
GLOSSARY

Acquisition. The Bureau of Land Management (BLM) acquires land, easements, and other real property rights when it is in the public interest and consistent with approved land use plans (LUP). The BLM's land acquisition program is designed to (1) improve management of natural resources through consolidation of federal, state, and private lands; (2) increase recreational opportunities, preserve open space, and/or ensure accessibility of public lands; (3) secure key property necessary to protect habitat for threatened and endangered species, promote high-quality riparian areas, and promote biological diversity; (4) preserve archaeological and historical resources; and (5) implement specific acquisitions authorized by Acts of Congress.

Activity Plan. A type of implementation plan (see Implementation Plan); an activity plan usually describes multiple projects and applies best management practices to meet LUP objectives. Examples of activity plans include interdisciplinary management plans, habitat management plans, recreation area management plans, and allotment management plans (from H-1601-1, *BLM Land Use Planning Handbook*).

Active Use. Livestock grazing term meaning the current authorized use, including livestock grazing and conservation use. Active use may constitute a portion, or all, of permitted use. Active use does not include temporary non-use or suspended use of forage within all or a portion of an allotment (43 Code of Federal Regulations [CFR] 4100.0-5).

Actual Use. Livestock grazing term meaning where, how many, what kind or class of livestock, and how long livestock graze on an allotment or on a portion or pasture of an allotment (43 CFR 4100.0-5).

Administrative Use. Official use related to management and resources of the public lands by federal, state, or local governments or non-official use sanctioned by an appropriate authorization instrument, such as right-of-way (ROW), permit, lease, or maintenance agreement.

Administrative Route. Routes that are limited to administrative (official or authorized) users only.

Administrative Purposes. Administrative use functions involving regular maintenance or operation of facilities or programs.

Air Quality. A measure of the health-related and visual characteristics of the air, often derived from quantitative measurements of the concentrations of specific injurious or contaminating substances. Refers to standards for various classes of land as designated by the Air Pollution Control Act of 1955; Clean Air Act of 1963, as amended; and Air Quality Act of 1967.

All-Terrain Vehicle (ATV). A wheeled or tracked vehicle, other than a snowmobile or work vehicle, designed primarily for recreational use or for the transportation of property or equipment exclusively on undeveloped roads, trails, marshland, open country, or other unprepared surfaces (from *BLM National Management Strategy for OHV Use on Public Lands*).

Allotment. An area of land designated and managed for livestock grazing (43 CFR 4100.0-5) (from H-4180-1, *BLM Standards for Rangeland Health*).

Allotment Management Plan (AMP). A document prepared in consultation with the grazing lessees or permittees involved that applies to livestock operations on the public lands and that (1) prescribes the manner in and extent to which livestock operations will be conducted to meet the multiple-use,

sustained-yield, economic, and other needs and objectives as determined for the lands by the Secretary concerned; (2) describes the type, location, ownership, and general specifications for the range improvements to be installed and maintained on the lands to meet the livestock grazing and other objectives of land management; and (3) contains such other provisions relating to livestock grazing and other objectives found by the Secretary concerned to be consistent with the provisions of this Act and other applicable law (from Federal Land Policy and Management Act [FLPMA], Title 43, Chapter 35, Subchapter I 1702(k)).

Analysis of the Management Situation (AMS). Assessment of the current management direction. It includes a consolidation of existing data needed for analyzing and resolving identified issues, a description of current BLM management guidance, and a discussion of existing problems and opportunities for solving them.

Animal Unit Month (AUM). A standardized measurement of the amount of forage necessary for the sustenance of one cow unit or its equivalent for 1 month (about 800 pounds of usable air-dried forage).

Appropriate Management Response (AMR). The response to a wildland fire based on an evaluation of risks to firefighter and public safety; the circumstances under which the fire occurs, including weather and fuel conditions; natural and cultural resource management objectives; protection priorities; and values to be protected. The evaluation also must include an analysis of the context of the specific fire within the overall local area, geographic area, or national wildland fire situation.

Areas of Critical Environmental Concern (ACEC). Areas within the public lands in which special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values; fish and wildlife resources; or other natural systems or processes or to protect life and safety from natural hazards (from FLPMA, Title 43, Chapter 35, Subchapter I 1702(a)).

Assessment. The act of evaluating and interpreting data and information for a defined purpose (from H-1601-1, *BLM Land Use Planning Handbook*).

Authorized Officer. A federal employee who has the delegated authority to make a specific decision.

Avoidance Area. Areas with sensitive resources and/or values where ROWs and Section 302 permits, leases, and easements would be strongly discouraged. Authorizations made in avoidance areas would have to be compatible with the purpose for which the area was designated and not be otherwise feasible on lands outside the avoidance area.

Backcountry. A recreation setting classification characterized by a naturally appearing landscape with human modifications not readily noticeable, small areas with limited evidence of surface or vegetative disturbances, and little or no evidence of primitive roads or motorized use. Small, isolated structures may be present. Contains some primitive trails made of native materials (e.g., log bridges and carved wooden signs).

Backcountry Byways. Vehicle routes that traverse scenic corridors using secondary or backcountry road systems. National backcountry byways are designated by the type of road and vehicle needed to travel the byway.

Benefits-Based Recreation. A management framework, philosophy, or approach to providing recreation and trail resources, facilities, and programs that focuses on identifying the economic, environmental,

and social benefits to target recreation users. This management approach builds on existing activity, facility, or demographic group orientations but focuses on the outcomes or changes in the target groups.

Best Management Practices (BMP). A suite of techniques that guide or may be applied to management actions to aid in achieving desired outcomes. BMPs are often developed in conjunction with LUPs, but they are not considered an LUP decision unless the LUP specifies that they are mandatory. The practices may be updated or modified without a plan amendment if they are not mandatory (from H-1601-1, *BLM Land Use Planning Handbook*).

Big Game. Indigenous ungulate wildlife species that are hunted (e.g., elk, deer, bison, bighorn sheep, and pronghorn).

Biological Assessment (BA). The document prepared by or under the direction of the BLM concerning listed and proposed species and designated and proposed critical habitat that may be present in the action area. The document contains the BLM's determination of potential effects of the action on such species and habitat. BAs are required for formal consultations and conferences on "major construction projects." They are recommended for all formal consultations and formal conferences and many informal consultations in which a written evaluation of the effects of an action on listed or proposed species and on designated or proposed critical habitat is needed (from M-6840, *Special Status Species Manual*).

Biological Opinion (BO). The document that includes (1) the U.S. Fish and Wildlife Service's (USFWS) and/or National Marine Fisheries Service's (NMFS) opinion as to whether or not a federal action is likely to jeopardize the continued existence of listed species or to result in the destruction or adverse modification of designated critical habitat; (2) a summary of information on which the opinion is based; and (3) a detailed discussion of the effects of the action on listed species or designated critical habitat. Depending on the determination of jeopardy or non-jeopardy, the BO may contain reasonable and prudent alternatives, a statement of anticipated take of listed animals, and conservation recommendations for listed plants (from M-6840, *Special Status Species Manual*).

Candidate Species. Taxa for which the USFWS has sufficient information on their status and threats to support proposing the species for listing as endangered or threatened under the Endangered Species Act (ESA) but for which issuance of a proposed rule is currently precluded by higher priority listing actions. Separate lists for plants, vertebrate animals, and invertebrate animals are published periodically in the *Federal Register* (from M-6840, *Special Status Species Manual*).

Casual Use. Any short-term non-commercial activity ordinarily resulting in no or negligible disturbance of the public lands, resources, or improvements. Casual use generally includes surveying, marking routes, and data collection. It also includes collecting of geochemical, rock, soil, or mineral specimens using hand tools, hand panning, and non-motorized sluicing. It also generally includes use of metal detectors, gold spears, and other battery-operated devices for sensing the presence of minerals, and hand and battery-operated dry-washers. Casual use excludes the use of mechanized earth-moving equipment, truck-mounted drilling equipment, suction dredges, and motorized vehicles in areas designated as closed to off-highway vehicles (OHV), chemicals, or explosives. It also excludes occupancy or operations in which the cumulative effects of the activities result in more than negligible disturbance.

Cherry-Stemming. Drawing the boundaries of a special management area to exclude the acreage and disturbance of a road/way.

Class of Livestock. Livestock grazing term meaning the ages and/or sex groups of a kind of livestock (43 CFR 4100.0-5).

Closed. Generally denotes that an area is unavailable for a particular use or uses; refers to specific definitions found in law, regulations, or policy guidance for application to individual programs. For example, 43 CFR 8340.0-5 sets forth the specific meaning of “closed” as it relates to OHV use, and 43 CFR 8364 defines “closed” as it relates to closure and restriction orders (from H-1601-1, *BLM Land Use Planning Handbook*).

Code of Federal Regulations (CFR). The official codification of the current, general, and permanent regulations of Federal Government activities.

Collaboration. A cooperative process in which interested parties, often with widely varied interests, work together to seek solutions with broad support for managing public and other lands (from H-1601-1, *BLM Land Use Planning Handbook*).

Collaborative Partnerships or Collaborative Stewardship. Refers to people working together, sharing knowledge and resources, to achieve desired outcomes for public lands and communities within statutory and regulatory frameworks (from H-1601-1, *BLM Land Use Planning Handbook*).

Conformance. Means that a proposed action shall be specifically provided for in the LUP or, if not specifically mentioned, shall be clearly consistent with the goals, objectives, or standards of the approved LUP (from H-1601-1, *BLM Land Use Planning Handbook*).

Conservation Agreement. A formal written document agreed to by USFWS and/or NMFS and another federal agency, state agency, local government, or the private sector to achieve the conservation of candidate species or other special status species through voluntary cooperation. It documents the specific actions and responsibilities for which each party agrees to be accountable. The objective of a conservation agreement is to reduce threats to a special status species or its habitat. An effective conservation agreement may lower species’ listing priority or eliminate the need for listing (from M6840, *Special Status Species Manual*).

Conservation Strategy. A strategy outlining current activities or threats that are contributing to the decline of a species, along with the actions or strategies needed to reverse or eliminate such a decline or threats. Conservation strategies are generally developed for species of plants and animals that are designated as BLM-sensitive species or that USFWS or National Oceanic and Atmospheric Administration (NOAA) Fisheries have determined to be federal candidates under the ESA (from H-1601-1, *BLM Land Use Planning Handbook*).

Consistency. Means that the proposed LUP does not conflict with officially approved plans, programs, and policies of tribes, other federal agencies, and state and local governments (to the extent practical within federal law, regulation, and policy) (from H-1601-1, *BLM Land Use Planning Handbook*).

Cooperating Agency. Assists the lead federal agency in developing an Environmental Assessment (EA) or Environmental Impact Statement (EIS). The Council on Environmental Quality (CEQ) regulations implementing the National Environmental Policy Act of 1969 (NEPA) define a cooperating agency as any agency that has jurisdiction by law or special expertise for proposals covered by NEPA (40 CFR 1501.6). Any federal, state, or local government jurisdiction with such qualifications may become a cooperating agency by agreement with the lead agency (from H-1601-1, *BLM Land Use Planning Handbook*).

Council on Environmental Quality. An advisory council to the President of the United States established by NEPA. It reviews federal programs to analyze and interpret environmental trends and information.

Critical Habitat. (1) The specific areas within the geographical area currently occupied by a species, at the time it is listed in accordance with ESA, on which are found those physical or biological features (i) essential to the conservation of the species and (ii) that may require special management considerations or protection, and (2) specific areas outside the geographical area occupied by a species at the time it is listed upon determination by the USFWS and/or NMFS that such areas are essential for the conservation of the species. Critical habitats are designated in 50 CFR 17 and 226. The constituent elements of critical habitat are those physical and biological features of designated or proposed critical habitat essential to the conservation of the species (from M6840, *Special Status Species Manual*).

Crucial Value Habitat. Any particular range or habitat component that directly limits a community, population, or subpopulation to reproduce and maintain itself at a certain level over the long term. Such habitat includes sensitive use areas that, because of limited abundance and/or unique qualities, constitute irreplaceable critical requirements for high-interest wildlife. It may also include highly sensitive habitats, including fragile soils that have little or no reclamation potential. Restoration or replacement of these habitats may not be possible. Examples include the most crucial (critical) summer and/or winter range or concentration areas; critical movement corridors; breeding and rearing complexes; spawning areas; developed wetlands; Class 1 and 2 streams, lakes, ponds, or reservoirs; and riparian habitats critical to high-interest wildlife.

Crucial Winter Range. The portion of the winter range to which a wildlife species is confined during periods of heaviest snow cover.

Cryptobiotic Crust. Biological communities that form a surface layer or crust on some soils. These communities consist of cyanobacteria (blue-green bacteria), micro fungi, mosses, lichens, and green algae and perform many important functions, including fixing nitrogen and carbon, maintaining soil surface stability, and preventing erosion. Cryptobiotic crusts also influence the nutrient levels of soils and the status and germination of plants in the desert. These crusts are slow to recover after severe disturbance.

Cultural Resource or Cultural Property. A definite location of human activity, occupation, or use identifiable through field inventory (survey), historical documentation, or oral evidence. The term includes archaeological, historic, or architectural sites, structures, or places with important public and scientific uses, and may include definite locations (sites or places) of traditional cultural or religious importance to specified social and/or cultural groups. Cultural resources are concrete, material places and things that are located, classified, ranked, and managed through the system of identifying, protecting, and using for public benefit described in this manual series (from M-8100-1, *BLM Cultural Resources Management*).

Cultural Resource Inventory Classes. (See *BLM Manual*, Section 8110.21.) *Class I: Existing Data Inventory.* A study of published and unpublished documents, records, files, registers, and other sources, resulting in analysis and synthesis of all reasonably available data. Class I inventories encompass prehistoric, historic, and ethnological/sociological elements and are in large part chronicles of past land uses. They may have major relevance to current land use decisions. *Class II: Sampling Field Inventory.* A statistically based sample survey designed to help characterize the probable density, diversity, and distribution of archaeological properties in a large area by interpreting the results of surveying limited and discontinuous portions of the target area. *Class III: Intensive Field Inventory.* A continuous, intensive survey of an entire target area aimed at locating and recording all archaeological properties

that have surface indications by walking close-interval parallel transects until the area has been thoroughly examined. Class III methods vary geographically, conforming to the prevailing standards for the region involved (from M-8100-1, *BLM Cultural Resources Management*).

Cumulative impact. The impact on the environment resulting from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (from H-1790-1, *BLM NEPA Handbook*).

Designated Roads and Trails. Specific roads and trails identified by the BLM (or other agencies) where some type of motorized vehicle use is appropriate and allowed either seasonally or yearlong (from H-1601-1, *BLM Land Use Planning Handbook*).

Dispersed or Extensive Recreation. Recreation activities of an unstructured type that are not confined to specific locations or dependent on recreation sites. Example of these activities may be hunting, fishing, off-road vehicle use, hiking, and sightseeing.

Disposal. Transfer of public land out of federal ownership to another party through sale, exchange, Recreation and Public Purposes (R&PP) Act, Desert Land Entry, or other land law statutes.

Disruptive Activities. Activities that preclude basic life functions for a species. These activities could result in individuals leaving a currently used area; increased stress on the individual; and/or not breeding, young abandonment, or aberrant behavior.

Easement. An interest in land entitling the owner or holder, as a matter or right, to enter upon land owned by another party for a particular purpose.

Ecological Site. A kind of land with a specific potential natural community and specific physical site characteristics, differing from other kinds of land in their ability to produce distinctive kinds and amounts of vegetation and to respond to management. Ecological sites are defined and described with information about soil, species composition, and annual production (BLM 2001a).

Ecological Site Description. A written narrative of the description of soils, climate, vegetation, uses, and potential of a kind of land with specific physical characteristics to produce distinctive kinds and amounts of vegetation (BLM 2001a).

Ecological Site Inventory. A resource inventory that involves the use of soils information to map ecological sites and plant communities and the collection of natural resource and vegetation attributes. The sampling data from each of these soil-vegetation units, referred to as site write-up areas (SWA), become the baseline data for natural resource management and planning (BLM 2001a).

Ecological Succession. An ecosystem's gradual evolution to a stable state or climax. If through the ability of its populations and elements an ecosystem can absorb changes, it tends to persist and become stable through time.

Eligibility. Qualification of a river for inclusion into the National Wild and Scenic Rivers System through the determination (professional judgment) that it is free-flowing and, with its adjacent land area, possesses at least one river-related value considered to be outstandingly remarkable (from M-8351, BLM WSR Policy and Program).

Endangered Species. Any species that is in danger of extinction throughout all or a significant portion of its range (from M6840, *Special Status Species Manual*).

Environmental Assessment (EA). (a) A concise public document for which a federal agency is responsible that serves to (1) briefly provide sufficient evidence and analysis for determining whether to prepare an EIS or a finding of no significant impact, (2) aid an agency's compliance with NEPA when no EIS is necessary, and (3) facilitate preparation of an EIS when one is necessary. (b) Shall include brief discussions of the need for the proposal, alternatives as required by Section 102(2)(E), environmental impacts of the proposed action and alternatives, and a listing of agencies and persons consulted (from H-1790-1, *BLM NEPA Handbook*).

Environmental Impact Statement (EIS). A detailed statement prepared by the responsible official in which a major federal action that significantly affects the quality of the human environment is described, alternatives to the proposed action provided, and effects analyzed (from *BLM National Management Strategy for OHV Use on Public Lands*).

Ephemeral Stream. A stream that flows only in direct response to precipitation and whose channel is at all times above the water table. Ephemeral streams generally do not flow continuously for more than 30 days and generally have more robust upland vegetation than that found outside of the ephemeral riparian-wetland area (U.S. Department of the Interior [USDOI] 1998).

Exclusion Area. Areas with sensitive resources and/or values where ROWs and Section 302 permits, leases, and easements would not be authorized.

Executive Order (EO). An EO is a presidential directive with the force of law. It does not need congressional approval. The Supreme Court has upheld EOs as valid either under the general constitutional grant of executive powers to the President or if authority for it was expressly granted to the President by the Congress. Congress can repeal or modify an EO by passing a new law; however, it must be signed by the President or overridden by his veto.

Extensive Recreation Management Area (ERMA). A public lands unit identified in LUPs containing all acreage not identified as a Special Recreation Management Area (SRMA). Recreation management actions within an ERMA are limited to only those of a custodial nature.

Facies. A lateral or vertical variation in the lithologic or paleontologic characteristics of a geologic formation that differs as a group from that elsewhere in the same formation. It is caused by or reflects a change in the depositional environments (Stokes 1986; Skinner & Porter 1992).

Federal Lands. As used in this document, lands owned by the United States, without reference to how the lands were acquired or what federal agency administers the lands. The term includes mineral estates or coal estates underlying private surface, but excludes lands held by the United States in trust for Indians, Aleuts, or Eskimos (see also Public Land).

Federal Land Policy and Management Act (FLPMA) of 1976. Public Law 94-579, October 21, 1976, often referred to as BLM's "Organic Act," which provides the majority of BLM's legislated authority, policy direction, and basic management guidance (from *BLM National Management Strategy for OHV Use on Public Lands*).

Federal Register. A daily publication that reports Presidential and federal agency documents (from *BLM National Management Strategy for OHV Use on Public Lands*).

Fire Management Plan. A strategic implementation-level plan that defines a program to manage wildland fire, fuel reduction, and fire rehabilitation based on an area's approved Resource Management Plan (RMP). Fire Management Plans must address a full range of fire management activities that support ecosystem sustainability, values to be protected, protection of firefighter and public safety, public health, and environmental issues. The plans must be consistent with resource management objectives and activities of the area.

Fiscal Year. The Federal Government's annual accounting period that begins on October 1 and ends on September 30 of the following calendar year.

Fluid Minerals. Oil, gas, coalbed natural gas, and geothermal resources.

Forage. Vegetation of all forms available and of a type used for animal consumption.

Fragile Soils. Soils with intrinsic properties and in areas that make them especially susceptible to erosion. These properties include high salt concentrations, very fine textures, shallow depths, and steep slopes (more than 30%).

Front Country. A recreation setting classification characterized by a setting on or near improved roads but away from highways that includes moderate evidence of human modification that generally harmonizes with the surrounding natural landscape. Surface and vegetative modifications are common. Structures, including small reservoirs, powerlines, and microwave installations, are generally scattered, remaining visually subordinate. Recreation facilities (e.g., campsites, restrooms, trails, and interpretive signs) are generally small and rustic.

Functioning at Risk. (1) Condition in which vegetation and soil are susceptible to losing their ability to sustain naturally functioning biotic communities. Human activities, past or present, may increase the risks (Rangeland Reform Final Environmental Impact Statement at 26). (2) Uplands or riparian-wetland areas that are properly functioning, but in which a soil, water, or vegetation attribute makes them susceptible to degradation and lessens their ability to sustain natural biotic communities. Uplands are particularly at risk if their soils are susceptible to degradation. Human activities, past or present, may increase the risks (Rangeland Reform Draft Environmental Impact Statement Glossary). See also Properly Functioning Condition and Nonfunctioning Condition (from H-4180-1, *BLM Standards for Rangeland Health*).

Geographic Information System (GIS). A system of computer hardware, software, data, people, and applications that capture, store, edit, analyze, and graphically display a potentially wide array of geospatial information (from H-1601-1, *BLM Land Use Planning Handbook*).

Goal. A broad statement of a desired outcome; usually not quantifiable and may not have established time frames for achievement (from H-1601-1, *BLM Land Use Planning Handbook*).

Guideline. A practice, method, or technique determined to be appropriate to ensure that standards can be met or that significant progress can be made toward meeting the standard. Guidelines are tools such as grazing systems, vegetative treatments, or improvement projects that help managers and permittees to achieve standards. Guidelines may be adapted or modified when monitoring or other information indicates the guideline is not effective, or a better means of achieving the applicable standard becomes appropriate (from H-4180-1, *BLM Standards for Rangeland Health*).

Habitat. The place where an organism (plant or animal) lives. There are four major divisions of habitat, namely, terrestrial, freshwater, estuarine, and marine (from M6840, *Special Status Species Manual*).

Habitat Management Plan (HMP). An officially approved activity plan for a specific geographic area of public land. An HMP identifies wildlife habitat and related objectives, defines the sequence of actions to be implemented to achieve the objectives, and outlines procedures for evaluating accomplishments.

Heritage Tourism. A form of recreation that involves experiencing the settings, activities, and people that represent the past and present experiences, stories, and peoples. It may include historic, cultural, and natural resources and may be dispersed, self-guided, or tour-guided in any recreational setting.

High-Value Habitat. Any particular habitat that sustains a community, population, or subpopulation. It includes intensive use areas that because of relative wide distribution do not constitute crucial (Utah Division of Wildlife Resources [UDWR] critical) values but are highly important to high-interest wildlife. It may also include moderately sensitive habitats of high-interest species that have low reclamation potential. Class 3 streams, lakes, ponds, or reservoirs. Reconstruction or enhancement of these areas may be possible, but should be avoided if not possible. Examples include less crucial (critical) but more widely distributed summer and/or winter ranges, important feeding areas, areas of high wildlife diversity and/or density of high-interest species, natural wetlands, and all other riparian areas.

Historic Climax Plant Community. The plant community considered to best typify the potential plant community of an ecological site prior to the advent of European man (BLM 2001a).

Hydrology. The science dealing with the properties, distribution, and circulation of water.

Impacts (or Effects). Environmental consequences (the scientific and analytical basis for comparison of alternatives) as a result of a proposed action. Effects may be either direct, which are caused by the action and occur at the same time and place, or indirect, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable, or cumulative (from *BLM National Management Strategy for OHV Use on Public Lands*).

Implementation Decisions. Decisions that take action to implement LUP decisions; generally appealable to the Interior Board of Land Appeals under 43 CFR 4.410 (from H-1601-1, *BLM Land Use Planning Handbook*).

Implementation Plan. A sub-geographic or site-specific plan written to implement decisions made in an LUP. Implementation plans include activity plans and project plans (they are types of implementation plans) (from H-1601-1, *BLM Land Use Planning Handbook*).

Indian Tribe (or tribe). Any Indian group in the conterminous United States that the Secretary of the Interior recognizes as possessing tribal status (listed periodically in the *Federal Register*) (from H-1601-1, *BLM Land Use Planning Handbook*).

Indicators. Components of a system whose characteristics (presence or absence, quantity, distribution) are used as an index of an attribute (e.g., rangeland health attribute) that are too difficult, inconvenient, or expensive to measure (Interagency Technical Reference 1734-8, 2000) (from H-4180-1, *BLM Standards for Rangeland Health*).

Interdisciplinary Team. Staff specialists representing identified skill and knowledge needs working together to resolve issues and provide recommendations to an authorized officer (from H-4180-1, *BLM Standards for Rangeland Health*).

Intermittent or Seasonal Stream. A stream that flows only at certain times of the year when it receives water from springs or from some surface source such as melting snow in mountainous areas. Generally, intermittent streams flow continuously for periods of at least 30 days and usually have visible vegetation or physical characteristics reflective of permanent water influences, such as the presence of cottonwoods (USDOI 1998).

Land Tenure Adjustments. Ownership or jurisdictional changes are referred as “Land Tenure Adjustments.” To improve the manageability of BLM lands and improve their usefulness to the public, the BLM has numerous authorities for “repositioning” lands into a more consolidated pattern, disposing of lands, acquiring lands, and entering into cooperative management agreements. These land pattern improvements are completed primarily through the use of land exchanges, but also through land sales, land acquisitions, jurisdictional transfers to other agencies, and the use of cooperative management agreements and leases.

Land Use Allocation. The identification in a LUP of the activities and foreseeable development that are allowed, restricted, or excluded for all or part of the decision area, based on desired future conditions (from H-1601-1, *BLM Land Use Planning Handbook*).

Land Use Plan (LUP). A set of decisions that establish management direction for land within an administrative area, as prescribed under the planning provisions of FLPMA; an assimilation of LUP-level decisions developed through the planning process outlined in 43 CFR 1600, regardless of the scale at which the decisions were developed. The term includes RMPs and Management Framework Plans (MFP) (from H-1601-1, *BLM Land Use Planning Handbook*).

Land Use Plan Amendment. The process for considering or making changes in the terms, conditions, and decisions of approved RMPs or MFPs. Usually only one or two issues are considered that involve only a portion of the decision area (from H-1601-1, *BLM Land Use Planning Handbook*).

Land Use Plan Decision. Establishes desired outcomes and actions needed to achieve them. Decisions are reached using the planning process in 43 CFR 1600. When they are presented to the public as proposed decisions, they can be protested to the BLM Director. They are not appealable to the Interior Board of Land Appeals (from H-1601-1, *BLM Land Use Planning Handbook*).

Lease. An authorization or contract by which one party conveys the use of property to another party in return for rental payments. FLPMA Section 302 provides BLM’s authority to issue leases for the use, occupancy, and development of the public lands. Leases are also authorized under the R&PP Act for an established or definitely proposed project for which there is a reasonable timetable of development and satisfactory development and management plans (43 CFR 2741.5). Leases are issued for purposes such as communication sites, parks, and other recreational facilities. The regulations establishing procedures for the processing of these leases are found in 43 CFR 2920 and 2740.

Lease Stipulation. A modification of the terms and conditions on a lease form at the time of the lease sale.

Leaseable Minerals. Those minerals or materials designated as leaseable under the Mineral Leasing Act of 1920, as amended. They include coal, phosphate, asphalt, sulphur, potassium, sodium minerals, oil, and gas.

Lek. An assembly area where birds, especially Greater sage-grouse, carry on display and courtship behavior.

Limited. An area restricted at certain times, in certain areas, and/or to certain vehicular use. These restrictions may be of any type, but can generally be accommodated within the following type of categories: numbers of vehicles, types of vehicles, time or season of vehicle use, permitted use only, use on existing roads and trails, use on designated routes, and other restrictions (from *BLM National Management Strategy for OHV Use on Public Lands*).

Limited-Value Habitat. Habitat that is abundant and not essential to sustain a community, population, or subpopulation. Occasional use areas that are either sparsely populated or that show sporadic or unpredictable use by high-interest wildlife. These areas have limited reclamation potential. Wildlife may be displaced due to the common occurrence of these habitats. Examples include yearlong deer range of low habitat quality; Class 5 and 6 streams, lakes, ponds, or reservoirs; and low-quality habitat in juxtaposition to areas of higher wildlife values.

Locatable Minerals. Minerals subject to exploration, development, and disposal by staking mining claims as authorized by the Mining Law of 1872, as amended. This includes deposits of gold, silver, and other uncommon minerals not subject to lease or sale.

Low-Value Habitat. Habitat that is abundant and not essential to sustain a community, population, or subpopulation.

Management Decision. A decision made by the BLM to manage public lands. Management decisions include LUP decisions and implementation decisions (from H-1601-1, *BLM Land Use Planning Handbook*).

Management Opportunities. A component of the analysis of the management situation and actions or management directions that could be taken to resolve issues or management concerns.

Middle Country. A recreation setting classification characterized by a naturally setting landscape except for obvious primitive roads, with subtle human modifications, small areas with limited evidence of surface or vegetative disturbances, and evidence of primitive roads or motorized use. Small, isolated structures may be present. Contains maintained and marked trails, simple trailhead developments, improved signs, and very basic toilets.

Mineral. A naturally formed chemical element or compound having a definite chemical composition and, usually, a characteristic crystal form. A mineral is generally considered to be inorganic, although organic compounds are classified as minerals by some (American Geological Institute 1974). The term is also sometimes informally used to refer to resources such as oil, gas, coal, and stone that are derived from the earth.

Mineral Entry. The filing of a claim on public land to obtain the right to any locatable minerals it may contain.

Mineral Materials. Materials such as sand and gravel and common varieties of stone, pumice, pumicite, and clay that are not obtainable under the mining or leasing laws, but that can be acquired under the Materials Act of 1947, as amended.

Mining Claim. A parcel of land that a miner takes and holds for mining purposes, having acquired the right of possession by complying with the Mining Law and local laws and rules. A mining claim may contain as many adjoining locations as the locator may make or buy. There are four categories of mining claims: lode, placer, millsite, and tunnel site.

Mitigation. A method or process by which impacts from actions may be made less injurious to the environment through appropriate protective measures. 40 CFR 1508.20 further defines mitigation as (1) avoiding the impact altogether by not taking a certain action or parts of an action; (2) minimizing an impact by limiting the degree or magnitude of the action and its implementation; (3) rectifying the impact by repairing, rehabilitating, or restoring the affected environment; (4) reducing or eliminating the impact over time by preservation and maintenance; and (5) compensating for the impact by replacing or providing substitute resources or environments.

Monitoring (Plan Monitoring). The process of tracking the implementation of LUP decisions and collecting and assessing data/information necessary to evaluate the effectiveness of land use planning decisions (from H-1601-1, *BLM Land Use Planning Handbook*).

Multiple Use. The management of the public lands and their various resource values so that they are used in the combination that will best meet the present and future needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to changing needs and conditions; the use of some land for less than all of the resources; a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources, including but not limited to recreation; range; timber; minerals; watershed; wildlife and fish; and natural scenic, scientific, and historical values; and harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment with consideration being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return or the greatest unit output (from FLPMA, Title 43 Chapter 35, Subchapter I 1702[c]).

National Environmental Policy Act of 1969. NEPA establishes policy, sets goals (Section 101), and provides means (Section 102) for carrying out the policy. Section 102(2) contains “action-forcing” provisions to make sure that federal agencies act according to the letter and spirit of the Act. The President, federal agencies, and the courts share responsibility for enforcing the Act so as to achieve the substantive requirements of Section 101.

National Register. The National Register of Historic Places, expanded and maintained by the Secretary of the Interior, as authorized by Section 2(b) of the Historic Sites Act and Section 101(a)(1)(A) of the National Historic Preservation Act (NHPA). The National Register lists cultural properties found to qualify for inclusion because of their local, state, or national significance. Eligibility criteria and nomination procedures are found in 36 CFR 60. The Secretary’s administrative responsibility for the National Register is delegated to the National Park Service (from M-8100-1, *BLM Cultural Resources Management*).

National Wild and Scenic River System. A system of nationally designated rivers and their immediate environments that have outstandingly remarkable values such as; scenic, recreational, geologic, fish and wildlife, historic, cultural, and other similar values and are preserved in a free-flowing condition. The system consists of three river classifications: (1) “recreational”—rivers or sections of rivers that are readily accessible by road or railroad and that may have some development along their shorelines and may have undergone some impoundments or diversion in the past; (2) “scenic”—rivers or sections of rivers free of impoundments with shorelines or watersheds still largely undeveloped but accessible in places by roads; and (3) “wild”—rivers or sections of rivers free of impoundments and generally inaccessible except by trails, with watersheds or shorelines essentially primitive and waters unpolluted. All rivers or river segments in these classifications must possess at least one outstandingly remarkable value that is river related.

Naturalness. Lands and resources exhibit a high degree of naturalness when affected primarily by the forces of nature and where the imprint of human activity is substantially unnoticeable. The BLM has authority to inventory, assess, and/or monitor the attributes of the lands and resources on public lands, which taken together are an indication of an area's naturalness. These attributes may include the presence or absence of roads and trails, fences, and other improvements; the nature and extent of landscape modifications; the presence of native vegetation communities; the resemblance to pre-European settlement condition; and the connectivity of habitats (from IM-2003-275, Change 1, Considerations of Wilderness Characteristics in LUP, Attachment 1).

No Surface Occupancy. A fluid minerals leasing constraint that prohibits occupancy or disturbance on all or part of the lease surface to protect special values or uses. Lessees may exploit the fluid mineral resources under the leases restricted by this constraint through use of directional drilling from sites outside the area.

Noxious Weed. A plant species designated by federal or state law as generally possessing one or more of the following characteristics: aggressive and difficult to manage; parasitic; a carrier or host of serious insects or disease; or non-native, new, or not common to the United States.

Objective. A description of a desired condition for a resource. Objectives can be quantified and measured and, where possible, have established time frames for achievement (from H-1601-1, *BLM Land Use Planning Handbook*).

Off-Highway Vehicle (OHV). Any motorized vehicle capable of or designed for travel on or immediately over land, water, or other natural terrain, excluding (1) any non-amphibious registered motorboat; (2) any military, fire, emergency, or law enforcement vehicle while being used for emergency purposes; (3) any vehicle whose use is expressly authorized by the authorized officer or otherwise officially approved; (4) vehicles in official use; and (5) any combat or combat support vehicle when used for national defense (from H-1601-1, *BLM Land Use Planning Handbook*).

Official Use. Use by an employee, agent, or designated representative of the Federal Government or one of its contractors in the course of his or her employment, agency responsibilities, or representation (from *BLM National Management Strategy for OHV Use on Public Lands*).

Old-Growth. Old-growth forests are ecosystems distinguished by old trees and related structural features. Old-growth encompasses the later stages of stand development that typically differ from earlier stages in several ways including tree size; accumulations of large dead, woody material; number of canopy layers; species composition; and ecosystem function (from BLM IM-2005-110).

Open. Generally denotes that an area is available for a particular use or uses. Refer to specific program definitions found in law, regulations, or policy guidance for application to individual programs (from H-1601-1, *BLM Land Use Planning Handbook*). For example, 43 CFR 8340.0-5 defines the specific meaning of "open" as it relates to OHV use as "an area where all types of vehicle use is permitted at all times, anywhere in the area subject to the operating regulations and vehicle standards set forth in" 43 CFR 8341 and 8342 (43 CFR 8340.0-5(f)).

Outstandingly Remarkable Values (ORV). Values among those listed in Section 1(b) of the Wild and Scenic Rivers Act: "scenic, recreational, geological, fish and wildlife, historical, cultural, or other similar values." Other similar values that may be considered include ecological, biological or botanical, paleontological, hydrological, scientific, or research values (from M-8351, BLM WSR Policy and Program).

Perennial Stream. A stream that flows continuously. Perennial streams are generally associated with a water table in the localities through which they flow.

Permit. A short-term, revocable authorization to use public lands for specific purposes, FLPMA Section 302 provides the BLM's authority to issue permits for the use, occupancy, and development of the public lands. Permits are issued for purposes such as commercial or non-commercial filming, advertising displays, commercial or non-commercial croplands, apiaries, harvesting of native or introduced species, temporary or permanent facilities for commercial purposes (does not include mining claims), residential occupancy, construction equipment storage sites, assembly yards, oil rig stacking sites, mining claim occupancy if the residential structures are not incidental to the mining operation, and water pipelines and well pumps related to irrigation and non-irrigation facilities. The regulations establishing procedures for the processing of these permits are found in 43 CFR 2920.

Permitted Use. The forage allocated by or under the guidance of an applicable LUP for livestock grazing in an allotment under a permit or lease, and that is expressed in AUMs (43 CFR 4100.0-5) (from H-4180-1, *BLM Standards for Rangeland Health*).

Plan of Operations. A plan for mining exploration and development that an operation must submit to the BLM for approval when more than 5 acres a year will be disturbed or when an operator plans to work in an area of critical environmental concern or a wilderness area. A Plan of Operations must be submitted for any new operation that began after January 20, 2001, and that has production, regardless of acreage disturbed. A Plan of Operations must document in detail all actions that the operator plans to take from exploration through reclamation.

Planning Criteria. The standards, rules, and other factors developed by managers and interdisciplinary teams for their use in forming judgments about decision-making, analysis, and data collection during planning. Planning criteria streamline and simplify the resource management planning actions (from H-1601-1, *BLM Land Use Planning Handbook*).

Potential Natural Community (PNC). The biotic community that would become established if all successional sequences were completed without interference by man under the present environmental conditions. Natural disturbances are inherent in development. PNCs can include naturalized non-native species (BLM 2001a).

Prescribed Fire. Any fire ignited by management action to meet specific objectives. A written approved prescribed fire plan must exist, and NEPA requirements must be met prior to ignition (from H-9214-1, *BLM Prescribed Fire Management Handbook*).

Primitive. A recreation setting classification characterized by a setting that is essentially an unmodified natural environment with extremely rare evidence of surface or vegetative disturbances. Trails may be present and suited for wilderness use. Structures are small and extremely rare. Enforcement presence is very rare.

Primitive and Unconfined Recreation. Those activities that provide dispersed, undeveloped recreation which do not require facilities or motorized equipment (from BLM Manual 8560, Section 08, Subsection A).

Project Plan. A type of implementation plan (see Implementation Plan). A project plan typically addresses individual projects or several related projects. Examples of project plans include prescribed burn plans, trail plans, and recreation site plans (from H-1601-1, *BLM Land Use Planning Handbook*).

Proper Functioning Condition (PFC). (1) An element of the Fundamentals of Rangeland Health for watersheds, and therefore a required element of state or regional standard and guidelines under 43 CFR 4180.2(b). (2) A condition in which vegetation and ground cover maintain soil conditions that can sustain natural biotic communities. For riparian areas, the process of determining function is described in BLM Technical Reference (TR) 1737-9. (3) Riparian-wetland areas are functioning properly when adequate vegetation, landform, or large woody debris is present to dissipate stream energy associated with high water flows, thereby reducing erosion and improving water quality; filter sediment, capture bed load, and aid floodplain development; improve floodwater retention and groundwater recharge; develop root masses that stabilize streambanks against cutting action; develop diverse ponding and channel characteristics to provide the habitat and the water depth, duration, and temperature necessary for fish production, waterfowl breeding, and other uses; and support greater biodiversity. The functioning condition of riparian-wetland areas is influenced by geomorphic features, soil, water, and vegetation. (4) Uplands function properly when the existing vegetation and ground cover maintain soil conditions capable of sustaining natural biotic communities. The functioning condition of uplands is influenced by geomorphic features, soil, water, and vegetation. See also, Nonfunctioning Condition and Functioning at Risk (from H-4180-1, *BLM Standards for Rangeland Health*).

Proposed Species. Species that have been officially proposed for listing as threatened or endangered by the Secretary of the Interior. A proposed rule has been published in the *Federal Register* (from M6840, *Special Status Species Manual*).

Public Land. Land or interest in land owned by the United States and administered by the Secretary of the Interior through the BLM without regard to how the United States acquired ownership, except lands located on the Outer Continental Shelf and land held for the benefit of Indians, Aleuts, and Eskimos (from H-1601-1, *BLM Land Use Planning Handbook*).

Range Improvement. An authorized physical modification or treatment designed to improve production of forage; change vegetation composition; control patterns of use; provide water; stabilize soil and water conditions; and restore, protect, and improve the condition of rangeland ecosystems to benefit livestock, wild horses and burros, and fish and wildlife. The term includes, but is not limited to structures, treatment projects, and use of mechanical devices or modifications achieved through mechanical means (43 CFR 4100.0-5) (from H-4180-1, *BLM Standards for Rangeland Health*).

Rangeland. A kind of land on which the native vegetation, climax, or natural potential consists predominantly of grasses, grasslike plants, forbs, or shrubs. Rangeland includes lands revegetated naturally or artificially to provide a non-crop plant cover that is managed like native vegetation. Rangeland may consist of natural grasslands, savannahs, shrublands, most deserts, tundra, alpine communities, coastal marshes, and wet meadows (from H-4180-1, *BLM Standards for Rangeland Health*).

Recreation and Public Purposes Act. The R&PP Act provides for the lease and sale of public lands determined valuable for public purposes. The objective of the R&PP Act is to meet the needs of state and local government agencies and non-profit organizations by leasing or conveying public land required for recreation and public purpose uses. Examples of uses made of R&PP lands are parks and greenbelts, sanitary landfills, schools, religious facilities, and camps for youth groups. The Act provides substantial cost-benefits for land acquisition and provides for recreation facilities or historical monuments at no cost.

Recreation Management Zones (RMZ). Subunits within a SRMA managed for distinctly different recreation products. Recreation products are comprised of recreation opportunities, the natural resource and community settings within which they occur, and the administrative and service environment

created by all affecting recreation-tourism providers, within which recreation participation occurs (from H-1601-1, *BLM Land Use Planning Handbook*).

Recreation River. A Wild and Scenic River Tentative Classification that applies to those rivers or sections of rivers readily accessible by road or railroad that may have some development along their shorelines and that may have undergone some impoundment or diversion in the past and possess at least one river-related outstandingly remarkable value.

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

Resource Management Plan (RMP). A BLM planning document, prepared in accordance with FLPMA Section 202, that presents systematic guidelines for making resource management decisions. An RMP is based on an analysis of an area's resources, its existing management, and its capability for alternative uses. RMPs are issue oriented and developed by an interdisciplinary team with public participation.

Resource Use Level. The level of use allowed within an area, based on the desired outcomes and land use allocations in the LUP. Targets or goals for resource use levels are established on an areawide or broad watershed level in the LUP. Site-specific resource use levels are normally determined at the implementation level, based on site-specific resource conditions and needs as determined through resource monitoring and assessments (from H-1601-1, *BLM Land Use Planning Handbook*).

Right-of-Way (ROW). The public lands authorized to be used or occupied for the construction, operation, maintenance, and termination of a project, pursuant to a ROW authorization.

Riparian Area. A form of wetland transition between permanently saturated wetlands and upland areas. A riparian area is defined as an area of land directly influenced by permanent (surface or subsurface) water. Riparian areas exhibit vegetation or physical characteristics that reflect the influence of permanent surface or subsurface water. Typical riparian areas include lands along, adjacent to, or contiguous with perennially and intermittently flowing rivers and streams, hanging gardens, and areas surrounding seeps and springs. Excluded are ephemeral streams or washes that lack vegetation and depend on free water in the soil.

Rural. A recreation setting classification characterized by a substantially modified natural setting with culturally modified landscapes constantly in view. The setting may include pastoral, agricultural landscapes. Surface and vegetative modifications are typical, and constructed roads and highways are present. Structures are readily apparent and may include small dominant clusters, including campgrounds, group shelters, boat launches, and exhibits.

Salable Minerals. Common variety minerals on the public lands, such as sand and gravel, which are used mainly for construction and are disposed of by sales or special permits.

Scenic Backways. Paved or unpaved routes that have roadsides or corridors of special aesthetic, cultural, or historic value in more remote, less visited locations. The corridor may contain outstanding scenic vistas, unusual geologic features, or other intrinsic qualities such as cultural, historic, natural, recreational, and archaeological values. Scenic Backways can be designated at either the state level or by the BLM during the land use planning process.

Scenic Byways. Highway routes that have roadsides or corridors of special aesthetic, cultural, or historic value. The corridor may contain outstanding scenic vistas, unusual geologic features, or other intrinsic

qualities such as cultural, historic, natural, recreational, and archaeological values. Scenic Byways can be designated at either the state or the federal level.

Scenic Quality. The relative worth of a landscape from a visual perception point of view.

Scenic River. A Wild and Scenic River Tentative Classification that applies to those rivers or sections of rivers that is free of impoundments and whose shorelines are largely undeveloped but accessible in places by roads and possess at least one river-related outstandingly remarkable value.

Scoping. An early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action. This involves the participation of affected federal, state, and local agencies and any affected Indian tribe, proponent of the action, and other interested persons unless there is a limited exception under 40 CFR 1507.3I.

Section 7 Consultation. The requirement of Section 7 of the ESA that all federal agencies consult with USFWS or NMFS if a proposed action may affect a federally listed species or its critical habitat.

Section 106 Compliance. The requirement of NHPA Section 106 that any project funded, licensed, permitted, or assisted by the Federal Government be reviewed for impacts to significant historic properties and that the State Historic Preservation Officer and the Advisory Council on Historic Preservation be allowed to comment on a project.

Sensitive Soils. Soils that have a high wind or water erosion hazard, are difficult to reclaim or restore due to physical and chemical properties (e.g., high salt or gypsum concentrations, high rock content, or low available water), or that are more susceptible to impacts and damage due to high water tables (hydric or wetland/riparian soils) or very fine surface textures. Information used to identify sensitive soils includes soils surveys, ecological site descriptions, local monitoring records, and research studies.

Sensitive Species. Those species designated by a State Director, usually in cooperation with the state agency responsible for managing the species and state natural heritage programs, as sensitive. They are those species that (1) could become endangered in or extirpated from a state or within a significant portion of its distribution; (2) are under status review by USFWS and/or NMFS; (3) are undergoing significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution; (4) are undergoing significant current or predicted downward trends in population or density such that federal listed, proposed, or candidate or state listed status may become necessary; (5) typically have small and widely dispersed populations; (6) inhabit ecological refugia or other specialized or unique habitats; or (7) are state listed but which may be better conserved through application of BLM sensitive species status (from M6840, *Special Status Species Manual*).

Significant. An effect that is analyzed in the context of the proposed action to determine the degree or magnitude of importance of the effect, whether beneficial or adverse. The degree of significance can be related to other actions with individually insignificant but cumulatively significant impacts.

Special Recreation Management Area (SRMA). A public lands unit identified in LUPs to direct recreation funding and personnel to fulfill commitments made to provide specific, structured recreation opportunities (i.e., activity, experience, and benefit opportunities). The BLM recognizes three distinct types of SRMAs: destination, community, and undeveloped (from H-1601-1, *BLM Land Use Planning Handbook*).

Special Status Species. Includes proposed species, listed species, and candidate species under the ESA; state-listed species; and BLM State Director-designated sensitive species (see BLM Manual 6840, *Special Status Species Policy*) (from H-1601-1, *BLM Land Use Planning Handbook*).

Socioeconomic Study Area. The geographic area used for estimation and analysis of economic and social impacts, consisting of the entirety of Garfield and Kane counties.

Solitude. The state of being alone or remote from habitations; isolation; a lonely, unfrequented, or secluded place. The emphasis is on the opportunities a person has to avoid the sights, sounds, and evidence of other people within a particular area (from BLM Manual 8560, Section 08, Subsection A).

Standard. A description of the physical and biological conditions or degree of function required for healthy, sustainable lands (e.g., Land Health Standards). To be expressed as a desired outcome (goal) (from H-1601-1, *BLM Land Use Planning Handbook*).

State Listed Species. Species listed by a state in a category implying but not limited to potential endangerment or extinction. Listing is either by legislation or regulation (from M6840, *Special Status Species Manual*).

Strutting Ground. An area used by Greater sage-grouse in early spring for elaborate, ritualized courtship displays (see also Lek).

Substantial Value Habitats. Any particular habitat that is common or of intermediate importance. Existence areas are used regularly by high-interest wildlife, but are moderate levels with little or no concentrated use. These areas may also include moderately sensitive habitats of high-interest species with moderate reclamation potential. Wildlife uses may be displaced in response to development. Examples include extensive summer and/or winter ranges receiving regular use well below carrying capacity having little potential for increase due to other limiting factors; Class 4 streams, lakes, ponds, or reservoirs; and areas of moderate habitat quality.

Succession. The progressive replacement of plant communities on a site that leads to the potential natural plant community (i.e., attaining stability). Primary succession entails simultaneous succession of soil from parent material and vegetation. Secondary succession occurs following disturbances on sites that previously supported vegetation and entails plant succession on the more mature soils (BLM 2001a).

Successional Status. The present state of vegetation and soil protection of an ecological site in relation to the potential natural community for the site. Successional status is the expression of the relative degree to which kinds, proportions, and amounts of plants in a community resemble that of the potential natural community. The four classes of successional status ratings, expressed in terms of similarity to the potential natural community, are: 0% to 25% early seral class, 26% to 50% mid seral, 51% to 76% late seral, and 76% to 100% PNC (BLM 2001a).

Suppression. All the work of extinguishing or containing a fire, beginning with its discovery.

Surface Disturbance. Greater than casual use actions created through mechanized or mechanical means that would cause soil mixing and result in alteration or removal of soil and vegetation, exposing the mineral soil to erosive processes to the extent that reclamation may be required. These actions may include the use of mechanized earth-moving equipment; truck-mounted drilling equipment; geophysical exploration; vehicle travel off routes in areas designated as limited or closed to OHV use; placement of surface facilities such as utilities, pipelines, structures, and oil and gas wells; new road construction; and use of pyrotechnics, explosives, and hazardous chemicals. Surface disturbing activities would not

include livestock grazing, low-impact vegetation management tools (e.g., bullhog, hand thinning, or Dixie harrow), cross-country hiking, driving on designated routes, and scientific excavation and/or mitigation of limited scope approved by the Field Office Manager.

Surface Occupancy. Placement or construction on the land surface (either temporary or permanent) for more than 14 days requiring continual service or maintenance. Casual use is not included.

Suspended Use. Temporarily withheld use that is shown on a grazing permit, but is not available for active use because of a decision issued by the Authorized Officer or by agreement.

Take. Harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct. The term applies only to fish and wildlife (from M6840, *Special Status Species Manual*).

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 (from M6840, *Special Status Species Manual*).

Timing Limitation (Seasonal Restriction). A fluid minerals leasing constraint that prohibits surface use during specified time periods in order to protect identified resource values. The constraint does not apply to the operation and maintenance of production facilities unless analysis demonstrates that such constraints are needed and that less stringent, project-specific constraints would be insufficient.

Total Maximum Daily Load (TMDL). An estimate of the total quantity of pollutants (from all sources including point, non-point, and natural) that may be allowed into waters without exceeding applicable water quality criteria (from H-1601-1, *BLM Land Use Planning Handbook*).

Undertaking. A project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a federal agency, including those carried out by or on behalf of a federal agency; those carried out with federal financial assistance; those requiring a federal permit, license, or approval; and those subject to state or local regulation administered pursuant to a delegation or approval by a federal agency.

Unsuitability Criteria. Criteria of the federal coal management program by which lands may be assessed as unsuitable for all or certain stipulated methods of coal mining (43 CFR 3461.5).

Utility. A service provided by a public utility, such as electricity, telephone, or water.

Valid Existing Rights. Legal “rights” or interest that are associated with a land or mineral estate and that cannot be divested from the estate until that interest expires or is relinquished. Lands within the decision area are subject to various authorizations, some giving “rights” to the holders and some of which could be construed as providing valid but lesser interests. Valid existing rights are established by various laws, leases, and filings under federal law.

Mineral: Authorizations for activities on existing mineral leases and mining claims are governed by valid existing rights. Valid existing rights vary from case to case with respect to oil and gas leases, mineral leases, and mining claims, but generally involve rights to explore, develop, and produce within the constraints of laws, regulations, and policies at the time the lease/claim was established or authorized.

Non-Mineral: There are other situations, unrelated to minerals, in which the BLM has authorized some use of public land or has conveyed some limited interest in public land. The authorization may be valid and existing and may convey some “right” or interest. Many ROWs, easements, and

leases granted on public land are in this category. These types vary from case to case, but the details of each one are specified in the authorizing document. Valid and existing authorizations of this type would continue to be allowed subject to the terms and conditions of the authorizing document.

RS 2477: Some government entities may have a valid existing right to an access route under Revised Statute (RS) 2477, Act of June 26, 1866, ch. 262, §8, 14 Stat. 251 (codified as amended at 43 U.S.C. 932 until repealed in 1976 by FLPMA, Public Law 94-579, Section 706(a), Stat. 2744, 2793 [1976]), which granted “the ROW for the construction of highways over public lands, not reserved for public uses.”

Access: The presence of non-federal land and resources within the decision area has implications because owners of non-federal land or mineral rights surrounded by public land are entitled to reasonable access to their land or resources (*State of Utah v Andrus, 1979*). Reasonable access is defined as access that the Secretary of the Interior deems adequate to secure the owner reasonable use and enjoyment of the non-federal land. Such access is subject to rules and regulations governing the administration of public land. In determining reasonable access, the BLM has discretion to evaluate and would consider such things as proposed construction methods and location, reasonable alternatives, and reasonable terms and conditions as are necessary to protect the public interest and resources of the decision area.

Other: There are a variety of other land use authorizations that do not involve the granting of legal “rights” or interests. Outfitter and guide permits are an example. These permits authorize certain uses of public land for a specified time, under certain conditions, without conveying a right, title, or interest in the land or resources used. If at any time it is determined that an outfitter and guide permit, other such permit, or any activities under those permits are not consistent with the approved RMP, then the authorization would be adjusted, mitigated, or revoked where legally possible. Grazing permits are also in this category. Grazing permits or leases convey no right, title, or interest in the land or resources used. Other applicable laws and regulations govern changes to existing grazing permits and levels of livestock grazing.

Visual Resources. The visible physical features of a landscape (topography, water, vegetation, animals, structures, and other features) that constitute the scenery of an area.

Visual Resource Management (VRM). The inventory and planning actions taken to identify visual values and establish objectives for managing those values, and the management actions taken to achieve the visual management objectives.

Visual Resource Management Classes. VRM classes define the degree of acceptable visual change within a characteristic landscape. A class is based on the physical and sociological characteristics of any given homogeneous area and serves as a management objective. There are four classes. Each class has an objective that prescribes the amount of change allowed in the characteristic landscape, as described below.

Class I: The objective for VRM Class I is to preserve the existing character of the landscape. This class provides for natural ecological changes; it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.

Class II: The objective for VRM Class II is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements

of form, line, color, and texture found in the predominant natural features of the characteristic landscape.

Class III: The objective for VRM Class III is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Any changes should repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.

Class IV: The objective for VRM Class IV is to provide for management activities that require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location; minimal disturbance; and repeating the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.

Visual Sensitivity Levels. Measures of public concern (e.g., high, medium, or low) for the maintenance of scenic quality.

Water Quality. The chemical, physical, and biological characteristics of water with respect to its suitability for a particular use.

Watershed. The fifth level of the hydrologic unit delineation system. A watershed is coded with 10 numerical digits, and watersheds range in size from 40,000 to 250,000 acres (Subcommittee on Spatial Water Data 2000) (from H-4180-1, *BLM Standards for Rangeland Health*).

Watershed Health. Watersheds are in or making significant progress toward properly functioning physical condition, including their upland, riparian-wetland, and aquatic components; soil and plant conditions support infiltration, soil moisture storage, and the release of water that are in balance with climate and landform and maintain or improve water quality, water quantity, and timing and duration of flow (BLM 1997a).

Way. A trace maintained solely by the passage of vehicles which has not been improved and/or maintained by mechanical means to ensure relatively regular and continuous use (from H-8550-1, *Interim Management Policy for Lands Under Wilderness Review*).

Wild River. A Wild and Scenic River Tentative Classification that applies to those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted and possess at least one river-related outstandingly remarkable value. These represent vestiges of primitive America.

Wilderness. A congressionally designated area of undeveloped federal land retaining its primeval character and influence, without permanent improvements or human habitation, that is protected and managed to preserve its natural conditions and that (1) generally appears to have been affected mainly by the forces of nature, with human imprints substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least 5,000 acres or is large enough to make practical its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historic value.

Wilderness Characteristics. Features of the land associated with the concept of wilderness that specifically deal with naturalness and opportunities for solitude and primitive unconfined recreation.

These characteristics may be considered in land use planning when BLM determines that those characteristics are reasonably present, of sufficient value (condition, uniqueness, relevance, importance) and need (trend, risk), and are practicable to manage (from IM-2003-275, Change 1, Considerations of Wilderness Characteristics in LUP, Attachment 1).

Wilderness Study Area (WSA). Areas that have been inventoried and found to have wilderness characteristics as described in FLPMA Section 603 and Section 2(c) of the Wilderness Act of 1964. These areas are under study for possible inclusion as a Wilderness Area in the National Wilderness Preservation System.

Wildfire: An unplanned, unwanted wildland fire including unauthorized human-caused fires, escaped wildland fire use events, escaped prescribed fire projects, and all other wildland fires where the objective is to put the fire out.

Wilding. A plant growing uncultivated in the wild either as a native or an escape. Specifically, the collection of such whole live plants.

Wildland Fire. Any fire, regardless of ignition source, that is burning outside of a prescribed fire and any fire burning on public lands or threatening public land resources, where no fire prescription standards have been prepared (from H-1742-1, *BLM Emergency Fire Rehabilitation Handbook*).

Wildland Fire Use. The management of naturally ignited wildland fires to accomplish specific pre-stated resource management objectives in pre-defined geographic areas outlined in Fire Management Plans.

Wildland-Urban Interface (WUI). The line, area, or zone in which structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels.

Withdrawal. Removal or withholding an area of federal land from settlement, sale, location, or entry, under some or all of the general land laws, for the purpose of limiting activities under those laws in order to maintain other public values in the area or reserving the area for a particular public purpose or program; or transferring jurisdiction over an area of federal land, other than “property” governed by the Federal Property and Administrative Services Act, as amended (40 U.S.C. 472), from one department, bureau, or agency to another department, bureau, or agency (from FLPMA, Title 43, Chapter 35, Subchapter I 1702(j)).

Woodland. A forest community occupied primarily by non-commercial species such as juniper, pinyon pine, mountain mahogany, or quaking aspen groves; all western juniper forestlands are considered woodlands because juniper is classified as a non-commercial species.

ABBREVIATIONS AND ACRONYMS

AASHTO	American Association of State Highway and Transportation Officials
ACEC	Area of Critical Environmental Concern
AML	Abandoned Mine Lands
AMR	Appropriate Management Response
AMS	Analysis of the Management Situation
AO	Authorized Officer
APD	Application for Permit to Drill (an oil or gas well)
APP	Avian Protection Plan
ATV	All-Terrain Vehicle
AUM	Animal Unit Month
AVF	Alluvial Valley Floors
BA	Biological Assessment
BCC	Birds of Conservation Concern
BHCA	Bird Habitat Conservation Areas
BLM	Bureau of Land Management
BMP	Best Management Practice
BTU	British Thermal Unit
CAA	Clean Air Act
CBGA	Cedar/Beaver/Garfield/Antimony (Resource Management Plan)
CBNG	Coalbed Natural Gas
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CMAQ	Community Multi-Scale Air Quality (a model)
CO	Carbon Monoxide
COA	Condition of Approval
CSP	Concentrating Solar Power
CSU	Controlled Surface Use (oil and gas leasing stipulation)
DPC	Desired Plant Community
DWFC	Desired Wildland Fire Condition
EA	Environmental Assessment
EAR	Environmental Analysis Record
EIS	Environmental Impact Statement
EO	Executive Order
EPA	Environmental Protection Agency
EPCA	Energy Policy and Conservation Act (of 1975)
ERMA	Extensive Recreation Management Area
ESA	Endangered Species Act (of 1973)
ESR	Emergency Stabilization and Rehabilitation
FLPMA	Federal Land Policy and Management Act (of 1976)
FMP	Fire Management Plan
FO	Field Office
FRCC	Fire Regime Condition Class
FY	Fiscal Year
GIS	Geographic Information Systems
GPS	Global Positioning System
GSENM	Grand Staircase–Escalante National Monument
HAP	Hazardous Air Pollutants
HMP	Habitat Management Plan

HUC	Hydrologic Unit Code
IBLA	Interior Board of Land Appeals
IC	Incident Commander (Appendix 8 only)
ID Team	Interdisciplinary Team
IM	Instruction Memorandum
IMP	BLM Interim Management Policy for Lands Under Wilderness Review
IMPROVE	Interagency Monitoring of Protected Visual Environments
IPCC	Intergovernmental Panel on Climate Change
IWJV	Intermountain West Joint Venture (migratory birds)
KFO	Kanab Field Office
KPA	Kanab Planning Area
KRCRA	Known Recoverable Coal Resource Areas
kV	Kilovolt
LUP	Land Use Plan
MBTA	Migratory Bird Treaty Act
MFP	Management Framework Plan
MMS	Minerals Management Service
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MSO	Mexican Spotted Owl
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Grave Protection and Repatriation Act
NAWMP	North American Waterfowl Management Plan
NEPA	National Environmental Policy Act (of 1969)
NHPA	National Historic Preservation Act
NOI	Notice of Intent
NO _x	Nitrogen Oxides
NPS	National Park Service
NRA	National Recreation Area
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
NSB	National Scenic Byway
NSO	No Surface Occupancy
NWSRS	National Wild and Scenic Rivers System
OHV	Off-Highway Vehicle
ORV	Outstandingly Remarkable Value
OSM	Office of Surface Mining
PAC	Protected Activity Center (Mexican spotted owls)
PEIS	Programmatic Environmental Impact Statement
PFC	Proper Functioning Condition (of riparian/wetland areas)
PIF	Partners in Flight
PILT	Payment in Lieu of Taxes
PM _{2.5}	Particulate Matter (less than 2.5 microns in diameter)
PM ₁₀	Particulate Matter (less than 10 microns in diameter)
PNC	Potential Natural Community
PSD	Prevention of Significant Deterioration
R&I	Relevant and Important
R&PP	Recreation and Public Purposes Act
RFD	Reasonably Foreseeable Development
RMA	Recreation Management Area
RMIS	Recreation Management Information System

RMP	Resource Management Plan (BLM land use plan under FLPMA)
RMZ	Recreation Management Zone
ROD	Record of Decision
ROW	Right-of-Way
RPM	Resource Protection Measure (fire stipulations)
RS 2477	Revised Statute 2477 (mining law related to road rights-of-way)
RUP	Recreation Use Permit
SHPO	State Historic Preservation Officer
SITLA	School and Institutional Trust Lands Administration
SMCRA	Surface Mining Control and Reclamation Act of 1977
SO _x	Sulfur Oxides
SO ₂	Sulfur Dioxide
SOP	Standard Operating Procedure
SR	State Route
SRMA	Special Recreation Management Area
SRP	Special Recreation Permit
SSS	Special Status Species
SWReGAP	Southwest Regional Gap Analysis Project
SUWA	Southern Utah Wilderness Alliance
T&E	Threatened and/or Endangered (species as per the ESA of 1973)
TDS	Total Dissolved Solids
TL	Timing Limitation
TLCA	Toyota Land Cruiser Association
TMDL	Total Maximum Daily Load
UACD	Utah Association of Conservation Districts
UDAQ	Utah Division of Air Quality
UDEQ	Utah Department of Environmental Quality
UDOT	Utah Department of Transportation
UDWR	Utah Division of Wildlife Resources
UGS	Utah Geological Survey
U.S.C.	United States Code
USDA	United States Department of Agriculture
USDOI	United States Department of the Interior
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
USU	Utah State University
VOC	Volatile Organic Compounds
VRI	Visual Resource Inventory
VRM	Visual Resource Management
WO	Washington Office
WRCC	Western Regional Climate Center
WSA	Wilderness Study Area
WSR	Wild and Scenic River
WUI	Wildland Urban Interface

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REFERENCES

- Adams, R. and D. Simmons. 1999. *Ecological effects of fire fighting foams and retardants*. New South Wales, Australia: School of Environmental and Information Sciences, Charles Sturt University.
- Allison, G.B., G.W. Gee, and S.W. Tyler. 1994. Vadose-zone techniques for estimating groundwater recharge in arid and semiarid regions. *Soil Science Soc. of America J.* 58:6–14.
- American Geological Institute, 1974. *Glossary of Geology*.
- Armour, C.L. 1991. The effects of livestock grazing on riparian and stream ecosystems. *Fisheries* 16(1):7–11. 1991. FR 36(2).
- Arno, S. 2000. Fire in Western Forest Ecosystems. In: J. Brown and J. Kapler-Smith, eds. *Wildland Fire in Ecosystems: Effects of Fire on Flora*, General Technical Report RMRS-GTR-42-vol. 2, United States Department of Agriculture, Forest Service, Rocky Mountain Research Station, Ogden, UT, pp. 97–120.
- Avian Power Line Interaction Committee. 2006. Suggested practices for raptor protection on power lines: the state of the art in 2006. Washington (D.C.): Edison Electric Institute/Raptor Research Foundation.
- Bailey, R.G. 1995. Descriptions of the Ecoregions of the United States. 2d ed. Rev. and expanded (1st ed, 1980). Misc. Publ. No. 1391 (rev.), Washington, DC: United States Forest Service. pp. 108 with separate map at 1:7,500,000.
- Bartos, D.L. and R.B. Campbell. 1998. *Decline of Quaking Aspen in the Interior West-Examples from Utah*. Rangelands. Society for Rangeland Management. 20:1 February 1998.
- Belsky, A.J. 1996. Viewpoint: Western juniper expansion: Is it a threat to arid northwestern ecosystems? *Journal of Range Management*. Vol. 49: pp 53–59.
- Bosworth III, W.R. 2003. *Vertebrate Information Compiled by the Utah Natural Heritage Program: A Progress Report*. State of Utah, Department of Natural Resources, Division of Wildlife Resources – Utah Natural Heritage Program. Publication Number 03-45. Prepared for Utah Reclamation Mitigation and Conservation Commission and the U.S. Department of the Interior. Salt Lake City, UT.
- Bradley, A.F., N.V. Noste, and W.C. Fischer. 1992. *Fire Ecology of Forests and Woodlands in Utah*, General Technical Report INT-287, Ogden, UT: United States Department of Agriculture, Forest Service, Intermountain Research Station.
- Brimson, M.M. [Chair]. 2001. *Riparian Areas: Functions and Strategies for Management*. National Academies Press, 2001 Constitution Avenue N.W., Washington, DC 20418. pp. 424.
- Brockway, D.G., R.G. Gatewood, and R.B. Paris. 2002. Restoring grassland savannas from degraded pinyon-juniper woodlands: Effects of mechanical overstory reduction and slash treatments alternatives. *Journal of Environmental Management* 64. pp. 179–197.

- Buenger, B. 2003. The Impact of Wildland and Prescribed Fire on Archaeological Resources. PhD Dissertation. Submitted to the Department of Anthropology, University of Kansas. http://www.blm.gov/heritage/docum/Fire/Dissertation_Buenger.htm.
- Bureau of Land Management (BLM). No date. Guidelines for Recreation Management for Public Lands in Utah.
- Bureau of Land Management (BLM). 1979. *Intermountain Power Project Draft Environmental Statement*. Prepared by the U.S. Department of the Interior, Bureau of Land Management. 3 Volumes.
- Bureau of Land Management (BLM). 1986. Utah BLM Statewide Desert Bighorn Sheep Management Plan.
- Bureau of Land Management (BLM). 1991a. Riparian-Wetland Initiative for the 1990s.
- Bureau of Land Management (BLM). 1991b. Utah Statewide Wilderness Study Report, Volume IIA. BLM Utah State Office, Salt Lake City, UT.
- Bureau of Land Management (BLM). 1997a. Standards for Rangeland Health and Guidelines for Grazing Management for BLM Lands in Utah. United States Department of the Interior, Bureau of Land Management, Utah State Office.
- Bureau of Land Management (BLM). 1997b. Final Arizona Statewide Wild & Scenic Rivers Study Report/Record of Decision. Arizona State Office: Phoenix, AZ.
- Bureau of Land Management (BLM). 1998. Revised Guidelines for Domestic Sheep and Goat Management in Native Wild Sheep Habitats.
- Bureau of Land Management (BLM). 1999a. Utah Wilderness Inventory.
- Bureau of Land Management (BLM). 1999b. St. George Field Office (formerly the Dixie Resource Area) Record of Decision and Resource Management Plan. United States Department of the Interior, Bureau of Land Management, Utah State Office, St. George Field Office. March 1999.
- Bureau of Land Management (BLM). 2000. Grand Staircase-Escalante National Monument Approved Management Plan Record of Decision. Prepared by Bureau of Land Management, Grand Staircase-Escalante National Monument, Cedar City, UT. Signed November 1999. Effective February 2000.
- Bureau of Land Management (BLM). 2001a. Ecological site inventory, Technical Reference 1734-7. Written by: Habich, E.F. Denver, CO. BLM/ST/ST-01/003+1734. pp. 112.
- Bureau of Land Management (BLM). 2001b. Biology and Conservation of the Coral Pink Sands Dunes Tiger Beetle, *Cincindela limbata albissima*, Year 2000, Final Report. March 15, 2001.
- Bureau of Land Management (BLM). 2002a. Special Evaluation Report: Escalante Management Framework Plan, Paria Management Framework Plan, Vermilion Management Framework Plan, Zion Management Framework Plan, and Cedar/Beaver/Garfield/Antimony Resource Management Plan Evaluations.

- Bureau of Land Management (BLM). 2002b. Finding of No Significant Impact and Decision Record: Sandford Bench Limekiln Prairie Dog Habitat Improvement/Translocation. EA UT-046-01-010.
- Bureau of Land Management (BLM). 2002c. Midwinter Bald Eagle Survey Standardized Survey Form. Lisa Church, Kanab Field Office.
- Bureau of Land Management (BLM). 2003. Programmatic Biological Assessment of the Utah Prairie Dog on Utah Bureau of Land Management Lands, March 2003.
- Bureau of Land Management (BLM). 2004a. National Sage-Grouse Habitat Conservation Strategy.
- Bureau of Land Management (BLM). 2004b. Internet. Payments in Lieu of Taxes Website. <http://www.blm.gov/pilt/>. Accessed November 2004.
- Bureau of Land Management (BLM). 2004c. Five-Year Analysis of Actions Implemented Under the Conservation Agreement and Strategy for the Coral Pink Sand Dunes Tiger Beetle (*Cicindela limbata albissima*).
- Bureau of Land Management (BLM). 2005a. Programmatic Biological Assessment of Utah Prairie Dog on Utah Bureau of Land Management Lands.
- Bureau of Land Management (BLM). 2005b. Socioeconomic Baseline Report for the Kanab Resource Management Plan and Environmental Impact Statement.
- Bureau of Land Management (BLM). 2005c. Utah Land Use Plan Amendment for Fire and Fuels Management Environmental Assessment, EA UT-USO-04-01. Finding of No Significant Impact and Decision Record.
- Bureau of Land Management (BLM). 2005d. Mineral Potential Report for the Kanab Planning Area, Kanab Field Office.
- Bureau of Land Management (BLM). 2005e. Record of Decision for Implementation of a Wind Energy Development Program and Associated Land Use Plan Amendments.
- Bureau of Land Management (BLM). 2006a. Utah State Office, Best Management Practices for Raptors and Their Associated Habitats in Utah. Instruction Memorandum No. UT 2006-096.
- Bureau of Land Management (BLM). 2006b. Recreation Management Information System. *Visitor Days and Participants by Office and Activity; Kanab Field Office*.
- Bureau of Land Management (BLM). 2007a. Proposed Resource Management Plan and Final Environmental Impact Statement for the Arizona Strip Field Office, Vermilion Cliffs National Monument, and Bureau of Land Management Portion of the Grand Canyon-Parashant National Monument, and a Proposed General Management Plan for the National Park Service portion and Final Environmental Impact Statement for the National Park Service Portion of the Grand Canyon Parashant National Monument. January 2007.
- Bureau of Land Management (BLM). 2007b. Northeast National Petroleum Reserve - Alaska Draft Supplemental Integrated Activity Plan/Environmental Impact Statement. USDOI BLM, August 2007. Available on the Internet: http://www.blm.gov/ak/st/en/prog/planning/npra_general/ne_npra/ne_npr-a_supplement.html.

- Burkhardt, J.W. and E.W. Tisdale. 1976. Causes of Juniper Invasion in Southwestern Idaho, *Ecology* 57, pp. 472–484.
- Cole, D.N. 2001. *Day users in wilderness: how different are they?* Research Paper RMRS-RP-31. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. pp. 29.
- Connelly, J.W., M.A. Schroeder, A.R. Sands, and C.E. Braun. 2000. Guidelines to Manage Sage-Grouse Populations and Their Habitat. *Wildlife Society Bulletin* 28(4):967–985.
- Curtis, P. 2005. Personal Communication. Conversation with Dr. Neil West (Professor of Range Science at Utah State University) and Jayne Belnap (ecologist with USGS, and a co-author of Technical Reference 1730-2 Biological Soil Crusts: Ecology and Management).
- Deal, K. No Date. Fire Effects to Flaked Stone, Ground Stone, and Other Stone Artifacts (DRAFT). In: Kevin C. Ryan and Anne Trinkle Jones, editors. *Wildland Fire in Ecosystems: Effects of Fire on Cultural Resources and Archeology*. Rainbow Series, Rocky Mountain Research Station, USDA Forest Service. In press.
- Doelling, H.H. and R.L. Graham. 1972. Southwestern Utah Coal Fields – Alton, Kaiparowits Plateau and Kolob-Harmony: Utah Geological and Mineralogical Survey Monograph 1, 333 p.
- Doelling, H.H. 1975. Geology and Mineral Resources of Garfield County, Utah: Utah Geological and Mineral Survey Bulletin 107, 175 p., 1 plate (1:250,000).
- Doelling, H.H. and F.D. Davis. 1978. Coal Drilling, Johns Valley, Garfield County, Utah. In: Smith, Martha, editor, *Utah Geology: Utah Geological and Mineral Survey*, vol. 5, no. 2, pp. 113–124.
- Doelling, H.H. and F.D. Davis. 1989. *The Geology of Kane County, Utah: Geology, Mineral Resources, Geologic Hazards*. Utah Department of Natural Resources, Utah Geological and Mineral Survey, Bulletin 124.
- Edison Electric Institute’s Avian Power Line Interaction Committee (APLIC) and U.S. Fish and Wildlife Service (USFWS). 2005. Avian Protection Plan Guidelines. April 2005.
- Economic Profile System (EPS). 2005. Data compiled by the Economic Profile System, developed by the Sonoran Institute for the U.S. Bureau of Land Management.
- Environmental Protection Agency (EPA). 1995. Compilation of Air Pollutant Emission Factors. U.S. Environmental Protection Agency Publication AP-42, Fifth Edition, Chapter 13.
- Environmental Protection Agency (EPA). 2000. 40 Code of Federal Regulations Part 81.430, Designation of Areas for Air Quality Planning Purposes, Identification of Mandatory Class I Federal Areas Where Visibility Is an Important Value, Utah. July 1, 2000.
- Environmental Protection Agency (EPA). 2005. Level III Ecoregions [web application]. 2005. Corvallis, OR: Western Ecology Division. Available at: http://www.epa.gov/wed/pages/ecoregions/level_iii.htm.
- Esplin, M. 2003. 2003 Report on Growth and Survival Trends of *Welsh’s Milkweed – Asclepias welshii*.
- Esplin, M. 2005. 2004 Report on Growth and Survival Trends of *Welsh’s Milkweed*.

- Esplin, M. 2006. 2005 Report on Growth and Survival Trends of *Welsh's Milkweed*.
- Five County Association of Governments. 1998a. Kane County Utah General Plan. Prepared for Kane County.
- Five County Association of Governments, 1998b. Garfield County General Plan. Prepared for Garfield County.
- Five County Association of Governments. 2001. Scenic Byway 12 Corridor Management Plan. Prepared for the Garfield County and Wayne County Commissioners.
- Foster, J.R., A.L. Titus, G.F. Winterfeld, and M.C. Hayden. 2001. *Paleontological Survey of the Grand Staircase-Escalante National Monument, Garfield and Kane Counties, Utah*. Utah Department of Natural Resources, Utah Geological Survey, Special Study 99.
- Freethy, G.W. and G.E. Cordy. 1991. Geohydrology of Mesozoic Rocks in the Upper Colorado River Basin in Arizona, Colorado, New Mexico, Utah, and Wyoming, Excluding the San Juan Basin. U.S. Geological Survey Professional Paper 1411-c.
- Freimund, W.A. and D.N. Cole. 2001. *Use Density, Visitor Experience, and Limiting Recreational Use in Wilderness: Progress to Date and Research Needs*. In: Freimund, W.A. and D.N. Cole (compilers). 2001. Visitor use density and wilderness experience: proceedings; 2000 June 1–3; Missoula, MT. Proc. RMRS-P-20. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.
- Fule, P.Z., W.W. Covington, and M.M. Moore. 1997. Determining reference conditions for ecosystem management of southwestern ponderosa pine forests. *Ecological Applications* 7(3):895–908.
- Geib, P.R., J.H. Collette, and K. Spurr. 2001. *Kaibabitsingügwü: An Archaeological Sample Survey of the Kaiparowits Plateau*. Utah Bureau of Land Management Cultural Resource Series No. 25, Grand Staircase-Escalante National Monument Special Publication No. 1.
- Geist, V. 1978. Behavior. In *Big Game of North America: Ecology and Management*. J.L. Schmidt and D.L. Gilbert, editors. Harrisburg, Pennsylvania: Stackpole Books. pp. 283–96, 494 pp.
- Gillette, D.D. and M.C. Hayden. 1997. *A preliminary investigation of paleontological resources within the Grand Staircase-Escalante National Monument, Utah*. Utah Geological Survey Circular 96. Utah Department of Natural Resources. Salt Lake City, UT.
- Goddard Institute for Space Studies. 2007. Annual Mean Temperature Change for Three Latitude Bands. Datasets and Images. GISS Surface Temperature Analysis, Analysis Graphs and Plots. New York, New York. Available on the Internet: <http://data.giss.nasa.gov/gistemp/graphs/fig.B.lrg.gif>.
- Goodin, J.R. and A. Mozafar. 1972. Physiology of Salinity Stress, United States Department of Agriculture, Forest Service, General Technical Report INT-1, p. 255–259.
- Goodrich, S. and B. Barber. 1999. Return Interval for Pinyon-Juniper Following Fire in the Green River Corridor, Near Dutch John, Utah. In: S.B. Monsen and R. Stevens, eds. Proceedings of the Ecology and Management of Pinyon-Juniper Communities Within the Interior West. United States Department of Agriculture, Forest Service Proceedings RMRS-P-9, Rocky Mountain Research Station, Fort Collins, CO. pp. 391–393.

- Gruell, G.E. and L.L. Loope. 1974. Relationships Among Aspen, Fire, and Ungulate Browsing in Jackson Hole, Wyoming, Lakewood, CO, United States Department of the Interior, National Park Service, Rocky Mountain Region, 33 p. In cooperation with: United States Department of Agriculture, Forest Service, Intermountain Region.
- Hall, J.A. 1980. *Direct impacts of off-road vehicles on vegetation*. Pages 63–74. In: Rowlands, P.G. (ed.). The direct effects of disturbance on desert soils, vegetation and community processes with emphasis on off-road vehicles: a critical review. U.S. Department of the Interior, Bureau of Land Management, Desert Plan Staff Special Publication. Riverside, CA.
- Hamilton, R.G. (compiler). 1993. Characteristics of Old-Growth Forests in the Intermountain Region. USDA Forest Service Intermountain Region, Ogden, UT.
- Harniss, R.O. and R.B. Murray. 1973. Thirty Years of Vegetal Change Following Burning of Sagebrush Grass Range, *J. Range Manage.*, 26:322–325.
- Harrington, M.G. 1985. The effects of spring, summer, and fall burning on Gambel oak in a southwestern ponderosa pine stand. *Forest Science* 31(1): 156–163.
- Harris, C.M. 1991. *Handbook of Acoustical Measurements and Noise Control*. McGraw-Hill, Inc., New York, New York. pp. 345.
- Havlick, D.G. 2002. No Place Distant: roads and motorized recreation on America's public lands. Island Press. Washington, DC. pp. 297.
- Hayden, M.C. 2005. Personal communication, May 10, 2005.
- Herbertson, E.G. 2007. A Biological Evaluation of Forest Health on Moquith Mountain. USDA Forest Service, Ogden Field Office. OFO-BE-07-01. February 2007.
- Hiatt, G.S. and D. Baker. 1981. Effects of oil/gas drilling on elk and mule deer winter distributions on Crooks Mountain, Wyoming. Wyoming Game and Fish Department. Unpublished report.
- Hintze, L.F. 1988. *Geologic History of Utah*. 2nd Edition, Brigham Young University Geological Studies Special Publication 7. Provo, UT.
- Houston, D.B. 1973. Wildfires in Northern Yellowstone National Park, *Ecology* 54:1111–1117.
- Howard, J.L. 1996. *Populus tremuloides*. In: Fire Effects Information System, United States Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Internet: <http://www.fs.fed.us/database/feis/>. Accessed August 2004.
- Howard, J.L. 1999. *Artemisia tridentata ssp. wyomingensis*. In: Fire Effects Information System, United States Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Internet: <http://www.fs.fed.us/database/feis/>. Accessed August 2004.
- Howard, J.L. 2003. *Pinus ponderosa var. scopulorum*. In: Fire Effects Information System [Online]. U.S. Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available at: <http://www.fs.fed.us/database/feis/>. Accessed May 15, 2005.

- Howery, L. 1999. *Rangeland Management Before, During and After Drought*. Range Technical Note No. NM-93. University of Arizona Cooperative Extension Bulletin. U.S. Department of Agriculture, Natural Resources Conservation Service.
- Hreha, A.M. and T.B. Meyer. 2000. Five-Year Monitoring Study of Siler's Pincushion Cactus (*Pediocactus sileri*) in Kane County, Utah. In: Southwest Rare and Endangered Plants: Proceedings of the Third Conference. Maschinski, J. and L. Holter (eds.). Proceedings RMRS-P-23. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. pp. 250.
- Interactive Biodiversity Information System (IBIS), 2004 Website: <http://ibis.nwhi.org>. Northwest Habitat Institute, Corvallis, OR.
- Intergovernmental Panel on Climate Change (IPCC). 2007. *Climate Change 2007: The Physical Basis (Summary for Policymakers)*. Cambridge University Press. Cambridge, England and New York, New York. Available on the Internet: <http://www.ipcc.ch/pdf/assessment-report/ar4/wg1/ar4-wg1-spm.pdf>.
- Intermountain West Joint Venture (IWJV). 2005. *Coordinated Implementation Plan for Bird Conservation in Utah*.
- Janetski, J.C. 2002. "Research Design." In: *The BYU Escalante Drainage Project: Big Flat and Escalante Canyon Areas 2001*. Jordan A. and R.K. Talbot (eds.). Department of Anthropology, Office of Public Archaeology, Brigham Young University, Provo, UT.
- Johnson, K.A. 2000. *Artemisia tridentata spp. vaseyana*. In: *Fire Effects Information System*, United States Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Internet: <http://www.fs.fed.us/database/feis/>. Accessed August 2004.
- Jones, J.R. and N.V. DeByle. 1985. Fire, p. 77–81. In: DeByle, N.V. and R.P. Winokur (eds.). *Aspen: Ecology and Management in Western United States*, General Technical Report RM-119, United States Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station, Fort Collins, CO. pp. 283.
- Kelly, R. and D.F. McCarthy. 2001. *Effects of Fire on Rock Art*. In *American Indian Rock Art*. Steven Freers and Alanah Woody, editors. Vol. 27, pp. 169–176.
- Kimball, S. and P. Schiffman. 2003. Differing Effects of Cattle Grazing on Native and Alien Plants. *Conservation Biology Volume 17, No. 6*. December 2003. pp. 1681–1693.
- Kitchen, S. 2004. Kitchen (ed.). In: *Proceedings: Ecology and Management of Annual Rangelands*, General Technical Report INT-GTR-313, United States Department of Agriculture, Forest Service, Intermountain Research Station, Ogden, UT.
- Knight, D.H. 1994. *Mountains and Plains: The Ecology of Wyoming Landscapes*, Yale University Press, New Haven, CT. pp. 338.
- Knisley, C.B. and C. Gowan. 2005. *Biology and Conservation of the Coral Pink Sand Dunes Tiger Beetle, Cicindela Albissima Year 2004*, Final Report.

- Little, E.L. Jr. 1971. Atlas of the United States trees. Volume 1. Conifers and important hardwoods. Misc. Publ. 1146. Washington, DC: U.S. Department of Agriculture, Forest Service. pp. 320.
- Loyd, J.M. et al. 2002. In: *The Effects of Fire and Heat on Obsidian*. Bureau of Land Management, Cultural Resources Publication, Bishop Field Office, California.
- McFadden, D.A. 1996. Virgin Anasazi Settlement and Adaptation on the Grand Staircase. Utah Archaeology 9(1):1–34.
- McFadden, D.A. 2001. *East Fork of the Virgin River Inventory*. U00BL0749b, report on file at the Utah State Historic Preservation Office.
- Members of the Conservation Committee for the Coral Pink Sand Dunes Tiger Beetle. 1997. Conservation Agreement and Strategy for the Coral Pink Sand Dunes Tiger Beetle (*Cicindela limbata albissima*). March 31, 1997.
- Miller, R.F. and J.A. Rose. 1999. *Fire History and Western Juniper Encroachment in Sagebrush Steppe*. Journal of Range Management. 52:550–559.
- Miller, R.F. and R.J. Tausch. 2001. *The role of fire in juniper and pinyon woodlands: A descriptive analysis*. pp. 15–30. In: Galley, K.E.M. and T.P. Wilson (eds.). Proceedings of the Invasive Species Workshop: the Role of Fire in the Control and Spread of Invasive Species. Fire Conference 2000: the First National Congress of Fire Ecology, Prevention, and Management. Miscellaneous Publication No. 11, Tall Timbers Research Station, Tallahassee, FL.
- Miller, R.F., C. Baisan, J.A. Rose, and D. Pacioretty. 2001. Pre- and Post-Settlement Fire Regimes in Mountain Big Sagebrush Steppe and Aspen: The Northwestern Great Basin, Final Report to the National Interagency Fire Center, 3833 S. Development Avenue, Boise, ID.
- Monson S.B. and R. Stevens (compilers). 1999. *Proceedings: Ecology and management of pinyon-juniper communities within the Interior West*. 1997 September 15–18; Provo, UT. Proceedings RMRS-P-9. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.
- Mueggler, W.F. 1989. *Age Distribution and Reproduction of Intermountain Aspen Stands*. Western Journal of Applied Forestry 4(2):41–45.
- Mutch, R. 1970. Wildland Fires and Ecosystems: A Hypothesis, Ecology, 51: 10461051, National Interagency Fire Center, Website: <http://www.nifc.gov/stats/wildlandfirestats.html>. Accessed August 12, 2004.
- National Academy of Sciences. 2006. Understanding and Responding to Climate Change: Highlights of National Academies Reports. Division on Earth and Life Studies. National Academy of Sciences. Washington, D.C. Available on the Internet: <http://dels.nas.edu/basc/Climate-HIGH.pdf>.
- National Park Service (NPS). 1997. “How to Apply the National Register Criteria for Evaluation.” Revised, National Register Bulletin 15, first published in 1990. National Park Service Interagency Resources Division, National Register Branch, Washington, DC.
- National Park Service (NPS). 2001a. National Historic Trail Feasibility Study and Environmental Assessment: Old Spanish Trail. United States Department of the Interior.

- National Park Service (NPS). 2001b. Zion National Park General Management Plan.
- National Park Service (NPS). 2003. National Park Service Annual Wilderness Report 2002–2003. National Wilderness Steering Committee. National Park Service. July 2003.
- National Park Service (NPS). 2004. Bryce Canyon National Park Fire Management Plan Environmental Assessment/Assessment of Effects.
- NatureServe. 2005. NatureServe Explorer: An online encyclopedia of life [web application]. Version 4.4. NatureServe, Arlington, VA. Available at: <http://www.natureserve.org/explorer>. Accessed June through September 2005.
- O'Brien, R.A. and S.H. Waters. 1998. *Forest Resources of the Fishlake National Forest*. U.S. Department of Agriculture, Rocky Mountain Research Station. May 1998.
- Ockenfels, R.A., A. Alexander, C.L. Ticer, and W.K. Carrel. 1994. Home Ranges, Movement Patterns, and Habitat Selection of Pronghorn in Central Arizona, Arizona Game and Fish Department Technical Report 13, Phoenix, AZ.
- Office of Surface Mining (OSM), United States Department of the Interior. 1979. OSM Reference No: 79-5-001. Secretary's Decision.
- Omernik, J.M. 1987. Ecoregions of the conterminous United States. Map (scale 1:7,500,000). *Annals of the Association of American Geographers* 77(1):118–125.
- Oster, E. No Date. The Effects of Fire on Subsurface Archeological Materials (DRAFT). In: *Wildland Fire in Ecosystems: Effects of Fire on Cultural Resources and Archeology*. Kevin C. Ryan and Anne Trinkle Jones (eds.). Rainbow Series, Rocky Mountain Research Station, USDA Forest Service. In press.
- Palmer, B.C. 1989. A Study of Welch's Milkweed (*Asclepias welshii*) on the Coral Pink Sand Dunes. Biology Department, Southern Utah State College.
- Parish, C. 2005. Personal Communication through Keith Day at the State of Utah. E-mail. August 7, 2005.
- Parrish, J.R., F.P. Howe, and R.E. Norvell. 2002. Utah Partners in Flight Avian Conservation Strategy. UDWR Publication Number 02-27. Utah Division of Wildlife Resources, Salt Lake City.
- Paysen, T.E., R.J. Ansley, J.K. Brown, G.J. Gottfried, S.M. Haase, M.G. Harrington, M.G. Narog, S.S. Sackett, and R.C. Wilson. 2000. Chapter 6: Fire in Western Shrubland, Woodland, and Grassland Ecosystems. In: Brown, J.K. and J.K. Smith (eds.), *Wildland Fire in Ecosystems: Effects of Fire on Flora*, General Technical Report RMRS-GTR-42-vol. 2, Ogden, UT, United States Department of Agriculture, Forest Service, Rocky Mountain Research Station, pp. 121–159.
- Peters, E.F. and S.C. Bunting. 1994. Fire Conditions Pre- and Post-Occurrence of Annual Grasses on the Snake River Plain, pp. 31–36. In: Monson, S.B. and S.G. Kitchen (eds.), *Proceedings – Ecology and Management of Annual Rangelands*, United States Department of Agriculture, Forest Service, General Technical Report INT-GTR-313, Ogden, UT.

- Prestemon, J., S. Zhu, J.A. Turner, J. Buongiorno, and R. Li. 2005. *The Forest Product Trade Impacts of an Invasive Species: Modeling Structure and Intervention Trade-Offs*. NAREA Workshop on Invasive Species. Workshop sponsored by U.S. Environmental Protection Agency, Farm Foundation, and USDA Economic Research Service. Annapolis, MD. June 14–15, 2005.
- Ralston, C.W. and G.E. Hatchell. 1971. Effects of prescribed burning on physical properties of soil. *Proceedings: Prescribed Burning*. USDA Forest Service, Southeast Station.
- Rinne, J.N. 1999. Fish and grazing relationships: The facts and some pleas. *Fisheries* Vol. 24(8), pp. 12–21.
- Robson, S.G. and E.R. Banta. 1995. *Ground Water Atlas of the United States: Arizona, Colorado, New Mexico, Utah*. U.S. Geological Survey Hydrologic Atlas 730-C.
- Romin, L.A. and J.A. Muck. 2002. *Utah Field Office Guidelines for Raptor Protection From Human and Land Use Disturbances*. U.S. Department of the Interior, U.S. Fish and Wildlife Service, Utah Field Office, Salt Lake City, UT.
- Romme, W.H., L. Floyd-Hanna, and D. Hanna. 2002. Ancient Pinyon-Juniper Forest of Mesa Verde and the West: A Cautionary Note for Forest Restoration Programs, Website: http://www.fs.fed.us/rm/pubs/rmrs_p029/rmrs_p029_335_350.pdf. Accessed October 8, 2004.
- Rondeau, R. 2001. Ecological System Viability Specifications for Southern Rocky Mountain Ecoregion. Colorado Natural Heritage Program 254, General Services Building, Fort Collins, CO 80523. Accessed on line at www.cnhp.colostate.edu/documents/2001 on July 11, 2005.
- Sestak, M.L. and A.R. Riebau. 1988. *SASEM simple approach smoke estimation model*. Technical Note 382. Bureau of Land Management. Denver, CO.
- Shackley, M., S. Dillian, and C. Dillian. 2002. Thermal and Environmental Effects on Obsidian Geochemistry: Experimental and Archaeological Evidence. In: *The Effects of Fire and Heat on Obsidian*. J.M. Loyd, T.M. Origer, and D.A. Fredrickson (eds.). Bureau of Land Management, Cultural Resources Publication, Bishop Field Office, California.
- Sharpe, E.K. and A.W. Ewert. 2000. *Interferences in Place Attachment: Implications for Wilderness*. In: McCool, S.F., D.N. Cole, W.T. Borrie, and J. O'Loughlin (compilers). 2000. Wilderness science in a time of change conference – Volume 3: Wilderness as a Place for Scientific Inquiry; May 23–27, 1999; Missoula, MT. Proceedings RMRS-P-15-VOL-3. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.
- Skinner, B.J. and S.C. Porter. 1992. *The Dynamic Earth: An Introduction to Physical Geology*. John Wiley and Sons, Inc. New York: New York.
- Solomon, M. 2002. Fire and Glass: Effects of Fire on Obsidian Hydration Bands. In: *The Effects of Fire and Heat on Obsidian*. J.M. Loyd, T.M. Origer, and D.A. Fredrickson (eds.). Bureau of Land Management, Cultural Resources Publication, Bishop Field Office, California.
- Sonne, E. and D. Briggs. 2001. *The Effect of Biosolid Fertilization and Thinning on Volume and Value of a 55-Year-Old, Low-Site Douglas-Fir Stand*. Graduate Student, College of Forest Resources. SMC Quarterly, College of Forest Resources, University of Washington. Volume 10, Number 10.

- Accessed on January 10, 2006 via <http://www.cfr.washington.edu/research.smc/newsletter/1stqtr2001.pdf>.
- Spangler, J.D. 2001. Human Landscapes & Prehistoric Paradigms: A Class I Overview of Cultural Resources in the Grand Staircase-Escalante National Monument. Utah Museum of Natural History Reports of Investigations No. 01-2.
- Sprinkel, D.A. 1999. Digital Geologic Resources Atlas of Utah. 1 CD-ROM, 4/99, B-129DF.
- Stoffle, R.W., A.K. Carroll, A. Eisenberg, and J. Amato. 2001. *Ethnographic Assessment of Kaibab Paiute Cultural Resources in Grand Staircase-Escalante National Monument, Utah*. Bureau of Applied Research in Anthropology, University of Arizona. January 6, 2001.
- Stoffle, R.W., F.P. Chmara-Huff, and K.A. Van Vlack. 2004. *Initial Findings from the Arizona Strip Cultural Landscape and Place Name Study*. Ms. prepared for the Arizona Strip Field Office by the Bureau of Applied Research in Anthropology, University of Arizona, Tucson.
- Stokes, W.L. 1986. Geology of Utah. *Utah Museum of Natural History, University of Utah and Utah Geological and Mineral Survey*, Department of Natural Resources, State of Utah. Salt Lake City, UT.
- Sullivan, A.P., P.M. Uphus, C.I. Roos, and P.B. Mink. 2002. Inadvertent Vandalism: The Hidden Challenge for Heritage Resource Management. *NPS Cultural Resources Management* 25(2):42–45.
- Sutcliffe, K. 2004. *Draft Grand Staircase-Escalante National Monument Soil Survey*. Unpublished Draft. United States Department of Agriculture, Natural Resource Conservation Service, in cooperation with the United States Department of the Interior, Bureau of Land Management, and the Utah Agricultural Experiment Station.
- Swenson, H.K. and J. Bayer. 1990. Soil Survey of Panguitch Area, Utah, Parts of Garfield, Iron, Kane, and Piute Counties. United States Department of Agriculture, Soil Conservation Service in cooperation with Forest Service, Bureau of Land Management, National Park Service, and Utah Agricultural Experiment Station.
- Tirmenstein, D. 1999. *Artemisia tridentata spp. tridentata*. In: Fire Effects Information System, United States Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Internet: <http://www.fs.fed.us/database/feis/>. Accessed August 2004.
- Titus, A. 2005. Draft Classification Map. Unpublished. Grand Staircase-Escalante Files.
- Tratebas, A. 2004. *Rock Art and Fire*. PowerPoint presentation. Available at: http://www.blm/heritage/powerpoint/Alice_Tratebas_firearch2_files/frame.htm.
- United States Department of Agriculture, Forest Service (USFS). 1992. Recommended Old-Growth Definitions and Descriptions and Old-Growth Allocation Procedure.
- United States Department of Agriculture, Forest Service (USFS). 2006. Proposed Land Management Plan—Dixie and Fishlake National Forests: Part Two: Strategy: Special Areas. June 2006.

- United States Department of Commerce, Bureau of Economic Analysis. 2002. Regional Economic Information System – 2002, CD, Table CA05.
- United States Department of the Interior (USDOI). 1998. Riparian Area Management: A User Guide to Assessing Proper Functioning Condition and the Supporting Science for Lotic Areas. Technical Reference 1737-15. Bureau of Land Management, Forest Service, Natural Resources Conservation Service. Written by: Prichard, D., J. Anderson, C. Correll, J. Fogg, K. Gebhardt, R. Krapf, S. Leonard, B. Mitchell, and J. Staats. Denver, CO. BLM/RS/ST-98/001+1737. pp. 127.
- United States Department of the Interior (USDOI). 1999. Riparian Area Management: A User Guide to Assessing Proper Functioning Condition and the Supporting Science for Lentic Areas. Technical Reference 1737-16 (Revised 2003). Bureau of Land Management, Forest Service, Natural Resources Conservation Service. Written by: Prichard, D., F. Berg, W. Hagenbuck, R. Krapf, R. Leinard, S. Leonard, M. Manning, C. Nobel, and J. Staats. Denver, CO. BLM/RS/ST-99/001+1737. pp. 109.
- United States Department of the Interior (USDOI). 2001. Biological Soil Crusts: Ecology and Management. Technical Reference 1730-2. U.S. Department of the Interior, Bureau of Land Management, U.S. Geological Survey. Written by: Belnap, J., R. Rosentreter, S. Leonard, J.H. Kaltenecker, J. Williams, and D. Eldridge. Denver, CO BLM/ID/ST-01/001+1730. pp. 119.
- United States Department of the Interior (USDOI). 2003. Quality of Water: Colorado River Basin, Progress Report No. 21. United States Department of the Interior. January 2003.
- United States Department of the Interior (USDOI). 2006. Internet. *Secretary Norton's Four C's*. <http://www.doi.gov/partnerships/4c.html>. Accessed April 3, 2006.
- United States Department of the Interior, Department of Agriculture, and Department of Energy. 2006. Scientific Inventory of Onshore Federal Lands' Oil and Gas Resources and Reserves and the Extent and Nature of Restrictions or Impediments to Their Development, The Paradox/San Juan, Uinta/Piceance, Greater Green River, and Powder River Basins and the Montana Thrust Belt.
- United States Energy Information Administration. 2006. Supplemental Tables to Annual Energy Outlook 2006. Table 111: Coal Prices by Region and Type (2004 dollars per short ton) Using Annual Energy Outlook 2006 National Energy Modeling System Run. AEO2006.D111905a. Source: <http://www.eia.doe.gov/oiaf/aeo/>. Accessed September 12, 2006.
- United States Fish and Wildlife Service (USFWS). 1979. Determination that *Pediocactus sileri* is an Endangered Species. 44 FR 61786 61788. October 26, 1979.
- United States Fish and Wildlife Service (USFWS). 1991. Utah Prairie Dog Recovery Plan. United States Fish and Wildlife Service. Denver, CO. pp. 41.
- United States Fish and Wildlife Service (USFWS). 1992. Welsh's Recovery Plan. U.S. Fish and Wildlife Service, Milkweed (*Asclepias welshii*). Denver, CO. pp. 19.
- United States Fish and Wildlife Service (USFWS). 1993. Final Rule to List the Mexican Spotted Owl as a Threatened Species. 58 *Federal Register* 14248 14271, March 16, 1993.
- United States Fish and Wildlife Service (USFWS). 1995. Recovery Plan for the Mexican Spotted Owl. December 1995.

- United States Fish and Wildlife Service (USFWS). 2002. Birds of conservation concern 2002. U.S. Fish and Wildlife Service Division of Migratory Bird Management, Arlington, VA. December 2002.
- United States Fish and Wildlife Service (USFWS). 2004. Endangered and Threatened Wildlife and Plants; Final Designation of Critical Habitat for the Mexican Spotted Owl. *69 Federal Register 53181 53298*, August 31, 2004.
- United States Fish and Wildlife Service (USFWS). 2005. Endangered Species List, Website: <http://endangered.fws.gov/wildlife.html>. Accessed May 2005.
- United States Geological Survey (USGS). 2004a. National SWReGAP Analysis Program 2004, Provisional Digital Land Cover Map for the Southwestern United States, Version 1.0. RS/GIS Laboratory, College of Natural Resources, Utah State University.
- United States Geological Survey (USGS). 2004b. Zion National Park, Utah 199-2003 Vegetation Mapping Project, Technical Memorandum 8260-03-01, Remote Sensing and GIS Group Technical Service Center, Bureau of Reclamation, Denver, CO.
- United States Geological Survey (USGS). 2005. Ground Water Atlas of the United States: Arizona, Colorado, New Mexico, Utah. Internet: http://capp.water.usgs.gov/gwa/ch_c/C-text8.html. Accessed July 2005.
- Utah Board of Water Resources. 1993. *Utah State Water Plan- Kanab Creek/Virgin River Basin*. Utah Division of Water Resources. Salt Lake City, UT.
- Utah Department of Agriculture and Food. 2005. Internet. Utah Noxious Weed List. http://ag.utah.gov/plantind/nox_utah.html. Accessed May 2005.
- Utah Department of Environmental Quality, Division of Water Quality. 2004. Utah's 2004 303(d) List of Impaired Waters.
- Utah Department of Natural Resources (DNR). 2004. Utah off-highway registration transactions by county and fiscal year. Obtained in e-mail from Fred Hayes, Utah Off-Highway Vehicle Program Coordinator, August 12, 2004.
- Utah Department of Natural Resources (DNR) Office of Energy and Resource Planning. 1995. The Economic and Fiscal Impacts of Coalbed Gas Drilling in Central Utah.
- Utah Division of Air Quality (UDAQ). 1999. Pollutant Inventory – Utah 1999 Statewide Emissions Inventory. Internet: http://www.airquality.utah.gov/Inventory/1999_State/State_List.htm. Accessed May 2005.
- Utah Division of Air Quality (UDAQ). 2002. *Annual Report*.
- Utah Division of Air Quality (UDAQ). 2003. *Annual Report*.
- Utah Division of Air Quality (UDAQ). 2004. Regional Haze State Implementation Plan (SIP). Utah Interagency Smoke Management, 2004 Available from: <http://www.airquality.utah.gov/SIP/Regionalhazesip/regionalhaze.htm>. Accessed October 2, 2004.

- Utah Division of Parks and Recreation. 2003. State Comprehensive Outdoor Recreation Plan, 2003. State of Utah, Department of Natural Resources, Division of Parks and Recreation.
- Utah Division of Parks and Recreation. 2004. Coral Pink Sand Dunes State Park General Management Plan, December 2004. State of Utah, Department of Natural Resources, Division of Parks and Recreation.
- Utah Division of Travel Development. 2005. 2004 State and County Economic & Travel Indicator Profiles. Internet: http://travel.utah.gov/research_and_planning/economic_planning/documents/CountyProfiles2004PrintVersion.pdf. Accessed May 2005.
- Utah Division of Wildlife Resources (UDWR). 1999a. Rare, Imperiled, and Recently Extinct or Extirpated Mollusks of Utah: A Literature Review by George V. Oliver and William R. Bosworth, III, Publication Number 99-29.
- Utah Division of Wildlife Resources (UDWR). 1999b. Utah Bighorn Sheep Statewide Management Plan.
- Utah Division of Wildlife Resources (UDWR). 1999c. Cougar Discussion Group. *Utah Cougar Management Plan*. Publication No. 99-1, January 27, 1999.
- Utah Division of Wildlife Resources (UDWR). 2000a. Kanab Ambersnail Distribution Survey in the East Fork of the Virgin River, Upper Parunuweap Canyon, Utah, Publication No. 00-29, May 2000.
- Utah Division of Wildlife Resources (UDWR). 2000b. Black Bear Discussion Group. *Utah Black Bear Management Plan*, Publication No. 00-23, 2000.
- Utah Division of Wildlife Resources (UDWR). 2002. Strategic Management for Sage-Grouse, Publication 02-20, June 11, 2002.
- Utah Division of Wildlife Resources (UDWR). 2005a. *Utah Comprehensive Wildlife Conservation Strategy (CWCS)*. Utah Division of Wildlife Resources Publication Number 05-19. Written by: Gorrell, J.V., M.E. Andersen, K.D. Bunnell, M.F. Canning, A.G. Clark, D.E. Dolsen, and F.P. Howe. pp. 80.
- Utah Division of Wildlife Resources (UDWR). 2005b. *Vertebrate Animal Factsheets*. Internet: <http://dwrcdc.nr.utah.gov/rsgis2/Search/SearchVerts.asp>. Accessed January through September 2005.
- Utah Division of Wildlife Resources (UDWR). 2005c. Utah Sensitive Species List, Salt Lake City, UT. February 8, 2005.
- Utah Division of Wildlife Resources (UDWR). 2005d. *Deer Herd Unit Management Plan: Deer Herd Unit #29 (Zion)*. Utah Department of Natural Resources, Division of Wildlife Resources. September 2005.
- Utah Division of Wildlife Resources (UDWR). 2005e. *Deer Herd Unit Management Plan: Deer Herd Unit #28 (Panguitch Lake)*. Utah Department of Natural Resources, Division of Wildlife Resources. September 2005.

- Utah Division of Wildlife Resources (UDWR). 2005f. *Deer Herd Unit Management Plan: Deer Herd Unit #24 (Mt. Dutton)*. Utah Department of Natural Resources, Division of Wildlife Resources. December 2005.
- Utah Division of Wildlife Resources (UDWR). 2005g. *Deer Herd Unit Management Plan: Deer Herd Unit #26 (Kaiparowits)*. Utah Department of Natural Resources, Division of Wildlife Resources. December 2005.
- Utah Division of Wildlife Resources (UDWR). 2005h. *Deer Herd Unit Management Plan: Deer Herd Unit #27 (Paunsaugunt)*. Utah Department of Natural Resources, Division of Wildlife Resources. December 2005.
- Utah Division of Wildlife Resources (UDWR). 2006a. Utah Sensitive Species List, Salt Lake City, UT. October 17, 2006.
- Utah Division of Wildlife Resources (UDWR). 2006b. Conservation and Management Plan for Three Fish Species in Utah Addressing needs for Roundtail Chub (*Gila robusta*), Bluehead Sucker (*Catostomus discobolus*), and Flannelmouth Sucker (*Catostomus latipinnis*). Utah Department of Natural Resources, Division of Wildlife Resources, Native Aquatic Species Program. April 14, 2006.
- Utah Division of Wildlife Resources (UDWR). 2006c. *Deer Herd Unit Management Plan: Deer Herd Unit #25 (Plateau)*. Utah Department of Natural Resources, Division of Wildlife Resources. January 2006.
- Utah Division of Wildlife Resources (UDWR). 2006d. *Management Recommendation Form: Kaiparowits (#26) Unit*. E-mail from D. Auer, Habitat Biologist, Utah Department of Natural Resources, Division of Wildlife Resources. June 20, 2006.
- Utah Division of Wildlife Resources (UDWR). 2006e. *Management Recommendation Form: Mt. Dutton (#24) and Paunsaugunt (#27) Units*. E-mail from D. Auer, Habitat Biologist, Utah Department of Natural Resources, Division of Wildlife Resources. June 20, 2006.
- Utah Division of Water Resources. 2001. Utah's Water Resources: Planning for the Future. Utah State Water Plan. Under Direction from Board of Water Resources, Utah Department of Natural Resources. Internet: <http://www.water.utah.gov/waterplan/>. Accessed September 2005.
- Utah Energy Office, Department of Natural Resources. 2004. Annual Review and Forecast of Utah Coal Production and Distribution – 2003.
- Utah Governor's Office of Planning and Budget. 2002. Internet. State of Utah Long-Term Economic and Demographic Projections. <http://governor.state.ut.us/projections>. Accessed May 2005.
- Utah Governor's Office of Planning and Budget. 2004a. Internet. State of Utah Demographic and Economic Analysis, Utah Population Estimates Committee: All UPEC Data. Internet: <http://governor.utah.gov/dea/DataTables.html>. Accessed October 2005.
- Utah Governor's Office of Planning and Budget. 2004b. Internet. State of Utah Demographic and Economic Analysis, Economics, State and County Historical Economic Data: Total Non-Agricultural Wages and Salaries by SIC Industry (\$000) (1977-2000). <http://governor.utah.gov/dea/HistoricalData.html>. Accessed October 2005.

- Utah Native Plant Society. 2005. *Utah Rare Plant Guide*. Internet: http://www.utahrareplants.org/rpg_species.html. Accessed May 25, 2005.
- Utah State Tax Commission, Property Tax Division. 2004. Internet. Utah Property Tax 2003 Annual Statistical Report. <http://propertytax.utah.gov/finalannualstats/2003annualreport.pdf>. Accessed October 2004.
- Warner, J.W., Heimes, F.J., Middelburg, R.F., 1985, Ground-water Contribution to the Salinity of the Upper Colorado River Basin: U.S. Geological Survey Water-Resources Investigation Report 84-4198
- Watson, A.E., R. Cronn, and N.A. Christensen. 1998. *Monitoring inter-group encounters in wilderness*. Research Paper RMRS-RP-14. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. pp. 20.
- Watson, A.E. 2001. *Goal Interference and Social Value Differences: Understanding Wilderness Conflicts and Implications for Managing Social Density*. In: Freimund, W.A. and D.N. Cole (compilers). 2001. Visitor use density and wilderness experience: proceedings; 2000 June 1–3; Missoula, MT. Proc. RMRS-P-20. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.
- Webb, R.H. 1983. *Compaction of desert soils by off-road vehicles*. pp. 51–71. In: Webb, R.H. and H.G. Wilshire (eds.). *Environmental effects of off-road vehicles: Impacts and management in arid regions*. Springer-Verlag. New York.
- Welsh, S.L., N.D. Atwood, S. Goodrich, and L.C. Higgins. 1993. *A Utah Flora*. Print Services, Brigham Young University. Provo, UT.
- Westenburg, C.L., 1995, Dissolved-Solids Contribution to the Colorado River from Public Lands in Southeastern Nevada, through September 1993: U.S. Geological Survey Water-Resources Investigation Report 94-4210, 25 pp.
- Western Regional Climate Center. 2005. Climate Summaries via the World Wide Web at <http://www.wrcc.dri.edu/summary/climsmut.html> and at <http://www.wrcc>.
- Western Regional Climate Center. 2006. *Historical Climate Information - 1971-2000*. Internet: <http://www.wrcc.dri.edu/Climsum.html>. Accessed May 10, 2006.
- Whisenant, S.G. 1990. Changing Fire Frequencies on Idaho's Snake River Plains: Ecological and Management Implications, pp. 4–10. In: McArthur, E.D., E.M. Romney, S.D. Smith, and P.T. Tueller (eds.), *Proceedings of a Symposium on Cheatgrass Invasion, Shrub Die-Off, and Other Aspects of Shrub Biology and Management*, United States Department of Agriculture, Forest Service, General Technical Report INT-276, Intermountain Forest and Range Experiment Station, Ogden, UT.
- White, R.J. 1996. *Growth and development of North American stream habitat management for fish*. Canadian Journal of Fisheries and Aquatic Sciences, Vol. 53 (Suppl 1), pp. 342–363.
- Winkler, G.R. 1990. *Geologic Map of the Cedar City 1° X 2° Quadrangle, Utah*. United States Department of the Interior, United States Geological Survey, Internet: <http://geology.utah.gov/maps/geomap/1x2/pdf/ofr90-34.pdf>. Accessed May 10, 2005.

- Winward, A. et al. 1997. Vegetation Types of the Wasatch-Cache National Forest, Compilation of Keys to Habitat and Vegetation Types.
- Workman, J. 1986. Range Economics. McMillan Publishing, Inc., New York, New York.
- Wright, H.A. and A.W. Bailey. 1982. Fire ecology: United States and Southern Canada, John Wiley and Sons, Inc., New York, NY.
- Wyoming Interagency Vegetation Committee. 2002. *Wyoming Guidelines for Managing Sagebrush Communities with Emphasis on Fire Management*. Wyoming Game and Fish Department and Wyoming BLM. Cheyenne, WY. pp. 53.
- Yorks, T.P., N.E. West, and K.M. Capels. 1994. *Changes in pinyon-juniper woodlands in western Utah's Pine Valley between 1933-1989*. Journal of Range Management. 47:5. pp. 359–364.
- Youngblood, A.P. and R.L. Mauk. 1985. Coniferous forest habitat types of central and southern Utah. General Technical Report INT-187. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Research Station. pp. 89.
- Zouhar, K. 2003. Bromus tectorum. In: Fire Effects Information System [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available at: <http://www.fs.fed.us/database/feis/>. Accessed October 27, 2004.

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