

CHAPTER 9. GLOSSARY

A

Acre-foot—The volume of water necessary to cover 1 acre to a depth of 1 foot. Equal to 43,560 cubic feet, 325,851 gallons, or 1,233 cubic meters. Depending on location and lot size, an acre-foot is generally considered enough water to meet the needs of up to two California single-family households.

Affected environment—Existing biological, physical, social, and economic conditions of an area subject to change, both directly and indirectly, as a result of a proposed human action.

Afterbay – A pool of water at the base of a dam, specifically, water after it has passed through a turbine.

Air quality—Measure of the health-related and visual characteristics of the air, often derived from quantitative measurements of the concentrations of specific injurious or contaminating substances.

Alluvium—Soil particles transported and deposited by water.

Anthropogenic—Human-created.

Anadromous—In general, this term refers to fish such as salmon or steelhead trout that hatch in fresh water, migrate to and mature in the ocean, and return to freshwater as adults to spawn. Section 3403(a) of the CVPIA defines anadromous as “those stocks of salmon (including steelhead), striped bass, sturgeon, and American shad that ascend the Sacramento and San Joaquin rivers and their tributaries and the Sacramento-San Joaquin Delta to reproduce after maturing in San Francisco Bay or the Pacific Ocean.”

Anadromous Fish Restoration Program (AFRP)—A program authorized by the CVPIA to address anadromous fish resource issues in Central Valley streams that are tributary to the Delta. This program is led by the United States Fish and Wildlife Service.

Applied Water (AW)—The quantity of water delivered to the intake of a city’s water system or a farm headgate, the amount of water supplied to a marsh or other wetland, either directly or by incidental drainage flows.

Appropriative water rights—Water rights based upon the principle of prior appropriations, or “first in time, first in right.”

Aquatic—Living or growing in or on the water.

Aquifer—A geological formation capable of producing and storing water.

Authorization—An act by the Congress of the United States which authorizes use of public funds to carry out a prescribed action.

B

Baseload—Most commonly referred to as baseload demand, this is the minimum amount of power that a utility or distribution company must make available to its customers, or the amount of power required to meet minimum demands based on reasonable expectations of customer requirements. Baseload values typically vary from hour to hour in most commercial and industrial areas.

Basin Irrigation Efficiency—Evapotranspiration of applied water divided by the net diversion.

Bay-Delta Plan Accord—In December 1994, representatives of the State and Federal governments and urban, agricultural, and environmental interests agreed to the implementation of a Bay-Delta protection plan through the SWRCB, to provide ecosystem protection for the Bay-Delta Estuary. The Draft Bay-Delta Water Control Plan, released in May 1995, superseded D-1485.

Beneficial use—Those uses of water as defined in the State of California Water Code (Chapter 10 of Part 2 of Division 2), including but not limited to agricultural, domestic, municipal, industrial, power generation, fish and wildlife, recreation, and mining.

Benthic—Bottom of rivers, lakes, or oceans; organisms that live on the bottom of water bodies.

Biological assessment—An evaluation, in accordance with Section 7 of the Endangered Species Act, to determine the potential presence of threatened or endangered species and the potential for a proposed action to affect its habitat.

Biological opinion—Document issued under the authority of the Endangered Species Act stating the United States Fish and Wildlife Service and/or the National Marine Fisheries Service finding as to whether a Federal action is likely to jeopardize the continued existence of a threatened or endangered species or result in the destruction or adverse modification of critical habitat. This document may include:

Critical habitat—A description of the specific areas with physical or biological features essential to the conservation of a listed species and which may require special management considerations or protection. These areas have been legally designated via Federal Register notices.

Jeopardy opinion—The United States Fish and Wildlife Service or National Marine Fisheries Service opinion that an action is likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of critical habitat. The finding includes reasonable and prudent alternatives, if any.

No jeopardy opinion—United States Fish and Wildlife Service or NMFS finding that an action is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of critical habitat.

C

CALFED—Joint Federal and State program to address water-related issues in the Delta of the Sacramento-San Joaquin rivers.

Candidate species—Plant or animal species not yet officially listed as threatened or endangered, but which is undergoing status review by the United States Fish and Wildlife Service or the National Marine Fisheries Service.

Carryover storage—Water remaining in storage at the end of the water year.

Catch—At a recreational fishery, refers to the number of fish captured.

Central Valley Habitat Joint Venture—As defined by Section 3403(c) of the CVPIA, “the association of Federal and State agencies and private parties established for the purpose of developing and implementing the North American Waterfowl Management Plan as it pertains to the Central Valley of California.”

Central Valley Project (CVP)—As defined by Section 3403(d) of the CVPIA, “all Federal reclamation projects located within or diverting water from or to the watershed of the Sacramento and San Joaquin rivers and their tributaries as authorized by the Act of August 26, 1937 (50 Stat. 850) and all Acts amendatory or supplemental thereto”

Central Valley Project service area—As defined by Section 3403(e) of the CVPIA, “that area of the Central Valley and San Francisco Bay Area where water service has been expressly authorized pursuant to the various feasibility studies and consequent congressional authorizations for the Central Valley Project.”

Central Valley Project water—As defined by Section 3403(f) of the CVPIA, “all water that is developed, diverted, stored, or delivered by the Secretary in accordance with the statutes authorizing the Central Valley Project in accordance with the terms and conditions of water rights acquired pursuant to California law.”

Central Valley Project Water Service Contractor—Water users that have contracted with the United States Bureau of Reclamation for water developed by and conveyed through CVP facilities.

Channel—Natural or artificial watercourse, with a definite bed and banks to confine and conduct continuously or periodically flowing water.

Confined aquifer—An aquifer bounded above and below by confining layers of distinctly lower permeability than the aquifer itself.

Confluence—The flowing together of two or more streams; the place of meeting of two streams.

Conjunctive water management—The planned and managed operation of a groundwater basin and a surface storage system combined through a coordinated conveyance infrastructure to maximize the efficient use of surface and groundwater resources.

Conserved water—That water resulting from the contractor operations and practices that results in less use of the allocated supply.

Conveyance capacity—The rate at which water can be transported by a canal, aqueduct, or ditch. In this document, conveyance capacity is generally measured in cubic feet per second.

Conveyance losses—Evaporation, evapotranspiration, and seepage losses in major conveyance canals.

Cooperating agency—An agency that meets the following criteria: (1) is included in 40 CFR Chapter V, Council on Environmental Quality (CEQ) Rules and Regulations, Appendix 1 - Federal and Federal-State agency National Environmental Policy Act (NEPA) contacts; and/or (2) has study area-wide jurisdiction by law or special expertise on environmental quality issues; (3) has been invited by the lead agency to participate as a cooperating agency; and (4) has made a commitment of resources (staff and/or funds) for regular attendance at meetings, participation in workgroups, in actual preparation of portions of the programmatic environmental impact statement (PEIS), and in providing review and comment on activities associated with the PEIS as it progresses. The role of the cooperating agency is documented in a formal memorandum of agreement with the lead agency.

Cost-of-service water rates—The water rate charged to recover all operating and capital costs, and individual contractor operating deficits, associated with the providing of water service. Components of operation and maintenance (O&M) and capital cost vary by contractor depending on services required for water delivery. Differs from full cost in that no charge for interest on capital is included.

Cubic feet per second—A measure of water flow. As a rate of streamflow, a cubic foot of water passing a reference section in 1 second of time. One cubic foot per second equals 0.0283 m³/s (7.48 gallons per minute). One cubic foot per second flowing for 24 hours produces approximately 2 acre-feet of water.

D

Decision -1641 (D-1641)—The SWRCB decision specifying water quality standards for the Sacramento-San Joaquin Delta and Suisun Marsh.

Dedicated Water—Refers to the 800,000 acre feet of CVP yield identified in Section 3406(b)(2) of the CVPIA that the Secretary must dedicate and manage for the primary purpose of implementing the fish and wildlife purposes and measures of the act, to help California protect the Bay-Delta estuary, and to help meet legal obligations imposed on the CVP under State and Federal law, including the Federal Endangered Species Act (ESA).

Deep Percolation—Percolation of applied water and precipitation below the root zone of plants.

Deficiencies—Reductions in deliveries of contracted water. The amount of the reduction is expressed as the percent of full annual contract amount.

Delta—A low, nearly flat alluvial tract of land formed by deposits at or near the mouth of a river. In this report, delta usually refers to the delta formed by the Sacramento and San Joaquin rivers.

Density—The mass of a substance per unit of volume of that substance.

Depletion—Represents water consumed in a service area or no longer available as a source of supply.

Depletion study area—An analysis unit defined by the California Department of Water Resources for water resources planning investigations. Defined as the division of large drainage areas into smaller drainage and service areas from which water supplies and demands can be evaluated.

Dissolved oxygen (DO)—The concentration of free (not chemically combined) molecular oxygen (a gas) dissolved in water, usually expressed in milligrams per liter, parts per million, or percent of saturation. DO levels are considered the most important and commonly employed measurement of water quality and indicator of a water body's ability to support desirable aquatic life.

Dry-farmed—Crop production without the use of irrigation.

E

Endangered species—Any species or subspecies of bird, mammal, fish, amphibian, reptile, or plant which is in serious danger of becoming extinct throughout all, or a significant portion of its range. Federally endangered species are officially designated by the United States Fish and Wildlife Service or the National Marine Fisheries Service and published in the Federal Register.

Endemism—Native or limited to a certain region (endemic).

Enhancement—Measures which develop or improve the quality or quantity of existing conditions or resources beyond a condition or level that would have occurred without an action (i.e., beyond compensation).

Entrainment—The drawing of fish and other aquatic organisms into water diversions.

Environmental consequences—The impacts to the affected environment that are expected from implementation of a given alternative.

Environmental Impact Statement (EIS)—An analysis required by the National Environmental Policy Act (NEPA) for all major Federal actions, which evaluates the environmental effects of alternative actions.

Ephemeral stream—Intermittent or seasonal flow.

Epilimnion—The upper, wind-mixed layer of a thermally stratified lake. This water is turbulently mixed throughout at least some portion of the day and because of its exposure, can freely exchange dissolved gases (such as O₂ and CO₂) with the atmosphere.

Escapement—Number of salmon that actually return to a stream to spawn.

Estuary—A water passage where the tide meets a river current; an arm of the sea at the lower end of a river.

Evaporation—The change of a substance from the solid or liquid phase to the gaseous (vapor) phase.

Evapotranspiration (ET)—Water evaporated from plant surfaces or transpired by plant tissues.

Evapotranspiration of Applied Water (ETA_W)—Portion of the evapotranspiration provided by the applied water.

Exotic species—Any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem, and whose introduction does or is likely to cause economic or environmental harm or harm to human health.

Extirpated species—A species that has become extinct in a given area.

F

Fallowed land—Cultivated land that lies idle during a growing season.

Field irrigation efficiency—The efficiency of water application. Computed by dividing the evapotranspiration of applied water by applied water and converting the result to a percentage. Efficiency may be computed at three levels: farm, district, or basin.

Fill—A man-made deposit of soil or other materials.

Firm water supplies—Non-interruptible water supplies guaranteed by the supplier to be available at all times except for reasons of uncontrollable forces or continuity of service provisions.

Fish ladders—A series of ascending pools constructed to enable salmon or other fish to swim upstream around or over a dam.

Fish passage facilities—Features of a dam that enable fish to move around, through, or over without harm. Generally an upstream fish ladder or a downstream bypass system.

Flow—The volume of water passing a given point per unit of time.

Instream flow requirements—Amount of water flowing through a stream course needed to sustain instream values.

Minimum flow—Lowest flow in a specified period of time.

Peak flow—Maximum instantaneous flow in a specified period of time.

Return flow—Portion of water previously diverted from a stream and subsequently returned to that stream or to another body of water.

Forebay—Water stored behind a dam, specifically, water intended to go through a turbine.

Fry—Life stage of fish between the egg and fingerling stages.

G

Geographic Information System (GIS)—A computer system which allows for input and manipulation of geographic data to allow researchers to manipulate, analyze and display the information in a map format.

Groundwater—Water stored below the ground surface.

Groundwater banking – Storage of water in the groundwater basin for later and planned use by intentionally recharging the basin.

Groundwater level—Refers to the water level in a well, and is defined as a measure of the hydraulic head in the aquifer system.

Groundwater management—The planned and coordinated management of a groundwater basin or portion of a groundwater basin with a long-term sustainability of the resource.

Groundwater overdraft—A condition of a groundwater basin in which the amount of water withdrawn by pumping exceeds the amount of water that recharges the basin over a period of years.

Groundwater pumping—Quantity of water extracted from groundwater storage.

Groundwater recharge—The natural or intentional infiltration of surface water into the zone of saturation.

Groundwater storage—The quantity of water in the zone of saturation.

Groundwater table—The upper surface of groundwater.

H

Habitat—Area where a plant or animal lives.

Hypolimnion—The bottom, and most dense layer of a stratified lake. It is typically the coldest layer in the summer and warmest in the winter. It is isolated from wind mixing and typically too dark for much plant photosynthesis to occur.

I

Indicator species—Organism, species, or community that indicates presence of certain environmental conditions.

Interest group—An agency or other entity that has expressed an interest, verbally or in writing, in becoming more involved in the development of a planned project.

Intermittent or seasonal stream—Stream on or in contact with the groundwater table that flows only at certain times of the year when the groundwater table is high.

Irrigation water—Water made available from the project that is used primarily in the production of agricultural crops or livestock, including domestic use incidental thereto, and the watering of livestock. Irrigation water does not include water used for domestic uses such as the watering of landscaping or pasture for animals (e.g., horses) which are kept for personal enjoyment. It generally does not include water

delivered to landholdings operated in units of fewer than 2 acres, unless the contractor establishes to the satisfaction of the contracting officer that the use of the water delivered to any such landholding is a use within this definition.

J

Juvenile—Young fish older than 1 year but not having reached reproductive age.

L

Land classification—An economic classification of variations in land reflecting its ability to sustain long-term agricultural production.

Land retirement—Permanent or long-term removal of land from agricultural production.

Level 2—A term used to refer to refuge water supply deliveries. The 1989 and 1992 Refuge Water Supply Studies define Level 2 refuge water supplies as the average amount of water the refuges received between 1974 and 1983.

Level 4—A term used to refer to refuge water supply deliveries. Level 4 refuge water supplies are defined in the 1989 and 1992 Refuge Water Supply Studies as the amount of water for full development of the refuges based on management goals developed in the 1980s. The CVPIA authorized purchase of the Level 4 increment, the difference between Level 2 and Level 4 amounts.

Limnology—Scientific study of the physical characteristics and biology of lakes, streams, and ponds.

Long-term contract—Contracts with terms of more than 10 years.

M

Main stem—The main course of a stream.

Mitigation—One or all of the following: (1) Avoiding an impact altogether by not taking a certain action or parts of an action; (2) minimizing impacts by limiting the degree or magnitude of an action and its implementation; (3) rectifying an impact by repairing, rehabilitating, or restoring the affected environment; (4) reducing or eliminating an impact over time by preservation and maintenance operations during the life of an action; and (5) compensating for an impact by replacing or providing substitute resources or environments.

Model—A tool used to mathematically represent a process that could be based on empirical or mathematical functions. Mathematical models can be computer programs, spreadsheets, or statistical analyses.

N

Natural production—As defined by Section 3403(h) of the CVPIA, “fish produced to adulthood without direct human intervention in the spawning, rearing, or migration processes.”

Nonconsumptive water use—Water uses, including swimming, boating, water skiing, fishing, maintenance of stream-related fish and wildlife habitat, hydropower generation, and other uses that do not substantially deplete water supplies.

Nonrecoverable loss—Losses to salt sinks, or evaporation and evapotranspiration in conveyance and drainage canals. Expressed as a percentage of evapotranspiration of applied water.

O

Operating non-Federal entity—A non-Federal entity, such as a water district, that operates and maintains Federal facilities pursuant to an agreement with the United States.

P

Percolation—The downward movement of water through the soil to the groundwater table.

Perennial stream—Flows continuously throughout the year.

Place of use—The geographic area specified in a water right permit or license issued by the California State Water Resources Control Board, wherein the water may be used.

Point of diversion—The point along a river or stream that a water right permit or license specifies water may be diverted to areas away from the river.

Programmatic environmental impact statement—EIS prepared prior to a Federal agency's decision regarding a major program, plan, or policy. It is usually broad in scope and followed by subsequent more narrowly focused NEPA compliance documents such as site-specific environmental assessments and environmental impact statements.

Project repayment—The return to the Treasury of the reimbursable funds expended to construct, operate, maintain, and replace project facilities under the terms and conditions authorized by Congress plus other costs assigned by Congress.

Proposed action—Plan that a Federal agency intends to implement or undertake and which is the subject of an environmental analysis. Usually, but not always, the proposed action is the agency's preferred alternative for a project.

Public involvement—Process of obtaining citizen input into each stage of the development of planning documents. Required as a major input into any EIS.

R

Range—Geographic region in which a given plant or animal normally lives or grows.

Reasonableness criteria—Parameters established by the AFRP for determining the “reasonableness” of restoration actions. These parameters include consideration of potential adverse economic and social impacts, public sentiment, the magnitude of benefits, the certainty that an action will achieve projected benefits, and the authority established by existing laws and regulations.

Recharge—The processes of water reentering the voids in an aquifer, which causes the water table to rise in elevation.

Reclamation laws—As defined by Section 3403(I) of the CVPIA, “the Act of June 17, 1902 (82 Stat. 388) and all Acts amendatory thereof or supplemental thereto.”

Reclamation Reform Act—The Reclamation Reform Act of 1982 (Public Law 97-293, 96 Stat. 1263) was signed by the President on October 12, 1982. While retaining the basic principle of limiting the amount of owned land that may receive irrigation water deliveries from Reclamation projects, the Act introduced the concept of full-cost pricing (including interest on the unpaid plant investment) for certain irrigation water deliveries to leased lands.

Record of Decision (ROD)—Concise, public, legal document that identifies and publicly and officially discloses the responsible official's decision on the alternative selected for implementation. It is prepared following completion of an EIS.

Redd—Depression in river or lake bed dug by fish for the deposition of eggs.

Refuge Water Supply Report—As defined by Section 3403(j) of the CVPIA, “the report issued by the Mid-Pacific Region of the Bureau of Reclamation of the United States Department of the Interior entitled Report on Refuge Water Supply Investigations, Central Valley Hydrologic Basin, California (March 1989).”

Repayment contract—As defined by Section 3403(k) of the CVPIA, “the same meaning as provided in sections 9(d) and 9(e) of the Reclamation Project Act of 1939 (53 Stat. 1187, 1195), as amended.” See water service contract.

Reservoir—Artificially impounded body of water.

Reservoir storage capacity—Reservoir capacity normally usable for storage and regulation of reservoir inflows to meet established reservoir operating requirements.

Flood control storage capacity—Reservoir capacity reserved for the purpose of regulating flood inflows to reduce flood damage downstream.

Restoration Fund—As defined in Section 3403(l) of the CVPIA, “the Central Valley Project Restoration Fund established by this title.”

Return flows—Water returned to the natural surface water system after use by the water user.

Riparian—Areas along or adjacent to a river or stream bank the waters of which provide soil moisture significantly in excess of that otherwise available through local precipitation.

Riparian water rights—Exists for lands which abut a waterway, or which overly an underground stream.

S

Sacramento River Settlement Contractors—Various irrigation districts, mutual water companies and other water users that hold Sacramento River Water Rights Settlement Contracts with the United States. The Settlement Contracts provide for the recognition of the contractors' underlying water rights to divert the natural flow of the Sacramento River, while also providing for a supplemental supply of Central Valley Project (CVP) project water during the summer months. Approximately 2.2 million acre-feet of water are diverted under the Settlement Contracts, serving approximately 440,000 acres between Redding and Sacramento.

Salmonids—Fish of the family *Salmonidae*, such as salmon, trout (including steelhead), and whitefish.

Scoping—The process of defining the scope of a study, primarily with respect to the issues, geographic area, and alternatives to be considered. The term is typically used in association with environmental documents prepared under the National Environmental Policy Act.

Secretary—The Secretary of the Interior.

Section 215 Water—Water defined under Section 215 of the Reclamation Reform Act of 1982 (RRA), as unstorable irrigation water to be released due to flood control criteria or unmanaged flood flows.

Seepage—Water that passes through canal lining, stream banks, or other holding or conveyance systems. Groundwater flow is a type of seepage.

Shasta Criteria—Establishes when a water year is considered critical, based on inflow to Shasta Lake. When inflows to Shasta Lake fall below the defined thresholds, the water year is defined as critical, and water deliveries to Sacramento River Water Rights and San Joaquin River Exchange Contractors may be reduced up to 25 percent. A year is critical when the full natural inflow to Shasta Lake for the current water year (October 1 of the preceding calendar year through September 30 of the current calendar year) is equal to or less than 3.2 million acre-feet. This is considered a single-deficit. A year is also critical when the accumulated difference (deficiency) between 4 million acre-feet and the full natural inflow to Shasta Lake for successive previous years, plus the forecasted deficiency for the current water year, exceeds 800,000 acre-feet.

Short-term contract—Contracts with a term of more than 5 years but less than 10 years.

Semiconfined aquifer—A condition where the movement of groundwater is restricted sufficiently to cause differences in head between different depth zones of the aquifer

during periods of heavy pumping, but during periods of little draft the water levels recover to a level coincident with the water table.

Smolt—A juvenile salmon or steelhead migrating to the ocean and undergoing physiological changes to adapt its body from a freshwater to a saltwater environment.

Spawning—The releasing and fertilizing of eggs by fish.

Spill—Water released from reservoirs to comply with flood control criteria.

Spillway—Overflow structure of a dam.

Stream—Natural water course.

Subsidence—A local ground movement that involves principally the gradual downward settling or sinking of the earth's surface with little or no horizontal motion.

Surface water diversion—Total quantity of water removed from a stream.

Surface Water Return Flow—Percent of water that directly returns by surface to the stream.

T

Tailwater—Water immediately downstream of a dam.

Target Flows—Flow goals used in development of the Draft PEIS alternatives. The goals were based upon preliminary information developed for the AFRP Restoration Plan.

Temporary contract—Contract with a term of less than 5 years.

Threatened species—Legal status afforded to plant or animals species that are likely to become endangered within the foreseeable future throughout all or a significant portion of their range, as determined by the United States Fish and Wildlife Service or the National Marine Fisheries Service.

Tiering—Procedure which allows an agency to avoid duplication of paperwork through incorporation by reference of the general discussions and relevant specific discussions from an environmental compliance document of broader scope into a subsequent document of narrower scope.

Total supply—Total water supply available to area (surface water plus groundwater).

Transfers, sales, and exchanges—A transfer or sale is a one-way transaction to another contractor usually on an annual basis, but could be on a permanent basis. An exchange is a two-way transaction wherein a contractor transfers water to another contractor to be returned at a later date.

Tributary—A stream feeding into a larger stream or a lake.

Turnout—Structure along main canal system for distribution of water.

W

Warren Act—The Warren Act of February 1, 1911, provides authority to convey and store nonproject water within project facilities. Both nonproject M&I and irrigation water can be stored or conveyed in project facilities. Section 1 of the Warren Act requires Reclamation to charge water contractors for the cost of conveying nonproject water through project facilities. Unlike virtually all other CVP rates, Warren Act rate revenues are not creditable to project repayment and are returned directly to the United States Treasury.

Water acquisition—The purchase of water from willing sellers.

Watershed—A region or area bounded peripherally by a water parting and draining ultimately to a particular watercourse or body of water.

Water year—Usually when related to hydrology, the period of time beginning October 1 of one year and ending September 30 of the following year and designated by the calendar year in which it ends.

Wetland—A zone periodically or continuously submerged or having high soil moisture, and which has aquatic and/or riparian vegetation components, and is maintained by water supplies significantly in excess of those otherwise available through local precipitation.

Wildlife habitat—An area that provides a water supply and vegetative habitat for wildlife.

Willing sellers—A term used to describe individuals who would be interested in selling water supplies under transfer guidelines established by SWRCB and other regulatory agencies.

X

X2—Salinity criteria of two parts per thousand (2 ppt), which must be maintained in Suisun Bay during the spring runoff period (February through June).

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