CHAPTER 8
GLOSSARY

8.0 GLOSSARY

abrasion—To rub or wear off; to waste or wear away by friction, as to abrade rocks.

absorbed dose—The energy imparted by ionizing radiation per unit mass of the irradiated material (e.g., biological tissue). The units of absorbed dose are the rad and the gray. (See rad and gray.)

accident—An unplanned sequence of events that usually results in undesirable consequences.

actinides—A series of heavy radioactive metallic elements of increasing atomic number (Z number) beginning with actinium (89) and continuing through lawrencium (103).

activated carbon—A highly adsorbent powdered or granular carbon used to remove radioactive or toxic substances from liquids or gases.

aggregate—Hard inert materials such as sand, gravel, or slag used for mixing with a cementing material to form concrete.

air pollutant—Generally, an airborne substance that could, in high enough concentrations, harm living things or cause damage to materials. From a regulatory perspective, an air pollutant is a substance of which emissions or atmospheric concentrations are regulated, or for which maximum guideline levels have been established because of potential harmful effects on human health and welfare.

air quality—The cleanliness of the air as measured by the levels of pollutants relative to standards or guideline levels established to protect human health and welfare. Air quality is often expressed in terms of the pollutant for which concentrations are the highest percentage of a standard (e.g., air quality may be unacceptable if the level of one pollutant is 150 percent of its standard, even if levels of other pollutants are well below their respective standards).

air-quality standards—The legally prescribed level of constituents in the outside air that cannot be exceeded during a specified time in a specified area.

alpha emitter—A radioactive substance that decays by releasing an alpha particle.

alpha particle—A positively charged particle ejected spontaneously from the nuclei of some radioactive elements. It is identical to a helium nucleus and has a mass number of 4 and an electrostatic charge of +2. It has low penetrating power and a short range (a few centimeters in air). (Also see alpha radiation.)

alpha radiation—A strongly ionizing, but weakly penetrating, form of radiation consisting of positively charged alpha particles emitted spontaneously from the nuclei of certain elements during radioactive decay. Alpha radiation is the least penetrating of the four common types of ionizing radiation (alpha, beta, gamma, and neutron). Even the most energetic alpha particle generally fails to penetrate the dead layers of cells covering the skin and can be easily stopped by a sheet of paper. Alpha radiation is most hazardous when an alpha-emitting particle is ingested or inhaled by an organism.

ambient air—The surrounding atmosphere as it exists around people, plants, and structures.

aquifer—An underground geological formation, group of formations, or part of a formation that holds water and is capable of yielding a significant amount of water to wells or springs.

as low as is reasonably achievable (ALARA)—The approach to radiation protection to manage and control exposures (both individual and collective) to the workforce and to the general public to as low as is reasonable, taking into account social, technical, economic, practical, and public policy considerations. ALARA is not a dose limit but a process that has the objective of attaining doses as far below the applicable limits of Title 10 of the *Code of Federal Regulations* Part 835 (10 CFR 835) as is reasonably achievable.

background concentration—The level of chemical elements or radionuclides in the natural environment not affected by human activities, found by taking measurements in areas unaffected by contamination.

background radiation—Radiation from: (1) cosmic sources; (2) naturally occurring radioactive materials, including radon (except as a decay product of source or special nuclear material); and (3) global fallout as it exists in the environment (e.g., from the testing of nuclear explosive devices).

best management practices—Structural, nonstructural, and managerial techniques, other than effluent limitations, to prevent or reduce pollution of surface water. They are the most effective and practical means to control pollutants that are compatible with the productive use of the resource to which they are applied. Best management practices are used in both urban and agricultural areas. Best management practices can include schedules of activities; prohibitions of practices; maintenance procedures; treatment requirements; operating procedures; and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

beta emitter—A radioactive substance that decays by releasing a beta particle.

beta particle—A charged particle emitted from a nucleus during radioactive decay, with a mass equal to 1/1,837 that of a proton. A negatively charged beta particle is identical to an electron. A positively charged beta particle is called a positron.

beta radiation—Ionizing radiation consisting of fast-moving beta particles (negatively charged) and positrons (positively charged) emitted from the nucleus of an atom during radioactive decay. Beta radiation is more penetrating, but less energized, than alpha radiation. Beta radiation is stopped by clothing or a thin sheet of metal.

bioaccumulation—The accumulation or buildup of contaminants in living systems by biological processes.

biota (biotic)—The plant and animal life of a region.

borrow pit—An excavated area where material has been dug for use as fill at another location (e.g., a gravel pit).

capillary fringe water—Water that is held in place by capillarity (a property of surface tension that draws water upwards) in the smaller void spaces of the porous material just above the water table (i.e., the capillary fringe).

cask—A heavily shielded container used to store or ship radioactive materials.

Cesium Prong—As used in this environmental impact statement (EIS), the area of surface soil contaminated by cesium-137, both on site and off site. This contamination resulted from abnormal releases to the atmosphere caused by reprocessing plant ventilation system failures. (See Appendix C, Section C.2.14, of this EIS.)

characteristic waste—Solid waste that is classified as hazardous waste because it exhibits any of the following properties or "characteristics": ignitability, corrosivity, reactivity, or toxicity, as described in 40 CFR 261.20 through 40 CFR 261.24 and Title 6 of the New York Code of Rules and Regulations Subpart 371.3 (6 NYCRR 371.3). (Also see hazardous waste, solid waste, and waste characterization.)

characterization—The determination of waste composition and properties, whether by review of process knowledge, nondestructive examination or assay, or sampling and analysis, generally done for the purpose of determining appropriate storage, treatment, handling, transport, and disposal requirements.

clay—The name for a family of finely crystalline sheet silicate minerals that commonly form as a product of rock weathering. Also, any particle smaller than or equal to about 0.002 millimeters (0.00008 inches) in diameter.

collective dose—The sum of the individual doses received in a given period of time by a specified population from exposure to a specified source of radiation. Collective dose is expressed in units of person-rem or person-sieverts.

committed dose equivalent—The radiation dose to some specific organ or tissue in the body after the intake of radioactive material. The period examined is commonly 50 years. Committed dose equivalent is expressed in units of rem or sieverts.

committed effective dose equivalent—The radiation dose obtained by multiplying committed dose equivalents (see committed dose equivalent) by weighting factors (applicable to the specific organ or tissue that is irradiated) and summing the resulting products. The period examined is commonly 50 years. Committed effective dose equivalent is expressed in units of rem or sieverts.

communities—Assemblage of plants and animals (dominated by one to a few species) that live in the same environment and that are mutually sustaining and interdependent.

concentration—The quantity of a substance in a unit quantity of a sample (e.g., milligrams per liter or micrograms per kilogram).

construction and demolition debris—Discarded nonhazardous material including solid, semisolid, or contained gaseous material resulting from construction, demolition, industrial, commercial, mining, and agricultural operations and from community activities. The category does not include source, special nuclear, or byproduct material as defined by the Atomic Energy Act (Title 42 of the *United States Code* Section 2011 et seq. [42 U.S.C. 2011 et seq.]).

contact-handled waste—Radioactive waste or waste packages whose external dose rate is low enough to permit contact handling by humans during normal waste management activities. "Contact-handled transuranic waste" means transuranic waste with a surface dose rate not greater than 200 millirem per hour. (Also see remote-handled waste.)

contamination—Unwanted chemical elements, compounds, or radioactive material on environmental media (e.g., soil, water, and air), structures (e.g., buildings), equipment, or personnel.

contour—Line connecting points of equal elevation on a map.

contour interval—The elevation difference between two adjacent contour lines.

creep—The slow mass movement of soil or rock down slopes (e.g., landslide), primarily driven by gravity, but facilitated by saturation with water and alternate freezing and thawing.

cultural resources—A prehistoric or historic district, site, building, structure, or object considered to be important to a culture, subculture, or community for scientific, traditional, religious, or other reasons. Usually divided into three major categories: prehistoric and historic archaeological resources, architectural resources, and traditional cultural resources.

curie—The basic unit to describe the intensity of radioactivity in a sample of material, equal to 37 billion disintegrations per second. Also, a quantity of any radionuclide or mixture of radionuclides that decays at a rate of 37 billion disintegrations per second.

decommissioning—Removing facilities such as processing plants, waste tanks, and burial grounds from service and reducing or stabilizing radioactive contamination. Includes the following concepts: the decontamination, dismantling, and return of an area to its original condition without restrictions on use or occupancy; partial decontamination; isolation of remaining residues; and continued surveillance and restrictions on use or occupancy.

decontamination—The actions taken to reduce or remove chemical or radioactive substances from environmental media (e.g., soil, water, and air), structures (e.g., buildings), equipment, or personnel. Radioactive decontamination may be accomplished by washing, chemical action, mechanical cleaning, or other techniques.

defense waste—Nuclear waste deriving from the manufacture of nuclear weapons and the operation of naval reactors. Associated activities, such as the research carried on in weapons laboratories, also produce defense waste.

deterministic—Referring to events that have no random or probabilistic aspects but proceed in a fixed, predictable fashion.

direct employment—As used in this EIS, direct employment refers to those jobs at the Western New York Nuclear Service Center (WNYNSC).

disposal—As used in this EIS, emplacement of waste so as to ensure isolation from the biosphere with no intent of retrieval, and requiring deliberate action to gain access after emplacement.

disposal area—A place for permanently isolating unwanted materials (e.g., radioactive waste) from the environment.

disposal facility—A natural and/or manmade structure in which waste is disposed. (Also see disposal.)

DOE Orders—Requirements internal to the U.S. Department of Energy (DOE) that establish DOE policy and procedures, including those for compliance with applicable laws.

dose (radiological)—The radioactive energy that is absorbed by one gram of material that has been irradiated. Dose measures include dose equivalent, effective dose equivalent, committed effective dose equivalent, or committed equivalent dose as defined elsewhere in this glossary.

***dose equivalent*—**A measure of radiological dose that correlates with biological effect on a common scale for all types of ionizing radiation. Defined as a quantity equal to the absorbed dose in tissue multiplied by a quality factor (the biological effectiveness of a given type of radiation) and all other necessary modifying factors at the location of interest. Dose equivalent is expressed in rems or sieverts.

dose rate—The radiation dose delivered per unit time (e.g., rad per year, millirad per year).

drainage basin—A region or area bounded by a drainage divide and occupied by a drainage system; specifically, the tract of country that gathers water originating as precipitation and contributes to a particular stream channel or system of channels or a lake, reservoir, or other body of water.

drainage divide—A boundary line, such as along a topographic ridge, that separates two adjacent drainage basins.

drinking-water standards—Prescriptive limits on the maximum contaminant level that may be in water for it to be considered safe for human consumption.

effective dose equivalent—The dose value obtained by multiplying the dose equivalents received by specified tissues or organs of the body by the appropriate weighting factors applicable to the tissues or organs irradiated, and then summing all of the resulting products. It includes the dose from radiation sources internal and external to the body. The effective dose equivalent is expressed in units of rems or sieverts. (Also see committed effective dose equivalent.)

endangered species—Any species which is in danger of extinction throughout all or a significant portion of its range from natural or manmade changes in the environment. The list of endangered species can be found in 50 CFR 17.11 (wildlife), 50 CFR 17.12 (plants), 50 CFR 222.23(a) (marine organisms), and 6 NYCRR Part 182.

engineered barrier (controls)—Physical controls designed to isolate or contain wastes or hazardous materials (e.g., caps, entombment of facilities, contaminant immobilization).

environmental impact statement (EIS)—The detailed written statement that is required by section 102(2)(c) of the National Environmental Policy Act (NEPA) for a proposed major Federal action significantly affecting the quality of the human environment. A DOE EIS is prepared in accordance with applicable requirements of the Council on Environmental Quality NEPA regulations in 40 CFR 1500-1508, and DOE NEPA regulations in 10 CFR 1021. The statement includes, among other information, discussions of the environmental impacts of the Proposed Action and all reasonable alternatives, adverse environmental effects that cannot be avoided should the proposal be implemented, the relationship between short-term uses of the human environment and enhancement of long-term productivity, and any irreversible and irretrievable commitments of resources. A New York State EIS is prepared in accordance with the Environmental Conservation Law Sections 3-301(1)(b), 3-30301(2)(m) and 8-0113, as well as the 6 NYCRR 617 State Environmental Quality Review Act (SEQR) regulations.

environmental justice—The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including racial, ethnic, or socioeconomic groups, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of Federal, state, local, and Tribal programs and policies. Executive Order 12898 directs Federal agencies to make achieving environmental justice part of their missions by identifying and addressing disproportionately high and adverse effects of agency programs, policies, and activities on minority and low-income populations.

erosion— Natural processes that include weathering, dissolution, abrasion, corrosion, and transportation, by which material is worn away from the Earth's surface.

exposure—The amount of radiation or pollutant present in a given environment that represents a potential health threat to living organisms.

external accident—Accidents initiated by manmade energy sources not associated with operation of a given facility. Examples include airplane crashes, induced fires, and transportation accidents adjacent to a facility.

fault (geologic)—Fracture in the Earth's crust accompanied by displacement of one side of the fracture with respect to the other.

fission—The splitting of a nucleus into at least two other nuclei (elements) and the release of a relatively large amount of energy.

fission products—Nuclei (new elements) formed from the fission of heavy elements.

floodplain—That portion of a river valley, adjacent to the river channel, that is built of sediments during the present regimen of the stream and that is covered with water when the river overflows its banks at flood stages.

gamma-emitter—A radioactive substance that decays by releasing gamma radiation.

gamma radiation—High-energy, short-wavelength electromagnetic radiation emitted from the nucleus of an atom during radioactive decay. Gamma radiation frequently accompanies alpha and beta emissions and always accompanies fission. Gamma rays are very penetrating and are best stopped or shielded by dense materials, such as lead or depleted uranium. Gamma rays are similar to x-rays, but are usually more energetic than x-rays. (Also see alpha radiation and beta radiation.)

gantry—A platform made to carry a traveling crane and supported by towers or side frames running on parallel tracks.

geologic repository—A system that is intended to be used for, or may be used for, the disposal of radioactive waste or spent nuclear fuel in excavated geologic media. A geologic repository includes (a) the geologic repository operations area, and (b) the portion of the geologic setting that provides isolation. DOE has been studying Yucca Mountain in Nevada as the location of a geologic repository. However, the Administration intends to terminate further development of the proposed geologic repository at Yucca Mountain. The Administration intends to convene a "blue ribbon commission" to evaluate alternative approaches for meeting these obligations, and to provide recommendations that will form the basis for working with Congress to revise the statutory framework for managing and disposing of spent nuclear fuel and high-level radioactive waste.

gradient—The elevation change within a given distance, particularly of a stream or a land surface.

gray—The SI (International System of Units) unit of absorbed dose. One gray is equal to an absorbed dose of 1 joule per kilogram (1 gray is equal to 100 rad). (The joule is the SI unit of energy.) (See absorbed dose.)

Greater-Than-Class C (GTCC)—Low-level radioactive waste that exceeds the concentration limits established for Class C waste in 10 CFR 61.55. Greater-Than-Class C waste and transuranic waste can represent similar wastes. Waste containing transuranics that may be Greater-Than-Class C by U.S. Nuclear Regulatory Commission (NRC) classification could be considered transuranic by DOE.

groundwater—Water below the ground surface in a zone of saturation. *Related definition:* Subsurface water is all water that exists in the voids found in soil, rocks, and sediment below the land surface, including soil moisture, capillary fringe water, and groundwater. That part of subsurface water in voids completely saturated with water is called groundwater. Subsurface water above the groundwater table is called vadose water.

habitat—The environment or place where a plant or animal naturally or normally grows or lives (includes soil, water, climate, other organisms, and communities.)

half-life (radiological)—The time in which one-half of the atoms of a particular radionuclide disintegrate into another nuclear form. Half-lives for specific radionuclides vary from millionths of a second to billions of years.

Hazard Index—The ratio of the potential exposure to a substance and the highest exposure level at which no adverse effects are expected. If the Hazard Index is calculated to be less than 1, then no adverse health effects are expected as a result of exposure. If the Hazard Index is greater than 1, then adverse health effects are possible.

hazardous chemical—Any chemical that is a physical hazard or a health hazard as defined under the Occupational Safety and Health Act and the Emergency Planning and Community Right-to-Know Act.

hazardous constituent—A constituent listed in 40 CFR 261, Appendix VII or VIII, that may cause a waste to be listed as a Resource Conservation and Recovery Act (RCRA) hazardous waste. "Hazardous waste constituent" means a constituent listed by the New York State commissioner in 6 NYCRR 371.4, or a constituent listed in section 371.3(e). This EIS uses the term "hazardous constituent" to encompass both the U.S. Environmental Protection Agency (EPA) and New York State definitions.

hazardous waste—A category of waste regulated under RCRA. To be considered hazardous, a waste must be a solid waste under RCRA and must exhibit at least one of four characteristics described in 40 CFR 261.20-24; 6 NYCRR 371.1(d)(1), 371.3 (ignitability, corrosivity, reactivity, or toxicity) or be specifically listed by EPA in 40 CFR 261.3-33, or by the State of New York in 6 NYCRR 371.4. Toxicity is determined by the Toxicity Characteristic Leaching Procedure method as given in 40 CFR 261.24; 6 NYCRR 371.3(e). (Also see characteristic waste, RCRA, and solid waste.) (See hazardous constituent.)

head (hydraulic)—The driving force for fluid (water) flow. The head is typically measured in pounds per square inch or feet of water.

high-efficiency particulate air (HEPA) filter—An air filter capable of removing at least 99.97 percent of particles 0.3 micrometers (about 0.00001 inch) in diameter. These filters include a pleated fibrous medium (typically fiberglass) capable of capturing very small particles.

high-level waste or high-level radioactive waste—As used in this EIS, the high-level radioactive waste which was produced by the reprocessing of spent nuclear fuel at WNYNSC. This waste includes both liquid wastes, which are produced directly in reprocessing, dry solid material derived from such liquid waste, and such other material as the NRC designates as high-level radioactive waste for the purposes of protecting the public health and safety (West Valley Demonstration Project Act, Public Law 96-368, 94 Stat. 1347). Also see the definition of high-level radioactive waste in the Nuclear Waste Policy Act of 1982, as amended (Public Law 97-425, 96 Stat. 2201).

high-level radioactive waste solidification—See solidification (of high-level radioactive waste).

hydraulic conductivity—A measure of the rate at which water can move through a permeable medium (e.g., soil) at a specified pressure and temperature.

hydraulic gradient—The change in elevation of the water table over a distance, resulting in groundwater movement.

hydric—Characterized by or requiring an abundance of moisture.

hydrogeology—The study of the occurrence, distribution, and chemistry of all water, including groundwater, surface water, and rainfall.

hydrology—The study of water, including groundwater, surface water, and rainfall.

hydrophytic—A property of a plant that can grow in water or in soil too water-logged for most plants to survive.

industrial waste—As used in this EIS, nonradiological and nonhazardous solid, or semisolid material generated from site cleanup activities.

in-ground structures—As used in this EIS, manmade structures that are set in the ground, but are not underground (e.g., lagoons, pits, storage tanks).

in situ—In the natural or original position.

institutional controls—Measures taken by Federal or state organizations to maintain waste management facilities safely for a period of time. The measures, active or passive, may include site access control, site monitoring, facility maintenance, and erosion control.

intensity (of an earthquake)—A measure of the effects (due to ground shaking) of an earthquake at a particular location, based on observed damage to structures built by humans, changes in the Earth's surface, and reports of how people felt the earthquake. Earthquake intensity is measured in numerical units on the Modified Mercalli scale. (Also see Modified Mercalli Intensity Scale.)

interim status facility (under RCRA)—A hazardous waste management facility (i.e., treatment, storage, or disposal facility) subject to RCRA permit requirements. These facilities have been issued an interim status and are temporarily allowed to operate while awaiting a permanent permit. Such facilities are required to meet the interim status standards described in 40 CFR 265 until certification of final closure or, if the facility is subject to postclosure requirements, until postclosure responsibilities are fulfilled.

inventory, radionuclide—The total amount (by volume and/or activity) of radioactive material in a container, building, or disposal facility.

ion exchange— A unit physiochemical process that removes anions and cations, including radionuclides, from liquid streams (usually water) for the purpose of purification or decontamination.

isotherm—A line on a map or chart of the Earth's surface connecting points having the same temperature.

isotope—Any of two or more variations of an element in which the nuclei have the same number of protons (i.e., the same atomic number) but different numbers of neutrons so that their atomic masses differ. Isotopes of a single element possess almost identical chemical properties, but often different physical properties (e.g., carbon-12 and -13 are stable, but carbon-14 is radioactive).

isotropic—Exhibiting properties with the same values when measured along axes in all directions.

knickpoint—A point of abrupt vertical change in the elevation of a stream or its valley.

latent cancer fatality (LCF)—A statistically based estimate of deaths from cancer resulting from, and occurring some time after, exposure to ionizing radiation or other carcinogens.

latent cancer morbidity—A statistically based estimate of cancer incidences from, and occurring some time after, exposure to ionizing radiation or other carcinogens.

leachate—The solution formed when a liquid has percolated through a substance (e.g., the solution formed when water percolates through buried waste).

license termination rule—Refers to the final rule on "Radiological Criteria for License Termination," published by the NRC as Subpart E to 10 CFR 20.

long-term storage—As used in this EIS (and distinct from the regulatory definition of storage), the storage of hazardous waste: (a) on site (a generator site) for a period of 90 days or greater, other than in a satellite accumulation area, or (b) off site in a properly managed treatment, storage, or disposal facility for any period of time.

long-term stewardship—Activities necessary to ensure protection of human health and the environment following closure of a site. Long-term stewardship includes engineered and institutional controls designed to contain or to prevent exposure to residual contamination and waste such as monitoring and maintenance activities, record-keeping activities, inspections, groundwater monitoring and treatment, access control, posting signs, and periodic performance reviews.

low-level radioactive waste or low-level waste (LLW)—Waste that contains radioactivity and is not classified as high-level radioactive waste, transuranic waste, or spent nuclear fuel, or the tailings or wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material (DOE Manual 435.1-1; 10 CFR 20.1003). In accordance with NRC regulations in 10 CFR 61.55, low-level radioactive waste is further classified into Class A, Class B, and Class C low-level radioactive waste. Low-level radioactive waste may also be categorized as low-specific-activity waste for the purposes of transportation analyses. Low-specific-activity wastes have low specific activity, are nonfissile, and meet certain regulatory exceptions and limits. Low-specific-activity wastes may be transported in large bulk containers.

maximally exposed individual (MEI)—A hypothetical individual whose location and habits are deliberately chosen to result in the highest total radiological or chemical exposure (and thus dose) from a particular source for all exposure routes (e.g., inhalation, ingestion, direct exposure).

maximum contaminant level (MCL)—Under the Safe Drinking Water Act, the maximum permissible concentration of a specific constituent in drinking water that is delivered to any user of a public water system that serves 15 or more connections and 25 or more people. The standards set as maximum contaminant levels take into account the feasibility and cost of attaining the standard.

millirem—One thousandth of a rem. (Also see rem.)

mixed low-level radioactive waste—Low-level radioactive waste that also contains hazardous components regulated under RCRA (42 U.S.C. 6901 et seq.) and 6 NYCRR 381.17.

mitigation—(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 the impact over time by preservation and maintenance operations during the life of an action; or (5) compensating for an impact by replacing or providing substitute resources or environments.

Modified Mercalli Intensity Scale—The Modified Mercalli Intensity Scale is a standard of relative measurement of earthquake intensity developed to fit construction conditions in most of the United States. It is a 12-step scale, with values from I (not felt except by a very few people) to XII (damage total). A Modified Mercalli Intensity is a numerical value on the Modified Mercalli Scale. (See intensity [of an earthquake].)

morphology—The observation of the form of lands.

nanocurie—One billionth of a curie. (Also see curie.)

natural phenomena accidents—Accidents that are initiated by natural phenomena such as earthquakes, tornadoes, and floods.

nuclide—An atomic nucleus specified by its atomic weight, atomic number, and energy state; a radionuclide is a radioactive nuclide.

occupational dose—Whole-body radiation dose received by workers participating in a given task or over the course of employment.

offsite—Outside of the WNYNSC boundary.

on-premises—As used in this EIS, on the West Valley Demonstration Project Premises.

onsite—Within the WNYNSC boundary.

orphan waste—Waste that cannot currently be disposed of in an established or planned permanent disposal facility because the path forward for treatment and disposal has not yet been defined. Non-defense transuranic waste, Greater-Than-Class C waste, and commercial Class B and Class C wastes are current examples of WNYNSC orphan waste.

permeability—The rate at which liquids or gasses pass through materials in a specified direction. In hydrology, it is used to describe the capacity of a rock, sediment, or soil for transmitting groundwater. Permeability depends on the size and shape of the pores between soil particles and how they are interconnected.

person-rem—A unit of collective radiation dose applied to populations or groups of individuals (see collective dose); that is, a unit for expressing the dose when summed across all persons in a specified population or group. One person-rem equals 0.01 person-sieverts.

picocurie—One trillionth (10^{-12}) of a curie. (Also see curie.)

piezometer—An instrument used for measuring the pressure of groundwater.

piling—A cylindrical or flat member of wood, steel, or concrete often tapered at the lower end, hammered vertically into soil to form part of a foundation or retaining wall.

pollution prevention—The use of materials, processes, and practices that reduce or eliminate the generation and release of pollutants, contaminants, hazardous substances, and waste into land, water, and air. For DOE, this includes recycling activities.

polychlorinated biphenyls (PCBs)—A group of toxic, persistent chemicals used for insulating purposes in electrical transformers and capacitors and in gas pipeline systems. Certain polychlorinated biphenyls are designated as hazardous waste according to 6 NYCRR 371.3.

population dose—See collective dose.

porosity—The volume of void space (air) in a soil sample divided by the bulk volume of the entire soil sample.

probable maximum flood (PMP)—The flood that may be expected from the most severe combination of critical meteorological and hydrologic conditions that are reasonably possible in a particular drainage area.

public—Anyone who may be impacted by, interested in, or aware of the cleanup operations at WNYNSC. With respect to accidents analyzed in this environmental impact statement, the public includes anyone outside the boundary of WNYNSC at the time of the accident.

radiation absorbed dose (rad)—The basic unit of dose equal to the amount of energy from radiation imparted in an absorbing medium. A dose of one rad is the absorption of 0.01 joule per kilogram of absorbing material.

radioactive decay—The decrease in the amount of any radioactive material with the passage of time, due to the spontaneous emission from the atomic nuclei of either alpha or beta particles, often accompanied by gamma radiation. (Also see half-life.)

radioactive waste—In general, waste that is managed for its radioactive content. Waste material that contains source, special nuclear, or by-product material is subject to regulation as radioactive waste under the Atomic Energy Act. (Also see specific radioactive waste definition: Greater-Than-Class C, high-level radioactive waste, low-level radioactive waste, transuranic waste.)

radioactivity—*Defined as a process:* The spontaneous transformation of unstable atomic nuclei, usually accompanied by the emission of ionizing radiation. *Defined as a property:* The property of unstable nuclei in certain atoms to spontaneously emit ionizing radiation during nuclear transformations.

radiological survey—The evaluation of the radiation hazard accompanying the production, use, or existence of radioactive materials under a specific set of conditions. Such evaluation customarily includes a physical survey of the disposition of materials and equipment, measurements, or estimates of the levels of radiation that may be involved, and a sufficient knowledge of processes affecting these materials to predict hazards resulting from unexpected or possible changes in materials or equipment.

radionuclide—An unstable element that decays or disintegrates spontaneously, emitting radiation.

Record of Decision (ROD)—A concise public document that records a Federal agency's decision(s) concerning a Proposed Action for which the agency has prepared an EIS. The ROD is prepared in accordance with the requirements of the Council on Environmental Quality NEPA regulations (40 CFR 1505.2). A ROD identifies the alternatives considered in reaching the decision, the decision made, the environmentally preferable alternative(s), factors balanced by the agency in making the decision, whether all practicable means to avoid or minimize environmental harm have been adopted, and if not, why they were not. (Also see environmental impact statement.)

region of influence (ROI)—As used in this EIS, the region within a 80-kilometer (50-mile) radius from WNYNSC. As used in the socioeconomic analysis, a 50-kilometer (35-mile) radius from WNYNSC.

release fraction—The portion of the total inventory of radioactivity that could be released to the atmosphere in a given accident.

rem—A unit of radiation dose that reflects the ability of different types of radiation to damage human tissues and the susceptibility of different tissues to the damage. Rem is a measure of effective dose equivalent.

remote-handled waste—In general, refers to radioactive waste that requires special shielding or other means of protecting workers from unnecessary exposure. "Remote-handled transuranic waste" means transuranic waste with a dose rate of 200 millirem per hour or more at the surface of the waste package. (See contact-handled waste.)

repository—See geologic repository.

reprocessing (of spent nuclear fuel)—Processing of reactor-irradiated nuclear material (primarily spent nuclear fuel) to recover fissile and fertile material, in order to recycle such materials. Historically, reprocessing has involved aqueous chemical separations of elements (typically uranium or plutonium) from undesired elements in the fuel.

resins—As used in this EIS, material used to absorb contaminants.

Resource Conservation and Recovery Act (RCRA)—A law that gives EPA and authorized states the authority to control hazardous waste from "cradle to grave" (i.e., from the point of generation to the point of ultimate disposal), including its minimization, generation, transportation, treatment, storage, and disposal. RCRA also sets forth a framework for the management of nonhazardous solid wastes. (Also see hazardous waste and solid waste.)

retrieval—The process of recovering wastes that have been stored or disposed of on site so they may be appropriately characterized, treated, and disposed of.

rip-rap—An assemblage of stones, rocks, or chunks of concrete that are placed on slope embankments to prevent erosion.

risk—The probability of a detrimental effect on life, health, property, and/or the environment from exposure to a hazard. Risk is often expressed quantitatively as the probability of an adverse event occurring multiplied by the consequence of that event (i.e., the product of these two factors). However, separate presentation of probability and consequence is often more informative.

runoff—That portion of precipitation, snow melt, or irrigation water that moves over the land surface as a sheet or channelized flow into surface waters (streams).

sanitary landfill—As defined in this EIS, a disposal facility that accepts nonhazardous and nonradioactive industrial waste. (Also see industrial waste.)

saturated zone—That part of the Earth's crust in which all naturally occurring voids are filled with water.

scientific notation—A notation adopted by the scientific community to deal with very large and very small numbers. Scientific notation uses a number times 10 and either a positive or negative exponent to show how many places to the left or right the decimal place has been moved. For example, in scientific notation, 120,000 would be written as 1.2×10^{5}, and 0.000012 would be written as 1.2×10^{-5}.

seep—A spot where groundwater discharges onto the land surface, often forming the source of a small stream.

seismicity—The study of the worldwide distribution of earthquakes; primarily related to location, size, and probability of occurrence.

sheet erosion—Soil particles that are removed in a fairly uniform layer by a continuous film of water that is moving over land surfaces.

shielding—Any material or obstruction used to absorb radiation in order to protect personnel or equipment.

sievert—The SI unit of radiation dose equivalent. The dose equivalent in sieverts equals the absorbed dose in grays multiplied by the appropriate quality factor (1 sievert is equal to 100 rem). (See gray.)

silt—A sedimentary material consisting of fine mineral particles, intermediate in size between sand and clay. In general, soils categorized as silt show greater rates of erosion than soils categorized as sand.

slump block—A mass of soil that slides down a bank as a single unit. Slump blocks form when water moves into deep fractures within banks, causes an increase in soil pore pressures, and reduces the strength of the soil.

slumping—The slipping of a mass of rock or soil, moving as a unit, down a slope or embankment.

slurry wall—An underground wall made of a watery mixture of insoluble matter (e.g., clay) used for preventing groundwater flow in a certain direction.

sole-source aquifer—A designation granted by EPA and authorized states when groundwater from a specific aquifer supplies at least 50 percent of the drinking water for the area overlying the aquifer. Sole-source aquifers have no alternative source or combination of sources that could physically, legally, and economically supply all those who obtain their drinking water from the aquifer. Sole-source aquifers are protected from Federal financially-assisted activities determined to be potentially unhealthy for the aquifer.

solid waste—1. In general, solid wastes are nonliquid, nonsoluble discarded materials ranging from municipal garbage to industrial wastes that contain complex and sometimes hazardous substances. Solid wastes include sewage sludge, agricultural refuse, demolition wastes, and mining residues. 2. For purposes of RCRA regulation, solid waste is any garbage; refuse; sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility; and other discarded material. Solid waste includes solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations and from community activities. Solid waste does not include solid or dissolved material in domestic sewage or irrigation return flows or industrial discharges that are point sources subject to permits under Section 402 of the Clean Water Act. Finally, solid waste does not include source, special nuclear, or byproduct material as defined by the Atomic Energy Act. A more detailed regulatory definition of solid waste can be found in 40 CFR 261.2 and 6 NYCRR 360. (Also see hazardous waste and Resource Conservation and Recovery Act.)

solidification (of high-level radioactive waste)—As used in this EIS, the process employed from 1996 to 2000 to vitrify high-level radioactive waste into glass logs by the West Valley Demonstration Project. (Also see vitrification.)

solvents—Liquid chemicals, usually organic compounds, that are capable of dissolving another substance.

source term—The amount of a specific pollutant (e.g., chemical, radionuclide) emitted or discharged to a particular environmental medium (e.g., air, water) from a source or group of sources. It is usually expressed as a rate (i.e., amount per unit time).

special nuclear material (SNM)—A category of material subject to regulation under the Atomic Energy Act, consisting primarily of fissile materials. It is defined to mean plutonium, uranium-233, uranium enriched in the isotopes uranium-233 or -235, and any other material that the NRC determines to be special nuclear material, but it does not include source material.

spent fuel assemblies—Frame-like structures which contain spent nuclear fuel rods.

spent nuclear fuel—Fuel that has been withdrawn from a nuclear reactor following irradiation, the constituent elements of which have not been separated.

stabilization—Treatment of waste or a waste site to protect the biosphere from contamination.

stakeholder—Any person or organization with an interest in or affected by future activities impacting cleanup of the site. Stakeholders may include representatives from Federal and state agencies, Congress, American Indian Tribal governments, unions, educational groups, industry, environmental groups, other groups, and members of the general public.

State Environmental Quality Review Act (SEQR)— A law promulgated by the State of New York, and prescribed by 6 NYCRR 617 that requires that all state and local agencies determine whether the actions they directly undertake, fund, or approve may have a significant impact on the environment and, if it is determined that the action may have a significant adverse impact, prepare or require the preparation of an EIS.

stochastic (effects)—Effects that occur by chance. In the radiation protection context, the main stochastic health effects from exposure to high levels of radiation are cancer and genetic effects.

storage (waste)—As used in this EIS, the collection and containment of waste in a retrievable manner, requiring surveillance and institutional control, as not to constitute disposal.

storage facility (RCRA)—A building used for storing radioactive or hazardous wastes for greater than 90 days.

stream downcutting—The abrasion and erosion of a streambed by debris and moving water.

stream terrace—Indicated by an abrupt vertical or definite sloping rise in elevation uphill/landward, identifying the outer edge of the floodplain. It is more or less flat or lightly rolling land parallel to the stream channel and very rarely or never floods.

succession—Relatively orderly, predictable, and progressive replacement of one plant community (called a stage) by another until a relatively stable climax community occupies the site (e.g., abandoned farm field to mature forest).

sump—A pit or reservoir serving as a drain or receptacle for liquids.

supernatant—The clear liquid overlying material that has settled, precipitated out of solution, or been separated by centrifugation.

tectonic—Relating to the deformation of the crust of the Earth.

tensile strength—The greatest longitudinal stretching stress a substance can bear without tearing.

thalweg—The line defined by the series of lowest points along a stream channel.

till—Earth material that was deposited by glaciers, consisting of clay, silt, sand, gravel, cobbles, and boulders intermingled.

topographic map—A map showing the relief of the land surface generally by means of contour lines.

transuranic—Refers to any artificially made, radioactive element whose atomic number is higher than that of uranium (atomic number 92), including neptunium, plutonium, americium, and curium.

transuranic waste—Radioactive waste that is not classified as high-level radioactive waste and that contains more than 100 nanocuries per gram of alpha-emitting transuranic isotopes with half-lives greater than 20 years (40 CFR 191).

tritium—A beta-emitting radioactive isotope of hydrogen whose nucleus contains one proton and two neutrons. Because it is chemically identical to natural hydrogen, tritium can easily be taken into the body by any ingestion pathway. The symbols for tritium are T and ^{3}H; the latter symbol is more frequently encountered.

tumulus—An artificial hillock or mound.

vadose zone (unsaturated zone)—The zone between the land surface and the water table (saturated zone); also called the zone of aeration.

vermiculite—A lightweight, highly water-absorbent material made of various micaceous minerals that are hydrous silicates.

vitrification—A waste treatment process that encapsulates or immobilizes radioactive wastes in a glassy matrix (e.g., borosilicate glass) to prevent them from reacting in disposal sites; involves adding chemicals and waste to a heated vessel and melting the mixture into a glass that is then poured into a canister.

waste characterization—The identification of waste composition and properties by reviewing process knowledge, nondestructive examination, nondestructive assay, or sampling and analysis. Characterization provides the basis for determining appropriate storage, treatment, handling, transportation, and disposal requirements.

Waste Incidental to Reprocessing—Waste resulting from reprocessing spent nuclear fuel that is not highly radioactive and does not need to be disposed of in a geologic repository in order to manage the risk that it poses.

Waste Incidental to Reprocessing Process—The process defined in Section II of DOE's *Radioactive Waste Management Manual* (DOE M 435.1-1) for determining whether spent nuclear fuel reprocessing plant wastes may be managed as Waste Incidental to Reprocessing. DOE Waste Incidental to Reprocessing determinations for wastes generated by West Valley Demonstration Project activities are subject to review by the NRC.

Waste Management Area (WMA)—For the purposes of this EIS, a geographic unit on site consisting of facilities and the surrounding grounds, including soil, piping, tanks, stored or buried waste, other underlying materials, and associated soil or groundwater contamination within a geographical boundary. There are 12 WMAs discussed in this EIS.

wetlands—An area that is inundated or saturated by surface or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in those conditions, including swamps, marshes, bogs, and similar areas.

wind rose—A circular diagram showing, for a specific location, the percentage of the time the wind is from each compass direction. A wind rose is used in assessing consequences of airborne releases and shows the frequency of different wind speeds for each compass direction.

worker—Any worker whose day-to-day activities are controlled by process safety management programs and a common emergency response plan associated with a facility or facility area. This definition includes any individual within a facility/facility area who would participate in or support activities required for implementation of the alternatives.

zeolite—Any of various hydrous silicates utilized for their adsorbent and catalytic properties. Inorganic ion-exchange materials used for water purification or water softening are often zeolites.