

Acronyms and Glossary

Acronyms

AGNET	—Agricultural Computer Network
BOD	—biochemical oxygen demand
CAM	—crassulacean acid metabolism
CAP	—Central Arizona Project
CBO	—Congressional Budget Office
CROHMS	—Columbia River Operation Hydromet Management System
DBCP	—dibromochloropropane
DOC	—Department of Commerce
DOD	—Department of Defense
DOI	—Department of the Interior
EDIS	—Environmental Data and Informa- tion Service
EPA	—Environmental Protection Agency
FIARBC	—Federal Inter-Agency River Basin Committee
FIFRA	—Federal Insecticide, Fungicide, and Rodenticide Act
FWPCA	—Federal Water Pollution Control Act
GAO	—General Accounting Office
HM	—Hydrometeorological Streamflow Prediction
ISS	—irrigation scheduling services
MCL	—maximum contaminant level
NAS	—National Academy of Sciences
NASQAN	—National Stream Quality Account- ing Network
NAWDEX	—National Water Data Exchange
NCAR	—National Center for Atmospheric Research
NCSL	—National Conference of State Legislatures
NNRIS	—Nebraska Natural Resources In- formation System
NWS	—National Weather Service
OTA	—Office of Technology Assessment
OWRT	—Office of Water Research and Technology
PIK	—payment-in-kind
RCRA	—Resource Conservation and Recovery Act
R&D	—research and development
SAR	—Sodium Absorption Ratio
SCS	—Soil Conservation Service
SSARR	—Streamflow Synthesis and Reser- voir Regulation
TNRIS	—Texas Natural Resources Infor- mation System

USDA	—U.S. Department of Agriculture
USGS	—U.S. Geological Survey
WATSTORE	—Water Data Storage and Retrieval System
WHO	—World Health Organization, United Nations
WRC	—Water Resources Council
WRSIC	—Water Resources Scientific Infor- mation Center
WUE	—water-use efficiency

Glossary

Acre-foot: A measure of the volume (e.g., irrigation water) that would cover 1 acre of land (43,560 square feet) to a depth of 1 ft. In the metric system, volume is expressed as cubic meters. One acre-ft equals 1,233.6 cubic meters.

Agriculture: The human use of land for direct production of plants and animals and materials produced by them. For purposes of this assessment, agriculture does not include the use of land primarily for the production of timber.

Agronomic water-use efficiency: The amount of harvestable or economic biomass produced per water lost by transpiration and evaporation.

Arid and semiarid lands: Those lands where crop-water requirements exceed the plant-available water (growing season precipitation plus soil water stored in the root zone) by a significant amount. Arid and semiarid lands comprise about one-third of the contiguous United States, principally the 17 Western States—the focus of this study.

Biological water-use efficiency: The total dry weight of plant material produced per total water lost by transpiration,

Dryland agriculture or farming: Crop production without irrigation in regions where available water is the most limiting factor.

Efficiency: The amount of output per unit of input. Efficiency can be measured at many different scales and for many different factors. For example, “irrigation efficiency” may refer to several different measures of theoretical, technical, economic, and actual water use, within irrigation districts, on farms, or in fields.

Evaporation: The process by which a liquid is changed into a gas. Evaporation that takes place from the seas and oceans is the main source of water on land areas.

Evapotranspiration: The loss of water from the soil by evaporation and from plants by transpiration.

Externalities: Unintended consequences of an exchange or a production process.

Ground water: The part of the subsurface water below the soil water zone in spaces, or interstices, of subsurface geological formations or of rock or unconsolidated sediment completely saturated with water.

Ground water “mining”: Withdrawal of ground water at a rate in excess of its natural or artificial recharge.

Hydrologic cycle: The central concept in hydrology that relates the interdependence and continuous movement of all forms of water through the vapor, liquid, and solid phases. The components of the hydrologic cycle are: precipitation, evaporation, transpiration, infiltration, percolation, runoff.

Infiltration: The process whereby water soaks into, or is absorbed by the soil layers.

Irrigation agriculture or farming: Crop production using the application of water to lands primarily to provide the water for plant growth that is not provided by rainfall during the growing season.

Long-term: Means more than one human lifespan (approximately 70 years) from the date of this report.

Onfarm irrigation efficiency: The ratio or percentage of the volume of water stored in the soil root zone and used by the crop to the volume of water delivered to the farm.

Percolation: The downward flow of water through soil and permeable rock formation to the ground water table.

Precipitation: Water added to the surface of the Earth from the atmosphere. It may be either liquid (e.g., rain and dew) or solid (e.g., snow, frost, and hail).

Rangeland: Those areas on which the native vegetation is predominantly grasses, grasslike plants, forbs, and shrubs. These lands have generally been thought unsuitable for cultivation and have traditionally been used for grazing domestic livestock. More recently, rangelands have been managed also for the production of wood and other plant products, water, recreational purposes, and wildlife habitat.

Renewable natural resource base: Includes soil, water, and all the physical, chemical, and biological components of agricultural resource systems.

Runoff: The portion of precipitation that comprises the gravity movement of water in surface channels or depressions.

Soil water (or soil moisture): The part of the subsurface water immediately below the surface in the spaces, or interstices, of the soil.

Subsidence: Collapse of underground, water-bearing formations caused by ground water overdraft.

Subsurface water: All water that exists below the surface of the Earth in interconnected openings (“interstices”) of soil or rock, includes soil water and ground water.

Total streamflow: Computed flow that includes effects of consumption, water transfers, and evaporation from manmade reservoirs, but not ground water overdraft.

Transpiration: The process by which water vapor passes through a living plant and enters the atmosphere.

Water: A mineral composed of two parts hydrogen to one part oxygen with a unique combination of properties: liquid at room temperature, requires large amounts of energy for conversion from liquid to vapor and from solid to liquid, resistant to temperature changes, strong attraction between its own and other molecules, dissolves many substances, transmits visible light but absorbs thermal radiation.

Water, “new”: Additional water available at a site in excess of that which would be available as a result of unmodified natural processes. This would include that made available, for example, from interbasin or intrabasin transfers, weather modification, or watershed management. This concept has little meaning from a hydrologic point of view. The total volume of water within a definable region is fixed by the hydrologic cycle. Water can be transferred only from one phase or location to another, while the term “new” water suggests that it is created. Additions at one point will inevitably produce deficits at another because of fundamental water-balance constraints. There are no exceptions to this although the lack of knowledge about some processes makes it appear that “new” supplies are available.

Water pollution, nonpoint sources: Diffused wastes reaching water through land runoff, washout from the atmosphere or other means. These pollutants are extremely difficult to control.

Water pollution, point sources: Waste discharges from identifiable points. These pollutants are amenable to direct control.

Water “savings”: The amount of water that remains for additional use after technological manipulation of the hydrologic cycle. Technolo-

gies include evapotranspiration suppression, reduced agricultural withdrawals, and decreased infiltration and deep percolation. A water “savings” can only be defined in the context of the water balance of a particular site and is largely an economic, not a hydrologic, concept. Hydrologically, water cannot be “saved” or “lost.” It can only be transferred from one place or phase of the hydrologic cycle to another.

Water supply: The streamflow volume that would occur at the outflow point of each subregion if consumption were eliminated, ground water overdrafting were discontinued, and current water transfer and reservoir practices were continued.

Water table: The upper surface of the zone of ground water.

Water use, Consumptive: Water withdrawal and use in such a way that it is no longer available for additional uses—e.g., due to evaporation, transpiration, and ingestion by animals.

Water use, Nonconsumptive: Withdrawals and use that return water to supplies for additional use—e.g., irrigation “return flows,” hydroelectric energy generation, and instream-flow requirements.

Watershed: The fundamental geographic units of hydrology, land area surrounded at its perimeter

by highlands that cause precipitation falling within the watershed’s bounds to flow or drain generally toward its center to form rivers or streams; a watershed is also known as a river basin, and could be as large as that of the Missouri River Basin (at least 500,000 mi²) or as small as an ephemeral tributary to that river (a few tens of acres),

Conversion Table for Common Measures

Area

1 hectare equals: 100 meters X 100 meters or 10,000 square meters; 2.471 acres; or 0.00386 square miles

1 acre equals: 0.405 hectares

Volume

1 cubic meter equals: 35.31 cubic ft; or 264.2 U.S. gal

1,000,000 cubic meters equals: 810.6 acre-ft

1 acre-ft equals: 1,233.6 cubic meters; or 325,931 gal