CHAPTER 6
GLOSSARY

6.0 GLOSSARY

3013 container—A container that meets the specifications in DOE Standard 3013, *Stabilization, Packaging, and Storage of Plutonium-Bearing Materials*, DOE-STD-3013-2012.

accident—An unplanned event or sequence of events resulting in undesirable consequences, such as the release of radioactive or hazardous material to the environment.

acute exposure—A single, short-term exposure to radiation, a toxic substance or other stressors that may result in biological harm. Pertaining to radiation, the exposure incurred during and shortly after a radiological release. Acute exposure involves the absorption or intake of a relatively large amount of radiation or radioactive material.

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 for which emissions or atmospheric concentrations are regulated or for which maximum guideline levels have been established due to potential harmful effects on human health and welfare.

Air Quality Control Region—An area designated by a state or the U.S. Environmental Protection Agency for the attainment and maintenance of National Ambient Air Quality Standards.

airborne release fraction (ARF)—The fraction of material at risk that becomes airborne due to an accident.

alternative—With respect to surplus plutonium disposition, a discrete sequence of disposition actions carried out in a group of facilities.

alternate feedstock—Surplus non-pit plutonium in, or capable of being converted into, an oxide form, which, after processing to remove impurities and transformed into an oxide, may be fabricated into mixed oxide fuel.

ambient air—The atmosphere external to buildings around humans, other animals, plants, and structures.

ambient air quality standards—Regulations prescribing the levels of airborne pollutants that may not be exceeded during a specified time within a defined area. (See National Ambient Air Quality Standards.)

amended Record of Decision—A modification to some aspect of a decision published in an earlier Record of Decision. The environmental impacts of the modification may be evaluated in a supplement analysis or in a supplemental or new environmental impact statement. (See Record of Decision.)

anadromous—Migrating from saltwater to freshwater for the purpose of spawning.

anthropogenic—Caused or produced by humans.

aquifer—A body of rock or sediment that is capable of transmitting groundwater and yielding usable quantities of water to wells or springs.

aquitard—A less-permeable, or impermeable, geologic unit in a stratigraphic sequence. Aquitards separate aquifers.

archaeological site—Any location where humans have altered the terrain or discarded artifacts during prehistoric or historic times.

artifact—An object produced or shaped by humans and of archaeological or historical interest.

as low as reasonably achievable (ALARA)—An approach to radiation protection to manage and control worker and public exposures (both individual and collective) and releases of radioactive material to the environment to as far below applicable limits as social, technical, economic, practical, and public policy considerations permit. ALARA is not a dose limit, but a process for minimizing doses to as far below limits as is practicable.

attainment area—An area that the U.S. Environmental Protection Agency has designated as being in compliance with one or more of the National Ambient Air Quality Standards (NAAQS) for sulfur dioxide, nitrogen dioxide, carbon monoxide, ozone, lead, and particulate matter. An area may be in attainment for some pollutants but not for others. (See National Ambient Air Quality Standards, nonattainment area, and particulate matter.)

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).

badged worker—A worker who has the potential to be exposed to occupational radiation, and is equipped with a dosimeter to measure his/her dose.

baseline—For National Environmental Policy Act evaluations, baseline is defined as the existing environmental conditions against which impacts of the Proposed Action and its alternatives can be compared.

basin—Geologically, a circular or elliptical downwarp in whose center younger beds occur. Topographically, a depression into which water from the surrounding area drains.

beyond-design-basis accident—This term is used as a technical way to discuss accident sequences that are possible but were not fully considered in the design process because they were judged to be too unlikely. (In that sense, they are considered beyond the scope of design-basis accidents [e.g., fire, earthquake, spill, explosion] that a nuclear facility must be designed and built to withstand.) As the regulatory process strives to be as thorough as possible, "beyond-design-basis" accident sequences are analyzed to fully understand the capability of a design. These accidents are typically very low-probability, but high-consequence events. (See design-basis accident.)

calcareous—Containing calcium carbonate (e.g., calcite or limestone).

cancer—The name given to a group of diseases characterized by uncontrolled cellular growth, with the cells having invasive characteristics such that the disease can be transferred from one organ to another.

can-in-canister—An approach to plutonium immobilization wherein cans of either ceramic or glass forms containing plutonium are encapsulated within canisters of high-level radioactive waste glass.

canyon—As used at the Savannah River Site, a large heavily shielded concrete building containing a remotely operated plutonium and uranium processing facility.

capable fault—In general, "capable fault" means a geologic fault along which it is mechanically feasible for sudden slip (i.e., earth motion) to occur. U.S. Nuclear Regulatory Commission reactor siting regulations define a capable fault as a fault that has exhibited one or more of the following characteristics: (1) movement at or near the ground surface at least once within the past 35,000 years, or movement of a recurring nature within the past 500,000 years; (2) macro-seismicity that has been instrumentally determined with records of sufficient precision to demonstrate a direct relationship with the fault; and/or (3) a structural relationship to a capable fault according to characteristics (1) or (2) such that movement on one could be reasonably expected to be accompanied by movement on the other.

carbon dioxide—A colorless, odorless gas that is a normal component of ambient air and a product of fossil fuel and biomass combustion, animal expiration, the decay of animal or vegetable matter, and industrial processes. It is the principal anthropogenic greenhouse gas that may affect the Earth's radiative balance and is the reference gas against which other greenhouse gases are measured. It is an asphyxiant at concentrations of 10 percent or more and has other health effects with exposure at lower concentrations (e.g., hyperventilation, vision damage, lung congestion, central nervous system injury, abrupt muscle contractions, elevated blood pressure, and/or shortness of breath).

carbon monoxide—A colorless, odorless gas that is toxic, due to the formation of carboxyhemoglobin in the bloodstream, if breathed in high concentrations over an extended period.

carcinogenic—Producing or tending to produce cancer.

Carolina bay—Closed, elliptical depressions capable of holding water that are common to South Carolina. A Carolina bay is a type of wetland. (See wetlands.)

ceramic—Surplus plutonium and other materials processed to form a porcelain end product.

chain reaction—A reaction that initiates its own repetition. In nuclear fission, a chain reaction occurs when a neutron induces a nucleus to fission and the fissioning nucleus releases one or more neutrons, which induce other nuclei to fission.

cladding—The outer metal jacket of a nuclear fuel element or target. It prevents fuel corrosion and retains fission products during reactor operation and subsequent storage, as well as providing structural support. Zirconium alloys, stainless steel, and aluminum are common cladding materials. In general, a metal coating bonded onto another metal.

***Code of Federal Regulations* (CFR)**—A publication in codified form of all Federal regulations in force.

conceptual design—Efforts to develop a project scope that will meet stipulated program needs; ensure project feasibility and attainable performance goals; develop project criteria and design parameters for all concerned engineering disciplines; and identify applicable codes and standards, quality assurance requirements, environmental studies, construction materials, space allowances, energy conservation features, health and safety safeguards, security requirements, and any essential features of the project. DOE Order 413.3B, *Program and Project Management for the Acquisition of Capital Assets*, defines conceptual design as the exploration of concepts, specifications, and designs for meeting the mission needs, and the development of alternatives that are technically viable, affordable, and sustainable. The conceptual design provides sufficient detail to produce a more refined cost estimate range and to evaluate the merits of the project. See also DOE-STD-1189-2008.

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. (See remote-handled waste.)

conversion—An operation for changing material from one form, use, or purpose to another.

cosmic radiation—A source of natural background radiation that originates in outer space and is composed of penetrating ionizing radiation (both particulate and electromagnetic). The sun and stars send a constant stream of cosmic radiation to Earth, much like a steady drizzle of rain. Differences in elevation, atmospheric conditions, and the Earth's magnetic field can change the amount (or dose) of cosmic radiation that we receive. Secondary cosmic rays, formed by interactions in the Earth's atmosphere, account for about 45 to 50 millirem of the 300 to 360 millirem of natural background radiation that an average individual receives in a year.

Council on Environmental Quality regulations—Regulations at 10 CFR Parts 1500–1508 that direct Federal agencies in complying with the procedures of and achieving the goals of the National Environmental Policy Act.

criteria pollutant—An air pollutant that is regulated under the National Ambient Air Quality Standards. The U.S. Environmental Protection Agency must describe the characteristics and potential health and welfare effects that form the basis for setting, or revising, the standard for each regulated pollutant. Criteria pollutants include sulfur dioxide, nitrogen dioxide, carbon monoxide, ozone, lead, and two size classes of particulate matter (that is less than 10 micrometers [0.0004 inches] in diameter, and that is less than 2.5 micrometers [0.0001 inches] in diameter). New pollutants may be added to, or removed from, the list of criteria pollutants as more information becomes available. (See National Ambient Air Quality Standards.)

critical habitat—Habitat essential to the conservation of an endangered species or threatened species that has been designated as critical by the U.S. Fish and Wildlife Service or the National Marine Fisheries Service following the procedures outlined in the Endangered Species Act and its implementing regulations (50 CFR Part 424). The lists of critical habitats can be found in 50 CFR 17.95 (fish and wildlife), 50 CFR 17.96 (plants), and 50 CFR Part 226 (marine species). (See endangered species and threatened species.)

criticality—The condition in which a system undergoes a sustained nuclear chain reaction.

critical mass—The smallest mass of fissionable material that will support a self-sustaining nuclear chain reaction.

cultural resources—Protected resources, including archaeological sites, architectural features, traditional-use areas, and American Indian sacred sites.

cumulative impacts—Impacts on the environment that result when the incremental impact of a proposed action is added to the impacts from other past, present, and reasonably foreseeable future actions, regardless of what agency (Federal or non-Federal) or person undertakes the other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7).

curie—A unit of radioactivity equal to 37 billion disintegrations per second (i.e., 37 billion becquerels); also a quantity of any radionuclide or mixture of radionuclides having 1 curie of radioactivity.

damage ratio (DR)—The fraction of material at risk exposed to the effects of the energy, force, or stress generated by an event or accident that results in a release of radioactive material.

deactivation—The placement of a facility in a radiologically and industrially safe shutdown condition that is suitable for a long-term surveillance and maintenance phase prior to final decontamination and decommissioning.

decay (radioactive)—The decrease in the amount of any radioactive material with the passage of time, due to spontaneous nuclear disintegration (i.e., emission from atomic nuclei of charged particles, photons, or both).

decibel (dB)—A unit for expressing the relative intensity of sounds on a logarithmic scale from zero for the average least perceptible sound to about 130 for the average level at which sound causes pain to humans. For traffic and industrial noise measurements, the A-weighted decibel (dBA), a frequency-weighted noise unit, is widely used. The A-weighted decibel scale corresponds approximately to the frequency response of the human ear and thus correlates well with loudness.

decommissioning—The process of safely closing a nuclear power plant (or other facility where nuclear materials are handled) to retire it from service after its useful life has ended. This process primarily involves decontaminating the facility to reduce residual radioactivity and then releasing the property for unrestricted or (under certain conditions) restricted use. This often includes dismantling the facility or dedicating it to other purposes. Decommissioning begins after the nuclear fuel, coolant, and radioactive waste are removed.

decontamination—A process used to reduce, remove, or neutralize radiological, chemical, or biological contamination to reduce the risk of exposure. Decontamination may be accomplished by cleaning or treating surfaces to reduce or remove the contamination; filtering contaminated air or water; subjecting contamination to evaporation and precipitation; or covering the contamination to shield or absorb the radiation. The process can also simply allow adequate time for natural radioactive decay to decrease the radioactivity.

depleted uranium—Uranium whose content of the fissile isotope uranium-235 is less than 0.7 percent (by weight) found in natural uranium, so that it contains more uranium-238 than natural uranium.

deposition—In geology, the laying down of potential rock-forming materials—i.e., sedimentation; in atmospheric transport, the settling out on ground and building surfaces of atmospheric aerosols and particles ("dry deposition") or their removal from the air to the ground by precipitation ("wet deposition" or "rainout").

design-basis—For nuclear facilities, information that identifies the specific functions to be performed by a structure, system, or component and the specific values (or ranges of values) chosen for controlling parameters for reference bounds for design. These values may be (1) restraints derived from generally accepted, state-of-the-art practices for achieving functional goals; (2) requirements derived from analysis (based on calculation or experiment) of the effects of a postulated accident for which a structure, system, or component must meet its functional goals; or (3) requirements derived from Federal safety objectives, principles, goals, or requirements.

design-basis accident—An accident postulated for the purpose of establishing functional and performance requirements for safety structures, systems, and components. (See beyond-design-basis accident.)

direct employment—The number of jobs required to implement an alternative.

dismantlement—The process of taking apart a nuclear warhead and removing the subassemblies, components, and individual parts.

disposition—A process of use or disposal of materials that results in the remaining material being converted to a form that is substantially and inherently more proliferation-resistant than the original form.

dissolution—The chemical dispersal (i.e., dissolving) of a solid throughout a liquid medium.

dose—A generic term meaning absorbed dose, dose equivalent, effective dose equivalent, committed dose equivalent, committed effective dose equivalent, or committed equivalent dose. For ionizing radiation, the energy imparted to matter 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. In many publications, the rem is used as an approximation of the rad.

drinking water standard—The level of constituents or characteristics in a drinking water supply specified in regulations under the Safe Drinking Water Act as the maximum permissible.

dunnage—Secured space not occupied by waste or waste containers. Dunnage may be used to keep the entire payload from shifting position during transit or when the payload has reached one or more shipping limits for parameters such as weight, gas generation, radioactivity, or fissile mass.

earnings—Wages and benefits received by workers for services performed.

economic output—A measure of economic activity that represents the market value of all goods and services produced by an activity, whether final or intermediate for further use.

ecosystem—A community of organisms and their physical environment interacting as an ecological unit.

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 rem or sieverts.

effluent—A waste stream flowing into the atmosphere, surface water, groundwater, or soil. Most frequently the term applies to wastes discharged to surface waters.

emission standards—Legally enforceable limits on the quantities or kinds of air contaminants that can be emitted into the atmosphere.

endangered species—Plants or animals that are in danger of extinction through all or a significant portion of their ranges and that have been listed as endangered by the U.S. Fish and Wildlife Service or the National Marine Fisheries Service following the procedures outlined in the Endangered Species Act and its implementing regulations (50 CFR Part 424). The lists of endangered species can be found in 50 CFR 17.11 for wildlife, 50 CFR 17.12 for plants, and 50 CFR 222.23(a) for marine organisms. (See critical habitat and threatened species.)

enriched uranium—Uranium whose content of the fissile isotope uranium-235 is greater than the 0.7 percent (by weight) found in natural uranium. (See highly enriched uranium and low-enriched uranium.)

environmental assessment (EA)—A concise public document that a Federal agency prepares under the National Environmental Policy Act (NEPA) to provide sufficient evidence and analysis to determine whether a proposed agency action would require preparation of an environmental impact statement (EIS) or a finding of no significant impact. A Federal agency may also prepare an EA to aid its compliance with NEPA when no EIS is necessary or to facilitate preparation of an EIS when one is necessary.

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 U.S. Department of Energy (DOE) EIS is prepared in accordance with applicable requirements of the Council on Environmental Quality NEPA regulations in 40 CFR Parts 1500–1508, and DOE NEPA regulations in 10 CFR Part 1021. The statement includes, among other information, discussions of the environmental impacts of the Proposed Action and 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.

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. (See minority population and low-income population.)

ethnohistory—The study of native or non-Western peoples from a combined historical and anthropological viewpoint, using written documents, oral literature, material culture, and ethnographic data.

exclusion area—The area surrounding a reactor in which the reactor licensee has the authority to determine all activities, including exclusion or removal of personnel and property from the area. This area may be traversed by a highway, railroad, or waterway, provided these are not so close to the facility as to interfere with normal operations of the facility and provided appropriate and effective arrangements are made to control traffic on the highway, railroad, or waterway, in case of emergency, to protect the public health and safety. Residence within the exclusion area is normally prohibited. In any event, residents are subject to ready removal in case of necessity. Activities unrelated to operation of the reactor may be permitted in an exclusion area under appropriate limitations, provided that no significant hazards to the public health and safety will result (10 CFR 100.3).

fault—A fracture or a zone of fractures within a rock formation along which vertical, horizontal, or transverse slippage has occurred.

Finding of No Significant Impact (FONSI)—A public document issued by a Federal agency briefly presenting the reasons why an action for which the agency has prepared an environmental assessment has no potential to have a significant effect on the human environment and, thus, will not require preparation of an environmental impact statement. (See environmental assessment and environmental impact statement.)

fissile material—Although sometimes used as a synonym for fissionable material, this term has acquired a more restricted meaning; namely, any material fissionable by low-energy (i.e., thermal or slow) neutrons. Fissile materials include uranium-233 and -235, and plutonium-239 and -241.

fission—A nuclear transformation that is typically characterized by the splitting of the nucleus of a heavy nucleus into at least two other nuclei, the emission of one or more neutrons, and the release of a relatively large amount of energy. Fission of heavy nuclei can occur spontaneously or be induced by neutron bombardment.

fission products—Nuclei (i.e., fission fragments) formed by the fission of heavy elements, in addition to the nuclides formed by the fission fragments' radioactive decay.

floodplains—The lowlands and relatively flat areas adjoining inland and coastal waters and the flood-prone areas of offshore islands. Floodplains include, at a minimum, that area with at least a 1 percent chance of being inundated by a flood in any given year. Such a flood is known as a 100-year flood.

fresh fuel—Reactor fuel that has been manufactured, but not irradiated in a reactor.

frit—Finely ground glass used as feedstock for vitrification.

fuel-grade plutonium—Plutonium with approximately 7 to 19 percent plutonium-240, as defined in the DOE Factsheet, "Additional Information Concerning Underground Nuclear Weapon Test of Reactor-Grade Plutonium."

fugitive emissions—(1) Emissions that do not pass through a stack, vent, chimney, or similar opening where they could be captured by a control device, or (2) any air pollutant emitted to the atmosphere other than from a stack. Sources of fugitive emissions include pumps; valves; flanges; seals; area sources such as ponds, lagoons, landfills, and piles of stored material (such as coal); and road construction areas or other areas where earthwork is occurring.

geology—The earth science that deals with the study of the materials, processes, environments, and history of the Earth, including rocks and their formation and structure.

glass—An amorphous material formed by the melting of silica.

glovebox—Enclosure that separates workers from equipment used to process hazardous material, while allowing the workers to be in physical contact with the equipment; normally constructed of stainless steel, with large acrylic/lead glass windows. Workers have access to equipment through the use of heavy-duty, lead-impregnated rubber gloves, the cuffs of which are sealed in portholes in the glovebox windows.

groundwater—Water below the ground surface in a zone of saturation.

half-life (radiological)—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.

hazardous material—A material, including a hazardous substance as defined by 49 CFR 171.8, that poses a risk to health, safety, and property when transported or handled.

hazardous waste—A category of waste regulated under the Resource Conservation and Recovery Act (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 (i.e., ignitability, corrosivity, reactivity, or toxicity), or be specifically listed by the U.S. Environmental Protection Agency in 40 CFR 261.31–33.

hazardous air pollutants (HAPs)—Air pollutants not covered by ambient air quality standards, but that may present a threat of adverse human health or environmental effects. Those specifically listed in 40 CFR 61.01 are asbestos, benzene, beryllium, coke oven emissions, inorganic arsenic, mercury, radionuclides, and vinyl chloride. More broadly, HAPs are any of the 189 pollutants listed in or pursuant to Section 112(b) of the Clean Air Act. Very generally, HAPs are any air pollutants that may realistically be expected to pose a threat to human health or welfare.

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 inches) in diameter. These filters include a pleated fibrous medium (typically fiberglass) capable of capturing very small particles.

high-level radioactive waste (HLW)—Defined by statute (the Nuclear Waste Policy Act) to mean the highly radioactive waste material resulting from the reprocessing of used nuclear fuel, including liquid waste produced directly in reprocessing and any solid material derived from such liquid waste that contains fission products in sufficient concentrations; and other highly radioactive material that the U.S. Nuclear Regulatory Commission (NRC), consistent with existing law, determines by rule requires permanent isolation. NRC has not defined sufficient concentrations of fission products or identified other highly radioactive material that requires permanent isolation. NRC defines high-level radioactive waste to mean irradiated (used) reactor fuel, as well as liquid waste resulting from the operation of the first cycle solvent extraction system, the concentrated wastes from subsequent extraction cycles in a facility for reprocessing irradiated reactor fuel, and solids into which such liquid wastes have been converted.

highly enriched uranium (HEU)—Uranium whose content of the fissile isotope uranium-235 has been increased through enrichment to 20 percent or more (by weight). Highly enriched uranium can be used in making nuclear weapons and also as fuel for some isotope-production, research, naval propulsion, and power reactors. (See enriched uranium and low-enriched uranium.)

historic resources—Archaeological sites, architectural structures, and objects dating from 1492 or later, after the arrival of the first Europeans in the Americas.

immobilization—A process by which plutonium is converted to a chemically stable solid form for disposal.

incident-free—Normal transport or operation.

indirect employment—Jobs generated or lost in related industries within a regional economic area as a result of a change in direct employment.

interbedded—Geologically speaking, occurring between beds (i.e., layers) or lying in a bed parallel to other beds of a different material.

interim action—An action within the scope of an environmental impact statement that is taken before a Record of Decision is issued.

interim status—Period during which treatment, storage, and disposal facilities subject to the Resource Conservation and Recovery Act are temporarily allowed to operate while awaiting the issuance or denial of a permit.

interim storage—Safe, secure storage supportive of continuing operations until long-term storage or disposition actions are implemented.

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

ionizing radiation—Particles (alpha, beta, neutrons, and other subatomic particles) or photons (i.e., gamma, x-rays) emitted from the nucleus of unstable atoms as a result of radioactive decay. Such radiation is capable of displacing electrons from atoms or molecules in the target material (such as biological tissues), thereby producing ions.

isotope—Any of two or more variations of an element in which the nuclei have the same number of protons (and thus 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; carbon-14 is radioactive.

job control waste—Plastic sheeting, paper, small pieces of wood and metal, glass, gloves, protective clothing, and/or pieces of small equipment that were used in a radioactive process.

land resources—All of the terrestrial areas available for economic production, residential or recreational use, government activities (such as military bases), or natural resources consumption. The patterns and densities of land use and the quality of visual resources are included in evaluations of land resources.

landscape character—The arrangement of a particular landscape as formed by the variety and intensity of the landscape features (e.g., land, water, vegetation, and structures) and the four basic elements (i.e., form, line, color, and texture). These factors give an area a distinctive quality that distinguishes it from its immediate surroundings.

latent cancer fatalities (LCFs)—Deaths from cancer resulting from and occurring sometime after exposure to ionizing radiation or other carcinogens.

lead assemblies—Small quantities of nuclear fuel inserted into commercial nuclear power reactors to confirm that a new fuel design will perform safely and predictably.

leak protection factor (LPF)—A factor that accounts for the action of removal mechanisms (e.g., containment systems, filtration, deposition) to reduce the amount of airborne radioactivity ultimately released to the environment.

low-enriched uranium (LEU)—Uranium whose content of the fissile isotope uranium-235 has been increased through enrichment to more than 0.7 percent but less than 20 percent by weight. Most nuclear power reactor fuel contains low-enriched uranium containing 3 to 5 percent uranium-235. (See enriched uranium and highly enriched uranium.)

low-income population—Defined in terms of U.S. Census Bureau annual statistical poverty levels (Current Population Reports, Series P-60 on Income and Poverty), a population may consist of groups or individuals who live in geographic proximity to one another or who are geographically dispersed or transient (e.g., migrant workers or American Indians), where the population experiences common conditions of environmental exposure or effect. (See environmental justice and minority population.)

low-level radioactive waste (LLW)—Radioactive waste that is not classified as high-level radioactive waste, transuranic waste, used nuclear fuel, or byproduct tailings from processing of uranium or thorium ore.

magazine—With respect to the can-in-canister approach to plutonium immobilization, a structure or housing used to facilitate inserting an array of cans into the canister and securing that array in place.

marsh—An area of low-lying wetland dominated by grass-like plants. (See wetlands.)

material at risk (MAR)—The amount of radionuclides in curies of activity or grams for each radionuclide available for release when acted upon by a given physical insult, stress, or accident. The material at risk is specific to a given process in the facility of interest. It is not necessarily the total quantity of material present, but it is that amount of material in the scenario of interest postulated to be available for release.

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

megawatt—A unit of power equal to 1 million watts. Megawatt-thermal is commonly used to define heat produced, while megawatt-electric defines electricity produced.

migration—The natural movement of a material through the air, soil, or groundwater; also, seasonal movement of animals from one area to another.

minority population—Minority populations exist where either: (1) the minority population of the affected area exceeds 50 percent, or (2) the minority population percentage of the affected area is meaningfully greater than in the general population or other appropriate unit of geographic analysis (such as a governing body's jurisdiction, a neighborhood, census tract, or other similar unit). "Minority" refers to individuals who are members of the following population groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic. "Minority populations" include either a single minority group or the total of all minority persons in the affected area. They may consist of groups of individuals living in geographic proximity to one another or a geographically dispersed/transient set of individuals (such as migrant workers or American Indians), where the population experiences common conditions of environmental exposure or effect. (See environmental justice and low-income population.)

mitigation—Mitigation includes (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.

mixed low-level radioactive waste (MLLW)—Waste that contains both hazardous waste, as defined under the Resource Conservation and Recovery Act, and source, special nuclear, or byproduct material subject to the Atomic Energy Act.

mixed oxide (MOX)—Reactor fuel made with a physical blend of different fissionable materials, such as uranium dioxide and plutonium dioxide.

mixed transuranic waste—Waste that contains both nonradioactive hazardous waste and transuranic waste, as defined in this glossary.

mutagenic—Capable of inducing mutation in the cells of living organisms (e.g., human or animal receptors).

National Ambient Air Quality Standards (NAAQS)—Standards defining the highest allowable levels of certain pollutants in the ambient air (the outdoor air to which the public has access). Because the U.S. Environmental Protection Agency must establish the criteria for setting these standards, the regulated pollutants are called *criteria* pollutants. Criteria pollutants include sulfur dioxide, nitrogen dioxide, carbon monoxide, ozone, lead, and two size classes of particulate matter (that less than or equal to 10 micrometers [0.0004 inches] in diameter and that less than or equal to 2.5 micrometers [0.0001 inches] in diameter). Primary standards are established to protect public health; secondary standards are established to protect public welfare (such as visibility, crops, animals, buildings). (See criteria pollutant.)

National Emission Standards for Hazardous Air Pollutants (NESHAPs)—Emissions standards set by the U.S. Environmental Protection Agency for air pollutants that are not covered by National Ambient Air Quality Standards and that may, at sufficiently high levels, cause increased fatalities, irreversible health effects, or incapacitating illness. These standards are given in 40 CFR Parts 61 and 63. NESHAPs are given for many specific categories of sources (e.g., equipment leaks, industrial process cooling towers, dry cleaning facilities, petroleum refineries). (See hazardous air pollutants.)

National Environmental Research Park—An outdoor laboratory established for research into the environmental impacts of energy developments. Such parks were established by the U.S. Department of Energy to provide protected land areas for research and education in the environmental sciences and to demonstrate the environmental compatibility of energy technology development and use.

National Pollutant Discharge Elimination System (NPDES)—A provision of the Clean Water Act that prohibits discharge of pollutants into waters of the United States unless a special permit is issued by the U.S. Environmental Protection Agency, a state, or, where delegated, a tribal government on an American Indian reservation. The National Pollutant Discharge Elimination System permit lists either permissible discharges, the level of cleanup technology required for wastewater, or both.

National Priorities List (NPL)—The U.S. Environmental Protection Agency's list of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial action under the Comprehensive Environmental Response, Compensation, and Liability Act. The list is based primarily on the score a site receives from the Hazard Ranking System described in 40 CFR Part 300, Appendix A. The U.S. Environmental Protection Agency must update the National Priorities List at least once a year.

National Register of Historic Places (NRHP)—The official list of the Nation's cultural resources that are worthy of preservation. The National Park Service maintains the list under direction of the Secretary of the Interior. Districts, sites, buildings, structures, and objects are included in the NRHP for their importance in American history, architecture, archaeology, culture, or engineering. Properties included on the NRHP range from large-scale, monumentally proportioned buildings to smaller-scale, regionally distinctive buildings. The listed properties are not just of nationwide importance; most are significant primarily at the state or local level. Procedures for listing properties on the NRHP are found in 36 CFR Part 60.

natural phenomena hazard—A category of events (e.g., earthquake, severe wind, tornado, flood, and lightning) that must be considered in the U.S. Department of Energy facility design, construction, and operations, as specified in DOE Order 420.1B.

nitrogen oxides—The oxides of nitrogen, primarily nitrogen oxide and nitrogen dioxide, produced in the combustion of fossil fuels. Nitrogen dioxide emissions constitute an air pollution issue, as they contribute to acid deposition and the formation of atmospheric ozone. Also known as NO_x.

noise—Any sound that is undesirable because it interferes with speech and hearing, is intense enough to damage hearing, or is otherwise annoying (i.e., unwanted sound).

nonattainment area—An area that the U.S. Environmental Protection Agency has designated as not meeting (i.e., not being in attainment of) one or more of the National Ambient Air Quality Standards for sulfur dioxide, nitrogen dioxide, carbon monoxide, ozone, lead, or both sizes of particulate matter (i.e., that with an aerodynamic diameter less than or equal to 10 or 2.5 micrometers [0.0004 or 0.0001 inches]). An area may be in attainment for some pollutants, but not for others. (See attainment area, National Ambient Air Quality Standards, and particulate matter.)

nonhazardous waste—Any garbage or refuse; sludge from a wastewater treatment plant, water supply treatment plant, or air pollution control facility; and other discarded material, including solid, liquid, semi-solid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities that is not otherwise characterized as radioactive or hazardous.

non-pit plutonium—Plutonium-239 was made in nuclear reactors for use in nuclear weapons. Historically, the United States operated weapons material production reactors at the Savannah River Site and the Hanford Reservation. The term "non-pit plutonium" refers to plutonium that is not in the metal pit form that is the core of a nuclear weapon. Non-pit plutonium may be in metal or oxide form, or may be associated with other materials that were used in the process of manufacturing and fabrication of plutonium for use in nuclear weapons. The non-pit plutonium discussed in this environmental impact statement was in some phase of the production cycle when the Cold War ended and the United States ceased production of plutonium. Some non-pit plutonium was generated during research and development activities that support weapons production. Most surplus non-pit plutonium is currently stored at the Savannah River Site.

nonproliferation—Preventing the spread of nuclear weapons, nuclear weapons materials, or nuclear weapons technology to rogue nations, terrorists, and countries that have not signed nonproliferation agreements.

Notice of Availability—A formal notice, published in the *Federal Register*, that announces the issuance and public availability of a draft or final environmental impact statement. The U.S. Environmental Protection Agency Notice of Availability is the official public notification of an environmental impact statement; a U.S. Department of Energy Notice of Availability is an optional notice used to provide information to the public.

Notice of Intent (NOI)—Public announcement that an environmental impact statement will be prepared and considered. It describes the Proposed Action, possible alternatives, and scoping process, including whether, when, and where any scoping meetings will be held. The Notice of Intent is usually published in the *Federal Register* and in the local media. The scoping process includes holding at least one public meeting and requesting written comments on issues and environmental concerns that an environmental impact statement should address.

nuclear criticality—See criticality.

nuclear facility—A facility that is subject to requirements intended to control potential nuclear hazards. Defined in U.S. Department of Energy directives as any nuclear reactor or any other facility whose operations involve radioactive materials in such form and quantity that a significant nuclear hazard potentially exists to the employees and/or the general public.

nuclear weapon—The general name given to any weapon in which the explosion results from the energy released by reactions involving atomic nuclei.

option—With respect to surplus plutonium disposition, a discrete sequence of pit disassembly and conversion, or plutonium disposition actions carried out in a facility or group of facilities. Pit disassembly and conversion and plutonium disposition options are combined to form surplus plutonium disposition alternatives. (See alternative.)

outfall—The discharge point of a drain, sewer, or pipe into a body of water.

oxidation—The combination of an element with oxygen wherein the element's atoms lose electrons and its positive charge (i.e., valence) is correspondingly increased.

oxide—A compound formed when an element (e.g., plutonium) is bonded to oxygen.

ozone—The tri-atomic form of oxygen (O_3), which in the stratosphere protects the Earth from the Sun's ultraviolet rays but, at lower atmospheric levels, is an air pollutant. Ozone is a major constituent of smog.

packaging—For radioactive materials, a container consisting of one or more receptacles, absorbent materials, spacing structures, thermal insulation, radiation shielding, and devices for cooling or absorbing mechanical shock; all to ensure compliance with U.S. Department of Transportation 49 CFR Parts 171–180 and U.S. Nuclear Regulatory Commission 10 CFR Part 71 regulations.

particulate matter (PM)—Any finely divided solid or liquid material, other than uncombined (i.e., pure) water. A subscript denotes the upper limit of the diameter of particles included. Thus, PM_{10} includes only those particles equal to or less than 10 micrometers (0.0004 inches) in diameter; $PM_{2.5}$ includes only those particles equal to or less than 2.5 micrometers (0.0001 inches) in diameter. Particulate matter can result in increased respiratory symptoms, decreased lung function, aggravated asthma, development of chronic bronchitis, irregular heartbeat, nonfatal heart attacks, and premature death in people with heart or lung disease. $PM_{2.5}$ is a major cause of reduced visibility. Particulate matter can contribute to acidification of streams and lakes, changes in nutrient balance of coastal waters and larger river basins, depletion of nutrients in soil, damage to forests and crops, and damage to stone and other building materials.

perched groundwater—A body of groundwater of small lateral dimensions separated from an underlying body of groundwater by an unsaturated zone.

person-rem—A unit of collective radiation dose applied to populations or groups of individuals; 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.

pit—The core element of a nuclear weapon's "primary" or fission component. The pit contains a potentially critical mass of fissile material, such as plutonium-239 or highly enriched uranium, arranged in a subcritical geometry and surrounded by some type of casing.

plume—The elongated volume of contaminated air or water originating at a pollutant source such as an outlet pipe, a smokestack, or a hazardous waste disposal site. A plume eventually diffuses into a larger volume of less-contaminated material as it is transported away from the source.

plutonium—A heavy radioactive, metallic element with the atomic number 94. It is produced artificially by neutron bombardment of uranium and is used in the production of nuclear weapons. Plutonium has 15 isotopes with atomic mass numbers ranging from 232 to 246 and half-lives from 20 minutes to 76 million years. Its most important isotope is fissile plutonium-239. Weapons-usable plutonium consists mainly of plutonium-239, which has a radiological half-life of 24,110 years. (See half-life [radiological].)

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 the U.S. Department of Energy, this includes recycling activities. (See waste minimization and pollution prevention.)

potable water—Water that is fit to drink, meeting Safe Drinking Water Act maximum contaminant levels.

pounds per square inch (psi)—A measure of pressure. Normal atmospheric pressure at sea level is about 14.7 pounds per square inch.

power reactor-grade plutonium (also referred to as "reactor-grade plutonium")—Plutonium of which 19 percent or greater is plutonium-240, as defined in the DOE Factsheet, "Additional Information Concerning Underground Nuclear Weapon Test of Reactor-Grade Plutonium." Power reactor-grade plutonium is weapons-usable.

precipitate—To cause a solid substance to become separate from a solution.

prevention of significant deterioration (PSD)—Regulations established to prevent significant deterioration of air quality in areas that already meet National Ambient Air Quality Standards. Specific details of prevention of significant deterioration are found in 40 CFR 51.166. Among other provisions, cumulative increases in levels of sulfur dioxide, nitrogen dioxide, and particulate matter equal to or less than 10 micrometers (0.0004 inches) in diameter after specified baseline dates must not exceed specified maximum allowable amounts. These allowable increases, also known as increments, are especially stringent in areas designated as Class I areas (such as national parks, wilderness areas) where the preservation of clean air is particularly important. All areas not designated as Class I are currently designated as Class II. Maximum increments in pollutant levels are also given in 40 CFR 51.166 for Class III areas, if any such areas should be so designated by the U.S. Environmental Protection Agency. Class III increments are less stringent than those for Class I or Class II areas. (See National Ambient Air Quality Standards.)

prime farmland—Land with the best combination of physical and chemical characteristics (i.e., soil quality, growing season, and moisture supply) for economically producing high yields of food, feed, forage, fiber, and oilseed crops, with minimum inputs of fuel, fertilizer, pesticides, and labor without intolerable soil erosion (Farmland Protection Policy Act of 1981, 7 *United States Code* [U.S.C] 4201 et seq.). Land classified as prime farmland includes crop land, pasture land, range land, and forest land, but not urban or built-up land or land covered with water. Prime farmlands are designated by the Natural Resources Conservation Service.

process—Any method or technique designed to change the physical or chemical character of the product.

Programmatic Environmental Impact Statement (PEIS)—A broad-scoped document that evaluates the environmental impacts of a Federal program. PEISs may be prepared, and are sometimes required, for broad Federal actions such as the adoption of new agency programs or regulations. Agencies shall prepare PEISs on broad actions so that they are relevant to policy and are timed to coincide with meaningful points in agency planning and decisionmaking.

proliferation—The spread of nuclear, biological, or chemical capabilities and the weapons (i.e., missiles) capable of delivering them.

rad—A unit of radiation-absorbed dose (e.g., in body tissue). One rad is equal to an absorbed dose of 0.01 joules per kilogram.

radiation—See ionizing radiation.

radioactive waste—In general, waste that is managed for its radioactive content. Waste material that contains source, special nuclear, or byproduct material is subject to regulation as radioactive waste under the Atomic Energy Act. Also, waste material that contains accelerator-produced radioactive material or a high concentration of naturally occurring radioactive material may be considered radioactive 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.

radioisotopes—Radioactive nuclides of the same element (i.e., having the same number of protons in their nuclei) that differ in the number of neutrons.

radionuclide—A radioactive element characterized according to its atomic mass and atomic number. Radionuclides can be manmade or naturally occurring, have a long life, and have potentially mutagenic, teratogenic, or carcinogenic effects on the human body.

radon—A radioactive element that is one of the heaviest gases known. Its atomic number is 86. It is a daughter product of radium. Radon occurs naturally in the environment and can collect in enclosed, unventilated areas, such as basements. Exposures to large concentrations of radon can cause lung cancer in humans.

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 environmental impact statement. The ROD is prepared in accordance with the requirements of the Council on Environmental Quality National Environmental Policy Act regulations (40 CFR 1505.2). A ROD identifies the alternatives considered in reaching the decision, 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. (See environmental impact statement.)

region of influence (ROI)—The physical area that bounds the environmental, sociological, economic, or cultural features of interest for the purpose of analysis.

rem—See roentgen equivalent man.

remote-handled waste—In general, refers to radioactive waste that must be handled at a distance to protect workers from unnecessary exposure. (See contact-handled waste.)

repository—A facility for disposal of radioactive waste.

reprocessing—The process to chemically separate used reactor fuel into uranium, transuranic elements, and fission products.

respirable fraction—The fraction of airborne material at risk with a particle size with an aerodynamic diameter equivalent to 10 micrometers or less that could be retained in the respiratory system following inhalation.

risk—The probability of a detrimental effect 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.

risk assessment (chemical or radiological)—The qualitative and quantitative evaluation performed in an effort to define the risk posed to human health or the environment by the presence, potential presence, or use of specific chemicals or radionuclides.

roentgen—A unit of exposure to ionizing x-ray or gamma radiation equal to or producing 1 electrostatic unit of charge per cubic centimeter of air. It is approximately equal to 1 rad.

roentgen equivalent man (rem)—A unit of dose equivalent. The dose equivalent in rem equals the absorbed dose in rad in tissue multiplied by the appropriate quality factor and possibly other modifying factors. Rem refers to the dosage of ionizing radiation that will cause the same biological effect as one roentgen of x-ray or gamma ray exposure. One rem equals 0.01 sieverts.

runoff—The portion of rainfall, melted snow, or irrigation water that flows across the ground surface and eventually enters streams.

Safe Secure Trailer (SST)—A specially modified semi-trailer, pulled by an armored tractor truck, which DOE uses to transport nuclear weapons, nuclear weapons components, or special nuclear material over public highways.

Safeguards Transporter (SGT)—A specially designed part of an 18-wheel rig that incorporates various deterrents to prevent unauthorized removal of cargo. The trailer has been designed to protect the cargo against damage in the event of an accident. Escort vehicles accompany the tractor-trailers during transportation activities. These tractors and escort vehicles are equipped with communications, electronic, and other equipment that further enhance en-route safety and security.

safety analysis report (SAR)—A report that systematically identifies potential hazards within a nuclear facility, describes and analyzes the adequacy of measures to eliminate or control identified hazards, and analyzes potential accidents and their associated risks. Safety analysis reports are used to ensure that a nuclear facility can be constructed, operated, maintained, shut down, and decommissioned safely and in compliance with applicable laws and regulations. Safety analysis reports (or documented safety analyses per 10 CFR Part 830) are required for U.S. Department of Energy (DOE) nuclear facilities and as a part of applications for U.S. Nuclear Regulatory Commission (NRC) licenses. The NRC regulations or DOE orders and technical standards that apply to the facility type provide specific requirements for the content of safety analysis reports. (See nuclear facility.)

saltstone—Concrete block formed by mixing the low-radioactivity fraction of high-level radioactive waste with cement, ash, and slag.

sanitary wastes—Nonhazardous, nonradioactive liquid and solid wastes generated by normal housekeeping activities.

scoping—An early and open process, including public notice and involvement, for determining the scope of issues to be addressed in an environmental impact statement and for identifying the significant issues related to a Proposed Action. The scoping period begins after publication in the *Federal Register* of a Notice of Intent to prepare an environmental impact statement. The public scoping process is that portion of the process where the public is invited to participate. The U.S. Department of Energy's scoping procedures are found in 10 CFR 1021.311.

scraps and residues—Material containing plutonium that was generated during the separation and purification of plutonium or during the manufacture of plutonium-bearing components for nuclear weapons.

secure transportation asset—A U.S. Department of Energy (DOE) asset managed and operated by the National Nuclear Security Administration, Office of Secure Transportation. The asset is a network of specially modified transport vehicles, special agents and other personnel, and specialized infrastructure, that provide for the safe and secure movement of weapons, weapon components and selected materials for DOE, the U.S. Department of Defense, and other customers, within the continental United States.

security—An integrated system of activities, systems, programs, facilities, and policies for the protection of Restricted Data and other classified information or matter, nuclear materials, nuclear weapons and nuclear weapons components, and/or U.S. Department of Energy or contractor facilities, property, and equipment.

seismic—Pertaining to any Earth vibration, especially that of an earthquake.

sewage—The total organic waste and wastewater generated by an industrial establishment or a community.

shielding—Any material or obstruction (e.g., bulkhead, wall, or other structure) that absorbs radiation, and thus tends to protect personnel or materials from the effects of ionizing radiation.

shutdown—That condition in which a U.S. Department of Energy facility has ceased operation and has officially declared that it does not intend to operate it further.

sinter—To form a solid mass by heating powder at an elevated temperature below the material's melting point.

solid waste—For purposes under the Resource Conservation and Recovery Act, solid waste is any garbage; refuse; sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility; and/or 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 materials in domestic sewage or irrigation return flows or industrial discharges, which 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.

special nuclear material—As defined in Section 11 of the Atomic Energy Act: "(1) plutonium, uranium enriched in the isotope 233 or in the isotope 235, and any other material which the U.S. Nuclear Regulatory Commission determines to be special nuclear material, or (2) any material artificially enriched by any of the foregoing."

spent fuel standard—A term, coined by the National Academy of Sciences and modified by DOE, denoting the main objective of alternatives for the disposition of surplus weapons-usable plutonium: that such plutonium be made roughly as inaccessible and unattractive for weapons use as the much larger and growing stock of plutonium in civilian spent (used) nuclear fuel.

spent nuclear fuel—See used nuclear fuel.

stabilization—Treatment, packaging, and removal of hazardous and radioactive materials in such a manner as to ensure that a facility is safe and environmentally secure.

stabilize—To convert a compound, mixture, or solution to a nonreactive form.

State Historic Preservation Office—State office charged with the identification and protection of prehistoric and historic resources in accordance with the National Historic Preservation Act.

stormwater—stormwater runoff, snow melt runoff, and surface runoff and drainage (40 CFR 122.26(b)(13)).

sulfur dioxide—A heavy, pungent colorless gas formed in the combustion of fossil fuels and considered a major air pollutant. During its long-range transport, it can combine with water vapor to form sulfuric acid, which contributes to the formation of acid rain, which damages trees, crops, and buildings and makes soils, lakes, and streams acidic. It also contributes to reduced visibility and can irritate the upper respiratory tract and cause lung cancer.

Supplement Analysis (SA)—A document prepared under the U.S. Department of Energy's National Environmental Policy Act Implementing Guidelines (10 CFR 1021.314(c)) to provide the information and analysis of proposed activities necessary to determine whether a supplemental or new environmental impact statement is required.

Supplemental Environmental Impact Statement (SEIS)—A document prepared as a supplement to an environmental impact statement, required when a change in a Proposed Action is substantial and relevant to environmental concerns or when new circumstances or information relevant to environmental concerns are significant.

surface water—All bodies of water on the surface of the Earth and open to the atmosphere, such as rivers, lakes, reservoirs, ponds, seas, and estuaries.

surplus plutonium—Plutonium that has no identified programmatic use within the U.S. Department of Energy and does not fall into one of the categories of national security reserves.

teratogenic—Tending to cause developmental malformations (i.e., birth defects).

threatened species—Any plants or animals that are likely to become endangered species within the foreseeable future throughout all or a significant portion of their ranges and have been listed as threatened by the U.S. Fish and Wildlife Service or the National Marine Fisheries Service following the procedures set out in the Endangered Species Act and its implementing regulations (50 CFR Part 424). The list of threatened species can be found at 50 CFR 17.11 (wildlife), 17.12 (plants), and 227.4 (marine organisms). (See critical habitat and endangered species.)

toxic air pollutants—See hazardous/toxic air pollutants.

transuranic (TRU)—Of, relating to, or being any element whose atomic number is higher than that of uranium (i.e., atomic number 92), including neptunium, plutonium, americium, and curium. All transuranic elements are produced artificially and are radioactive.

transuranic waste—Radioactive waste that is not classified as high-level radioactive waste and that contains more than 100 nanocuries (3,700 becquerels) per gram of alpha-emitting transuranic isotopes with half-lives greater than 20 years, except for waste that the U.S. Department of Energy has determined, with the concurrence of the U.S. Environmental Protection Agency, does not need the degree of isolation called for by 40 CFR Part 191; or waste that the U.S. Nuclear Regulatory Commission has approved for disposal case-by-case in accordance with 10 CFR Part 61 (DOE Order 435.1).

treatment—An operation necessary to prepare material for storage, disposal, or transportation.

tritium—A radioactive isotope of the element hydrogen whose nucleus contains two neutrons and one proton.

uranium—A radioactive, metallic element with the atomic number 92; the heaviest naturally occurring element. Uranium has 14 known isotopes, of which uranium-238 is the most abundant in nature. Uranium-235 is commonly used as a fuel for nuclear fission, and uranium-238 is transformed into fissionable plutonium-239 following its capture of a neutron in a nuclear reactor.

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

value added—Measure of economic activity that represents the market value of all final goods and services produced by an activity, directly comparable to the gross domestic product. Measures of value added exclude intermediate goods and services.

viewshed—The extent of the area that may be viewed from a particular location. Viewsheds are generally bounded by topographic features such as hills or mountains.

visual resource management (VRM)—A process devised by the Bureau of Land Management to assess the aesthetic quality of a landscape, and consistent with the results of that analysis, to design proposed activities so as to minimize their visual impact on that landscape. The process consists of a rating of visual quality followed by a measurement of the degree of contrast between proposed development activities and the existing landscape. Four classifications are employed to describe different degrees of modification to landscape elements: Class I, areas where the natural landscape is preserved, including national wilderness areas and the wild sections of national wild and scenic rivers; Class II, areas with very limited land development activity, resulting in visual contrasts that are seen but do not attract attention; Class III, areas in which development may attract attention, but the natural landscape still dominates; and Class IV, areas in which development activities may dominate the view and may be the major focus in the landscape.

vitrification—A process by which finely ground glass (e.g., borosilicate glass) is used to immobilize radioactive wastes. (See frit.)

volatile organic compounds (VOCs)—A broad range of organic compounds, often halogenated, that vaporize at ambient or relatively low temperatures (e.g., benzene, chloroform, and methyl alcohol). With respect to air pollution, any non-methane organic compound that participates in atmospheric photochemical reaction, except for those designated by the U.S. Environmental Protection Agency as having negligible photochemical reactivity.

Waste Isolation Pilot Plant (WIPP)—A U.S. Department of Energy facility designed and authorized to permanently dispose of defense-related contact-handled and remote-handled transuranic radioactive waste in a mined underground facility in deep geologic salt beds. It is located in southeastern New Mexico, 26 miles (42 kilometers) east of the city of Carlsbad.

waste minimization and pollution prevention—An action that economically avoids or reduces the generation of waste and pollution by means of source reduction, reduction in the toxicity of hazardous waste and pollution, improvement in energy use, and recycling. These actions are consistent with the general goal of minimizing present and future threats to human health, safety, and the environment. (See pollution prevention.)

wastewater—Water originating from human sanitary water use (i.e., domestic wastewater) and from a variety of industrial processes (i.e., industrial wastewater).

water quality standards—Limits on the concentrations of specific constituents or on the characteristics of water, often based on water use classifications (e.g., drinking water, recreation, propagation of fish and aquatic life, agricultural and industrial use). Water quality standards are legally enforceable under the Clean Water Act (33 U.S.C. 1251 et seq.), whereas water quality criteria are nonenforceable recommendations based on biotic impacts.

water table—The boundary between the unsaturated zone and the deeper, saturated zone; the upper surface of an unconfined aquifer.

weapons-grade plutonium—Plutonium manufactured for weapons application. Weapons-grade plutonium is largely plutonium-239, and contains no more than 7 percent plutonium-240, as defined in the DOE Factsheet, "Additional Information Concerning Underground Nuclear Weapon Test of Reactor-Grade Plutonium." A different range is used in the *Agreement Between the Government of the United States of America and the Government of the Russian Federation Concerning the Management and Disposition of Plutonium Designated as No Longer Required for Defense Purposes and Related Cooperation*: a ratio of plutonium-240 to plutonium-239 no greater than 0.10; approximately equal to 9 percent plutonium-240.

weapons-usable fissile material—Plutonium or highly enriched uranium in forms (e.g., metals, oxides) that can be readily converted for use in nuclear weapons. Weapons-grade, fuel-grade, and power reactor-grade plutonium are all weapons-usable.

wetlands—Those areas that are inundated by surface or groundwater with a frequency sufficient to support, and under normal circumstances do or would support, a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas (e.g., sloughs, potholes, wet meadows, river overflow areas, mudflats, natural ponds).