

Nevada State Water Plan
PART 3 — WATER MANAGEMENT ISSUES

Section 6
Glossary of Terminology

[Source: Nevada Division of Water Planning's *Water Words Dictionary*. Words presented in italics and the referenced appendices may be found in the Dictionary. Words and definitions included in this glossary which explain or summarize elements of existing water law are not intended to change that law in any way.]

Abandoned Well — A well which is no longer used or a well removed from service; a well whose use has been permanently discontinued or which is in a state of such disrepair that it cannot be used for its intended purpose. Generally, abandoned wells will be filled with concrete or cement grout to protect underground water from waste and contamination.

Acid Mine Drainage — Acidic water that flows into streams from abandoned mines or piles of mining waste or tailings. Iron sulfide oxidation products include sulfuric acid, the presence of which has reduced or eliminated aquatic life in many streams in mining regions. Also see *Open-Pit Mining* and *Yellowboy*. Also referred to as *Acid Mine Waste*.

Alluvial Fan Flooding — Flooding occurring on the surface of an *Alluvial Fan* or similar landform which originates at the apex and is characterized by high-velocity flows: active processes of erosion, sediment transport, deposition, and unpredictable flow paths.

Annual Flood — The highest peak discharge of a stream in a *Water Year*.

Annual Low-Flow — The lowest flow occurring each year, usually the lowest average flow for periods of perhaps 3, 7, 15, 30, 60, 120, or 180 consecutive days.

Aquifer — (1) A geologic formation, a group of formations, or a part of a formation that is water bearing. (2) A geological formation or structure that stores or transmits water, or both, such as to wells and springs. (3) An underground layer of porous rock, sand, or gravel containing large amounts of water. Use of the term is usually restricted to those water-bearing structures capable of yielding water in sufficient quantity to constitute a usable supply.

Base Flood (100-Year Flood) — The flood having a 1 percent average probability of being equaled or exceeded in a given year at a designated location. It may occur in any year or even in successive years if the hydrologic conditions are conducive for flooding. Also see *Hundred-Year Flood*, *X-Year Flood*, and *X-Year Flood, Y-Duration Rain*.

Base Flood Elevation — The height in relation to mean sea level (MSL) expected to be reached by the waters of the base flood at specific points in the floodplain of *Riverine* areas.

Basin Management (of Water) — Also referred to as *Water or Watershed Management*, it is the analysis, protection, development, operation, or maintenance of the land, vegetation, and water resources of a drainage basin for the conservation of all its resources for the benefit of man. Basin management for water production is concerned with the quality, quantity, and timing of the water which is produced.

Beneficial Use (of Water) — (1) The amount of water necessary when reasonable intelligence and diligence are used for a stated purpose. (2) A use of water resulting in appreciable gain or benefit to the user, consistent with state law, which varies from one state to another. Most states recognize the following uses as beneficial:

- [1] domestic and municipal uses;
- [2] industrial uses;
- [3] irrigation;
- [4] mining;
- [5] hydroelectric power;

- [6] navigation;
- [7] recreation;
- [8] stock raising;
- [9] public parks;
- [10] wildlife and game preserves.

(3) The cardinal principle of the *(Prior) Appropriation Doctrine*. A use of water that is, in general, productive of public benefit, and which promotes the peace, health, safety and welfare of the people of the State. A certificated water right is obtained by putting water to a beneficial use. The right may be lost if beneficial use is discontinued. A beneficial use of water is a use which is of benefit to the appropriator and to society as well. The term encompasses considerations of social and economic value and efficiency of use. In the past, most reasonably efficient uses of water for economic purposes have been considered beneficial. Usually, challenges have only been raised to wasteful use or use for some non-consumptive purpose, such as preserving instream values. Recent statutes in some states have expressly made the use of water for recreation, fish and wildlife purposes, or preservation of the environment a beneficial use. Also see *Appropriative Water Rights*.

Best Management Practices (BMP) — Accepted methods for controlling *Non-Point Source (NPS) Pollution* as defined by the 1977 *Clean Water Act (CWA)*; may include one or more conservation practices. Also refers to water conservation techniques of proven value. See, for example, *Best Management Practices (BMP) — Urban Water Use*.

Best Management Practices (BMP)–Urban Water Use — Water conservation measures that generally meet one of two criteria: (1) Constitutes an established and generally accepted practice among water purveyors that provides for the more efficient use of existing water supplies or contributes towards the conservation of water; or (2) Practices which provide sufficient data to clearly indicate their value, are technically and economically reasonable, are environmentally and socially acceptable, are reasonably capable of being implemented by water purveyors and users, and for which significant conservation or conservation-related benefits can be achieved.

Biodiversity — Refers to the variety and variability of life, including the complex relationships among microorganisms, insects, animals, and plants that decompose waste, cycle nutrients, and create the air that we breathe. Diversity can be defined as the number of different items and their relative frequencies. For biological diversity, these items are organized at many levels, ranging from complete *Ecosystems* to the biochemical structures that are the molecular basis of heredity. Thus, the term encompasses different ecosystems, species, and genes. It is generally accepted that human survival is dependent upon the conservation and preservation of a diversity of life forms. Typically five levels of biodiversity are recognized:

- [1] **Genes** — Genetic diversity encompasses the variety of genetically coded characteristics of plant and animal populations;
- [2] **Populations** — Groups of individuals of a species that interbreed or interact socially in an area;
- [3] **Species** — The level at which most organisms are recognizable as distinct from all others;
- [4] **Natural Communities** — Groups of species that typically occur in recognizable units, such as redwood forests, coastal sage scrub, or oak woodlands. A natural community includes all the vegetation and animal life, and their interactions within that community; and
- [5] **Ecosystems** — A collection of natural communities. An ecosystem can be as small as a rotting log or a puddle of water, but current management efforts typically focus on larger landscape units, such as a mountain range, a river basin, or a watershed.

Biological Oxygen Demand (BOD) — A measure of the amount of oxygen removed from aquatic environments by aerobic micro-organisms for their metabolic requirements. Measurement of BOD is used to determine the level of organic pollution of a stream or lake. The greater the BOD, the greater the degree of water pollution. Also referred to as *Biochemical Oxygen Demand (BOD)*.

Blackwater — Water that contains animal, human, or food wastes; wastewater from toilet, latrine, and aqua privy flushing and sinks used for food preparation or disposal of chemical or chemical-biological ingredients. Compare to *Greywater*.

Candidate Species — Plant or animal species designated by the Department of the Interior, *U.S. Fish and Wildlife Service (USFWS)* as candidates for potential future listing as an *Endangered Species* or *Threatened Species* pursuant to the *Endangered Species Act (ESA)* of 1973; plant or animal species that are candidates for designation as endangered (in danger of becoming extinct) or threatened (likely to become endangered).

Clean Water Act (CWA) [Public Law 92–500] — More formally referred to as the *Federal Water Pollution Control Act*, the Clean Water Act constitutes the basic federal water pollution control statute for the United States. Originally based on the *Water Quality Act* of 1965 which began setting water quality standards. The 1966 amendments to this act increased federal government funding for sewage treatment plants. Additional 1972 amendments established a goal of zero toxic discharges and “fishable” and “swimmable” surface waters. Enforceable provisions of the CWA include technology-based effluent standards for point sources of pollution, a state-run control program for nonpoint pollution sources, a construction grants program to build or upgrade municipal sewage treatment plants, a regulatory system for spills of oil and other hazardous wastes, and a *Wetlands* preservation program (Section 404).

Community Assistance Program (CAP) — A grant program for state programs funded by the *Federal Emergency Management Agency (FEMA)* with the objective of providing technical assistance for flood mitigation activities and coordinating floodplain management activities in counties and communities participating in the *National Flood Insurance Program (NFIP)*.

Conjunctive (Water) Use — (1) The operation of a groundwater basin in combination with a surface water storage and conveyance system. Water is stored in the groundwater basin for later use by intentionally recharging the basin during years of above-average water supply. (2) The combined use of surface and groundwater systems and sources to optimize resource use and prevent or minimize adverse effects of using a single source; the joining together of two sources of water, such as groundwater and surface water, to serve a particular use. (3) The integrated use and management of hydrologically connected groundwater and surface water.

Conservation District — A public organization created under state-enabling law as a special purpose district to develop and carry out a program of soil, water, and related resource conservation, use, and development within its boundaries. In the United States, such districts are usually a subdivision of state government with a local governing body and are frequently called a soil conservation district or a soil and water conservation district.

Conservation Easement — An agreement negotiated on privately owned lands to preserve open space or protect certain natural resources.

Coordinated Resource Management and Planning — A planning process used by the U.S. Department of the Interior, *Bureau of Land Management (BLM)* that includes public users, interest groups, agencies and affected individuals in the decision-making process before on-the-ground implementation of an activity plan.

Data — In its strictest sense, data may be defined only as the raw numbers (or descriptions, in the case of qualitative data), either in *Time-Series* format (data covering observations over specific periods of time), *Cross-Sectional* format (spatial numeric data consisting of a number of observations taken at a specific point in time or about a specific event or phenomenon), or a combination of these two. Information, on the other hand, deals more specifically with the manipulation, re-organization, analysis, graphing, charting, and presentation of data for specific management and decision-making purposes. Also see *Information Management*.

Data Base — A well-defined collection of data, usually of the same general type, which can be accessed by a computer and may readily be used for further analysis, presentation, and forecasting.

Data Management — The act, process, or means by which data is managed. This may include the compilation, storage, safe-guarding, listing, organization, extraction, retrieval, manipulation, and dissemination of data.

Designated Groundwater Basin — A basin where permitted ground water rights approach or exceed the estimated average annual recharge and the water resources are being depleted or require additional administration. Under such conditions, a state’s water officials will designate a groundwater basin and, in the interest of public welfare, declare *Preferred Uses* (e.g., municipal and industrial, domestic, agriculture, etc.). Also referred to as *Administered Groundwater Basin*.

Designated Groundwater Basin [Nevada] — In the interest of public welfare, the Nevada State Engineer, *Division of Water Resources, Department of Conservation and Natural Resources*, is authorized by statute (Nevada Revised Statute 534.120) and directed to designate a ground water basin and declare *Preferred Uses* within such designated basin. The State Engineer has additional authority in the administration of the water resources within a designated ground water basin. [A listing of Nevada’s Hydrographic Regions, and designated Areas and Sub-Areas is presented in Appendix A–1 (hydrographic regions, areas and sub-areas), Appendix A–2 (listed sequentially by area number) Appendix A–3 (listed alphabetically by area name), and Appendix A–4 (listed alphabetically by principal Nevada county(ies) in which located).]

Dewater, and Dewatering — (1) To remove water from an aquifer or streambed. (2) The extraction of a portion of

the water present in sludge or slurry, producing a dewatered product which is easier to handle. (3) (Mining) The removal of ground water in conjunction with mining operations, particularly open-pit mining when the excavation has penetrated below the ground-water table. Such operations may include extensive ground-water removal and, if extensive enough and if not re-injected into the groundwater, these discharges may alter surface water (stream) flows and lead to the creation of lakes and wetland areas.

Disaster Relief Bill (SB 218) [Nevada] — A State of Nevada fund established to help communities recover from damages sustained in a disaster.

Dissolved Oxygen (DO) — (1) Concentration of oxygen dissolved in water. (2) The amount of free (not chemically combined) oxygen dissolved in water, wastewater, or other liquid, usually expressed in milligrams per liter, parts per million, or percent of saturation. Adequate concentrations of dissolved oxygen are necessary for the life of fish and other aquatic organisms and the prevention of offensive odors. Dissolved oxygen levels are considered the most important and commonly employed measurement of water quality and an indicator of a water body's ability to support desirable aquatic life. The ideal dissolved oxygen level for fish is between 7 and 9 milligrams per liter (mg/l); most fish cannot survive at levels below 3 mg/l of dissolved oxygen. Secondary and advanced wastewater treatment techniques are generally designed to ensure adequate dissolved oxygen in waste-receiving waters.

Domestic Well — A water well used solely for domestic, i.e., residential or household purposes to include both indoor and outdoor water uses. Such wells are generally not required to be permitted; however, they may have restrictions in terms of daily pumping amounts, for example, 1,800 gallons per day.

Drinking Water Standards [Nevada] — The primary objective of Nevada's drinking water standards is to assure safe water for human consumption. To this end, the *Nevada Department of Human Resources, Health Division — Consumer Health Protection* has established statewide primary and secondary drinking water standards at least as rigorous as those required by the *U.S. Environmental Protection Agency (EPA)*. *Primary Drinking Water Standards* limit contaminants (constituents) which may affect consumer health. *Secondary Drinking Water Standards* were developed to deal with the aesthetic qualities of drinking water. [Appendix B-3, Nevada Drinking Water Standards, presents a listing of Nevada's current primary and secondary drinking water quality standards.]

Drought — There is no universally accepted quantitative definition of drought. Generally, the term is applied to periods of less than average or normal precipitation over a certain period of time sufficiently prolonged to cause a serious hydrological imbalance resulting in biological losses (impact flora and fauna ecosystems) and/or economic losses (affecting man). In a less precise sense, it can also signify nature's failure to fulfill the water wants and needs of man.

Ecology — The study of the inter-relationships of living things to one another and to the environment.

Ecosystem — A community of animals, plants, and bacteria, and its interrelated physical and chemical environment. An ecosystem can be as small as a rotting log or a puddle of water, but current management efforts typically focus on larger landscape units, such as a mountain range, a river basin, or a watershed. Also see *Biodiversity*.

Ecosystem Management — An approach to managing the nation's lands and natural resources which recognizes that plant and animal communities are interdependent and interact with their physical environment (i.e., soil, water, and air) to form distinct ecological units called *Ecosystems*. The fact that these ecosystems span jurisdictional and political boundaries necessitates a more comprehensive and unified approach to managing them. Implementing the initial stage of a government-wide approach to ecosystem management typically requires clarifying the policy goals and undertaking certain practical steps to apply the principles being considered to include:

- [1] Delineating the ecosystem;
- [2] Understanding the system(s) ecologies;
- [3] Making management choices;
- [4] Unifying disparate data and information needs and sources; and
- [5] Adapting management on the basis of new information.

Endangered Species — Any plant or animal species threatened with extinction by man-made or natural changes throughout all or a significant area of its range; identified by the Secretary of the Interior as "endangered", in accordance with the 1973 *Endangered Species Act (ESA)*, below. [See Appendix D-1, Nevada's Endangered and Threatened Species.]

Flood, or Flood Waters — (1) An overflow of water onto lands that are used or usable by man and not normally covered by water. Floods have two essential characteristics: The inundation of land is temporary; and the land is

adjacent to and inundated by overflow from a river, stream, lake, or ocean. (2) As defined, in part, in the *Standard Flood Insurance Policy (SFIP)*: “A general and temporary condition of partial or complete inundation of normally dry land areas from overflow of inland or tidal waters or from the unusual and rapid accumulation or runoff of surface waters from any source.”

Flood Control Districts — A district organized to manage flooding hazards through land use controls and construction and maintenance of flood control structures.

Flood, 100-Year — A 100-year flood does not refer to a flood that occurs once every 100 years, but rather to a flood level with a 1 percent or greater chance of being equaled or exceeded in any given year. Areas below the 100 year flood level are termed special flood hazard areas. Areas between the 100-year and the 500-year flood boundaries are termed *Moderate Flood Hazard Areas*. The remaining areas are above the 500-year flood level and are termed *Minimal Flood Hazard Areas*.

Flood Hazard Zones (Defined) — Zones on the *Flood Insurance Rate Map (FIRM)* in which the risk premium insurance rates have been established by a *Flood Insurance Study (FIS)*.

Flood Insurance — A means of spreading the cost of flood losses. It enables property owners in communities participating in the *National Flood Insurance Program (NFIP)* to purchase insurance against loss resulting from floods.

Flood Insurance Rate Map (FIRM) — Official map on which the *Federal Emergency Management Agency (FEMA)* has delineated both the areas of special flood hazards and the risk premium zones applicable to the community.

Flood Insurance Study (FIS) — A document containing the results of an examination, evaluation, and determination of flood hazards and, if appropriate, corresponding water surface elevations, mudslides and erosion hazards.

Flood Mitigation Assistance Program (FMA) — A grant program funded by the *Federal Emergency Management Agency (FEMA)* with the objective of providing funding to assist states and communities in implementing measures to reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes and other structures insurable under the *National Flood Insurance Program (NFIP)*.

Floodplain, also Flood Plain — (1) A strip of relatively smooth land bordering a stream, built of sediment carried by the stream and dropped in the slack water beyond the influence of the swiftest current. It is called a *Living Flood Plain* if it is overflowed in times of high water but a *Fossil Flood Plain* if it is beyond the reach of the highest flood. (2) The lowland that borders a stream or river, usually dry but subject to flooding. (3) That land outside of a stream channel described by the perimeter of the *Maximum Probable Flood*. Also referred to as a *Flood-Prone Area*.

Floodplain Management — Comprehensive flood damage prevention programs which require the integration of all alternative measures (structural and nonstructural) in investigation of flood problems and planning for wise use of the floodplain. Includes corrective and preventive measures for reducing flood damage and preserving and enhancing, where possible, natural resources in the floodplain, including but not limited to emergency preparedness plans, flood control works and floodplain management regulations and ordinances.

Floodplain Management Regulations — Any federal, state, or local government regulations and zoning ordinances, subdivision regulations, building codes, health regulations, special purpose ordinances (such as a grading permit and erosion control requirement) and other applications of regulatory power which control development in flood-prone areas specifically for the purpose of preventing and reducing flood loss and damage.

Floodplain Management Measures — Refers to an overall community program of corrective and preventive measures for reducing future flood damage. The measures take a variety of forms and generally include zoning, subdivision, or building requirements and special-purpose floodplain ordinances. Also see *National Flood Insurance Program (NFIP)* and *Federal Emergency Management Agency (FEMA)*.

Gap Analysis — A method for determining spatial relationships between areas of high biological diversity and the boundaries of *National Parks*, *National Wildlife Refuges (NWR)*, and other preserves. The primary goal of Gap Analysis is to prevent additional species from being listed as threatened or endangered. Analyses are made and displayed using a *Geographic Information System (GIS)*. Estimates of diversity are often derived from known or hypothesized relationships between mapped plant communities and animal populations. In addition to the *National Biological Survey*, which serves as the primary coordinating agency, there are over 200 collaborating organizations involved in performing Gap Analysis on a state-by-state basis, including businesses, universities, and state, local, and federal government entities. [The term *Gap* originated from an initial *Biodiversity* study in Hawaii which showed that for certain sensitive animal species there existed a physical (geographic) gap between the species and its habitat and wildlife preserves (national parks, forests, wildlife protection areas, etc.), indicating potential

limitations of species and habitat protection.]

Geothermal — Terrestrial heat, usually associated with water as around hot springs.

Greywater (Graywater) — Waste water from a household or small commercial establishment which specifically excludes water from a toilet, kitchen sink, dishwasher, or water used for washing diapers.

Groundwater, also Ground Water — (1) Generally, all subsurface water as distinct from *Surface Water*; specifically, the part that is in the saturated zone of a defined aquifer. (2) Water that flows or seeps downward and saturates soil or rock, supplying springs and wells. The upper level of the saturate zone is called the Water Table. (3) Water stored underground in rock crevices and in the pores of geologic materials that make up the earth's crust. Ground water lies under the surface in the ground's *Zone of Saturation*, and is also referred to as *Phreatic Water*.

Import (Water) — Water piped or channeled into an area.

Injection — Generally refers to a system of artificially introducing surface water into the ground water system as a means of storage or recharge. Most typically, this includes the use of *Recharge Wells* which work directly opposite of pumping wells to inject surface water into underlying formations. Depending on the water-bearing formation, these methods may have limited usefulness and are generally better used for pumping water into deep, confined aquifers. (Water Quality) Refers to a system of subsurface disposal of brine effluent into an acceptable formation. Also see *Induced Recharge*.

Instream Flow or Instream Use — (1) The amount of water remaining in a stream, without diversions, that is required to satisfy a particular aquatic environment or water use. (2) Nonconsumptive water requirements which do not reduce the water supply; water flows for uses within a defined stream channel. Examples of instream flows include:

- [1] **Aesthetics** — Water required for maintaining flowing streams, lakes, and bodies of water for visual enjoyment;
- [2] **Fish and Wildlife** — Water required for fish and wildlife;
- [3] **Navigation** — Water required to maintain minimum flow for waterborne commerce;
- [4] **Quality Dilution** — Water required for diluting salt and pollution loading to acceptable concentrations; and
- [5] **Recreation** — Water required for outdoor water recreation such as fishing, boating, water skiing, and swimming.

Instream Flow Requirement — The flow required in a stream to maintain desired instream benefits such as navigation, water quality, fish propagation, and recreation.

Integrated (Water) Resource Planning (IRP) — A comprehensive, interdisciplinary approach to water resource planning that encompasses water resource assessment, demand considerations, analysis of alternatives, risk management, resource diversity, environmental considerations, least-cost analysis, multidimensional modeling, and participatory decision making and public input, among other factors. Integrated Resource Planning begins with specific policy objectives that are applied to extensive lists of options for water supply sources, distribution systems, or other operational requirements. The options are then narrowed after evaluating demand requirements, environmental impacts, conservation options, costs, risks, and other aspects of a project. IRP involves a dynamic process of assessing demand and supply conditions and creatively integrating alternatives and new technologies. While the concepts of IRP are relatively new to the process of water planning, it has been used extensively in the energy industry. As a planning process it helps decision makers select the best mix of water resources, facilities, and conservation measures to meet water demands.

Interbasin Transfer (of Water) — A transfer of water rights and/or a diversion of water (either groundwater or surface water) from one *Drainage* or *Hydrographic Basin* to another, typically from the basin of origin to a different hydrologic basin. Also referred to as *Water Exports* and/or *Water Imports*.

Intermittent Stream — A stream that carries water only part of the time, generally in response to periods of heavy runoff either from snowmelt or storms; a stream or part of a stream that flows only in direct response to precipitation. It receives little or no water from springs or other sources. It is dry for a large part of the year, generally more than three months. Flow generally occurs for several weeks or months in response to seasonal precipitation, due to groundwater discharge, in contrast to the *Ephemeral Stream* that flows but a few hours or days following a single storm. Also referred to as *Seasonal Streams*. Also see *Stream*.

Interstate Waters — According to federal and state laws, interstate waters are defined as: (1) rivers, lakes and other waters that flow across or form a part of state or international boundaries; (2) waters of the Great Lakes; and (3)

coastal waters whose scope has been defined to include ocean waters seaward to the territorial limits and waters along the coastline (including inland streams) influenced by the tide.

Land Subsidence — (1) The sinking or settling of land to a lower level in response to various natural and man-caused factors. (2) With respect to ground water, subsidence most frequently results from overdrafts of the underlying water table or aquifer and its inability to fully recharge, a process termed *Aquifer Compaction*. Also see *Subsidence*.

Land Use Planning — The process of inventorying and assessing the status, potentials, and limitations of a particular geographic area and its resources, interacting with the populations associated and/or concerned with the area to determine their needs, wants, and aspirations for the future.

Methyl Tertiary Butyl Ether (MTBE) — An oxygenate and gasoline additive used to improve the efficiency of combustion engines in order to enhance air quality and meet air pollution standards. MTBE is a product of petroleum refining that has been added to gasoline nationwide since the late 1970's as an octane booster. Following federal actions in the early 1990's, refiners began adding more MTBE to clean up the air. Current federal law requires some minimum amount of an oxygenate in gasoline sold in areas that do not meet air quality standards. The *U.S. Environmental Protection Agency (EPA)* considers MTBE a possible human carcinogen. In addition to being a suspected carcinogen, MTBE also pollutes waters, particularly by personal watercraft using two-stroke marine engines. More recently, leaking gasoline storage tanks containing MTBE have been found to cause contamination of nearby municipal water wells forcing their closure. MTBE has been found to mix and move more easily in water than many other fuel components, thereby making it harder to control, particularly once it has entered surface or ground waters.

Minimum Instream Flow — The specific amount of water required to support aquatic life, to minimize pollution, or for recreation. It is subject to the priority system and does not affect water rights established prior to its institution.

Mitigation — (1) (Environmental, General) Actions designed to lessen or reduce adverse impacts; frequently used in the context of environmental assessment. (2) (NEPA) Action taken to avoid, reduce the severity of, or eliminate an adverse impact. Mitigation can include one or more of the following:

- [1] avoiding impacts;
- [2] minimizing impacts by limiting the degree or magnitude of an action;
- [3] rectifying impacts by restoring, rehabilitating, or repairing the affected environment;
- [4] reducing or eliminating impacts over time; and
- [5] compensating for the impact by replacing or providing substitute resources or environments to offset the loss.

Monitoring Well — (1) A well used to obtain water quality samples or measure groundwater levels. (2) (Water Quality) A well drilled in close proximity to a waste storage or disposal facility, or hazardous waste management facility or *Superfund Site* to check the integrity of the facility or to keep track of leakage of materials into the adjacent groundwater.

Native Species — A species that is a part of an area's original fauna or flora.

Natural Resource — A material source of wealth, such as timber, fresh water, or a mineral deposit, that occurs in a natural state and has economic and/or value. Natural resources are considered *Nonrenewable* when they do not naturally replenish themselves within the limits of human time or *Renewable* when they are more or less continuously replenished in the course of natural events within the limits of human time.

Non-Point Source (NPS) Pollution — (1) Pollution discharged over a wide land area, not from one specific location. (2) Water pollution caused by diffuse sources with no discernible distinct point of source, often referred to as runoff or polluted runoff from agriculture, urban areas, mining, construction sites and other sites. These are forms of diffuse pollution caused by sediment, nutrients, organic and toxic substances originating from land use activities, which are carried to lakes and streams by surface runoff.

Nonstructural Measures — Measures for managing, utilizing, or controlling water and related lands without structural development to achieve the desired objective. Such measures include best management practices, flood plain zoning, flood warning systems, education and legal restraints, and preservation, as well as the more common land management measures.

One Hundred-Year Flood — Having the same meaning as *Base Flood*, *1 percent Flood*, or *Hundred-Year Flood*. Also see *X–Year Flood*, and *X–Year Flood, Y–Duration Rain*.

Overdraft — (1) A condition that occurs in a ground water basin when pumping exceeds recharge over an extended period of time. (2) That quantity of water pumped in excess of the safe yield; the act of overdrawing a water supply or aquifer in amounts greater than replenishment. Also, the sustained extraction of ground water from an aquifer at a rate greater than the recharge rate of the aquifer, resulting in a drop in the level of the water table. Also see *Ground Water Overdraft* and *Ground Water Mining*.

Perennial Yield (Ground Water) — The amount of usable water of a ground water reservoir that can be withdrawn and consumed economically each year for an indefinite period of time. It cannot exceed the sum of the *Natural Recharge*, the *Artificial (or Induced) Recharge*, and the *Incidental Recharge* without causing depletion of the groundwater reservoir. Also referred to as *Safe Yield*.

pH (Hydrogen Ion Concentration) — (1) A convenient method of expressing the acidity or basicity of a solution in terms of the logarithm of the reciprocal (or negative logarithm) of the hydrogen ion concentration. The pH scale runs from 0 to 14; a pH value of 7.0 indicates a neutral solution. Values above 7.0 pH indicate basicity (basic solutions); those below 7.0 pH indicate acidity (acidic solutions). Natural waters usually have a pH between 6.5 and 8.5.

Point Source (PS) Pollution — (1) Pollution originating from any discrete source. (2) Pollutants discharged from any distinct, identifiable point or source, including pipes, ditches, channels, sewers, tunnels, wells, containers of various types, concentrated animal-feeding operations, or floating craft. Also referred to as *Point Source of Pollution*. Also see *Non-Point Source (NPS) Pollution*.

Pollution — (1) Any alteration in the character or quality of the environment which renders it unfit or less suited for certain uses. With respect to water, the alteration of the physical, chemical, or biological properties by the introduction of any substance that adversely affects any beneficial use. (2) Adverse and unreasonable impairment of the beneficial uses of water even though no actual health hazard is involved. Under the Clean Water Act (CWA), for example, the term is defined as the manmade or man-induced alteration of the physical, biological, chemical, and radiological integrity of water.

Prior Appropriation Doctrine — (1) A concept in water law under which a right to a given quantity of water is determined by such a procedure as having the earliest *Priority Date*. (2) The system for allocating water to private individuals used in most of the western United States. The doctrine of *Prior Appropriation* was in common use throughout the arid west as early settlers and miners began to develop the land. The prior appropriation doctrine is based on the concept of “*First in Time, First in Right*”. The first person to take a quantity of water and put it to *Beneficial Use* has a higher priority of right than a subsequent user. Under drought conditions, higher priority users are satisfied before junior users receive water. Appropriative rights can be lost through nonuse; they can also be sold or transferred apart from the land. Contrasts with *Riparian Doctrine* and *Riparian Water Rights*. Also see *Littoral Water Rights* and *Prescribed Water Rights*.

Project WET (Water Education for Teachers) [Nevada] — A statewide supplementary, interdisciplinary water education program with components for the education community (K–12) and the general public. The goal of *Nevada Project WET* is to facilitate and promote the awareness, appreciation, knowledge, and stewardship of Nevada’s water resources through the development and dissemination of classroom ready teaching aides, teacher training, learning materials, and demonstration models as well as the maintenance of a resource bureau. The program is designed to provide useful, unbiased information in a straight-forward, neutral fashion addressing a wide variety of water-related topics. National Project WET at Montana State University coordinates the individual state WET programs. The *Nevada Division of Water Planning (Department of Conservation and Natural Resources)*, is the official sponsor of the Project WET program in the State of Nevada. Other water education programs include the International Office for Water Education (IOWE), established at Utah State University in 1983 to promote water/science education, the *U.S. Geological Survey (USGS) National Water Information Clearinghouse (NWIC)*, which was established to serve as a focus for the dissemination of water resource information to all levels of government, academia, the private sector, the cooperative extension, and the general public.

Recharge (Hydrologic) — (1) The process by which water is added to the *Zone of Saturation*. (2) The introduction of surface or ground water to groundwater storage such as an aquifer. Recharge or replenishment of groundwater

supplies consists of three (3) types:

- [1] **Natural Recharge** which consists of precipitation or other natural surface flows making their way into groundwater supplies;
- [2] **Artificial or Induced Recharge** which includes actions by man specifically designed to increase supplies in a groundwater reservoirs through various methods such as water spreading (flooding), ditches, and pumping techniques; and
- [3] **Incidental Recharge** which consists of actions, such as irrigation and water diversion, which add to groundwater supplies but are intended for other purposes.

Recharge may also refer to the amount of water so added.

Recharge Area (Groundwater) — The area in which water reaches the *Zone of Saturation* by surface infiltration. Infiltration moves downward into the deeper parts of an aquifer in a recharge area. Also referred to as a *Recharge Zone*.

Recharge, Artificial — The designed (as opposed to the natural or incidental) replenishment of ground water storage from surface water supplies. There exist five (5) common techniques to effect artificial recharge of a groundwater basin:

- [1] **Water Spreading** consisting of the basin method, stream-channel method, ditch method, and flooding method, all of which tend to divert surface water supplies to effect underground infiltration;
- [2] **Recharge Pits** designed to take advantage of permeable soil or rock formations;
- [3] **Recharge Wells** which work directly opposite of pumping wells although have limited scope and are better used for deep, confined aquifers;
- [4] **Induced Recharge** which results from pumping wells near surface supplies thereby inducing higher discharge towards the well; and
- [5] **Wastewater Disposal** which includes the use of secondary treatment wastewater in combination with spreading techniques, recharge pits, and recharge wells to reintroduce the water to deep aquifers thereby both increasing the available groundwater supply and also further improving the quality of the wastewater.

Also referred to as *Induced Recharge*. Also see *Natural Recharge*, *Incidental Recharge*, *Injection*, and *Perennial Yield*.

Recharge Basin — A surface facility, often a large pond, used to increase the infiltration of surface water into a ground water basin.

Recharge Well — Used in conjunction with artificial or induced ground water recharge techniques, the recharge well works directly opposite of pumping wells to induce surface water into the ground water system. Based on the nature of the soil and rock being recharged, the use of recharge wells typically have limited scope and are better employed for recharging deep, confined aquifers. Also see *Injection*.

Reclaimed Waste Water — Waste water that becomes suitable for a specific beneficial use as a result of treatment or brackish water demineralized for use. General types of reclaimed waste water include:

- [1] **Primary Effluent** — reclaimed water that only has had sewage solids removed and is typically used only for surface irrigation of tree, fodder, and fiber crops;
- [2] **Secondary Effluent** — reclaimed water that has had sewage solids removed and has been oxidized and disinfected and is used to irrigate golf courses and cemeteries and provide water for pasture and food crops; and
- [3] **Tertiary Recycled Water** — water produced by conventional sewage treatment followed by more advanced procedures including filtration and disinfection, providing it with the broadest range of uses.

Also see *Waste Water Reclamation* and “*Repurified Water*.”

Reclaimed Water — Refers to water that has received at least *Secondary Wastewater Treatment* and is reused after flowing out of a wastewater treatment facility.

Recreation Resource — Land and water areas and their natural attributes, with or without man-made facilities, that provide opportunities for outdoor recreation.

Restoration — The act or process of bringing something back to a previous condition or position. For example, the establishment of natural land contours and vegetative cover following extensive degradation of the environment caused by activities such as *Surface Mining*. Under this condition, the term is used interchangeably with *Reclamation*.

Reuse (of Water) — (1) Water that is discharged by one user and is used by other users. (2) Repeated use of the same

water by subsequent users in sequential systems. Sometimes, it also means water discharged by one unit and used by other units in the same plant. Also referred to as *Recycled Water*.

Reverse Osmosis — (1) (Desalination) Refers to the process of removing salts from water using a membrane. With reverse osmosis, the product water passes through a fine membrane that the salts are unable to pass through, while the salt waste (brine) is removed and disposed. This process differs from electro dialysis, where the salts are extracted from the feedwater by using a membrane with an electrical current to separate the ions. The positive ions go through one membrane, while the negative ions flow through a different membrane, leaving the end product of freshwater. (2) (Water Quality) An advanced method of water or wastewater treatment that relies on a *Semi-permeable Membrane* to separate waters from pollutants. An external force is used to reverse the normal osmotic process resulting in the solvent moving from a solution of higher concentration to one of lower concentration.

Riparian — Pertaining to the banks of a river, stream, waterway, or other, typically, flowing body of water as well as to plant and animal communities along such bodies of water.

Riparian Areas (Habitat) — (1) Land areas directly influenced by a body of water. Usually such areas have visible vegetation or physical characteristics showing this water influence. Stream sides, lake borders, and marshes are typical riparian areas. Generally refers to such areas along flowing bodies of water.

Riparian Doctrine — The system for allocating water used in England and the eastern United States, in which owners of lands along the banks of a stream or water body have the right to *Reasonable Use* of the waters and a *Correlative Right* protecting against unreasonable use by others that substantially diminishes the quantity or quality of water. The right is appurtenant to the land and does not depend on prior use. Under this doctrine, ownership of land along a stream or river (i.e., riparian lands) is an absolute prerequisite to a right to use water from that body of water and each such landowner has an equal right to withdraw “reasonable” amounts of water (whether or not he is presently using it or not) so long as downstream landowners are not unreasonably damaged. Contrast with *Prior Appropriation Doctrine*.

Riverine — (1) Relating to, formed by, or resembling a river including tributaries, streams, brooks, etc. (2) Pertaining to or formed by a river; situated or living along the banks of a river, for example, a “riverine ore deposit.” Also see *Riparian*.

Safe Yield — (1) The rate at which water can be withdrawn from supply, source, or an aquifer over a period of years without causing eventual depletion or contamination of the supply. (2) A rate of extraction that does not deplete the basin over time. (3) (Groundwater) The amount of water that can be withdrawn from an aquifer without producing an undesired effect. (4) (Surface Water) The amount of water than can be withdrawn or released from a reservoir on an ongoing basis with an acceptably small risk of supply interruption (i.e., reducing the reservoir storage to zero.) More commonly referred to a *Perennial Yield* and *Sustained Yield*. Generally consists of the rate of *Natural Recharge*, *Artificial (or Induced) Recharge*, and *Incidental Recharge*.

Salinity — (1) The concentration of dissolved salts in water or soil water. (2) The relative concentration of salts, usually sodium chloride, in a given water sample. It is usually expressed in terms of the number of parts per thousand (‰) or parts per million (ppm) of chloride (Cl). Although the measurement takes into account all of the dissolved salts, sodium chloride (NaCl) normally constitutes the primary salt being measured. As a reference, the salinity of seawater is approximately 35‰. See *Salts* for comparative salt concentrations in water. Also see *Total Dissolved Solids*.

Sanitary Seal (Water Well) — The neat cement seal at the top of a water well intended to prevent well contamination from surface water or shallow ground water flows containing potential contaminants.

Sensitive Species — Those plant or animal species susceptible or vulnerable to activity impacts or habitat alterations. Species not yet officially listed but undergoing status review for listing on the *U.S. Fish and Wildlife Service’s (USFWS)* official threatened and endangered list; species whose populations are small and widely dispersed or restricted to a few localities; and species whose numbers are declining so rapidly that official listing may be necessary. Also see *Endangered Species Act (ESA)*, *Endangered Species* and *Threatened Species*.

Subsidence — (1) The sinking of the land surface due to a number of factors, of which groundwater extraction is one. (2) A sinking of a large area of the earth’s crust. Typically this may result from the over-pumping of a basin’s water table and the inability of the soils to re-absorb water from natural or artificial injection. Also frequently results from overdrafts of the aquifer and its inability to fully recharge, a process termed *Aquifer Compaction*. Also see *Land Subsidence*.

Total Dissolved Solids (TDS) — (Water Quality) A measure of the amount of material dissolved in water (mostly inorganic salts). Typically aggregates of carbonates, bicarbonates, chlorides, sulfates, phosphates, nitrates, etc. of calcium, magnesium, manganese, sodium, potassium, and other cations which form salts. The inorganic salts are measured by filtering a water sample to remove any suspended particulate material, evaporating the water, and weighing the solids that remain. An important use of the measure involves the examination of the quality of drinking water. Water that has a high content of inorganic material frequently has taste problems and/or water hardness problems. The common and synonymously used term for TDS is “salt”. Usually expressed in milligrams per liter. Also see *Hard Water* and *Salinity*.

Treated (Wastewater) Effluent — Water that has received primary, secondary, or advanced treatment to reduce its pollution or health hazards and is subsequently released from a wastewater facility after treatment.

Trihalomethanes (THMs) — (1) Any of several synthetic organic compounds formed when chlorine combines with organic materials in water during the disinfection process. The most common THM is chloroform.

Turbidity — A measure of the reduced transparency of water due to suspended material which carries water quality implications. The term “turbid” is applied to waters containing suspended matter that interferes with the passage of light through the water or in which visual depth is restricted. The turbidity may be caused by a wide variety of suspended materials, such as clay, silt, finely divided organic and inorganic matter, soluble colored organic compounds, plankton and other microscopic organisms and similar substances. Turbidity in water has public health implications due to the possibilities of pathogenic bacteria encased in the particles and thus escaping disinfection processes. Turbidity interferes with water treatment (filtration), and affects aquatic life. Excessive amounts of turbidity also make water aesthetically objectionable. The degree of the turbidity of water is measured by a *Turbidimeter*.

Water Bank — A mechanism for holding water for eventual use. A water bank may include the use of surface water reservoirs, underground storage facilities (e.g., groundwater recharge), or a combination of these mechanisms.

Water Banking — A water conservation and use optimization system whereby water is reallocated for current use or stored for later use. Water banking may be a means of handling surplus water resources and may involve aquifer recharge or similar means of storage. Typically, under such arrangements, an agency is created with the authority to purchase, sell, hold, and transfer water and water rights in addition to serving as a negotiator between buyers and sellers. In its broadest sense, all water rights would be covered under such water banking arrangements to include surface water, groundwater, treated wastewater effluent, and irrigation tailwater. Generally, participants in water banking arrangements will have their water rights protected from cancellation (non-beneficial use) for a specific period so long as their water is “deposited” in the water bank. Also see *Water Marketing*.

Water-Based Recreation — Those activities which require water for participation such as boating, swimming, sailing and canoeing.

Water Importation — The act or process whereby water is brought into an area or region which would not naturally receive such waters. Typically, it refers to the artificial transport of water through aqueducts, canals, or pipelines from one water basin, drainage area, county or *Hydrographic Area* to another, thereby affecting the natural surface and groundwater drainage and flow patterns in both the water exporting and importing areas.

Water Management — (1) (General) Application of practices to obtain added benefits from precipitation, water, or water flow in any of a number of areas, such as irrigation, drainage, wildlife and recreation, water supply, watershed management, and water storage in soil for crop production. Includes *Irrigation Water Management* and *Watershed Management*. (2) (Irrigation Water Management) The use and management of irrigation water where the quantity of water used for each irrigation is determined by the water-holding capacity of the soil and the need for the crop, and where the water is applied at a rate and in such a manner that the crop can use it efficiently and significant erosion does not occur. (3) (Watershed Management) The analysis, protection, development, operation, or maintenance of the land, vegetation, and water resources of a drainage basin for the conservation of all its resources for the benefit of its residents. Watershed management for water production is concerned with the quality, quantity, and timing of the water which is produced. Also see *Basin Management*.

Water Marketing — A concept of water transfer and use borne out of increased demand by urban populations for water whereby a holder of water rights is allowed to sell or lease those rights in an open market to the highest bidder. As an example, in the United States one acre-foot of water typically yields only about \$400 on a farm versus \$400,000 in manufacturing (National Geographic Special Edition, *WATER: The Power, Promise, and Turmoil of North America's Fresh Water*, November 1993). Such water marketing arrangements, however, can only succeed

where necessary water transport and delivery systems exist between supply points and demand points. There are a variety of transactions that are considered marketing transactions, including intrastate transfers, interstate transfers, interbasin transfers, conserved water, and short-term and long-term leasing arrangements, etc. Also see *Water Banking*.

Water Pollution — Generally, the presence in water of enough harmful or objectionable material to damage the water's quality. More specifically, pollution shall be construed to mean contamination of any waters such as will create or is likely to create a nuisance or to render such waters harmful, detrimental or injurious to public health, safety or welfare, or to domestic, municipal, commercial, industrial, agricultural, recreational, or other legitimate uses, or to livestock, wild animals, birds, fish or other aquatic life, including but not limited to such contamination by alteration of the physical, chemical or biological properties of such waters, or change in temperature, taste, color or order thereof, or the discharge of any liquid, gaseous, radioactive, solid or other substances into such waters. More simply, it refers to quality levels resulting from man's activities that interfere with or prevent water use or uses.

Water Quality Management — Planning for the protection of a water's quality for various *Beneficial Uses*, for the provision of adequate wastewater collection, treatment, and disposal for municipalities and industries, and for activities that might create water quality problems, and regulating and enforcing programs to accomplish the planning goals and laws and regulations dealing with water pollution control.

Water Quality Standards — (1) A plan for water quality management containing four major elements: water use; criteria to protect uses; implementation plans, and enforcement plans. An anti-degradation statement is sometimes prepared to protect existing high quality water sources. (2) State-adopted and *U.S. Environmental Protection Agency (EPA)* approved ambient standards for water bodies. The standards prescribe the use of the water body and establish the water quality criteria that must be met to protect designated uses.

Watershed Protection Approach (WPA) — A type of pollution management program supported by the *U.S. Environmental Protection Agency (EPA)* as being the most effective mechanism for achieving clean water and healthy, sustainable ecosystems throughout the United States. The WPA is a "placel-based" strategy that integrates water quality management activities within hydrologically defined drainage basins or watersheds as opposed to using conventional, politically-defined boundaries. The WPA allows stakeholders to tailor corrective actions to local concerns within the coordinated framework of a state, Tribal, and national water program. In addition, an emphasis on public participation provides the opportunity to incorporate environmental justice issues into watershed management. Six basic objectives form the general foundations of EPA's watershed protection process:

- [1] identifying critical watersheds with EPA and state participation;
- [2] clearly defining the problems, general causes, and specific sources of risks and impairments to the watershed;
- [3] developing potential pollution prevention and control strategies;
- [4] implementing point and nonpoint source controls;
- [5] developing scientifically valid and practical indicators for gauging and reducing the risks in the watershed; and
- [6] developing ecological criteria that states may use in formulating future watershed protection standards.

Water Use — The amount of water needed or used for a variety of purposes including drinking, irrigation, processing of goods, power generation, and other uses. The amount of water used may not equal the amount of water withdrawn due to water transfers or the recirculation or recycling of the same water. For example, a power plant may use the same water a multiple of times but withdraw a significantly different amount. Also see *Water Use, Types*, below.

Water Use Practices — Direct, indirect, consumptive, and nonconsumptive uses of water. These include domestic practices (e.g., washing, bathing, cooking, drinking), navigation, wildlife habitat management, irrigation practices, recreation activities, industrial uses, and hydroelectric power generation.

Water Use, Types — The use of water may be classified by specific types according to distinctive uses, such as the following:

- [1] Commercial Water Use
- [2] Domestic Water Use
- [3] Hydroelectric Power Water Use
- [4] Irrigation Water Use

- [5] Livestock Water Use
- [6] Mining Water Use
- [7] Navigational Water Use
- [8] Other Water Use
- [9] Public Water Use (same as *Utility Water Use*)
- [10] Residential Water Use (same as *Domestic Water Use*)
- [11] Rural Water Use
- [12] Thermoelectric Power Water Use

Wellhead Protection (Program) — Programs intended to protect and preserve the quality of ground water used as a source of drinking water. A typical wellhead protection program will have a number of critical elements to include: (1) delineating the roles and responsibilities of state agencies, local governments, and water purveyors; (2) delineation of wellhead protection areas; (3) contaminant source inventories; (4) management options; (5) siting of new wells; (6) contingency and emergency planning; and (7) public participation. Typically, steps taken to protect and preserve the quality of a well are far less costly than actions necessary to restore a contaminated well.

Wetlands, also Wetland — Wetlands are those areas where water saturation is the dominant factor determining the nature of soil development and the types of plant and animal communities living in the surrounding environment. The identification of wetlands and associated habitats is regulated by complex federal legislation. The *U.S. Environmental Protection Agency (EPA)*, the *U.S. Army Corps of Engineers (COE)*, the (U.S. Department of Agriculture) *Natural Resources Conservation Service (NRCS)* (formerly the *Soil Conservation Service — SCS*), and the (Department of the Interior) *U.S. Fish and Wildlife Service (USFWS)*, have developed definitions of wetlands in response to their regulatory responsibilities. The single feature that all wetlands have in common is a soil or substrate that is saturated with water during at least a part of the growing season. These saturated conditions control the types of plants and animals that live in these areas. Other common names for wetlands are *Sloughs, Ponds, Swamps, Bogs, and Marshes*. Basically, all definitions of wetlands require that one or more attributes be met:

- [1] **Wetland Hydrology** — At some point of time in the growing season the substrate is periodically or permanently saturated with or covered by water;
- [2] **Hydrophytic Vegetation** — At least periodically, the land supports predominantly water-loving plants such as cattails, rushes, or sedges;
- [3] **Hydric Soils** — The area contains undrained, wet soil which is anaerobic, or lacks oxygen in the upper levels.

Wildlife Management Areas (WMAs) [Nevada] — Nevada’s Wildlife Management Areas (WMAs) are lands and waters which have been acquired to effectuate a coordinated and balanced program resulting in the maximum revival of fish and wildlife and in the maximum recreational advantages to the people of the State of Nevada. Lands in Nevada set aside as WMAs currently total almost 275,000 acres (429 square miles). State WMAs are subject to supervision by the Nevada Board of Wildlife Commissioners.

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