storage reservoirs and the average annual carry-over for prior comparable water conditions and the projected water supply for the system; and

- 8) the extent to which the requirements of the senior-priority surface water right could be met using alternate reasonable means or points of diversion, including the construction of wells or the use of existing wells to divert and use water from the area having a common ground water supply under the petitioner's surface water right priority.

**Material Medium:** Any substance including, but not limited to, naturally heated fluids, brines, associated gasses and steam in whatever form, found at any depth and in any position below the surface of the earth, which contains or transmits the natural heat energy of the earth, but excluding petroleum, oil, hydrocarbon gas, or other hydrocarbon substances.

**MCL (Maximum Contaminant Level):** See **Drinking Water Standard**.

**McCarran Amendment:** (43 U.S.C. 666). Waives the sovereign immunity of the United States so as to allow state courts and agencies to adjudicate Federal water rights in proceedings that qualify as general stream adjudications. This waiver of immunity from suit has been interpreted by the courts to include claims against the United States as trustee of reserved water rights of Indian tribes and individual Indian allottees. See **Winters Rights**.

**Mean:** The average of all data results.

**Meander:** A curve in a stream.

**Meander Pool:** A pool in a stream resulting from a shift in channel direction (meander) and found along the outer curves of the channel, where scouring (localized erosion) occurs.

**Mean High Water Mark:** A water level corresponding to the natural or ordinary high water mark. The line that the edge of water in a stream or lake impresses on the soil by covering it for sufficient periods of time to deprive the soil of its terrestrial vegetation and destroy its value for commonly accepted agricultural purposes (Idaho Code § 42-3802(h)).

**Measuring Device:** A generally accepted structure or apparatus used to determine a rate of flow or volume of water. Examples are weirs, meters and flumes. See **Open Channel Measuring Device** and **Closed Conduit Flowmeter**.

**Median:** The middle value (or average of the two middle values) when all results are arranged in ascending order. This is also called the 50th percentile.

**Megawatt (MW):** Unit of electrical power equal to 1,000,000 watts, or about 1,340 horsepower.

**Metamorphic Rock:** Igneous or sedimentary rock that has partially or completely re-crystallized in response to elevated temperature, pressure, and chemical environment. The change the metamorphic rocks have undergone generally occurs in the solid state and deep underground.

**Micrograms per liter (ig/l):** Unit of measurement equivalent to parts per billion (ppb).

**Milligrams per liter (mg/l):** Unit of measurement equivalent to parts per million (ppm).

**Mineral:** A naturally occurring material having a definite chemical composition and, usually, a characteristic crystal form. A mineral may be disseminated in some other mineral or rock.

**Mineral Composition of Rocks:** The crust of the earth contains only eight elements (oxygen, silicon, aluminum, iron, calcium, sodium, potassium, and magnesium) with concentrations greater than 1% by weight. Minerals are compounds of these elements. Each mineral has a specified crystalline structure. The most abundant minerals represent only five types of chemical compounds: silicates, carbonates, sulfates, halides, and oxides. Of these minerals, the silicates are more abundant than all the rest combined, comprising 95% of the rest.

**Mineralized Water:** Any naturally occurring ground water that has an unusually high amount of chemical constituents dissolved within the water. Water with above five thousand (5000) ppm total dissolved solids is considered mineralized.

**Miner's Inch:** A variable unit used to express a rate of flow of water in the Western United States. In Idaho, a miner's inch is equal to 1/50 of a cubic foot per second (cfs), or 0.02 cfs. One miner's inch is the duty of water, or the standard allocated flow, for each acre of irrigated land.

**Minimum Stream Flow:** The amount of flow necessary to preserve desired stream values, including fish and wildlife habitat, aquatic life, navigation and transportation, recreation, water quality, and aesthetic beauty. Idaho Code defines this term as the minimum flow of water in cubic feet per second of time, or minimum lake level in feet above mean sea level, required to protect fish and wildlife habitat, aquatic life, recreation, scenic beauty, navigation, transportation, or water quality of a waterway in the public interest (Idaho Code § 42-1502(f).)

**Mitigation Plan:** A document submitted by the holder(s) of a junior-priority ground water right and approved by the Director that identifies actions and measures to prevent, or compensate holders of senior-priority water rights for, material injury caused by the diversion and use of water by the holders of junior-priority ground water rights within an area having a common ground water supply. See Material Injury.

**Monitoring Site:** Any well more than eighteen (18) feet in vertical depth constructed to evaluate, observe or determine the quality, quantity, temperature, pressure or other characteristics of the ground water or aquifer.

**Mouth:** The location where flowing water enters a larger water body.

**Multicoliniarity:** A problem associated with the independent variables where two or more are highly correlated with each other, i.e. not independent. The resulting coefficients will not be reliable. (Greene W. 1990).

**Municipal water use:** Water for residential, commercial, or industrial use: for irrigation of parks and open spaces: or for related purposes. Municipal water use does not include use of water from geothermal sources for heating, which a municipal provider is entitled or obliged to supply to all those users within a service area, including those located outside the boundaries of a municipality served by a municipal provider (Idaho Code § 42-202B(3).)

**National Pollutant Discharge Elimination System (NPDES):** A permit program that controls water pollution by regulating point sources that discharge pollutants into waters of the United States. Point sources are discrete conveyances such as pipes or man-made ditches. Individual homes that are connected to a municipal system, use a septic system, or do not have a surface discharge do not need an NPDES permit; however, industrial, municipal, and other facilities must obtain permits if their discharges go directly to surface waters. In most cases, authorized States administer the NPDES program. In 2005, Idaho was not an authorized State.

**Natural Flow:** That portion of the total flow in a stream channel which does not include storage water released from a reservoir or water from other sources, such as groundwater pumped from a well and injected into a stream, or surface water transferred to the stream from another basin. Sources of natural flow may include tributary streams, springs, return flows from irrigated fields or ditches, and underground flow or groundwater that seeps into the stream channel.

**Natural River:** A designation made by the Idaho Water Resource Board. It defines a waterway which possesses outstanding fish and wildlife, recreation, geologic, or aesthetic values; which is free of substantial existing human-made impoundments, dams, or other structures; and of which the riparian areas are largely undeveloped although accessible in places by trails and roads (Idaho Code § 42-1731(7); IDAPA 37.03.08.)

**Nature of Use:** The characteristic current or desired use for water. Examples are domestic, irrigation, mining, industrial, fish propagation, power generation, municipal, etc. (See IDAPA 37.03.02.)

**Nitrate:** A naturally occurring inorganic ion that can be generated by animal or human wastes, fertilizers, etc. In this study, nitrate refers to the concentration of nitrite plus nitrate ( $\text{NO}^2 + \text{NO}^3$ ).

**Non-point Source Activities:** Activities on a geographical area on which pollutants are deposited or dissolved or suspended in water applied to or incident on that area, the resultant mixture being discharged into the waters of the state. Non-point source activities on Outstanding Resource Waters do not include issuance of water rights permits or licenses, allocation of water rights, operation of diversions, or impoundments. Non-point source activities include, but are not limited to:

- a) Irrigated and non-irrigated lands used for:
  - i. Grazing;
  - ii. Crop production;
  - iii. Silviculture;

- b) Log storage or rafting;
- c) Construction sites;
- d) Recreation sites;
- e) Septic tank disposal fields;
- f) Mining;
- g) Runoff from storms or other weather related events; and
- h) Activities not regulated by National Pollutant Discharge Elimination System (NPDES).

**Not Assessed:** Describes a water body that has been studied, but is missing critical information needed to complete a water body assessment.

**Not Attainable:** Describes a water body that has characteristics that make it unlikely that a beneficial use can be attained (e.g., a stream that is dry but designated for salmonid spawning).

**Not Fully Supporting:** Not in compliance with water quality standards or not within the range of biological reference conditions for a beneficial use as determined through the Water Body Assessment Guidance.

**Observation Well:** A small diameter well drilled strictly for monitoring purposes. An observation well cannot be completed for production of geothermal resources or for use as an injection well.

**Open Channel Measuring Devices:** Devices used to measure water flow through open channel ditches or canals, as opposed to devices used to measure closed conduit water flow. Common open channel flow measuring devices used in Idaho include the 1) contracted rectangular weir, 2) suppressed rectangular weir, 3) Cipolletti weir, 4) 90 degree V-notch weir, 5) Parshall flume, 6) trapezoidal flume, 7) submerged rectangular orifice, 8) constant head orifice, and the 9) ramped broad crested weir (or ramped flume). See Closed Conduit Flowmeters.

**Order:** Pursuant to IDAPA 37.01.01, an agency action of particular applicability that determines the legal rights, duties, privileges, immunities, or other legal interests of specific persons.

**Orifice:** See Standard Submerged Orifice.

**Outstanding Resource Water (ORW):** A high-quality water, such as water of national and state parks and wildlife refuges and water of exceptional recreational or ecological significance, which has been designated by the legislature and subsequently listed in IDAPA Rule 58.01.02. ORW constitutes an outstanding national or state resource that requires protection from point and non-point source activities that may lower water quality.

**Palmer Drought Index:** A well-known indicator or index of drought severity that is essentially a soil-moisture accounting or water-balance method. It uses precipitation as input, and evapotranspiration and ground water recharge or deep percolation as outputs to compute an accumulated value of moisture deficiency or excess. The index is normalized for regional or local conditions, permitting droughts in different climates to be compared. (And see SWSI.)

**Penstock:** A conduit used to convey water under pressure to the turbines of a hydroelectric plant.

## *Glossary of Idaho Water-related Definitions*

**Per Acre Fee:** The variable fee for irrigation use, as provided in Idaho Code § 42-1414(2)(a), which shall be calculated for each acre and fraction thereof. (See IDAPA 37.03.01.)

**Per Cfs Fee:** The variable fee payable for other uses, as provided in Idaho Code § 42-1414(2)(d) and (e), which shall be calculated for each cfs and fraction thereof to the nearest dollar.

**Perched water:** Ground water separated from an underlying body of ground water by unsaturated rock.

**Perennial Stream:** A stream that flows year-around in most years.

**Period of Use:** The time period each year during which water under a given right may be beneficially used in compliance with terms of the water right. (See IDAPA 37.03.02.)

**Per Kilowatt Fee:** The variable fee payable for power generation use, as provided in Idaho Code § 42-1414(2)(b), which shall be calculated for each kilowatt and fraction thereof.

**Permit or Water Right Permit:** The water right document issued by the Director authorizing the construction of diversion facilities and commencement of use of unappropriated public water of the state.

**Pesticide:** Any substance or mixture of substances intended to: 1) prevent, destroy, repel, or mitigate any pest, and 2) use as a plant growth regulator, defoliant or desiccant. Insecticides, herbicides, fungicides, rodenticides, fumigants, disinfectants and plant growth regulators are all identified as pesticides.

**Picocurie (pCi/1):** A unit of radioactivity. One picocurie equals 2.22 disintegrations per minute.

**Place of Use:** The legal location where a water right is used; generally described as  $\frac{1}{4}$ ,  $\frac{1}{4}$  sections down to a 40-acre tract. Other legal descriptions that might be used are: government lots, block, subdivision, parcel numbers, town site names, mining claim information, homestead entry surveys and other survey information.

**Placer (or Dredge) Mining:** Any dredge or other operation to recover minerals with the use of a dredge boat or sluice washing plant whether fed by bucket line or separate dragline or any other method. This could include, but is not limited to, suction dredges that are capable of moving more than 2 cubic yards per hour of surficial material. (See IDAPA 37.03.08.)

**Plain:** A land region of general uniform slope, comparatively level, of considerable extent, and unbroken by marked elevations and depressions.

**Point of Diversion:** The legal location where water is diverted from its source; generally described as  $\frac{1}{4}$ ,  $\frac{1}{4}$  sections down to a 40-acre tract, or smaller. Other legal descriptions that might be used are: government lots, block, subdivision, parcel numbers, town site names, mining claim information, homestead entry surveys and other survey information. Legal locations for in-stream flow claims are marked with a beginning point and an ending point.

**Point Source:** Any discernible, confined, and discrete conveyance, including, but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are, or may be, discharged. This term does not include return flows from irrigated agriculture, discharges from dams and hydroelectric generating facilities or any source or activity considered a non-point source by definition.

**Power Records:** An irrigator's alternative to installing flowmeters is the use of power records and other information to estimate the annual diversion from a pump. This method, which we call the Power Consumption Coefficient (PCC) method, utilizes information obtained from the pumping plant while running at or near full capacity. Two parameters are measured while the pump is operating: flow rate and input power. With this information, one can calculate the number of kilowatt-hours required to pump one acre-foot of water. This number is unique to each well and pumping plant due to the physical attributes of the system.

**Prior Appropriation Doctrine:** See Appropriation Doctrine.

**Priority Date:** The date used to determine the priority of your right in relation to other rights using water from the same source.

**Private, Domestic, and Stock:** Water used from private wells or springs for individual homes, usually in rural areas not accessible to public water supply systems.

**Production String:** The casing or tubing through which a resource is produced. This string extends from the producing zone to land surface.

**Production Well:** Any well that is commercially producing or is intended for commercial production of a geothermal or other resource.

**Project Works:** A general term that includes diversion works, conveyance works, and any devices that may be used to measure the water or to apply the water to the intended use. Improvements that have been made as a result of application of water, such as land preparation for cultivation, are not a part of the project works. (See IDAPA 37.03.02.)

**Proof of Beneficial Use:** The submittal required in Idaho Code § 42-217. This submittal is commonly termed proof. When a water right examiner files the proof of beneficial use, field report, and drawings on behalf of an owner, written evidence of authority to represent the owner must be filed in the form of an affidavit with the proof, field report and drawings. It is the responsibility of the permit holder or authorized representative to submit proof of beneficial use and to provide for the timely submission of a completed field report by the due date in acceptable form to the Director by either paying the required examination fee to the department or by employing a certified water right examiner. (See IDAPA 37.03.02.)

**Protected River:** A waterway protected in the comprehensive state water plan by designation as either a natural river or a recreational river. (See IDAPA 37.03.08.)

**Publicize:** To notify the public through press releases to the media, published notice in local, regional or statewide publications, and other procedures, as may be appropriate to inform and notify the local and general public of an impending action or decision.

**Public Interest:** Something that impacts the majority of the people, usually beneficially.

**Public Interest (local):** In regards to water appropriations, this encompasses the affairs of the people of the area directly affected by the proposed use (Idaho Code § 42-203A(5)).

**Public Land Survey System (PLSS):** A series of separate land surveys that subdivide and describe land in the United States. Used primarily west of the Mississippi River, areas are divided into grids made up of townships and ranges beginning at initial points. Townships are surveyed north, south, east, and west from that point. The north-south line that runs through the initial point is a true meridian and is called the Principal Meridian. There are 34 Principal Meridians, each is named, and these names are used to distinguish the various surveys. The east-west line that runs through the initial point is called a base line. This line is perpendicular to the Principal Meridian. A typical township has 36 regular sections, each of one square mile or 640 acres. Sections are divided into quarter-sections of 160 acres each. Quarter sections, in turn, are divided into quarter-quarter sections of 40 acres, so that a typical township has  $36 \times 4 \times 4 = 576$  quarter-quarter sections of 40 acres.

**Public Utility Regulatory Policies Act of 1978 (PURPA):** Federal legislation at 16 U.S.C. § 823a et seq. that, in part, requires utilities that transmit electricity interstate to purchase electricity from qualified independent power generators at a price called avoided cost that reflects what the utilities would have paid for the power had they generated it themselves. Portions of the Act were designed to encourage small-scale cogeneration and renewable resource power generation.

**Public Water:** As defined by Idaho law, public water is all waters of the state when flowing in their natural channels, including the waters of all-natural springs and lakes and ground water.

**Public Water Supply:** Water withdrawn by public and private water suppliers and delivered to users (USGS definition). A private or community owned water system that serves 25 people at least 60 days per year or has 15 or more connections (EPA definition). Public suppliers provide water for a variety of demands, such as domestic, commercial, thermoelectric power, industrial, and municipal water demand.

**Purpose of Use:** As to claims for small domestic and/or stock water uses: Domestic right means a right to the use of water for homes, organization camps, public campgrounds, livestock, and for any other purpose in connection with these uses, including irrigation of up to one-half acre of land. Stock water right means a right to the use of water solely for livestock or wildlife. Period of use means the period of time during the year when you can use the water for your right.

**Quantity:** The amount of water recommended in either cubic feet per second (cfs) and/or the volume of water in acre feet per year (AFY). The quantity of water for small domestic and/or stock water claims is not to exceed 13,000 gallons per day.

**Radon:** A naturally occurring radioactive gas that originates from decay of radium-226. Radon is measured in picocuries per liter (pCi/l).

**Ramp rate:** The maximum allowable rate of change in output from a power plant. The rate is established to prevent undesirable effects due to rapid changes in loading or, in the case of hydroelectric plants, discharging.

**Reach:** A stream section with fairly homogenous physical characteristics, see River Reach.

**Reasonably Anticipated Average Rate Of Future Natural Recharge:** The estimated average annual volume of water recharged to an area having a common ground water supply from precipitation, underflow from tributary sources, and stream losses and also water incidentally recharged to an area having a common ground water supply as a result of the diversion and use of water for irrigation and other purposes. The estimate will be based on available data regarding conditions of diversion and use of water existing at the time the estimate is made and may vary as these conditions and available information change.

**Reasonable Ground Water Pumping Level:** A level established by the Director pursuant to Idaho Code §§ 42-226, and 42-237, either generally for an area or aquifer or for individual water rights on a case-by-case basis, for the purpose of protecting the holders of senior-priority ground water rights against unreasonable lowering of ground water levels caused by diversion and use of surface or ground water by the holders of junior-priority surface or ground water rights.

**Recharge Water:** Water that is used to add water to the zone of saturation.

**Recreational dredge mining:** Operation of vacuum or suction dredges and power sluice equipment in which the nozzle is 5 inches or less, and the equipment rated at 15 horsepower or less, and capable of moving 2 cubic yards per hour or less.

**Recreational River:** A designation made by the Idaho Water Resource Board. It defines a waterway which possesses outstanding fish and wildlife, recreation, geologic or aesthetic values, and which might include some human-made development within the waterway or within the riparian area of the waterway (Idaho Code § 42-1731(9); IDAPA 37.03.08.)

**Recreational Visitor Days (RVD):** One RVD is equivalent to one person spending twelve hours at a particular outdoor activity.

**Redd:** Spawning ground or nest of various fishes.

**Re-Diversion:** Generally used to describe the location of any secondary point of diversion under a water right.

**Reference Condition:** A stream condition that fully supports applicable beneficial uses with little affect from human activity and represents the highest level of use support attainable.

**Reference Site:** A specific location on a water body that is minimally impaired and is representative of reference conditions for similar water bodies.

**Release Capability:** The ability of a dam to pass excess water through the spillway(s) and outlet works and otherwise discharge.

**Rent:** To convey by contract a water right from the Board's water supply bank or stored water from a rental pool. (See IDAPA 37.02.03.)

**Rental pool:** A market for exchange of stored water operated by a local committee that is appointed by the Idaho Water Resource Board. (See IDAPA 37.02.03.)

**Reservoir:** A lake or pond in which water is collected and controlled for some beneficial use.

**Residential water use:** See domestic water use.

**Return Flow:** Return flows may accrue to the stream from upstream diversions. In most cases, the return flow is considered part of the natural flow and is available to the downstream users.

**Right Number:** A number assigned by IDWR identifies water rights. The first two digits identify IDWR's administrative basin number; for example, 71 or 72. For IDWR administrative basins see: <http://www2.state.id.us/adm/adminrules/rules/idapa37/37index.htm>.

**Riparian:** Living on or adjacent to a water supply such as a riverbank, lake, or pond; that area within 100 feet of the mean highwater mark of a waterway.

**Riparian Area:** The area associated with aquatic (stream, river, or lake) habitats. The term is defined in Idaho Code for purposes associated with the Idaho Department of Water Resources and the Idaho Water Resource Board, as the area within one hundred (100) feet of the mean high water mark of a water way (Idaho Code § 42-1731(10).)

**Riparian Habitat Conservation Area (RHCA):** A U.S. Forest Service description of land within the following number of feet up-slope of each of the banks of streams: a) 300 feet from perennial fish-bearing streams, b) 150 feet from perennial non-fish-bearing streams, c) 100 feet from intermittent streams, wetlands, and ponds in priority watersheds.

**Riparian Vegetation:** Vegetation that is associated with aquatic (streams, rivers, lakes) habitats, usually deciduous trees and shrubs, such as willows, cottonwood, red alder and numerous berry-producing bushes, that have adapted to moist streambank conditions.

**River Basin:** The total drainage or catchment area of a stream (i.e., the watershed). Idaho is divided into six major river basins: Panhandle, Clearwater, Salmon, Southwest, Upper Snake, and Bear River.

**River Corridor:** 1) The area of varying width along both sides of a river or stream. 2) The area along each side of the river that is being studied.

**River Reach:** A continuous section of a river from one point to another. A stretch of the river.

**Rotation Credit.** Water rights that do not include storage as a purpose of use may not be stored. In certain circumstances, water rights may be rotated for credit when such practice improves the efficiency of water use as contemplated by an irrigation district's plan of operation subject to the following conditions:

- a. Rotation for credit must be approved by the director as provided by the rules.
- b. Rotation for credit must be pursuant to the irrigation district's approved plan of operation.
- c. Any water credited under such a rotation, if not used in the same irrigation season in which it is credited, shall become storage water of the irrigation district at the end of the irrigation season.
- d. Rotation for credit cannot occur prior to the need for irrigation water on the land in a given year, as determined pursuant to the rules, and only where:
  1. Natural flow is available at the river headgate point of diversion for the water right requesting rotation credit.
  2. The water user has operable delivery and use facilities and an actual need for the water on the land in the year rotation is sought.
  3. If natural flow can not be delivered to a point of diversion at the beginning of the irrigation season and the watermaster determines rotation credit is needed to make possible the delivery of water rights being called for, and there is room in the reservoir for rotation credit, the watermaster may rotate natural flow rights, which would not otherwise be deliverable to their point of diversion, for credit of up to certain combined totals of AF to be released from the reservoir under the control of the watermaster to make natural flow rights deliverable to their point of diversion. The watermaster may use storage water to assist the delivery of natural flow water rights at the beginning of the irrigation season when requested to do so by the storage holder.
- e. Water rotated for credit may only be used on the land to which the water right being rotated is appurtenant (water rotated for credit may not be marketed) except under the provisions of Idaho Code § 42-222A.
- f. If the reservoir fills after rotation has begun in any year, (or would have filled except for flood operations) and the natural flow is sufficient to allow diversion of water by a certain year's or junior water rights while the reservoir is full, all rotation credits accrued at that time are lost and all water in the reservoir at that time becomes storage water of the irrigation district for reallocation.
- g. Water rights being rotated must be identified to the watermaster as being rotated into the reservoir. Water rights identified as such will have the reservoir as the temporary point of diversion during the time rotation is occurring.
- h. The rate of diversion for a water right being rotated for credit combined with other water rights for the same place of use being diverted at the same time cannot exceed the combined diversion limit specified in the listing of water rights. This rule does not limit the rate at which rotation credit, once impounded, can be used.

**Rule:** The whole or a part of an agency statement of general applicability that has been promulgated in compliance with the provisions of Chapter 52, Title 67, Idaho Code, and that implements, interprets, or prescribes:

- a. Law or policy, or

- b. The procedure or practice requirements of an agency. The term includes the amendment, repeal, or suspension of an existing rule, but does not include:
  - 1) Statements concerning only the internal management or internal personnel policies of an agency and not affecting private rights of the public or procedures available to the public;
  - 2) Declaratory rulings issued pursuant to Idaho Code § 67-5232;
  - 3) Intra-agency memoranda; or
  - 4) Any written statements given by an agency that pertain to an interpretation of a rule or to the documentation of compliance with a rule. (See IDAPA 37.01.01.)

**Runoff:** The portion of rainfall, melted snow, or irrigation water that flows across the surface, through shallow underground zones (interflow), and through ground water to create streams.

**Scrub Vegetation:** Vegetation dominated by shrubs, typically found at elevations below montane (mountain) vegetation.

**Secondary Systems:** Pressurized lawn and garden irrigation systems using untreated water for irrigation of lawns, gardens, and publicly owned open areas.

**Sediment:** 1) Solid matter which has been transported from its source by wind or water and then deposited. 2) Solid matter that has been filtered from liquid solutions or formed from skeletal remains or secretions of organisms.

**Sedimentary Rock:** Descriptive term for rock formed of sediment, especially: 1) clastic rocks such as conglomerate, sandstone, and shales formed of fragments of other rock transported from their sources and deposited in water; and 2) rocks formed by precipitation from solution, such as rock salt and gypsum, or from secretions of organisms, such as most limestone.

**Self-supplied water:** Water withdrawn from a surface or groundwater source rather than being obtained from a public supply.

**Semi Log specification:** Semi log specification is one where an independent variable is transformed into logs. (Greene W. 1990.)

**Senior-Priority Right:** A water right priority date earlier in time than the priority dates of other water rights being considered.

**Serial Correlation.** Serial correlation is a problem associated with the error term in the estimated regression equation in time series analysis, where the errors associated with each observation are correlated with one or more of its previous values instead of being independent of them. The estimated regression equation tends to be a poor estimate of the true regression line in this case. See Bibliography (Greene W. 1990.)

**Shallow Injection Well:** An injection well that is less than or equal to eighteen (18) feet in vertical depth below the land surface.

**Skewness:** A data distribution on a chart that is non-normal shaped.

**Small Domestic and Stock Water Uses:** Water uses meeting the definition of either Idaho Code § 42-111 or § 42-1401A(12).

**Sole Source Aquifer:** An aquifer that has been designated by EPA as the sole or principal source of drinking water for an area. A designated sole source aquifer receives special protection. Three Idaho aquifers—the Eastern Snake River Plain Aquifer, the Spokane Valley-Rathdrum Prairie Aquifer, and the Lewiston Basin Aquifer—are sole source aquifers.

**Source:** The name and/or type of the source where water is diverted. For example: “groundwater,” “unnamed spring,” or “Common Creek.”

**Speciation:** Laboratory analysis performed to further determine specific analytes present in a sample.

**Species of Special Concern:** Native species that are either low in numbers, limited in distribution, or have suffered significant habitat losses.

**Specific Capacity:** The yield of a well per unit of drawdown, usually expressed in gallons per minute per foot of drawdown.

**Spring:** Ground water seeping out of the earth where the water Appendix C-Table intersects the ground surface.

**Standard Industrial Classification (SIC) Codes:** Four-digit codes established by the Office of Management and Budget and used in the classification of establishments by type of activity in which they are engaged.

**Standard Submerged Orifice:** Any fixed dimension opening in a vertical bulkhead where both the upstream and downstream water surface is above the opening. The difference in head or depth of water between the upstream and downstream surfaces must be obtained to determine discharge. Like flumes, submerged orifices are better suited for flatter grade channels where weirs cannot be installed.

**State Agency:** Any board, commission, department, or executive agency of the state of Idaho. Agency responsibilities for water programs in Idaho are depicted using the following acronyms:

A. State and local agencies and programs

IDA: Idaho Department of Agriculture  
IDFG: Idaho Department of Fish and Game  
IDHW: Idaho Department of Health and Welfare  
IDL: Idaho Department of Lands  
IDWR: Idaho Department of Water Resources  
PHD: Public Health Districts  
SAWQP: State Agricultural Water Quality Plan  
SCC: Soil Conservation Commission  
SCD: Soil Conservation Districts

B. Federal agencies and programs

COE: (U.S. Army) Corps of Engineers (Department of Defense)

CWA: Clean Water Act, section 404

EPA: Environmental Protection Agency

NPDES: National Pollution Discharge Elimination System

NRCS: Natural Resource Conservation Service, fka SCS: Soil Conservation Service (Department of Agriculture)

**Storage Capacity:** The total reservoir storage in acre-feet at the maximum storage elevation.

**Storage Rights:** A right to divert an amount of water and store it in a reservoir for later beneficial use. Pursuant to Idaho Code § 42-702, a person or organization using the reservoir is required by law to place and maintain a measuring device above the reservoir. Although not required by law, the Department usually requires that some means of measurement be placed and maintained below the reservoir. Storage rights are generally filled according to priority. Where there are multiple reservoirs on one stream or river system, the senior storage rights should be satisfied ahead of junior storage rights, but it is often preferable to just allow the reservoirs to fill naturally and make adjustments later. Diversion of water to new storage during the storage period should not interfere with earlier priority natural flow rights.

**Stored Water:** Water that is diverted to and retained within a reservoir and then released for some beneficial use. Water may be diverted to and stored in a reservoir located either within the stream channel or off of the stream channel. IDWR considers a storage facility as one that will not fill within 24 hours using the maximum authorized flow rate.

**Stratified Random Sample:** A sampling method that divides the sample into subgroups and takes the same number of sample points from each group.

**Stream Bed:** A natural water course of perceptible extent with a definite bed and banks, which confine and conduct the water of a waterway that lies below and between the ordinary high water marks on either side of that waterway (Idaho Code § 42-1731(12).)

**Stream Channel:** A natural watercourse of perceptible extent with definite beds and banks that confines and conducts continuously flowing water. The channel referred to is that which exists at the present time, regardless of where the channel may have been located at any time in the past. Usually, the beds of lakes and reservoir pool areas are not considered to be stream channels.

**Stream Channel Protection Act:** Idaho statutes and rules requiring stream channels of the state and their environment to be protected against alteration for the protection of fish and wildlife habitat, aquatic life, recreation, aesthetic beauty and water quality. This means IDWR must approve in advance any work being done within the beds and banks of a continuously flowing stream. (See Idaho Statutes Title 42, Chapter 38 and IDAPA 37.03.07.)

**Stream Order:** The hierarchical ordering of streams based on the degree of branching. A first-order stream is an unbranched stream (hence, a very small stream). Higher order streams (larger

numbers/bigger streams) result from the joining of two streams of the same order (e.g., two first order streams flow together to form a second order stream).

**Stream Segment of Concern:** A specific stream segment or body of water that has been designated by the Water Quality Advisory Working Committee or the Governor.

**Sub-area:** See Hydrogeologic subareas.

**Subordinated Water Right:** A water right used for hydropower generation purposes subject to depletion without compensation by upstream water rights that are initiated later in time and that are for a purpose other than hydropower generation purposes. (See IDAPA 37.03.08.)

**Surface Casing:** The first string of casing that is run after the conductor pipe to anchor blow out prevention equipment and to seal out all existing groundwater zones.

**Surface Runoff (Overland Flow):** Precipitation, snow melt, or irrigation water in excess of what can infiltrate into the soil and be stored in small surface depressions; a major transporter of non-point source pollution.

**Surface Water:** All water naturally open to the atmosphere (rivers, lakes, reservoirs, streams, impoundments, seas, estuaries, etc.) and all springs, wells, or other collectors that are directly influenced by surface water, such as an open body of water, stream or lake.

**Surface Water Supply Index (SWSI):** Drought index similar to the Palmer Drought Index, based on the probability distribution of the sum of reservoir carryover storage plus forecasted spring and summer stream flow. In basins without reservoirs, the natural stream flow provides the irrigation supply and the index is computed using stream flow as the sole input. The results of the probability distribution are scaled to a value range of +4 to -4, to mirror the Palmer Drought Index. The only values that are required in operational SWSI calculations are an estimate of April 1 reservoir storage (in basins with reservoirs) and the April-September stream flow forecasts. Once the SWSI distribution is developed for drainage basins, the forecast values describe the surface water supply conditions in each basin.

**Threatened Species:** A species of plant or animal that is likely to become endangered within the foreseeable future throughout all or a significant portion of its range, as determined by the U.S. Fish and Wildlife Service or the National Marine Fisheries Service.

**Total Dissolved Solids (TDS):** The total amount of solids left when a filtered ground water sample is evaporated to dryness (Drever). Statewide Program TDS results are calculated from the total major ions (mg/l): [(alkalinity \* 0.6) + calcium + magnesium + sodium + potassium + chloride + sulfate + fluoride + silica + nitrate].

**Total Maximum Daily Load (TMDL):** The sum of all pollutants in a waterway. Pollutant levels established through TMDL standards must be at or below the level that the water body can assimilate without violating the state's water quality standards.

**Trace Elements:** Elements present in minor amounts in the earth's crust. Includes elements such as arsenic, cadmium, chromium, iron, lead, manganese, mercury, selenium, zinc and others.

**Tributary:** A stream feeding into a larger stream or lake.

**Trust Water:** That portion of an unsubordinated water right used for hydropower generation purposes that is in excess of a minimum stream flow established by state action either with agreement of the holder of the hydropower right as provided by Idaho Code § 42-203B(5), or without an agreement as provided by Idaho Code § 42-203B(3). (See IDAPA 37.03.08.)

**Turbidity:** A measure of the extent to which light passing through water is reduced due to suspended materials. Excessive turbidity may interfere with light penetration and minimize photosynthesis, thereby causing a decrease in primary productivity. It may alter water temperature and interfere directly with essential physiological functions of fish and other aquatic organisms, making it difficult for fish to locate a food source.

**TWBZ:** Top of water-bearing zone in a well.

**Unappropriated water:** Water that is not subject to diversion and use under existing water rights established by diversion and application, permit, or license on file or issued by the Director of Idaho Department of Water Resources. (Idaho Code § 42-1502(g).)

**United States Geological Survey (USGS):** The U.S. Geological Survey, an agency of the U.S. Department of the Interior, is the principal federal agency concerned with preparing accurate maps of the physical features of the country and providing scientific information essential to the development of the nation's land, mineral, and water resources. It is recognized as one of the world's foremost research organizations in the earth sciences. In water-related sciences, it 1) makes hydrologic maps, showing the availability and quality of water; 2) takes a continuing inventory of the nation's water resources and studies areas that have special water problems; and 3) classifies federally owned lands for mineral and water power potential.

**United States Bureau of Reclamation (USBR):** Established in 1902, the Bureau of Reclamation is best known for the dams, power plants, and canals it constructed in the 17 western states. These water projects led to homesteading and promoted the economic development of the West. USBR has constructed more than 600 dams and reservoirs, including Hoover Dam on the Colorado River and Grand Coulee on the Columbia River. It is the largest wholesaler of water in the country, bringing water to more than 31 million people, and providing one out of five Western farmers (140,000) with irrigation water for 10 million acres of farmland that produce 60% of the nation's vegetables and 25% of its fruits and nuts. USBR is the second largest producer of hydroelectric power in the western United States. Its 58 power plants annually provide more than 40 billion kilowatt hours generating nearly a billion dollars in power revenues and produce enough electricity to serve 6 million homes. (See [www.usbr.gov](http://www.usbr.gov))

**Vadose Zone:** An underground, unsaturated region between the soil surface and the water table.

**Vested rights:** Those rights that are fixed and not contingent upon any future actions. For example, a protected river designation cannot interfere with vested property rights made prior to

the designation. Non-vested rights include, but are not limited to, pending applications for appropriation of water.

**Volatile Organic Compound (VOC):** A synthetic organic compound with a tendency to volatilize (pass into the gaseous state) readily. VOCs are contaminants of ground water and other water sources.

**Water Appendix C-Table:** The upper surface of ground water; below this point, the soil is saturated with water.

**Water Conversion Factors:** Just how much water are we talking about?

- One Miner's Inch = 9 gallons per minute or 0.02CFS
- One Cubic Foot of Water = 7.4805 gallons or 62.37 pounds
- One Cubic Foot per Second (CFS) = 448.83 gallons per minute or 26,930 gallons per hour or 646,315 gallons per day
- One Cubic Foot per Second (CFS) = 1.9835 AF/day, 59.502 AF/mo, and 723.9775 AF/yr
- One Acre-Foot (AF) = enough water to cover one acre of land one foot deep
- One Acre-Foot = 43,560 cubic feet or 325,850 gallons
- One Cubic Meter per Second = 35.31 CFS or 15,850 gallons per minute
- One Million Gallons = 3.0689 Acre-Feet
- One Million Gallons Per Day = 1,120.147 Acre-Feet per year
- One Pound Per Square Inch (psi) = 2.31 Ft. Head of Water (column)
- One Acre = 43,560 Square Feet
- GPM = gallons per minute
- CFS = cubic feet per second
- AF = acre feet
- PSI = pound per square inch
- Ten Cents Per 1,000 Gallons = \$32.59 Per AF

**Water Delivery System:** All structures and equipment used for diversion, storage, transportation, and use of water from the water source to and including each place of use. (See IDAPA 37.03.01.)

**Water Delivery Organization:** An irrigation district, a water utility, a municipality, or any similar claimant of a water right who diverts water pursuant to the water right claimed and delivers the water to others who make beneficial use of the water diverted by the water delivery organization pursuant to the water right claimed by the water delivery organization. (See IDAPA 37.03.01.)

**Water Demand:** The relationship between the quantity of water demanded by consumers, water price, characteristics of water users and other factors. In this report the term “water demand” is used to refer to the model or conceptual framework and the term “water use” to data describing actual use. Total water demand refers to the combination of demands for self-supplied withdrawals and public-supply deliveries.

**Water District:** An instrumentality of the State of Idaho created by the Director, as provided in Idaho Code § 42-604, for the purpose of performing the essential governmental function of distribution of water among appropriators under Idaho law. There are three types of water districts in Idaho:

- **Ground Water Districts:** The Legislature adopted the "Ground Water District Act" in 1995 that enables ground water users to organize their own Ground Water Districts that have broader authorities than Water Measurement Districts. Ground Water Districts can perform the measurement and reporting functions required by law and levy assessments like Water Measurement Districts. Additionally, Ground Water Districts may represent their members in various water use issues and related legal matters, develop and operate mitigation and recharge plans, and perform other duties as described under Section 42-5224. Since 1995, six separate Ground Water Districts have been organized. These districts include: the North Snake, Magic Valley, Aberdeen-American Falls, Bingham, Bonneville-Jefferson and Madison County Ground Water Districts. Questions regarding any of Ground Water Districts can be directed to Tim Luke.
- **Irrigation Districts:** Chapter 1, Title 43 of the Idaho Code authorizes the formation of Irrigation Districts whenever 50, or a majority, of the owners of lands that can be irrigated from the same or different sources and by the same or different systems of works, want to provide for the irrigation of their land, or when for other reasons they desire to organize the proposed territory into an Irrigation District.
- **Water Measurement Districts:** In 1995 the Idaho Legislature passed Section 42-706 of Idaho Code that authorized the IDWR Director to create Water Measurement Districts to accomplish measurement and reporting of diversions outside of established water districts. Specific legislative intent was given to creating measurement districts as expeditiously as possible within the Eastern Snake Plain Aquifer (ESPA). Water Measurement Districts are limited to the measurement and reporting of diversions within the district, and to assess members for the costs of such work. In October of 1996, the IDWR Director created three Water Measurement Districts within the ESPA. These districts are the East, North and West ESPA Water Measurement Districts.

**Watermaster:** Pursuant to Idaho Code §§ 42-605 and 42-801, a staff position in a water district with various administrative duties that may include management of the Water District office; preparation and maintenance of district budgets; preparation and collection of assessments; hiring, training and supervision of district employees; analyzing water measurement data and making water delivery determinations; coordinating with IDWR in receipt and transmittal of all pertinent water right and water use data or information; investigating and stopping illegal uses of water; distributing water to rights in accordance with Idaho Code Title 42 and local district rules; administering ground water diversions that are subject to mitigation; curtailing ground water diversions that are not covered by an IDWR-approved plan; regulating water rights by both point of diversion and place of use; and other miscellaneous duties.

**Water Right:** The legal right to divert and use or to protect in place the public waters of the state of Idaho where such right is evidenced by a decree, a permit or license issued by the Department, a beneficial or constitutional use right or a right based on federal law. (Idaho Code § 42-230(e).)

**Water Rights Adjudication:** A series of judicially recognized stipulations or decrees determining the water rights within a given watershed. In Idaho, the Snake River Watershed

Adjudication is the largest water-right adjudication attempted in the United States and includes an estimated 140,000 water rights within about 72,000 square miles.

**Water Right Application:** An application filed by any person, association, or corporation with the Idaho Department of Water Resources, intending to acquire the right to the beneficial use of the waters of any natural streams, springs, or seepage waters, lakes, or ground water, or other public waters of the state of Idaho (Idaho Code § 42-202.)

**Water Rights Claims:** See **Claims**.

**Watershed:** A region or area drained by surface or ground water flows. Watersheds are infinitely nested, and any large watershed is composed of smaller sub-watersheds.

**Water Storage Elevation:** The maximum elevation of the water surface that can be obtained by the dam or reservoir. It is further defined as the storage level attained when the reservoir is filled to capacity (i.e. to the spillway crest) or an authorized storage level attained by installing flashboards to increase the reservoir capacity, or a specified upper storage limit, which is attained by operation of moveable gates that raises the reservoir to a controlled operating level. The maximum storage elevation is an equivalent term of water storage elevation.

**Water Supply Bank:** The water exchange market operated by the Water Resource Board pursuant to Idaho Code §§ 42-1761 through 42-1766 and IDAPA 37.02.03. It is a general term that includes the Board's water supply bank and rental pools. The Board may purchase, lease, accept as a gift or otherwise obtain rights to natural flow or stored water and credit them to the Board's water supply bank. These water rights may then be divided or combined into more marketable blocks provided that there is no injury to other right holders, or enlargement of use of the water rights, and the change is in the local public interest.

**Water Supply Bank Rules:** Rules governing the Board's operation and management of a Water Supply Bank provided for in Idaho Code §§ 42-1761 to 42-1766. The purposes of the Water Supply Bank, as defined by statute, are to encourage the highest beneficial use of water; provide a source of adequate water supplies to benefit new and supplemental water uses; and provide a source of funding for improving water user facilities and efficiencies. The rules are to be used by the Water Resource Board in considering the purchase, sale, lease or rental of natural flow or stored water, the use of any funds generated therefrom, and the appointment of local committees to facilitate the lease and rental of stored water. The purchase, sale, lease or rental of water must comply with state and federal law. The rules were not intended to prevent any person from directly selling or leasing water by transactions outside the purview of the Water Supply Bank Rules where such transactions are otherwise allowed by law. (See IDAPA 37.02.03.)

**Water Table:** The highest part of the soil or underlying rock material that is wholly saturated with water. On some places an upper, or perched water table may be separated from a lower one by a dry zone.

**Water User:** A person, corporation, association, firm, governmental agency or other entity who is entitled to divert and beneficially use water.

**Waterway:** A river, stream, creek, lake or spring, or a portion thereof.

**Weir:** An economical device to install and maintain for the measurement of water through a manmade channel, such as a ditch or a canal. A weir consists of an opening in a bulkhead with a sharp-crested edge. The depth of water above the bottom of the edge, or the weir crest, is called the head. Measurement of the head can be related to discharge using appropriate tables. The stream of water that springs out from the weir crest is referred to as the nappe. Proper weir operation requires free flow over the weir blade and an air space around the nappe.

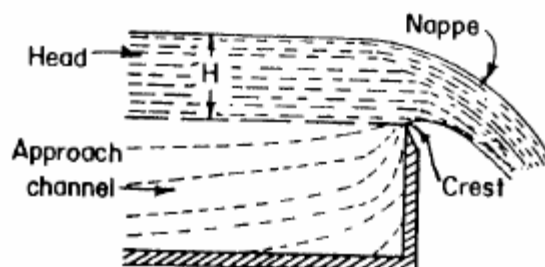


Figure 7.3: Profile of standard weir

**Well:** An artificial excavation or opening in the ground more than eighteen (18) feet in vertical depth below land surface by which ground water of any temperature is sought or obtained. Well also means any injection well more than eighteen (18) feet in vertical depth below land surface and any test well, monitoring well, cathodic protection well, observation well or exploratory well more than eighteen (18) feet in vertical depth below land surface that is constructed to evaluate the ground water resource or to evaluate contamination of the resource. Well does not mean a hole drilled for mineral exploration, oil and gas exploration (for which a permit has been issued pursuant to Idaho Code § 47-320) for dam or building foundation dewatering, for foundation geotechnical evaluations, for the installation of standpipes or piezometers installed near dams, buildings or other construction sites for the sole purpose of measuring uplift forces caused by water or for the purpose of collecting soil samples above the water table.

**Wetlands:** Transitional lands between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. Wetlands must have the following three attributes: 1) at least periodically, the land supports predominately hydrophytes; 2) the substrate is predominately undrained hydric soil; and 3) the substrate is on soil and is saturated with water or covered by shallow water at some time during the yearly growing season.

**Winters Rights:** Under the reserved Indian water rights doctrine established by the U.S. Supreme Court in *Winters v. United States*, 207 U.S. 564 (1907), the setting aside of a reservation for an Indian tribe creates an implied reservation of rights to water in an amount sufficient to fulfill the purposes of the reservation. These *Winters* rights have a basis in Federal law that is separate and distinct from water rights created under the water rights legal system of “prior appropriation” that controls the use and allocation of water, including the priorities of use in times of shortage, under the laws of most western states. Thus, an assertion of *Winters* rights

*Glossary of Idaho Water-related Definitions*

might impede beneficial use diversions by rights holders granted under the prior appropriation doctrine, because the creation of Indian reservations with their *Winters* rights occurred prior to creation of less-senior rights holders under state-law prior appropriation doctrine.

**Zone of Aeration:** 1) A subsurface zone containing water under pressure less than that of the atmosphere, including water held by capillarity; and containing air or gases generally at atmospheric pressure. Extends from the ground surface to the water table. 2) Also refers to zones shallow enough that they are oxidizing, since they are replenished by rainwater.

(Updated, October 2005)