

9 GLOSSARY

Abiotic: Refers to nonliving objects, substances, or processes. The abiotic factors of the environment include light, temperature, and atmospheric gases.

Aboveground retorting: *see* Retorting.

Acre-foot (ac-ft): A term used in measuring the volume of fluid. An acre-foot is the amount of fluid required to cover 1 acre to a depth of 1 ft, or 43,540 ft³ (325,829 gal).

Adaptive management: Adaptive management is a structured, iterative process of robust decision making in the face of uncertainty, with an aim of reducing uncertainty over time via system monitoring.

Adiabatic change: Change in the volume and pressure of a parcel of gas without an exchange of heat between the parcel of gas and its surroundings.

Aerodynamics: The study of the forces exerted on and the flow around solid objects moving relative to a gas, especially the atmosphere.

Aggregate: Mineral materials such as sand, gravel, crushed stone, or quarried rock used for construction purposes.

Air density: The weight of a given volume of air. Air is denser at a lower altitude, lower temperature, and lower humidity.

Air quality: Measure of the health-related and visual characteristics of the air. Air quality standards are the prescribed level of constituents in the outside air that cannot be exceeded during a specific time in a specified area.

Air toxics: Substances that have adverse impacts on human health when present in ambient air.

All-American Roads: Roads selected for this designation by the U.S. Department of Transportation because of their important scenic, natural, historical, cultural, archaeological, or recreational qualities. They provide an exceptional traveling experience such that motorists go to these highways as a primary reason for their trip.

Alluvial: Formed by the action of running water; of or related to river and stream deposits.

Alluvial fan: A gently sloping mass of unconsolidated material (e.g., clay, silt, sand, or gravel) deposited where a stream leaves a narrow canyon and enters a plain or valley floor. Viewed from above, it has the shape of an open fan. An alluvial fan can be thought of as the land counterpart of a delta.

Alluvium: Sediments deposited by erosion processes, usually by streams.

Ambient air: The surrounding atmosphere as it exists around people, plants, and structures.

Ambient noise level: The level of acoustic noise existing at a given location, such as in a room or somewhere outdoors.

American Antiquities Act of 1906: Prohibits excavating, injuring, or destroying any historic or prehistoric ruin or monument or object of antiquity on federal land without the prior approval of the agency with jurisdiction over the land.

American Indian Religious Freedom Act of 1978: Requires federal agencies to consult with tribal officials to ensure protection of religious cultural rights and practices.

Anthropogenic: Human made; produced as a result of human activities.

API gravity: A measurement convention established by the American Petroleum Institute for expressing the relative density of petroleum liquids to water; the greater the API gravity, the less dense the material.

Aquifer: An underground bed or layer of earth, gravel, or porous stone that yields usable quantities of water to a well or spring.

Archaeological and Historical Preservation Act of 1966, as amended: Directly addresses impacts or cultural resources resulting from federal activities that would significantly alter the landscape. The focus of the law is the creation of dams and the impacts resulting from flooding, creation of access roads, etc. Its requirements, however, are applicable to any federal action.

Archaeological Resources Protection Act of 1979: Requires a permit for excavation or removal of archeological resources from public or Native American lands.

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

Areas of Critical Environmental Concern (ACECs): These areas are managed by the Bureau of Land Management (BLM) and are defined by the Federal Land Policy and Management Act of 1976 as having significant historical, cultural, and scenic values, habitat for fish and wildlife, and other public land resources, as identified through the BLM's land use planning process.

Areas recognized as having wilderness characteristics (WCAs): Areas that are not officially identified as “wilderness” under the meaning of the Wilderness Act of 1964; nor are they “wilderness study areas” (WSAs) that were identified by BLM inventories in the 1970s and 1980s under the authority of FLPMA. Generally, they are areas that were identified by the BLM or others and that were inventoried by the BLM to determine whether they possessed the characteristics of wilderness as described in the Wilderness Act. The BLM may manage the lands to protect and/or preserve some or all of those characteristics through the land use planning process. In addition, under the land use planning process, the BLM must consider a range of alternatives for the land identified with wilderness characteristics. This gives the public the ability to fully compare the consequences of protecting or not protecting the wilderness characteristics on these non-WSA lands.

Argillaceous: Used to describe a rock containing a large percentage of clay.

Atmospheric deposition: The process by which trace gases and particulate matter in the atmosphere are deposited on vegetation, soils, and water bodies. Key concerns are total (wet and dry) deposition of sulfur and nitrogen compounds, and especially their potential impacts on sensitive lake systems.

Attainment area: An area considered to have air quality as good as or better than the National Ambient Air Quality Standards for a given pollutant. An area may be in attainment for one pollutant and in nonattainment for others.

Attenuation: The reduction in level of sound.

Authigenic: Formed in place; typically refers to minerals formed in place after the sediments were deposited.

Bald and Golden Eagle Protection Act of 1940: Act making it unlawful to take, pursue, molest, or disturb bald and golden eagles, their nests, or their eggs. Permits must be obtained from the U.S. Department of the Interior (DOI) in order to relocate nests that interfere with resource development or recovery.

Best management practices (BMPs): A practice or combination of practices that are determined to provide the most effective, environmentally sound, and economically feasible means of managing an activity and mitigating its impacts.

Biological Assessment: A document prepared for the Endangered Species Act of 1973 (ESA) Section 7 process to determine whether a proposed major construction activity under the authority of a federal action agency is likely to adversely affect listed species, proposed species, or designated critical habitat.

Biological Opinion: A document resulting from formal consultation with the U.S. Fish and Wildlife Service (USFWS). The document presents the opinion of the USFWS as to whether a federal action is likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat.

Biomass: Anything that is or has once been alive.

Biota: The living organisms in a given region.

Bitumen: A mix of hydrocarbons with a high carbon-to-hydrogen ratio, which may contain elevated concentrations of sulfur, nitrogen, oxygen, and heavy metals.

Boiler slag: A noncombustible by-product collected from the bottom of furnaces that burn coal for the generation of steam. When molten boiler slag comes in contact with water, it fragments into coarse, black, angular particles having a smooth, glassy appearance. These particles are used for blasting grit and roofing granules.

Boreal forest: A forest that grows in regions of the northern hemisphere with cold temperatures; made up of mostly cold-tolerant coniferous species such as spruce and fir.

Borrow pit: A pit or excavation area used for gathering earth materials (borrow) such as sand or gravel.

Broadband noise: Noise that has a continuous spectrum; that is, energy is present at all frequencies in a given range. This type of noise lacks a discernible pitch and is described as having a “swishing” or “whooshing” sound.

Browse: Shrubs, trees, and herbs that provide food for wildlife.

Bureau of Land Management (BLM): An agency of the U.S. Department of the Interior that is responsible for managing public lands.

Bureau of Land Management (BLM) “Gold Book”: *Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development* provides comprehensive guidance on the design, construction, maintenance, and reclamation of sites and access roads. The Gold Book promotes conduct of environmentally responsible oil and gas operations on federal lands.

Candidate species: Plants and animals for which the USFWS has sufficient information on their biological status and threats to propose them as endangered or threatened under the ESA, but for which development of a listing regulation is precluded by other higher priority listing activities.

Canopy: The upper forest layer of leaves consisting of tops of individual trees whose branches sometimes cross each other.

Carbon monoxide (CO): A colorless, odorless gas that is toxic if breathed in high concentrations over an extended period. Carbon monoxide is listed as a criteria air pollutant under Title I of the Clean Air Act.

Carrion: The dead, decomposing flesh of an animal.

Chaparral: A plant community of shrubs and low trees adapted to annual drought and often extreme summer heat and also highly adapted to fires recurring every 5 to 20 years.

Char: The organic residue remaining on the spent shale.

Clean Air Act (CAA): Establishes national ambient air quality standards and requires facilities to comply with emission limits or reduction limits stipulated in State Implementation Plans (SIPs). Under this Act, construction and operating permits, as well as reviews of new stationary sources and major modifications to existing sources, are required. The Act also prohibits the federal government from approving actions that do not conform to SIPs.

Clean Water Act (CWA): Requires National Pollutant Discharge Elimination System (NPDES) permits for discharges of effluents to surface waters, permits for storm water discharges related to industrial activity, and notification of oil discharges to navigable waters of the United States.

Clearcut: The removal or cutting of all trees in an area of forest land at one time. An area of forest land from which all trees have recently been harvested.

Coal production (on BLM lands): The Mineral Leasing Act of 1920, as amended by the Federal Coal Leasing Amendments Act of 1976, requires competitive leasing of coal. These leases require payment of a royalty rate of 12.5% for surface-mined coal (8% for coal mined by underground methods), diligent development of commercial quantities of coal within 10 years of lease issuance, and stipulations to protect other resources within the lease. The BLM routinely inspects all coal to ensure accurate reporting of coal production and maximum economic recovery of the coal resource.

Code of Federal Regulations (CFR): A compilation of the general and permanent rules published in the *Federal Register* by the Executive departments and agencies of the United States government. It is divided into 50 titles that represent broad areas subject to federal regulation. Each volume of the CFR is updated once each calendar year and is issued on a quarterly basis.

Colluvium: A general term to include loose rock and soil material that accumulates at the base of a slope as the result of mass wasting processes.

Combined Hydrocarbon Lease (CHL): Lease issued in a Special Tar Sand Area (STSA) for the removal of gas and nongaseous hydrocarbon substances other than coal, oil shale, or gilsonite.

Combined Hydrocarbon Leasing Act of 1981: Act that amended the Mineral Leasing Act of 1920 to authorize the Secretary of the Interior to issue CHLs in areas containing substantial deposits of tar sands, which were to be designated as STSAs.

Confined aquifer: An aquifer in which groundwater is confined under pressure that is significantly greater than atmospheric pressure.

Conifers: Cone-bearing trees, mostly evergreens, that have needle-shaped or scale-like leaves.

Conterminous United States: The 48 mainland states, excluding Alaska and Hawaii.

Controlled Surface Use (CSU): (1) Use and occupancy is allowed (unless restricted by another stipulation), but identified resource values require special operational constraints that may modify the lease rights. CSU is used for operating guidance, not as a substitute, for the No Surface Occupancy (NSO) or timing stipulations. (2) Stipulations to be attached to oil and gas leases to protect specific areas or resources, such as riparian and wetland areas, rivers, sensitive species, viewsheds, and watersheds.

Corona/corona noise: The electrical breakdown of air into charged particles. The phenomenon appears as a bluish-purple glow on the surface of and adjacent to a conductor when the voltage gradient exceeds a certain critical value, thereby producing light, audible noise (described as crackling or hissing), and ozone.

Corona discharge: A noise having a hissing or crackling character.

Council on Environmental Quality (CEQ): Established by NEPA. CEQ regulations (40 CFR Parts 1500–1508) describe the process for implementing NEPA, including preparation of environmental assessments (EAs) and environmental impact statements (EISs), and the timing and extent of public participation.

Cradle-to-Grave: A procedure in which hazardous materials are identified and followed as they are produced, treated, transported, and disposed of by a series of permanent, linkable, descriptive documents (e.g., manifests). Commonly referred to as the cradle-to-grave system.

Criteria air pollutants: Six common air pollutants for which National Ambient Air Quality Standards (NAAQS) have been established by the U.S. Environmental Protection Agency (EPA) under Title I of the Clean Air Act (CAA). They are sulfur dioxide, nitrogen oxides, carbon monoxide, ozone, particulate matter (PM_{2.5} and PM₁₀), and lead. Standards were developed for these pollutants on the basis of scientific knowledge about their health effects.

Critical habitat: The specific area within the geographical area occupied by the species at the time it is listed as endangered or threatened. The area in which physical or biological features essential to the conservation of the species are found. These areas may require special management or protection.

Crude oil: Unrefined oil as it is found underground, consisting of a mixture of hydrocarbons formed from organic matter.

Cryptobiotic organisms: Soil-dwelling organisms, including cyanobacteria (blue-green bacteria), microfungi, mosses, lichens, and green algae found in surface soils of the arid and semiarid West. These organisms perform many important functions, including fixing nitrogen and carbon, maintaining soil surface stability, plant growth, and preventing erosion. They bind together with soil particles to create a crust.

Cuesta: An asymmetrical ridge with one steep face (an escarpment slope) and an opposite, gently inclined face (a dip-slope).

Cultural resources: Archaeological sites, architectural structures or features, traditional use areas, and Native American sacred sites or special-use areas that provide evidence of the prehistory and history of a community.

Culvert: A pipe or covered channel that directs surface water through a raised embankment or under a roadway from one side to the other.

Cumulative impacts: The impacts assessed in an EIS that could potentially result from incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or nonfederal), private industry, or individual undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Cut slope: An earthen slope that is cut; for example, a trail built lower than the existing terrain would result in a cut slope.

Dawsonite: Dihydroxy sodium aluminum carbonate; found in the lower portion of the northern province of the Piceance Basin; can be used as a source of alumina.

Decibel (dB): A standard unit for measuring the loudness or intensity of sound. In general, a sound doubles in loudness with every increase of 10 decibels.

Decibel, A-weighted (dBA): A measurement of sound approximating the sensitivity of the human ear and used to characterize the intensity or loudness of a sound.

Decommissioning: All activities necessary to take out of service and dispose of a facility after its useful life.

Demographics: Specific population characteristics such as age, gender, education, and income level.

Dendritic drainage pattern: In hydrologic terms, the form of the drainage pattern of a stream and its tributaries when it follows a treelike shape, with the main trunk, branches, and twigs corresponding to the main stream, tributaries, and subtributaries, respectively, of the stream.

Dermal: Of or pertaining to the skin.

Desert scrub: Community characterized by plants adapted to seasonally dry climate.

Dewater: To remove or drain water from an area.

Dewatering: Removal or separation of a portion of the water in a sludge or slurry to dry the sludge so that it can be handled and disposed of; removing or draining the water from a tank or trench.

Dielectric fluids: Fluids that do not conduct electricity.

Diluents: Light petroleum liquids used to dilute bitumen and heavy oil so that they can flow through pipelines.

Direct impact: An effect that results solely from the construction or operation of a proposed action without intermediate steps or processes. Examples include habitat destruction, soil disturbance, and water use.

Disseminated: Occurring as scattered particles in the rock.

Downwarp: A downward bend or gradual sinking of land with respect to its previous level.

Ecological refugium: *See* Refugium.

Ecological resources: Fish, wildlife, plants, biota, and their habitats, which may include land, air, and/or water.

Ecoregion: A geographically distinct area of land that is characterized by a distinctive climate, ecological features, and plant and animal communities.

Ecosystem: A group of organisms and their physical environment interacting as an ecological unit.

Electromagnetic fields (EMFs): Fields that surround both large power lines that distribute power and the smaller electric lines in homes and appliances. Generated when charged particles (e.g., electrons) are accelerated. EMFs are typically generated by alternating current in electrical conductors. They may also be referred to as EM fields.

Electromagnetic interference: Any electromagnetic disturbance that interrupts, obstructs, or otherwise degrades or limits the effective performance of electrical equipment. It is caused by the presence of electromagnetic radiation.

Emergency Planning and Community Right-to-Know Act (EPCRA): This Act requires emergency release notification, hazardous chemical inventory reporting, and toxic chemical release inventory reporting by facilities, depending on the chemicals stored or used and their amounts.

Emissions: Substances that are discharged into the air from industrial processes, vehicles, and living organisms.

Empirical: Based on experimental data rather than theory.

Endangered species: Any species (plant or animal) that is in danger of extinction throughout all or a significant part of its range. Requirements for declaring a species endangered are found in the ESA.

Endangered Species Act of 1973 (ESA): Requires consultation with the USFWS and/or the National Marine Fisheries Service to determine whether endangered or threatened species or their habitats will be impacted by a proposed activity and what, if any, mitigation measures are needed to address the impacts.

Endemic: Unique to a particular region.

Environmental Assessment (EA): A concise public document that a federal agency prepares under NEPA to provide sufficient evidence and analysis to determine whether a proposed action requires preparation of an EIS or whether a Finding of No Significant Impact can be issued. An EA must include brief discussions on the need for the proposal, the alternatives, the environmental impacts of the proposed action and alternatives, and a list of agencies and persons consulted.

Environmental Impact Statement (EIS): A document required of federal agencies by NEPA for major proposals or legislation that will or could significantly affect the environment.

Environmental justice: The fair treatment of people of all races, cultures, incomes, and educational levels with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.

Ephemeral stream: A stream that flows only after a storm or during snowmelt, and whose channel is, at all times, above the water table; groundwater is not a source of water for the stream. Many desert streams are ephemeral.

Epicenter: The point on the earth's surface that is directly over the focus of an earthquake.

Erosion: The wearing away of the land surface by running water, wind, ice, or other geologic agents.

Escarpmnts: The topographic expression of a fault.

Estate lands: *See* Split estate lands.

Evaporite: A sedimentary rock formed when a saline solution evaporates. Evaporites are typically formed when a saline lake dries up or due to evaporation in tidal marshes in hot, arid climates.

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

Executive Order: A President's or Governor's declaration that has the force of law usually based on existing statutory powers and requiring no action by the Congress or state legislature. <http://www.legal-explanations.com/definitions/executive-order.htm>

Exotic species: A plant or animal that is not native to the region where it is found.

Exploration and Mining Activity (on BLM land): Exploration refers to exploring for minerals by way of drilling, trenching, etc. Mining refers to the extraction and processing of minerals. Exploration and mining activities on BLM-managed lands are regulated under 43 CFR Part 3809, which provides for three levels of activity. The first, causal use, requires no contact with the BLM. The second, a notice, is filed for activities that disturb less than 5 acres unreclaimed per calendar year. The third, a plan of operations, is filed for activities that exceed 5 acres unreclaimed per calendar year. Plans of operation require BLM approval and are subject to NEPA.

Exposure pathway: The path from sources of pollutants via soil, water, or food, to man and other species or settings.

Extant: Currently existing.

Extensive Recreation Management Areas: All BLM-administered lands outside Special Recreation Management Areas. These areas may include developed and primitive recreation sites with minimal facilities.

Extirpation: The elimination of a species or subspecies from a particular area, but not from its entire range.

Federal Cave Resources Protection Act of 1988: Sets forth policy that public lands will be managed to secure, protect, and preserve significant caves.

Federal land: Land owned by the United States, without reference to how the land was acquired or which federal agency administers the land. *See also* Public land.

Federal Land Policy and Management Act of 1976 (FLPMA): Act requiring the Secretary of the Interior to issue regulations to manage public lands and the property located on those lands for the long term.

Federal Mine Safety and Health Act of 1977: Act requiring the U.S. Department of Labor's (DOL's) Mine Safety and Health Administration (MSHA) to inspect all mines each year to ensure safe and healthy work environments for miners.

Feedstock: Raw material required for an industrial process.

Flare: A control device that burns hazardous materials to prevent their release into the environment; may operate continuously or intermittently, usually on top of a stack.

Fledging success: The average number of offspring fledged (i.e., raised until they leave the nest) per female.

Floaters: Nonbreeding adult and subadult birds that move and live within a breeding population.

Floodplain: Mostly level land along rivers and streams that becomes covered by water when the river overflows its banks.

Flora: Plants, especially those of a specific region, considered as a group.

Fluvial: Pertaining to a river; fluvial sediments are deposited by rivers.

Fly ash: Small particles of airborne ash produced by burning fossil fuels. Fly ash is expelled as noncombustible airborne emissions or recovered as a by-product for commercial use (e.g., as a replacement for Portland cement used in concrete).

Flyway: A concentrated, predictable flight path of migratory bird species from their breeding ground to their wintering area.

Forbs: Nonwoody plants that are not grasses or grasslike.

Fragmentation of habitat: The breaking up of a single large habitat area such that the remaining habitat patches are smaller and farther apart from each other.

Frost heave: Expansion in soil volume due to the formation of ice. It is generally expressed as an upward movement of the ground surface.

Fugitive dust: The dust released from activities associated with construction, manufacturing, or transportation.

Gallinaceous birds: Heavy-bodied, largely ground-feeding domestic or game birds, including chickens, pheasants, turkeys, grouse, partridges, and quail.

Geologic resources: Material of value to humans that is extracted (or is extractable) from solid earth, including minerals, rocks, and metals; energy resources; soil; and water.

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

Geotechnical: Related to the use of scientific methods and engineering principles to analyze and predict the behavior of earth materials. Geotechnical engineers deal with soil and rock mechanics, foundation engineering, ground movement, deep excavation, and related work.

Geothermal energy: Energy that is generated by the heat of the earth's own internal temperature. Sources of geothermal energy include molten rock, hot springs, geysers, steam, and volcanoes.

Geothermal production: Electricity produced from the heat energy of the earth. This energy may be in the form of steam, hot water, or the thermal energy contained in rocks at great depths. The BLM leases geothermal rights to explore for and produce geothermal resources from federal lands or from subsurface mineral rights held by the government.

Gilsonite: A form of natural asphalt found in large amounts only in the Uintah Basin of Utah. Discovered in the 1860s, it was first marketed as a lacquer, electrical insulator, and waterproofing compound about 25 years later by Samuel H. Gilson.

Grazing permits and leases (on BLM land): A grazing permit authorizing grazing of a specified number and class of livestock within a grazing district on a designated area of land during specified seasons each year. A grazing lease authorizes the grazing of livestock on public land outside grazing districts during a specified period of time. Grazing privileges are measured in terms of animal unit months.

Groundwater: The supply of water found beneath the earth's surface, usually in porous rock formations (aquifers), which may supply wells and springs. Generally, it refers to all water contained in the ground.

Habitat: The place, including physical and biotic conditions, where a plant or animal lives.

Halite: Common table salt, NaCl.

Hazardous air pollutants (HAPs): *See* Air toxics.

Hazardous material: Any material that poses a threat to human health and/or the environment. Hazardous materials are typically toxic, corrosive, ignitable, explosive, or chemically reactive.

Hazardous Material Transportation Law: This law (Title 49, Sections 5101–5127 of the *United States Code*) is the major transportation-related statute affecting transportation of hazardous cargoes. Regulations include The Hazardous Materials Table (49 CFR 172.101), which designates specific materials as hazardous for the purpose of transportation, and Hazardous Materials Transportation Regulations (49 CFR Parts 171–180), which establish packaging, labeling, placarding, documentation, operational, training, and emergency response requirements for the management of shipments of hazardous cargoes by aircraft, vessel, vehicle, or rail.

Hazardous waste: By-products of society that can pose a substantial or potential hazard to human health or the environment when improperly managed. Possesses at least one of four characteristics (ignitability, corrosivity, reactivity, or toxicity), or appears on special EPA lists.

Hedonic statistical framework: A method of assessing the impact of various structural (number of bedrooms, bathrooms, square footage, age, etc.) and locational attributes (local amenities, fiscal conditions, distance to workplace, etc.) on residential housing prices.

Herbaceous plants: Nonwoody plants.

Hertz (Hz): The unit of measurement of frequency, equivalent to one cycle per second.

Historic properties: Any prehistoric or historic districts, sites, buildings, structures, or objects included in, or eligible for inclusion in, the *National Register of Historic Places* (NRHP) maintained by the Secretary of the Interior. They include artifacts, records, and remains that are related to and located within such properties.

Historic site: The site of a significant event, prehistoric or historic activity, or structure or landscape (existing or vanished), where the site itself possesses historical, cultural, or archeological value apart from the value of any existing structure or landscape.

Hydrocarbon: Any compound or mix of compounds, solid, liquid or gas, composed of carbon and hydrogen (e.g., coal, crude oil, and natural gas).

Hydrology: The study of water that covers the occurrence, properties, distribution, circulation, and transport of water, including groundwater, surface water, and rainfall.

Hypolimnetic: The deeper, cooler portions of a reservoir or lake that result from stratification. (Stratification refers to the division of water in lakes and ponds into layers with different temperatures and oxygen content).

Impact: The effect, influence, alteration, or imprint caused by an action.

Impact-producing factor: An activity or process that causes impacts to the environmental or socioeconomic setting, such as water use, surface disturbance, numbers of employees hired, or solid and liquid waste generation.

Impoundment: A body of water or sludge confined by a dam, dike, floodgate, or other barrier. An impoundment is used to collect and store water for future use.

Incidental take: To harass, harm, wound, or kill threatened or endangered species as an unintentional consequence of project construction or operations.

Indigenous: Native to an area.

Indirect impact: An effect that is related to but removed from a proposed action by an intermediate step or process. An example would be changes in surface water quality resulting from soil erosion at construction sites.

Infrasound: Sound waves below the frequency range that can be heard by humans (about 1 to <20 Hz). Infrasound can often be felt, or sensed as a vibration, and can cause motion sickness and other disturbances.

Infrastructure: The basic facilities, services, and utilities needed for the functions of an industrial facility or site.

In situ: In its original place; unmoved, unexcavated; remaining at the site or in the subsurface.

In situ processing: Processing that liquefies and mobilizes the kerogen (oil shale) or bitumen (tar sands) in place by circulating a heated working medium such as gas, superheated water, or steam, or by using underground electric heaters.

Interbedded: Alternating layers of different character.

Intermittent streams: A stream that flows most of the time but occasionally is dry or reduced to a pool stage when losses from evaporation or seepage exceed the available streamflow.

Intermontane: Between or surrounded by mountains.

Invasive species: Any species, including noxious and exotic species, that is an aggressive colonizer and can outcompete indigenous species.

Isochronal: Recurring at regular intervals; of equal time.

Joint: A fracture or parting in rock, without movement.

Just-in-time ordering strategy: A strategy for managing materials used at a project that ensures materials become available as needed to support activities but are not stockpiled at the project location in excess of what is needed at any point in time. The just-in-time approach controls costs by avoiding the accumulation of inflated inventories, reducing the potential for stockpiled materials to go out of date or otherwise become obsolete, and minimizing product storage and management requirements. When applied to hazardous chemicals, this approach reduces waste generation, the potential for mismanagement of materials, and the overall risk of adverse impacts resulting from emergency or off-normal events involving those materials.

Kerogen: The hydrocarbon in oil shale. Kerogen is a pyrobitumen, and oil is formed from kerogen by heating. It consists chiefly of low forms of plant life; chemically it is a complex mixture of hydrocarbon compounds of large molecules, containing hydrogen, carbon, oxygen, nitrogen, and sulfur. Kerogen is the chief source of oil in oil shales.

Lacustrine: Pertaining to a lake. Lacustrine sediments are deposited in lakes.

Lands with wilderness characteristics (LWC): Under Section 201 of FLPMA, the BLM has an ongoing obligation to maintain an inventory of all public lands and their resources and other values. Through this inventory process, the BLM has identified certain lands as having wilderness characteristics.

Laydown area: An area that has been cleared for the temporary storage of equipment and supplies. To ensure accessibility and safe maneuverability for transport and off-loading of vehicles, laydown areas are usually covered with rock and/or gravel.

L_{dn}: The day-night average sound level. It is the average A-weighted sound level over a 24-hour period that gives additional weight to noise that occurs during the night (10:00 p.m. to 7:00 a.m.).

Leachate: A liquid that results from water collecting contaminants as it trickles through wastes, agricultural pesticides, or fertilizers. Leaching may occur in farming areas, feedlots, and landfills and may result in hazardous substances entering surface water, groundwater, or soil.

Leaching: The process by which soluble substances are dissolved and transported down through the soil by recharge.

Lead: A gray-white metal that is listed as a criteria air pollutant. Health effects from exposure to lead include brain and kidney damage and learning disabilities. Sources include leaded gasoline and metal refineries.

Lease: A contract in legal form that provides for the right to develop and produce resources within a specific area for a specific period of time under certain agreed-upon terms and conditions.

Lek: A traditional site that is used year after year by males of certain bird species for communal display as they compete for female mates. Leks are generally areas supported by low, sparse vegetation or open areas surrounded by sagebrush that provide escape, feeding, and cover.

L_{eq}: Equivalent/continuous sound level. L_{eq} is the steady sound level that would contain the same total sound energy as the time-varying sound over a given time.

Limestone: A sedimentary rock consisting of more than 50% calcium carbonate (CaCO₃).

Listed species: Any species of fish, wildlife, or plant that has been determined, through the full, formal ESA listing process, to be either threatened or endangered.

Losing streams: Streams that seem to disappear because they flow into an aquifer.

Low-frequency sound: Sound waves with a frequency in the range of 20 to 80 Hz. The range of human hearing is approximately 20 to 20,000 Hz.

Mahogany Zone: The Mahogany Zone (Parachute Member) in the Piceance Creek Basin consists of kerogen-rich strata and averages 100 to 200 ft thick. This zone extends to all margins of the basin and is the richest oil shale interval in the stratigraphic section.

Management Framework Plan (MFP): A land use plan that establishes land use allocations, multiple use guidelines, and management objectives for a given planning area. The MFP planning system was used by the BLM until about 1980.

Marlstone: An earthy or impure argillaceous limestone.

Marsh: A wetland where the dominant vegetation is nonwoody plants, such as grasses, as compared with a swamp where the dominant vegetation is woody plants, such as trees and shrubs.

Mechanical noise: Noise caused by the vibration or rubbing of mechanical parts.

Mesic: Refers to a habitat that is neither wet or dry; intermediate in moisture, without extremes.

Mesocyclone: A cyclonically rotating vortex, around 2 to 6 mi in diameter, in a convective storm.

Mineral Leasing Act of 1920 (MLA): Authorizes the agency to issue rights-of-way grants for oil and gas gathering and distribution pipelines and related facilities not already authorized through a lease, and oil and natural gas transmission pipelines and related facilities.

Mineral materials (salable): For BLM-managed land, these are defined as minerals such as common varieties of sand, gravel, pumice, and clay that are not obtainable under the mining or leasing law, but that can be obtained through purchase or free use permit under the Materials Act of 1947, as amended.

Mitigation: A method or process by which impacts from actions can be made less injurious to the environment through appropriate protective measures. Also called mitigative measure.

Monocline: An open, step-like fold in rock over a large area.

Montane: A section of a mountainous region below the timberline, characterized by cool, moist temperatures and dominated by evergreen trees.

Mudflat: A flat sheet of mud between the high- and low-tide marks. Also, the flat bottoms of lakes, rivers, and ponds, largely filled with organic deposits, freshly exposed by a lowering of the water level.

Nahcolite: Sodium bicarbonate or baking soda (NaHCO_3).

National Ambient Air Quality Standards (NAAQS): Air quality standards established by the CAA, as amended. The primary NAAQS specify maximum outdoor air concentrations of criteria pollutants that would protect the public health within an adequate margin of safety. The secondary NAAQS specify maximum concentrations that would protect the public welfare from any known or anticipated adverse effects of a pollutant.

National Conservation Areas: Areas designated by Congress to provide for the conservation, use, enjoyment, and enhancement of certain natural, recreational, paleontological, and other resources, including fish and wildlife habitat.

National Environmental Policy Act of 1969 (NEPA): Requires federal agencies to prepare a detailed statement on the environmental impacts of their proposed major actions significantly affecting the quality of the human environment.

National Historic Preservation Act of 1996, as Amended (NHPA): Requires federal agencies to take into account the effects of their actions on historical and archaeological resources and consider opportunities to minimize their impacts.

National Historic Trails: These trails are designated by Congress under the National Trails System Act of 1968 and follow, as closely as possible, on federal land, the original trails or routes of travel with national historical significance.

National Landscape Conservation System (NLCS): Created by the BLM in June 2000 to increase public awareness of BLM lands with scientific, cultural, educational, ecological, and other values. It consists of National Conservation Areas, National Monuments, Wilderness Areas, Wilderness Study Areas, Wild and Scenic Rivers, and National Historic and Scenic Trails.

National Monument: An area owned by the federal government and administered by the National Park Service, the BLM, and/or U.S. Forest Service for the purpose of preserving and making available to the public a resource of archaeological, scientific, or aesthetic interest. National monuments are designated by the president, under the authority of the American Antiquities Act of 1906, or by Congress through legislation.

National Natural Landmark: An area of national significance, designated by the Secretary of the Interior or the Secretary of Agriculture, that contains outstanding examples of the nation's natural heritage.

National Outstanding Natural Areas: Areas of public land that are either congressionally or administratively designated on the basis of their exceptional, rare, or unusually natural characteristics.

National Parks: Public lands set aside by an act of Congress because of their unique physical and/or cultural value to the nation as a whole. These lands are administered by the National Park Service.

National Pollutant Discharge Elimination System (NPDES): A federal permitting system controlling the discharge of effluents to surface water and regulated through the CWA, as amended.

National Recreation Area: An area designated by Congress to conserve and enhance certain natural, scenic, historic, and recreational values.

National Recreation Trails: Trails designated by the Secretary of the Interior or the Secretary of Agriculture that are reasonably accessible to urban areas and meet criteria established in the National Trails System Act.

National Register of Historic Places: A comprehensive list of districts, sites, buildings, structures, and objects that are significant in American history, architecture, archaeology, engineering, and culture. The National Register is administered by the National Park Service, which is part of the U.S. Department of the Interior.

National Scenic Trails: These trails are designated by Congress and offer maximum outdoor recreation potential and provide enjoyment of the various qualities—scenic, historical, natural, and cultural—of the areas through which these trails pass.

National Wild and Scenic River: A river or river section designated by Congress or the Secretary of the Interior, under the authority of the Wild and Scenic Rivers Act of 1968, to protect outstanding scenic, recreational, and other values and to preserve the river or river section in its free-flowing condition.

National Wildlife Refuge System: A designation for certain protected areas in the United States, managed by the USFWS, that includes all lands, waters, and interests therein administered by the USFWS as wildlife refuges, wildlife ranges, wildlife management areas, waterfowl production areas, and other areas for the protection and conservation of fish, wildlife, and plant resources.

Native American Graves Protection and Repatriation Act: This Act established the priority for ownership or control of Native American cultural items excavated or discovered on federal or tribal land after 1990 and the procedures for repatriation of items in federal possession. The Act allows the intentional removal from or excavation of Native American cultural items from federal or tribal lands only with a permit or upon consultation with the appropriate tribe.

Nitrogen dioxide (NO₂): A toxic reddish brown gas that is a strong oxidizing agent, produced by combustion (as of fossil fuels). It is the most abundant of the oxides of nitrogen in the atmosphere and plays a major role in the formation of ozone.

Nitrogen oxides (NO_x): Nitrogen oxides include various nitrogen compounds, primarily nitrogen dioxide and nitric oxide. They form when fossil fuels are burned at high temperatures and react with volatile organic compounds to form ozone, the main component of urban smog. They are also a precursor pollutant that contributes to the formation of acid rain. Nitrogen oxides are one of the six criteria air pollutants specified under Title I of the CAA.

Noise Control Act of 1972: Requires that noise levels of facilities or operations not jeopardize public health and safety. States are authorized to establish their own noise levels.

Nominal (measurement): A design value, based on experience and generally reflecting accepted industry practice. A nominal value (e.g., depth of a tower foundation) may change depending on the conditions at a specific location.

Nonattainment area: The EPA's designation for an air quality control region (or portion thereof) in which ambient air concentrations of one or more criteria pollutants exceed NAAQS.

Nonenergy leasables: All solid nonenergy minerals that private entities produce under leases issued by the BLM. These entities pay royalties to the federal government based on the value of the mineral they produce. Most of these minerals are used in industry and include sodium, bicarbonate, and potash.

Non-point-source contaminant: Forms of diffuse pollution caused by sediment, nutrients, and organic and toxic substances originating from land use activities; these substances are carried to lakes and streams by surface runoff. Non-point-source pollution is contamination that occurs when rainwater, snowmelt, or irrigation water washes off plowed fields, city streets, or suburban backyards. As this runoff moves across the land surface, it picks up soil particles and pollutants, such as nutrients and pesticides.

No Surface Occupancy (NSO): A fluid mineral leasing stipulation that prohibits occupancy or disturbance on all or part of the lease surface in order to protect special values or uses. Lessees may develop the oil and gas or geothermal resources under leases restricted by this stipulation through use of directional drilling from sites outside the no surface occupancy area.

Noxious plants/noxious weeds: Those plants regulated by law or those that are so difficult to control that early detection is important.

Occupational Safety and Health Administration (OSHA): Congress created OSHA under the Occupational Safety and Health Act on December 29, 1970. Its mission is to prevent work-related injuries, illnesses, and deaths.

Off-highway vehicle (OHV): Any motorized vehicle capable of or designed for travel on or immediately over land, water, or other natural terrain.

Offsets: Reductions in emissions that are caused by an activity not directly related to the source creating the emissions. Offsets are used to stabilize total emissions in a particular area.

Oil and gas leasing (on BLM land): The BLM leases oil and gas rights to explore for and produce oil and gas resources from federal lands or mineral rights owned by the federal government. Federal oil and gas leases may be obtained and held by any adult citizen of the United States.

Oil shale: A term used to cover a wide range of fine-grained, organic-rich sedimentary rocks. Oil shale does not contain liquid hydrocarbons or petroleum as such but organic matter derived mainly from aquatic organisms. This organic matter, kerogen, may be converted to oil through destructive distillation or exposure to heat.

Oil Shale, Tar Sands, and Other Strategic Unconventional Fuels Act of 2005: As part of the Energy Policy Act of 2005, Congress declared that oil shale and tar sands (and other unconventional fuels) are strategically important domestic energy resources that should be developed to reduce the nation's growing dependence on oil from politically and economically unstable foreign sources.

Organism: Any form of plant or animal life.

Outwash plain: A smooth plain covered by deposits from water flowing from glaciers.

Overburden: The surface soil that must be moved away to get at coal seams and mineral deposits.

Ozone (O₃): A strong-smelling, reactive toxic chemical gas consisting of three oxygen atoms chemically attached to each other. It is formed in the atmosphere by chemical reactions involving NO_x and volatile organic compounds. The reactions are energized by sunlight. Ozone is a criteria air pollutant under the CAA and is a major constituent of smog.

Paleontological resources: Fossilized remains, imprints, and traces of plants and animals preserved in rocks and sediments since some past geologic time.

Paleontology: The study of plant and animal life that existed in former geologic times, particularly through the study of fossils.

Particulate matter: Fine solid or liquid particles, such as dust, smoke, mist, fumes, or smog, found in air or emissions. The size of the particulates is measured in micrometers (µm). One micrometer is 1 millionth of a meter, or 0.000039 inch. Particle size is important because the EPA has set standards for PM_{2.5} and PM₁₀ particulates.

Parturition areas: Birthing areas commonly used by more than a few female members of a population. Generally used when referring to ungulates, such as elk and mule deer.

Passerines: Perching birds or songbirds.

Perennial streams: Streams that flow continuously.

Permissible exposure limit (PEL): The maximum amount or concentration of a chemical that a worker may be exposed to under OSHA regulations.

Permit: A revocable authorization to use public land for a specified purpose for up to 3 years. (BLM glossary).

Personal protective equipment (PPE): Clothing and equipment that are worn to reduce exposure to potentially hazardous chemicals and other pollutants.

Petroglyphs: Carvings in rock that express artistic or religious meaning.

Photovoltaic system: A system that converts light into electric current.

Phreatophytic: Relating to deep-rooted plants that obtain water from a permanent ground supply or from the water table.

Physiography: The physical geography of an area or the description of its physical features.

Pigs: Devices routinely introduced into pipelines to clean the inner wall of the pipe and monitor for critical conditions that could compromise the integrity or efficiency of the pipeline, such as cracks, corrosion, and pipe deformations.

Planetary boundary layer: The bottom layer of the atmosphere that is in contact with the surface of the earth. Within this layer, the effects of friction are significant. It is roughly the lowest 1 or 2 km of the atmosphere.

Plateau: A large, flat area of land that is higher than the surrounding land.

Playa: A dry, vegetation-free area in the bottom of an undrained desert basin. It may contain deposits of clay, silt, or sand and, frequently, soluble salts of sodium, calcium, potassium, etc.

Playa lake: A shallow, intermittent lake in an arid or semiarid region. It occupies a playa and may dry up in the summer.

PM₁₀: Particulate matter with a mean aerodynamic diameter of 10 μm (0.0004 in.) or less. Particles less than this diameter are small enough to be deposited in the lungs. PM₁₀ is one of the six criteria air pollutants specified under Title I of the CAA.

PM_{2.5}: Particulate matter with a mean aerodynamic diameter of 2.5 μm (0.0001 in.) or less.

Policy: A plan of action adopted by an organization.

Pollutant: Any material entering the environment that has undesired effects.

Polychlorinated biphenyls (PCBs): A group of manufactured organic compounds made up of carbon, hydrogen, and chlorine. They were used in the manufacture of plastics and as insulating fluids for electrical equipment. Because they are very stable and fat-soluble, they accumulate in ever-higher concentrations as they move up the food chain. Their use was banned in the United States in 1979.

Polycyclic aromatic hydrocarbons (PAHs): Aromatic hydrocarbons containing more than one fused benzene ring. PAHs are a carcinogenic component of the tar sands and oil shale. PAHs are commonly formed during the incomplete burning of coal, oil and gas, garbage, or other organic substances.

Population: A group of individuals of the same species occupying a defined locality during a given time that exhibit reproductive continuity from generation to generation.

Potable water: Water that can be used for human consumption.

Preference right lease areas: In the context of the BLM's ongoing oil shale research, development, and demonstration (RD&D) program, an area reserved by the holder of an RD&D lease for future leasing for the commercial development of oil shale, subsequent to review and approval by the BLM.

Prevention of Significant Deterioration (PSD) Program: An air pollution permitting program intended to ensure that air quality does not diminish in attainment areas.

Processing technologies: *See* Retorting.

Programmatic Agreement: A document that records the terms and conditions agreed upon to resolve the potential adverse effects of a federal agency program, complex undertaking, or other situations in accordance with Section 800.14(b), "Programmatic Agreements," of 36 CFR Part 800, "Protection of Historic Properties."

Public land: Any land and interest in land (outside of Alaska) owned by the United States and administered by the Secretary of the Interior through the BLM.

Public Land Order (PLO): An order affecting, modifying, or canceling a withdrawal or reservation that has been issued by the Secretary of the Interior pursuant to powers of the President delegated to the Secretary by Executive Order 9146 of April 24, 1942, or 9337 of April 24, 1943.

Putrescible waste: Solid waste that contains organic matter that can rot or decompose.

Pyrolysis: Chemical decomposition by the action of heat.

Raptor: Bird of prey.

Reasonably Foreseeable Future Action: A projection of activities (industrial and minerals development, recreational activities and development, wildlife management, air and water resource management, urban development, transportation, etc.) within a defined geographic area and for a specified time frame. Reasonably foreseeable future actions are defined by available information on resource occurrences, past and present activities or uses and trends, economics, existing project proposals and other reliable indications of anticipated activities, and other identified factors specific to the area of analysis.

Recharge: The addition of water to an aquifer by natural infiltration (e.g., rainfall that seeps in to the ground) or by artificial injection through wells.

Reclamation: Returning disturbed lands to a form and productivity that will be ecologically balanced and in conformity with a predetermined land management plan.

Recreation Opportunity Spectrum (ROS) Class: A tool commonly used by federal land management agencies to determine the level of development, the types of facilities that are appropriate, and the type of recreational opportunities that one will experience. Six recreation opportunity classes have been developed: primitive, semiprimitive nonmotorized, semiprimitive motorized, roaded natural, rural, and urban.

Refugium: An area where special environmental circumstances have enabled a species or a community of species to survive after extinction in surrounding areas.

Region of influence (ROI): Consists of the counties in each of the three states (Colorado, Utah, and Wyoming) in which each oil shale and tar sands resource is located.

Relict: A remnant or fragment of the vegetation of an area that remains from a former period when the vegetation was more widely distributed.

Research Natural Areas: Areas designated or set aside by Congress or by a public or private agency to protect natural features or processes for scientific and educational purposes.

Resource Conservation and Recovery Act (RCRA): Regulates the storage, treatment, and disposal of hazardous and nonhazardous wastes.

Resource Management Plan (RMP): A land use plan that establishes land use allocations, multiple use guidelines, and management objectives for a given planning area. The RMP planning system has been used by the BLM since about 1980.

Retort: A device or process used for extraction or distillation of valuable resources from complex mixtures. In oil shale processing, a retort is a mechanical device in which mined and sized oil shale is heated to cause the pyrolysis of its kerogen organic fraction to produce organic liquids known as raw shale oil.

Retorting: Processing technologies for separating valuable resources from their parent ores or extracting them from their natural settings. Retorting of oil shale involves removing kerogen from the oil shale, usually by burning or heating the shale, and subsequent chemical conversion of the kerogen into synthetic crude oils. Retorting can be carried out in surface vessels (surface retorting) or underground in fractured shale. Chemical treatment processes also may be applied. Aboveground retorting (AGR) technologies are used to process mined oil shale; the retorting processes are typically preceded by a variety of pretreatment activities, including crushing, sizing, and sorting. By-products of aboveground retorting of oil shale include flammable low-molecular weight organic gases and “spent shale” (that which is left of the original oil shale after kerogen has been removed).

Riffle: A rapid, turbulent flow of water over a shallow area in a stream. Riffles add oxygen to the water as water is churned and provide habitat for many invertebrates.

Right-of-way (ROW): A legal right of passage over another person’s land; public land authorized to be used or occupied pursuant to a ROW grant.

Right-of-way corridor: A designated parcel of land, either linear or areal in character, that has been identified through the land use planning process as the preferred location for existing and future ROW grants and would accommodate more than one type of ROW or one or more ROWs that are similar, identical, or compatible.

Right-of-way grant: The authorization to use a particular parcel of public land for specific facilities for a definite time period; authorizes the use of a ROW over, upon, under, or through public lands for construction, operation, maintenance, and termination of a project.

Riparian: Relating to, living in, or located on the bank of a river, lake, or tidewater.

Rolling footprint: Development that occurs incrementally so that, at any given time, some portion of a lease area is involved in active development, another portion is involved in preparation for a future development phase, another portion is undergoing restoration after development, and the remainder of the lease area is essentially undeveloped. Ultimately, the entire lease will be developed and then restored, but the amount of acreage that is disturbed at any given time is a subset of the entire lease.

Room-and-pillar entries: Refers to a system of mining in which typically flat-lying beds of coal or ore are removed from haulage-ways (entries) and selected areas called rooms. Pillars of unmined coal are left between the rooms to support the roof.

Run-of-mine: Refers to ore in its natural, unprocessed state; pertaining to ore just as it is mined.

Safe Drinking Water Act (SDWA): This Act authorizes development of maximum contaminant levels for drinking water applicable to public water systems (i.e., systems that serve at least 25 people or have at least 15 connections).

Salt: Any compound formed by the reaction of an acid and a base. The sodium salts formed in saline lakes are typically the reaction products of carbonic acid (H_2CO_3) with sodium derived from the weathering of any number of minerals containing sodium. Carbonic acid is formed when atmospheric carbon dioxide dissolves in water.

Sandstone: A sedimentary rock composed primarily of sand-sized (0.0025 to 0.08 in.) grains.

Savannah: A flat grassland of tropical and subtropical regions usually having distinct periods of dry and wet weather.

Scrubbers: Any of several forms of chemical/physical devices that remove sulfur compounds formed during coal combustion.

Section 7 of the Endangered Species Act: Requires all federal agencies, in “consultation” with the USFWS, to ensure that their actions are not likely to jeopardize the continued existence of listed species or result in destruction or adverse modification of critical habitat.

Sedges: Perennial nonwoody plants that resemble grasses in that they have relatively narrow leaves. They are common to most freshwater wetlands.

Sediment: Materials that sink to the bottom of a body of water, or materials that are deposited by wind, water, or glaciers.

Sedimentary rock: Rock formed at or near the earth's surface from the consolidation of loose sediment that has accumulated in layers through deposition by water, wind, or ice, or deposited by organisms. Examples are sandstone and limestone.

Sedimentation: The removal, transport, and deposition of sediment particles by wind or water.

Seeps: Wet areas, normally not flowing, arising from an underground water source. Any place where liquid has oozed from the ground to the surface.

Seismic: Pertaining to any earth vibration, especially that of an earthquake.

Sensitive species: A plant or animal species listed by the state or federal government as threatened, endangered, or as a species of special concern. The list of BLM-sensitive species varies from state to state, and the same species can be considered sensitive in one state but not in another.

Seral: The state of development in ecological succession.

Shakedown tests: Tests conducted to demonstrate that equipment is operational and meets performance requirements.

Shale oil: A crude liquid hydrocarbon obtained from oil shale by distillation. The shale oil may be refined into normal petroleum products such as gasoline and diesel fuel.

Shortite: Sodium calcium carbonate $[\text{Na}_2\text{Ca}_2(\text{CO}_3)_3]$.

Shrub steppe: Habitat composed of various shrubs and grasses.

Silt: Sedimentary material consisting of fine mineral particles intermediate in size between sand and clay.

Siltation: The deposition or accumulation of silt.

Siltstone: A sedimentary rock composed primarily of silt-sized (0.00016 to 0.0025 in.) grains.

Slash: Any treetops, limbs, bark, abandoned forest products, windfalls, or other debris left on the land after timber or other forest products have been cut.

Sludge: A dense, slushy, liquid-to-semifluid product that accumulates as an end result of an industrial or technological process designed to purify a substance; A semisolid residue from any of a number of air or water treatment processes; can be a hazardous waste.

Solid Waste Disposal Act: An act that regulates the treatment, storage, or disposal of solid, both hazardous and nonhazardous waste, as amended by RCRA and the Hazardous and Solid Waste Amendments of 1984.

Sound pressure level: The level, in decibels, of acoustic pressure waves. Very loud sounds have high sound pressure levels; soft sounds have low sound pressure levels. A 3-dB increase in sound doubles the sound pressure level. Zero decibels is the threshold of human hearing. The maximum level of human hearing is around a 120-dB sound pressure level, which is the level where people begin to experience pain because of the high sound pressure levels.

Special areas: Areas of high public interest and containing outstanding natural features or values. BLM special areas include National Wild and Scenic Rivers, National Wildernesses, National Conservation Areas, National Scenic Areas, National Recreation Areas, National Monuments, National Outstanding Natural Areas, National Historic Landmarks, National Register of Historic Places, National Natural Landmarks, National Recreational Trails, National Scenic Trails, National Historic Trails, National Backcountry Byways, Areas of Critical Environmental Concern, Research Natural Areas, Important Bird Areas, United Nations Biosphere Reserves, and World Heritage Sites.

Special Recreation Management Areas (SRMAs): An area that possesses outstanding recreation resources or where recreation use causes significant user conflicts, visitor safety problems, or resource damage.

Special Status species: Includes both plant and animal species that are proposed for listing, are officially listed as threatened or endangered, or are candidates for listing as threatened or endangered under the provisions of the ESA; those listed by a state in a category such as threatened or endangered, implying potential endangerment or extinction; and those designated by each BLM State Director as sensitive.

Species of Special Concern: A species that may have a declining population, limited occurrence, or low numbers for any of a variety of reasons.

Spent shale: By-product of aboveground retorting of oil shale, that is, what is left of the original oil shale after kerogen has been removed; spent shale is typically disposed of as a waste or used in reclamation of the oil shale mine.

Split estate lands: Lands where the owner of the mineral rights and the surface owner are not the same party in interest. The most common split estate is federal ownership of mineral rights and other-interest ownership of the surface. The federal government can lease the oil and gas rights without surface owner consent, where such a condition occurs.

Spoilbank: A pile of soil, subsoil, rock, or other material excavated from a drainage ditch, pond, or other cut. A deposit at the surface of the mine of mined material (e.g., coal).

State Historic Preservation Officer (SHPO): The state officer charged with the identification and protection of prehistoric and historic resources in accordance with the National Historic Preservation Act.

State Implementation Plan (SIP): A plan for controlling air pollution and air quality in that state; each state must develop its own regulations to monitor, permit, and control air emissions within its boundaries.

Steppe: *See* Shrub-steppe.

Stipulation: A provision that modifies standard lease rights and is attached to and made a part of the lease.

Strata: Single, distinct layers of sediment or sedimentary rock.

Strategic Petroleum Reserve (SPR): The largest stockpile of government-owned emergency crude oil in the world. It was established in 1975 in the aftermath of the 1973–1974 oil embargo to provide emergency crude oil supplies for the United States. The oil is stored in underground salt caverns in Texas and Louisiana.

Stratification: Separating into layers. Stratification refers to the division of water in lakes and ponds into layers with different temperatures and oxygen content.

Stratigraphy, subsurface: The arrangement (in layers) of different types of geologic materials located below the surface of an area.

Subalpine: The growing or living conditions in mountainous regions just below the timberline.

Substation: Consists of one or more transformers and their associated switchgear. A substation is used to switch generators, equipment, and circuits or lines in and out of a system. It is also used to change ac voltages from one level to another.

Sulfur dioxide (SO₂): A gas formed from burning fossil fuels. Sulfur dioxide is one of the six criteria air pollutants specified under Title I of the CAA.

Sulfur oxides (SO_x): Pungent, colorless gases that are formed primarily by fossil fuel combustion. Sulfur oxides may damage the respiratory tract, as well as plants and trees.

Surface mining: Removal of a mineral by stripping off the overburden, removing the mineral, and then replacing the overburden and topsoil.

Surface retorting: *See* Retorting.

Surface water: Water on the earth's surface that is directly exposed to the atmosphere, as distinguished from water in the ground (groundwater).

Switchgear: A group of switches, relays, circuit breakers, etc., used for controlling distribution of power to other distribution equipment and large loads.

Syncline: A downward, trough-shaped configuration of folded, stratified rocks.

Syncrude: Synthetic crude oil.

Talus: Rock debris accumulated at the base of the cliff or slope from which they have broken off.

Tar sands: Also referred to as "oil sand" or "bituminous sand," tar sand is a sedimentary material composed primarily of sand, clay, water (in some deposits) and organic constituents known as bitumen. Processing of tar sands involves separating the bitumen fraction from the inorganic materials and subsequently upgrading the bitumen through a series of reactions to produce a synthetic crude oil feedstock that is suitable for further refining into distillate fuels in conventional refineries.

Terrace: A step-like surface, bordering a valley floor or shoreline, that represents the former position of a floodplain, lake, or seashore.

Terrestrial: Belonging to or living on land.

Thermal maturity: The amount of heat, in relative terms, to which a rock has been subjected. A thermally immature rock has not been subjected to enough heat to begin the process of converting kerogen to oil and/or gas. A thermally overmature rock has been subjected to enough heat to convert it to graphite. These are the two extremes, and there are many intermediate stages of thermal maturity.

Threatened species: Any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. Requirements for declaring a species threatened are contained in the ESA.

Timing limitations (seasonal restriction): Prohibits surface use during specified time periods to protect identified resource values. The stipulation does not apply to the operation and maintenance of production facilities unless the findings of analysis demonstrate that there is the continued need for such mitigation and that less stringent, project-specific mitigation measures would be insufficient.

Topography: The shape of the earth's surface; the relative position and elevations of natural and human-made features of an area.

Total dissolved solids (TDS): The dry weight of dissolved material, organic and inorganic, contained in water. The term is used to reflect salinity.

Total Maximum Daily Load (TMDL): The sum of the individual wasteload allocations for point sources, load allocations for non-point sources and natural background, plus a margin of safety. TMDLs can be expressed in terms of mass per time, toxicity, or other appropriate measures that relate to a state's water quality standard.

Toxic Substances Control Act (TSCA): An Act authorizing the EPA to secure information on all new and existing chemical substances and to control any of these substances determined to cause an unreasonable risk to public health or the environment.

Transformer: A device for transferring electric power from one circuit to another in an alternating current system. Transformers are also used to change voltage from one level to another.

Transponder: A device that transmits and responds to radio waves.

Trona: Soda ash; a major source of sodium minerals $[\text{Na}_2(\text{CO}_3)(\text{HCO}_3)2\text{H}_2\text{O}]$.

Turbidity: A measure of the cloudiness or opaqueness of water. Typically, the higher the concentration of suspended material, the greater the turbidity.

Understory species: Plants that grow beneath a forest canopy.

Unfossiliferous: Not fossil bearing.

Undissected: A plateau or other relatively level surface that has not been deeply cut by streams.

U.S. Environmental Protection Agency (EPA): The independent federal agency, established in 1970, that regulates federal environmental matters and oversees the implementation of federal environmental laws.

Valid existing rights: Legal interests that attach to a land or mineral estate that cannot be divested from the estate until that interest expires or is relinquished.

Viewshed: The total landscape seen or potentially seen from all or a logical part of a travel route, use area, or water body.

Visitor days: One visitor day equals 12 visitor hours at a site or area.

Visual impact: The creation of an intrusion or perceptible contrast that affects the scenic quality of a landscape.

Visual Resource Management (VRM) classes: VRM classes identify the degree of acceptable visual change within a particular landscape. A classification is assigned to public lands based on the guidelines established for scenic quality, visual sensitivity, and visibility (*see Section 3.8*).

Visual Resource Management System: Procedures and methods that support decision-making for planning activities and reviews of proposed developments on BLM-administered lands.

Visual resources: Refers to all objects (man-made and natural, moving and stationary) and features such as landforms and water bodies that are visible on a landscape.

Vitrinite: A type of organic material found in coal.

Vitrinite reflectance (R_0): A measure of the percentage of incident light reflected from a polished surface of vitrinite. It is a measure of the thermal maturity of a sedimentary rock containing kerogen. It is an indicator of whether a source rock has been heated enough to produce oil, oil and gas, or gas only.

Volatile organic compounds (VOCs): A broad range of organic compounds that readily evaporate at normal temperatures and pressures. Sources include certain solvents, degreasers (benzene), and fuels. Volatile organic compounds react with other substances (primarily nitrogen oxides) to form ozone. They contribute significantly to photochemical smog production and certain health problems.

Wastewater: Water that typically contains less than 1% concentration of organic hazardous waste materials.

Water quality: The condition or purity of water with respect to the amount of impurities in it.

Watershed: An area from which water drains to a particular body of water. Watersheds range in size from a few acres to large areas of the country.

Wetlands: Areas that are soaked or flooded by surface or groundwater frequently enough or long enough to support plants, birds, animals, and aquatic life. Wetlands generally include swamps, marshes, bogs, estuaries, and other inland and coastal areas and are federally protected.

Wild and Scenic Rivers (WSR) Act: Primary river conservation law enacted in 1968. The Act was specifically intended by Congress to balance the existing policy of building dams on rivers for water supply, power, and other benefits, with a new policy of protecting the free-flowing character and outstanding values of other rivers.

Wild Horse and Burro Act: Act passed by Congress in 1971 giving BLM the responsibility to protect, manage, and control wild horses.

Wild Horse and Burro Adoption Program: BLM program that offers excess animals for adoption to qualified people. After caring for an animal for 1 year, the adopter is eligible to receive title, or ownership, from the federal government.

Wild horses and burros: Unbranded and unclaimed horses or burros roaming free on public lands in the western United States and protected by the Wild Free-roaming Horse and Burro Act of 1971. They are descendants of animals turned loose by, or escaped from, ranchers, prospectors, Indian Tribes, and the U.S. cavalry from the late 1800s through the 1930s.

Wilderness Areas: Areas designated by Congress and defined by the Wilderness Act of 1964 as places “where the earth and its community are untrammeled by man, where man himself is a visitor who does not remain.” Designation is aimed at ensuring that these lands are preserved and protected in their natural condition.

Wilderness Study Areas (WSAs): Areas designated by a federal land management agency as having wilderness characteristics, thus making them worthy of consideration by Congress for wilderness designation.

Wind rose: Weather map showing the frequency and strength of winds from different directions. A wind rose for use in assessing consequences of airborne releases also shows the frequency of different wind speeds for each compass direction.

Xeric: Low in moisture.

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