

Wildland Planning Glossary

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More than 1400 terms useful in wildland and related resource planning are defined. The purpose of the work is to facilitate communication between professionals, not to provide them with exhaustive vocabularies of each other's specialties. Definitions are drawn from many sources, including public laws and government manuals, but are not intended to establish legally binding definitions. A list of terms and list of sources are included.

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To: The Readers

A primary goal of the Land Use Planning Unit is to establish a communications network among all planners and those interconnected with planning. There is a basic need for quick transfer of methodology and techniques to support an effective job of planning with a minimum of duplication and effort.

Good communications demand common agreement on the meanings of words. This is particularly true in scientific and professional disciplines, and especially critical where quantified techniques must be used. Agreement comes from understanding and acceptance over time.

This "Wildland Planning Glossary," prepared by the Pacific Southwest Forest and Range Experiment Station, is a good beginning towards obtaining common understanding and acceptance of the meanings of words. This glossary is the first edition in a series which will become even more comprehensive as new wildland planning terms and concepts are added. Many words, if not most, will be immediately understood and accepted by all who read it. Other words may cause controversy and not be accepted by some. Suggestions for improvement of meaning and additional terms should be addressed to:

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All readers are invited to participate by commenting on these meanings when they do not agree or understand. Comments or suggestions for improvement should provide references or justification for change. New editions incorporating suggested changes and additional terms and definitions will be prepared by the Systems Application Unit.

THOMAS C. NELSON
Deputy Chief

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PREFACE

National recognition of the importance of land use planning in the management of the Nation's wildlands is growing steadily. Many local and State governments have already passed land use planning laws. The Federal Government, in stages marked by the passage of the National Environmental Policy Act of 1969 and the Coastal Zone Management Act of 1972, has been gradually moving toward comprehensive land use planning, and a national land use planning act will probably be passed before long. The U.S. Forest Service has already adopted land use planning procedures for management of all National Forests.

Such growth, as might be expected, has been attended by problems of communication—coordination, definition, and exchange of information. Wildland planning has brought together the wildland manager (usually trained in forestry or range management), the professional planner (usually trained in city or regional planning), and specialists in any of a dozen or more natural, physical, or social sciences. Most of these people have only limited knowledge of the concerns, methods, and terminology of special fields other than their own.

In the absence of a standard reference work, the terminology of wildland planning has become a haphazard accumulation of technical terms—many duplicating others in meaning, many used differently by different people, and some having no precise meaning at all. Obviously, such terminology can only aggravate the difficulties of communication.

This book is an attempt to alleviate the problem by providing definitions of the terms currently used in wildland planning. The purpose here is to facilitate communication between professionals, not to supply them with exhaustive vocabularies of each other's specialties. Accordingly, only those terms of each discipline that are most important to wildland planning are listed. Less frequently used terms may be found in glossaries of special fields. Many such works are listed here under Sources.

We do not present this book as a final product. Just as the rapid growth of wildland planning has made the glossary necessary, so continued growth will make it obsolete; new terms will be developed and some of those given here will drop out of use. A glossary, though giving temporary stability and unity to terminology, should not cause stagnation. Our hope is that this first effort will be followed by expanded and revised editions, keeping pace with the evolution of wildland planning, and thus contributing to it.

The forms of entry and definition used in this book vary somewhat from those of standard dictionaries and glossaries.

Alphabetizing. All entries are listed in strict alphabetical order, regardless of word breaks. For example, **Mine tailings** follows **Mineral soil** and precedes **Mining, area strip**. However, clusters of multiple-word terms are entered under the main word: for example, **Erosion, accelerated** and **Erosion, raindrop** follow **Erosion**.

Synonyms. Where several similar terms for one concept are in use, or where various terms are used interchangeably with a variety of meanings (sometimes contradictory), the main entry is the preferred or standard term. Preference is usually determined as the original or apparently most common usage. Less acceptable terms follow the main entry in parentheses. The terms in parentheses are not necessarily accurate synonyms for the main entry.

Boldface terms. A boldface term within a definition is being used precisely and is itself defined in the glossary.

Sources. The definitions given come from many sources, including public laws or Government manuals. We have made no attempt, however, to establish legally binding definitions or official doctrine. Some officially stated definitions are not in agreement with common usage, but they are included because planners often need to be aware of them.

Each definition is followed by an abbreviated source citation in parentheses; complete citations are listed at the end of the book. Definitions followed only by initials are those originated for this glossary by one of the authors or by a reviewer.

List of terms. A simple listing of all terms included precedes the glossary. This list allows the user to determine quickly the form of the main entry for the particular term needed. It can also serve as a thesaurus of terms for the writer who is groping for the right word.

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Yarding	Zoning, natural resource
Yarding, skyline	Zoning, open space
Zonal soil. <i>See</i> Soil horizon (2)	Zoning ordinance
Zoning	Zoning, performance
Zoning, aesthetic	Zoning, prohibition
Zoning, agricultural	Zoning permit
Zoning, cluster	Zoning, spot
Zoning, conservation	Zoning, time
Zoning, development	Zoning variance. <i>See</i> Variance
Zoning, Euclidean	Zoological area
	Zooplankton. <i>See</i> Plankton

A



Abiotic

The nonliving, material (as opposed to conceptual) components of the environment such as air, rocks, soil (in general), water, coal, peat, plant litter, etc. (*C.F.S.*)

Abiotic commodity

A broad class of resource products which includes all material yields of commercial value whose initial condition was that of a nonliving substance—such as water, steam, minerals, sand, gravel, petroleum, and natural gas. (*C.F.S.*)

Abiotic productivity. See **Productivity, abiotic.**

Absentee ownership

The holding of property by a person or persons not living or working on the premises and not regularly present to oversee its use or maintenance. (*Abrams, 1971*)

Absolute poverty. See **Poverty, absolute.**

Accelerated erosion. See **Erosion, accelerated.**

Acceptable material

Mining **reclamation** usage. Any soil material within the waste materials overlying a mineral deposit to be removed by **surface mining** which (based on **soil fertility** evaluation and other tests) possesses (or can be readily modified to possess) chemical and physical properties making it a satisfactory medium for growth of plants common in the area. (*Counc. Agric. Sci. Technol. 1973*)

Acceptable risk. See **Risk, acceptable.**

Acceptability test

U.S. Water Resources Council (WRC) usage. One of the tests to be applied in choosing among alternatives in planning for water and related land

resources while following the WRC **principles and standards.**

The "acceptability test" refers to the workability and viability of the plan in the sense of acceptance by the public and compatibility within known constraints. (*U.S. Dep. Agric. 1974*)

Accessibility

1. The relative ease or difficulty of getting to or from someplace. For example, a potential land use evaluation procedure may locate areas with characteristics highly favorable for use but which are separated from the nearest road by some impediment to travel—such as bluffs or a river. Such an area would be characterized as having low accessibility. (*C.F.S.*)

2. Range management usage. The ease with which animals penetrate and graze an area. (*Amer. Soc. Range Manage. 1964*)

Accessory use. See **Secondary use.**

Acculturation

The processes and results of contact between two or more different cultures.

Generally, acculturation brings about considerable diffusion of cultural traits in one or more directions. However, other change-processes also occur, such as development of new intercultural roles, the growth of new customs not found in either culture and the disintegration of older cultural forms. (*O'Connell 1974*)

Acquisition of development rights. See **Development rights, acquisition of.**

Acquisition of land

Purchase of full land **ownership** rights. (*C.F.S.*)

Also see **Property rights.**

Acre-foot

A water or sediment volume measurement term, equal to the amount of water which would cover an area of one acre to a depth of one foot—i.e., 43,560 cubic feet or 325,851 gallons. (E. C. T.)

Action plan. See **Activity planning**.

Active fault. See **Fault, active**.

Activity planning (Functional planning)

U.S. Forest Service usage. Under the "multiple use planning" system "activity planning" referred to the **functional plans** for such items as timber management, recreation, transportation and fire protection. (U.S. Forest Serv., FSM 2111.9, Sept. 1972)

Under the newly adopted "land use planning" system, activity plans are called "functional plans". (U.S. Forest Serv., FSM 8213, Oct. 1973)

Also see **Functional planning**.

Adaptive planning (Contingency planning)

A planning strategy whereby planning efforts are directed toward meeting temporary crises which arise in response to changing conditions. The planner responds to external forces influencing the area, identifies potential and current crises, takes advantage of externally developed resources (such as a new Federal program), and attempts to forestall or solve the crises by creating the proper response to the pressures generated by those forces. (After Bolan 1967)

Additive weighting

Decisionmaking method whereby a number of very different kinds of potential resource yields (whose values can not be directly compared by conversion to common units of measurement, such as dollars) are assigned numerical values on the basis of some more or less objective, common-sense notion of their relative importance. The simple summation of the

weightings of alternative resource yield mixes is used as the basis for making choices.

Maximization of the net social yield of resource use is either the mix which maximizes the sum of the additive weights, if numerically larger weights are assigned to more important values, or minimizes the sum, if relative importance values are assigned on the basis of rankings, with 1 being the most important type of yield and successively less important yields being assigned higher numbers. (C.F.S.)

Administration

Execution of an organizational **policy** to reach predetermined objectives. (U.S. Forest Serv. 1971)

Administrative unit

U.S. Forest Service usage. An area under the administration of one line officer. Examples include the Forest Service California Region, a National Forest, and a Ranger District.

This term includes a single National Forest or National Grassland or portion thereof, or a Ranger District or separate portion thereof. (U.S. Forest Serv., FSM 2624.3, Sept., 1970)

ADT. See **Average daily traffic**.

Adversary procedure

Involving the Anglo-American system of procedure for conducting civil trials under strict rules of evidence with the right of cross examination and argument, one contestant with his witnesses striving to prove the facts essential to his case and the other striving to disprove those facts or to establish an affirmative defense. (Webster 1963)

This procedure is sometimes advocated as a best method for resolving (in or out of court) land use planning issues having or involving readily identified, opposing, antagonistic parties or interests.

Its theoretical strength lies in the strong presentation and contrasting of both pro and con interpretations of what the real facts are for the judging parties. Its theoretical weaknesses lie in the distortions of the relative merits of the opposing cases that may result from unequal (1) ability to finance presentations and defenses, (2) access to information, (3) theatrical and intellectual abilities in making presentations and cross examinations and, (4) limits on the ability of judging parties to be truly objective. (C.F.S.)

Adverse land use

1. Not in conformity with the planning or social requirements of the community. (U.S. Bur. Outdoor Recreation 1974)

2. Use of land which results in **soil erosion** rates greater than the **soil-loss tolerance** values (which have been established by use of the **soil loss equation**). (After W.A.B.)

Advocacy planning

1. The practice of professional planners voluntarily helping underprivileged sections of society to give expression to their hopes for a better environment. (Ashworth 1973)

2. More generally used in the sense of planners working directly with socioeconomically defined special interest groups to translate their aspirations for a living environment into formal planning goals and a set of procedures for attaining those goals. Presumably conflicts between different socioeconomic groups' values are to be resolved by adversary procedures during which the arguments for and against all proposals are presented. (C.F.S.)

Aerial logging. See **Logging, aerial.**

Aerial perspective. See **Perspective, aerial.**

Aesthetic recreational carrying capacity. See **Carrying capacity, wildland recreation**, definition 5.

Aesthetics

1. Evaluations and considerations concerned with the sensory quality of resources (sight, sound, smell, taste and touch) and especially with respect to judgment about their pleasurable qualities. (C.F.S.)

2. Pertaining to the quality of human perceptual experience (including sight, sound, smell, touch, taste, and movement) evoked by phenomena or elements or configurations of elements in the environment. (L. W.)

Aesthetic zoning. See **Zoning, aesthetic.**

Affirmative easement. See **Easement, affirmative.**

Afforestation

The establishment of a tree crop on an area from which it has always or very long been absent. (Ford-Robertson 1971)

Agricultural land

Land used primarily for the production of farm commodities.

The categories of "agricultural land" are: **cropland** and **pasture**; orchards, groves, vineyards, bush fruits, and horticultural areas (such as nurseries); feeding operations; and other. (Anderson, et al. 1972)

Agricultural zoning. See **Zoning, agricultural.**

Agriculture

1. A broad class of resource uses which includes all forms of land uses for the production of biotic crops—whether animal or plant.

Where large amounts of **wildlands** are contained in planning units it is useful to subdivide agriculture in its broadest sense into subcategories which make a distinction between harvesting where little or no management inputs are made to increase natural biotic productivity (as in wildland range, most timber, fish and wildlife harvesting uses) and a subcategory

which includes all desirable biotic productivity which has been significantly increased over natural rates by management inputs—including such uses as cultivated and/or irrigated farming and managed pasture. (*C.F.S.*)

2. The use of the land for agricultural purposes, including farming, dairying, pasturage, agriculture, apiaries, horticulture, floriculture, viticulture, and animal and poultry husbandry, and the necessary accessory uses for packing, processing, treating or storing the produce; provided, however, that the operation of any such accessory uses shall be secondary to that of normal agricultural activities and provided further that the above uses shall not include the commercial feeding of garbage or offal to swine or other animals. (*Eisner 1969*)

Air pollution

Any substance or energy form (heat, light, noise, etc.) which alters the state of the air from what would naturally occur.

Especially associated with those altered states whose physical, chemical, biological, psychological or aesthetic impacts have been decreed to be undesirable by human value judgments. (*E. C. T.*)

Air rights

The right to the use of air space over property owned by another.

Air rights can be sold or leased. Through the erection of a platform over the existing use, additional "land" can, in effect, be created. (*Abrams 1971*)

Air shed

1. A region with common sources and problems of air pollution; it may coincide with a **watershed** or be a part of a large urban agglomeration. (*Durrenberger 1973*)

2. The air encompassing a specific geographic region.

Although not as well defined, this concept is comparable to a watershed. (*Sesco, et al. 1973*)

Algal bloom (Bloom, Water bloom)

A readily visible, high concentration of algal growth or aggregation of algae in or on the surface layer of a body of water. (*Sesco, et al. 1973*)

Alienated land. See **Land, alienated.**

All-aged stand. See **Uneven-aged stand.**

Allocation. See **Resource allocation** and **Land use allocation.**

Allotment. For range management usage see **Range allotment.**

Allowable cut (Prescribed cut, Prescribed yield, Permissible yield, Allowable harvest)

1. The volume of timber which can be cut, under specified management plans during a given period. (*Sesco, et al. 1973*)

2. The amount of forest productivity that may be harvested, annually or periodically, from a specified area over a stated period, in accordance with the objectives of management.

For timber productivity "allowable cut" is usually stated in terms of wood volume, number of stems of certain size categories or area that can be cut over.

When "allowable cut" is expressed as the amount that can be removed on an annual basis it is termed "annual (allowable) cut" or "annual (allowable) yield". When expressed as the amount that can be removed at recurring time periods of greater than a year it is termed "periodic (allowable) cut" or "periodic (allowable) yield". The amount actually prescribed to be cut is termed the "prescribed yield", "prescribed cut", "permissible yield" or "permissible cut". (*After Ford-Robertson 1971*)

The common usage of all these terms carries with it an implicit conno-

tation of an overall rate of harvesting which is in dynamic balance with the ability of the forest to replace what has been removed with new wood growth. (C.F.S.)

Allowable harvest. See **Allowable cut.**

Allowable use. For range management usage see **Use, allowable.**

Alluvial

Pertaining to material that is transported and deposited by running water. (*Soil Conserv. Soc. Amer. 1970*)

Alluvial land

1. An area of unconsolidated **alluvium**, generally stratified and varying widely in texture, 'recently' deposited by streams and subject to frequent flooding. (*Soil Conserv. Soc. Amer. 1970*)

2. U.S. Soil Conservation Service usage. A miscellaneous land type in the U.S. Soil Conservation Service Land Classification System characterized by the deposits and processes given in definition 1. (C.F.S.)

Alluvial valley floor

The unconsolidated stream-laid deposits holding streams where water availability is sufficient for subirrigation or flood irrigation agricultural activities. (*Surface Mining Control and Reclamation Act of 1975*)

Alluvium

Material, including **clay, silt, sand**, gravel and mud, deposited in riverbeds, lakes, **alluvial** fans, valleys and elsewhere by modern streams. (*Durrenberger 1973*)

Alternate grazing. See **Grazing, rotation.**

Alternative

The different means by which objectives or goals can be attained.

They need not be obvious substitutes for one another or perform the same specific function. (*U.S. Forest Serv. 1972B*)

Alternative futures. See **Futures.**

Alternative life styles. See **Life styles.**

Ambient

1. Referring to surrounding, external or unconfined conditions. (C.F.S.)

2. Referring to the quality of some specific environmental factor—such as the "ambient" temperature or "ambient" air pollution levels. (C F. S.)

Amenity (Amenity value)

1. An object, feature, quality, or experience that gives pleasure or is pleasing to the mind or senses. (*After Webster 1963*)

2. The pleasurable or aesthetic, as contrasted with the utilitarian, features of a plan, project, location or resource.

The term amenity is now used so broadly that it can refer to just about anything that makes life more agreeable—from a temperate climate to an intellectual climate. (*Abrams 1971*)

3. (Amenity value.) Typically used in land use planning to describe those resource properties for which **market values** (or **proxy values**) are not or cannot be established. (E. C. T.)

Anadromous fish

Those species of fish which mature in the sea, and migrate into streams to spawn. Salmon, steelhead, and shad are examples. (*U.S. Forest Serv. 1963. FSM 2605, Sept. 1974*)

Analysis

1. A detailed examination of anything complex in order to understand its nature or determine its essential features. (*Webster 1963*)

2. A separating or breaking up of any whole into its component parts for the purpose of examining their nature, function, relationship, etc. (*Webster 1963*)

3. In mathematics and computer science, it pertains to solving problems. (*U.S. Forest Serv. 1972B*)

Angle of repose (Critical slope)

1. The angle between the horizontal and the maximum slope that a soil or loose rock fragments assumes through natural processes. (*Soil Conserv. Soc. Amer. 1970*)

2. The maximum slope or angle at which a material, such as soil or loose rock, remains stable. (*Amer. Geol. Inst. 1962*)

Animal community. See **Biotic community.**

Animal month

A month's tenure upon **range** by one animal. (*Amer. Soc. Range Manage. 1964*)

Animal unit conversion factor

A numerical grazing measurement figure which allows conversion from one kind or class of animal to another.

Such a conversion factor is satisfactory in respect to the amount of forage required to maintain an animal, but may have no application in determining **stocking rates** for range use for particular kinds or classes.

Conversion factors generally accepted are: mature cow with calf, 1.0; mature bull, 1.25; weaned calf, 0.6; yearling over 12 months and under 17 months, 0.7; yearling from 17 to 22 months, 0.75; two-year old from 22 to 32 months, 0.9; elk, 0.7; white-tail deer, 0.14; mule deer, 0.2; mature ewe with lamb, 0.2; ram, 0.2; weaned wether, 0.17; doe goat with kid, 0.17; buck, 0.17; weaned wether, 0.14 and grown horse, 1.25. (*Amer. Soc. Range Manage. 1964*)

Animal unit month (AUM)

The quantity of forage required by one mature cow (1000 lbs) or the equivalent for one month. (*Dyrland 1973*)

Annual cut. See **Allowable cut**, definition 2.

Annual flood. See **Flood, annual.**

Annual pasture. See **Pasture, annual.**

Annual range. See **Range, annual.**

Annual yield (Annual allowable yield).

See **Allowable cut**, definition 2.

Antagonism

The combined action of two or more agents that is less than the sum of the actions of each of the agents acting separately or independently. (*Webster 1963*)

See **Synergism** for combined actions which are greater than a simple summation of individual actions.

Antecedent moisture (Antecedent soil water)

The degree of wetness of the soil at the beginning of a runoff period, expressed as an **index** or as the total inch-depth-equivalents of water stored in the soil. (*Soil Conserv. Soc. Amer. 1970*)

Antiquities Act (34 Stat. 225)

The Antiquities Act of 1906 provides for the protection of historic or prehistoric remains, or any object of antiquity, on Federal lands; establishes criminal sanctions for unauthorized destruction or appropriation of antiquities and authorizes scientific investigation of antiquities on Federal lands, subject to permit and regulations. (*U. S. Forest Serv., FSM 2361.01, Feb., 1974*)

Approximate original contour. See **Contour, approximate original.**

Aquifer

A geologic formation or structure that transmits water in sufficient quantity to supply the needs for a water development, such as a well.

The term "water-bearing" is sometimes used synonymously with "aquifer" when a stratum furnishes water for a specific use.

Aquifers are usually saturated sands, gravel, fractured rock, or cavernous and vesicular rock. (*Soil Conserv. Soc. Amer. 1970*)

Archeological area

U.S. Forest Service usage. Sites and areas which have been designated by the Forest Service as containing important evidence and remains of the life of man on earth between the time of his first appearance and the development of written history.

Archeological remains are the sole kind of evidence that applies to prehistory and provides information about all aspects of human life throughout this period. (*After U.S. Forest Serv., FSM 2361.21, July, 1973*)

Areas of this type and all other **special interest areas** are identified and formally classified primarily because of their recreational values. (*W. W.*)

Archeological resource

The subclass of **cultural history resource** planning considerations which includes all remaining physical evidence of former occupation by now extinct cultural groups—including skeletons, settlement remains, implements, artifacts, monuments and inscriptions.

In the United States this subclass is most easily distinguished from its more recent counterpart "historical resources" by establishing a dividing point in time between the two at the beginning of movement of settlers into an area.

This resource class does not include any of the more recent physical products of contemporary native cultural groups such as may exist on Indian reservations. (*C.F.S.*)

Area guide. For U.S. Forest Service usage see **Planning area guide**.

Area of critical environmental concern (Critical area)

Usage in the defeated 1973 bill for a **National Land Use Policy and Planning Assistance Act**.

Areas, as defined and designated by states on **non-Federal lands**, where un-

controlled or incompatible development could result in significant damage to the environment, life or property, or the long term public interest which is of more than local significance.

Three specific classes of critical areas are defined in the Act— **fragile or historic lands, natural hazard lands, and renewable resource lands**. States may also add additional types of areas of critical concern.

Coastal areas are specifically deleted from the definitions of the types of areas of critical environmental concern. In an amendment relating the **Coastal Zone Management Act** to this Act the words "coastal wetlands, marshes, and other lands inundated by the tides, beaches, dunes and significant estuaries" were deleted from the definition of fragile or historic lands. A state is free to add these areas to its state land use program. However, the state need not do so, but rather can keep such areas separate and accountable only to the requirements of the Coastal Zone Management Act.

The Land Use Policy and Planning Assistance Act did not require the Federal government to designate such areas on Federal land. Areas of critical environmental concern are to be designated only on private, state and Indian lands.

These definitions were purposely left legally incomplete, in accordance with the purpose of the Act, to improve the states' ability to devise and implement their own land use policies. By further refining these definitions the states make the first basic policy decisions concerning the scope and the thrust of the state land use programs. For example, major policy decisions are involved in determining what is a "shoreline". Is it a shoreline of all bodies of water or only bodies of a certain size? Is it limited to relatively undeveloped shoreline? Is its extent

four hundred feet inland of the water, four hundred yards, or to the extent of any land the use of which has a direct impact on the water? What are "major recreational lands and facilities"? What are "issues of more than local significance" in the judgment of the state?

This category is not designed to be a "no growth" category. Only uncontrolled development is unwanted. The adjective "incompatible" is present to make certain that development is to be allowed which is compatible with the basic environmental or renewable resources values or safety problems of the land in question. Multiple use, when planned, is clearly expected. The category "Areas of critical environmental concern" has been subdivided into subcategories to pinpoint the basic values of the land involved so as to better provide opportunities for development which can demonstrate its compatibility with such values. (*U.S. Congr., Senate, Com. Inter. Insular Aff. 1973*)

Area planning. See **Regional planning** and **Planning area.**

Area reconnaissance

Engineering and surveying usage. The projection of feasible road routes on an area topographic map and their delineation on aerial photographs. (*U.S. Forest Serv., FSH 7140, 1973*)

Area strip mining. See **Mining, area surface.**

Area surface mining. See **Mining, area surface.**

Aspect (Exposure, Slope orientation)

The compass direction that the slope of a land surface faces toward (e.g., north, northwest, south). (*After Soil Conserv. Soc. Amer. 1970*)

Association. See **Biotic community.**

Assumption (Basic assumption, General assumption)

1. Something that is taken for granted or accepted as true. (*After Webster 1963*)

2. A judgmental decision by planners which supplies missing values, relationships or societal preferences for some informational component necessary for making a decision.

The true nature of such missing information is either unknown or cannot be readily ascertained within the time and/or budgetary constraints on the need for the planning decision. (*C.F.S.*)

Attitude

1. A learned predisposition manifesting itself in a general state of readiness either to evaluate or to react toward an object or class of objects in either a favorable or unfavorable manner in a more or less consistent and characteristic way.

Attitudes are relatively stable and are comprised of three components: a cognitive or belief component, an affective or feeling component, and a conative or action-disposition component.

Although behavior may be a function of attitude at times, attitudes are not necessarily predictors of behavior under all circumstances. Consequently, changes in attitudes do not always result in changes in behavior. (*O'Conner 1974*)

2. Behavior representative of feeling or conviction. A disposition that is primarily grounded in affect and emotion and is expressive of **opinions** rather than **beliefs**. (*Webster 1963*)

Also contrast with **Belief** and **Opinion**.

Auger mining. See **Mining, auger.**

Autotrophic organism

An organism capable of synthesizing organic matter from inorganic substances. (*Geckler, et al. 1963*)

In contrast, a **heterotrophic organism** must have organic matter as its

source of food. (*After Geckler et al. 1963*)

Average daily traffic (ADT)

The average 24-hour volume of traffic, being the total volume of traffic during a stated period divided by the number of days in that period. Unless

otherwise stated, the period is 1 year. (*U.S. Forest Serv., FSM 7720.5, Oct., 1970*)

Avoidable risk. See **Risk, avoidable.**

Azonal soil. See **Soil horizon**, definition 2.

B

Backcountry

1. An imprecise term often used to refer to all those portions of **wildlands** in which usually there are no permanent, improved or maintained access roads or operational, fixed facilities—such as lumber mills, ski resorts, or settlements with permanent residents. Deteriorating, unused and unoccupied structures may be present. Those roads which are present are only usable by trucks or 4 wheeled-drive vehicles and typically dead-end in the "back-country", rather than continue through it. Any presently active uses only have primitive facilities—e.g., backwoods cabins, base camps, undeveloped campgrounds.

In common usage, **primitive** and **wilderness** areas are backcountry types of wildlands which show no obvious evidence of permanent human uses or occupancy. (*After A. W.M.*)

2. Any area where the management objectives stress dispersed, off-road recreation activities—e.g. hiking, trail bike riding, hunting, fishing.

"Backcountry" is defined as a recreation area while "wilderness" is defined primarily as a large natural ecosystem, to be experienced as it is. Recreational opportunities can be enhanced or even created in "back-country", but not in "wilderness". (*Lucas and Stankey 1974*)

Background

1. The distant part of a scene, landscape, etc. (*Webster 1963*)

2. Surroundings, especially those

behind something and providing harmony or contrast. (*Webster 1963*)

3. The portions of a view between 3 or 5 miles from the observer and as far into the distance as the eye can detect the presence of objects.

Skylines or ridge lines against other land surfaces are the strongest visual elements of the "background". (*After Litton 1968*)

Also see **Foreground** and **Middle-ground**.

Background level (Background, Natural background level)

The ever-present environmental conditions or effects above which a phenomenon must manifest itself in order to be detected. (*U.S. Dep. Def. 1968*)

Back lighting

1. A viewing situation in which sunlight is coming toward the observer from behind a feature or elements in a scene. (*After Litton 1966*)

2. The viewing condition whereby an observer looks toward the light source. Solid objects are seen in shadow, silhouette, translucence and/or with highlighted edges. (*After Litton 1966*)

Balanced objectivism

An idealistic point of view which advocates that resource use decision should be reached in a completely objective manner—not disproportionately influenced by any **special interest group** pressure tactics, nor special consideration for any particular segment

B

of society (whether privileged or disadvantaged) nor any of the other planning value determinisms—biophysical, social, economic.

Balanced objectivism is conceptually unrealistic because it seeks to ignore the political reality of **pressure groups**, fails to recognize that issues (i.e. value conflicts between resource use audience members) are typically the impetus for any planning effort and that most value system clashes cannot be satisfactorily resolved by rational arguments. (*C.F.S.*)

Balance of nature (Ecologic stability)

The apparent stability of the population density relationships between the many species of organisms that make up a **biotic community** is often spoken of as the "balance of nature".

The concept of such a balance has been severely criticized. It has been pointed out that the population density of each of the species in a biotic community may fluctuate more or less widely from time to time (e.g., existence of population explosions, die-offs, epidemics, irregular migrations, succession etc.) and that the density of no species remains at a fixed value.

The fluctuations in the numbers of each species, however, usually have fairly definite limits. The usage of the term 'balance' includes the recognition that the population densities of every species making up a community fluctuate from season to season and from year to year. (*Dice 1952*)

Also see **Ecologic stability**.

Bank erosion. See **Erosion, bank**.

Basal area

1. Range management usage. The area of ground surface occupied by the stem(s) of a range plant, as contrasted with the full spread of its herbage or foliage, generally measured at one inch above soil level. (*Ford-Robertson 1971*)

2. The area of the cross-section of a tree stem near its base, generally at breast height and inclusive of bark. (*Ford-Robertson 1971*)

Also see **Diameter at breast height**

Base flow

That portion of the water flowing in a stream which is due to ground water seepage into the channel. (*After Soil Conserv. Soc. Amer. 1970*)

Base map

A map showing certain fundamental information, on which is compiled additional data of specialized nature. (*C.F.S.*)

Base property. For range management usage see **Commensurate property**.

Basic assumption. See **Assumption**, definition 2.

Basic productivity. See **Productivity**, primary.

Beach erosion. See **Erosion, beach**.

Bedload

The sediment in a stream channel that mainly moves by jumping, sliding or rolling on or very near the bottom of the stream. (*Amer. Geol. Inst. 1962*)

Bedrock

1. The more or less solid rock is place either on or beneath the surface of the earth. It may be soft or hard and have a smooth or irregular surface. (*Soil Conserv. Soc. Amer. 1970*)

2. Any in place, solid rock exposed at the surface of the earth or overlain by unconsolidated material. (*Amer. Geol. Inst. 1962*)

Belief

An unmeasurable and unprovable assertion based on one or more fundamental assumptions. (*O'Connell 1974*)

Also contrast with **Attitude** and **Opinion**.

Benchmark

1. G.A. Hills land evaluation ter-

minology. Certain existing examples or conditions in the field which are usable as established standards or definitions suitable for practical comparison of his "use **capability**" classes. This is the concept by which units of equal "use capability", but possessing markedly different physical features or appearances, can be recognized as being equal. (*Belknap and Furtado 1967*)

2. The use of assessed "land capability" to serve as a basis from which to estimate the effects on the land of alternative patterns of management. (*U.S. Forest Serv., FSM 2813, Oct., 1973*)

Benefit

1. An assessment of the value of the expected outputs. (*U.S. Forest Serv. 1972B*)

2. Desirable effects of a plan or action. (*P. M. R.*)

Also see **Social benefits**.

Benefit-cost analysis (Cost-benefit analysis)

An analytical approach to solving problems of choice which identifies for each objective, that alternative which yields the greatest **benefit** for a given **cost** or that alternative which produces the required level of benefits at the lowest cost.

This same analytical process has also been referred to as **cost effectiveness analysis** when the benefits of the alternatives cannot be quantified in terms of dollars. (*U.S. Gen. Account. Off. 1969*)

Also see **Cost-effectiveness analysis** and **Revenue-cost analysis**.

Benefit-cost ratio (Cost-benefit ratio)

1. An economic indicator of efficiency, computed by dividing **benefits** by **costs**. Usually, both the benefits and the costs are **discounted** so that the ratio reflects efficiency in terms of the present value of future benefits and costs. (*U.S. Gen. Account. Off. 1969*)

Benthos

The whole group of bottom-dwelling organisms in a water body. The benthos includes all organisms which crawl about on the bottom, or burrow into the bottom or grow attached to the bottom.

Those aquatic organisms that are carried passively by water currents or the wind are termed **plankton** and those that swim actively and may move long distances for feeding or breeding purposes **nekton**. (*Southward 1965*)

Bequest motive. See **Existence value**.

Biochemical oxygen demand. See **Biological oxygen demand**.

Biodegradables

Chemicals or substances which can be readily utilized as part of the biological **food chain** and so broken into their component parts. (*E. C. T.*)

Biogeochemical

1. Relating to the relationship of the earth's chemicals to plant and animal life.

Relating to the chemical relationships between the geology of an area and its plant and animal life. (*After Webster 1963*)

2. As used in **land use planning**, the term is more often used to refer, with one word, to all of the naturally occurring objects, processes and interrelationships in an area than in specific reference to **biogeochemical cycles**.

Often used in the sense of the "biogeochemical parameters" of a planning area or its "biogeochemical environment." In such usages the term "biogeochemical" is approximately equivalent to the natural ecosystem and ecosystem functions of a planning area.

This composite term is based on the assumption that all naturally occurring things can be classified as being either biological, geological or chemical. (*C. F. S.*)

Biogeochemical cycle (Mineral cycle, Nutrient cycle, Material cycle)

1. The circulation (cycling) of chemical elements such as nitrogen, carbon, etc. in specific pathways from the **abiotic** portions of the environment into the organic substances in the flora and fauna and then back again into abiotic forms. (*After Hanson 1962*)

2. All of the mineral and nutrient cycles involving man, animals, and plants—such as the **carbon cycle**, phosphorus cycle, **nitrogen cycle**, etc. (*After Durrenberger 1973*)

Bio(geo)c(o)enose. The translated Germanic and Slavic language equivalent of **Ecosystem**.

Bio(geo)c(o)enosis. The translated Germanic and Slavic language equivalent of **Ecosystem**.

Biogeophysical

A composite term often used to encompass, in one word, reference to all of the naturally occurring materials, processes, and relationships operating in an area.

Often used in the sense of the "biogeophysical parameters" of a planning area, or its "biogeophysical environment." In such usages the term "biogeophysical" is approximately equivalent to the natural **ecosystem** and ecosystem functions of a planning area.

The word was constructed on the assumption that all the natural objects and processes operating in an area can be classified as being either biological (i.e., plant and animal species, ecological interactions, biotic productivity, etc.) or geological (i.e., rock types, soil types, geomorphic history, sedimentation, erosion, etc.), or physical (i.e., heat, light, electrical, gravitational, etc.) (*C.F.S.*)

Biological management unit

U.S. Forest Service usage. This term includes a big-game management unit

as recognized by cooperating states even though it may not be strictly a herd unit. It may include a drainage system in the case of fishery management, any unit for species management, or any unit of intensive or special management. (*U.S. Forest Serv., FSM 2624.3, Sept., 1970*)

Biological oxygen demand (BOD, Biochemical oxygen demand)

A measure of the demand on a water body's dissolved oxygen supply which will be generated (over some specified period of time) by the biological decomposition of various additions of organic wastes.

A high BOD may temporarily, or permanently, so deplete oxygen in water as to kill aquatic life. The determination of BOD is perhaps most useful in evaluating impact of wastewater on the receiving water bodies. (*After Feth 1973*)

Also see **Chemical oxygen demand**.

Biological potential. See **Biotic potential**.

Biological primacy. See **Biophysical determinism**.

Biologic diversity (Species diversity, Biotic diversity)

In common usage "biologic diversity" usually equivalent to **species diversity**—i.e., the number of different species occurring in some location or under some condition such as pollution.

"Biologic diversity" may also be used in a more general sense to refer to the number of higher taxonomic levels or types and amounts of organismal relationships in some location or under some condition—e.g., number of genera, families, orders or phyla present; or the number of biotic communities present; or the number of energy, nutrient, or food chain pathways present. (*C.F.S.*)

Biologic stability. See **Ecologic stability**.

Biomass (Protoplasm mass)

1. The total weight of the living organisms in some biological system. (*Odum 1971*)
2. The total quantity (at a given time) of living organisms of one or more species per unit of space (species biomass), or of all the species in a biotic community (community biomass), (*Hanson 1962*)

Biome

A major **biotic community** composed of all the plants and animals and smaller biotic communities, including the successional stages of an area. The smaller communities in a biome possess certain similarities in gross external appearances (e.g., deciduous trees, coniferous trees, grasslands, savanna/woodlands) and environmental conditions present (especially gross climatic conditions—e.g., desert, tropical, temperate, tundra). The North American Grassland is an example of a named biome. (*Hanson 1962*)

While a particular biome is defined in terms of both the plants and animals present in an area, it is usually identified and named in terms of the characteristic vegetation forms. (*Webster 1963*)

Also see **Biome-type**.

Biome-type

A group of similar **Biomes**—e.g., the temperate deciduous forest biome-type includes all areas dominated by deciduous forests in eastern Asia, China, Manchuria, Europe and North America. (*Hanson 1962*)

Some other examples are the tropical rain forest biome-type, tropical savanna biome-type, northern coniferous forest biome-type, temperate grassland biome-type. (*C.F.S.*)

Also see **Biome**.

Biophysical

1. Of or relating to the physics of living organisms. Involving the applica-

tion of physical principles and methods to biological problems.

Involving biological and physical factors or considerations. (*Webster 1963*)

2. In **land use planning** the term is used to encompass, in a single word, reference to all the naturally occurring objects and processes of an area.

The word is used in such a sense on the assumption that all naturally occurring things can be classified as being either living (i.e., biotic) or nonliving (physical or abiotic). (*C.F.S.*)

Biophysical determinism

A particular point of view in planning which advocates making resource allocation and use decisions primarily on the basis of the inherent ability of the resource to sustain use—i.e., an **ecologic carrying capacity** concept of resource capability. Economic and social system needs and desires are viewed as being completely subordinated to this inherent capacity of the resource to meet any and all demands while maintaining its natural integrity, condition, and performance of other natural processes at a desirable level. Economic and social demands can only be satisfied within the ecologic carrying capacity constraints.

The terms "**biological primacy**," "**physiographic determinism**," and "**ecological determinism**," in their common usage, are equivalent to biophysical determinism—though "biophysical" more clearly implies concern with both physical and biological processes. (*C. F. S.*)

Biosphere

That part of the earth's crust, waters and surrounding air-layer which is inhabited by living organisms. (*Dansereau 1957*)

Biota

The plants and animals of an area, taken collectively. (*After Webster 1963*)

Biotic

All the natural living organisms in a planning area and their life processes.

The term "biotic" in land use planning contexts is most commonly used as a resource classification category which subdivides the natural resources and properties into either the biota and living characteristics or the abiotic (nonliving) entities and characteristics.

Man and his activities are not usually grouped with either of these categories because he is not considered to be a part of a planning area's natural entities or characteristics. This latter rationale for exclusion becomes tenuous when one encounters situations in which native cultures have been actively influencing the course of biotic activity for centuries. (*C.F.S.*)

Biotic association. See **Biotic community**.

Biotic carrying capacity. See **Carrying capacity, ecological**, definition 4.

Biotic climax. See **Climax community**, definition 3.

Biotic community (Community, Association, Biotic association, Ecologic community)

1. A "biotic community" is any assemblage of populations living in a prescribed area or physical habitat; it is a loosely organized biotic unit to the extent that it has characteristics additional to its individual species and populations components. Communities have functional unity, characteristic trophic structures and patterns of energy flow. They also have taxonomic unity (in that there is a certain probability that certain species will occur together) and a relatively uniform appearance. Communities may be sharply defined. Very frequently, however, communities blend gradually into one another. (*Odum 1959*)

2. A general term used to designate biotic sociological units of all degrees from the simplest (as an unrooted mat

of algae) to the most complex **ecosystem** (as a multistoried rain forest). (*Carpenter 1938*)

3. The word community may be used for any large or small assemblage, of organisms. It can be used in an abstract or a concrete sense. (*Daubenmire 1968*)

4. An aggregate of organisms which forms a distinct ecological unit. Such a unit may be defined in terms of **flora**, of **fauna**, or both.

Community units may be very large, like the continent-wide coniferous forest, or very small, like the community of invertebrates and fungi in a decaying log. The extent of a community is limited only by the requirement of a more or less uniform species composition.

A different community occurs in each different habitat and environmental unit of larger size, and in fact the composition and character of the community is an excellent indicator of the type of environment that is present.

Since "plant communities" and "animal communities" occur together in the same habitat and have many interrelations, the one can scarcely be considered independently of the other. Together they make up the "biotic community". (*Kendeigh 1961*)

Biotic diversity. See **Biologic diversity**.

Biotic potential (Reproductive potential, Biologic potential, Reproductive capacity)

The inherent ability of an organism to multiply in the absence of extrinsic controlling factors.

This potential depends on the number of live, fertile offspring produced at each reproduction, the frequency of reproduction and, where sex is involved, the sex ratio. (*Soc. Amerc. For. 1958*)

Biotic productivity. See **Productivity, biotic**.

Black box

An unknown and often unknowable mechanism or system whose operation is judged solely by observation of its **inputs** and **outputs**. (*U.S. Forest Serv. 1972B*)

BLM

Bureau of Land Management, U.S. Department of Interior.

Blob diagram. See **Diagrammatic representation**.

Block diagram

A drawn illustration of a piece of land (or water) in three dimensions which displays the land's surface appearance bounded around the exposed sides by a cutaway representation of the underground (underwater) conditions at those edges. Commonly the land surface is tilted toward the viewer and image size is not reduced with distance from viewer—as would truly occur in accordance with the rules of perspective.

The end result is a pictorial representation which appears as if a block of land (or water) had been cut out of its true surroundings and lifted up so as to reveal both its surface and underground characteristics. (*C.F.S.*)

Bloom (Algal bloom, Water bloom)

1. A readily visible, concentrated growth or aggregation of **plankton** (plant and/or animal). (*Geckler, et al. 1963*)

2. A prolific growth of plankton. A "bloom" of algae may be so dense that it distinctly colors the water. (*Veatch and Humphreys 1966*)

Blow down. See **Windthrow**.

Boardfoot

Lumber or timber measurement term. The amount of wood contained in an unfinished board one inch thick, 12 inches long, and 12 inches wide. (*E. C. T.*)

BOD. See **Biological oxygen demand**.

Botanical area

U.S. Forest Service usage. An area which has been designated by the Forest Service as containing specimens or group exhibits of plants, plant groups, and plant communities which are significant because of form, color, occurrences, **habitat**, location, **life history**, arrangement, **ecology**, environment, rarity, and/or other features. (*U.S. Forest Serv., FSM 2362.43, July, 1973*)

Areas of this type and all other **special interest areas** are identified and formally classified primarily because of their recreational values. Areas with similar types of values of scientific importance are formally classified as "Research Natural Areas" (See **Natural Area, Research**). (*W. W.*)

Boundary species. See **Species, peripheral**.

Browse

1. That part of the current leaf and twig growth of shrubs, woody vines and trees available for animal consumption. (*Amer. Soc. Range Manage. 1964*)

2. Act of consuming browse. (*Amer. Soc. Range Manage. 1964*)

Brush

1. A growth of shrubs or small trees usually of a type undesirable to livestock or timber management. (*Amer. Soc. Range Manage. 1964*)

2. A collective term that refers to **stands** of vegetation dominated by shrubby, woody plants or low growing trees—regardless of whether some of the components are cropped. (*After Sampson and Jespersen 1963*)

Brush control

Reduction of **brush** to: (1) reduce its competition for space, moisture, light and nutrients with plant species that are more preferred by grazing animals, or, (2) to reduce the **wildfire** hazard by reducing the amount of fuel present. (*After Amer. Soc. Range Manage. 1964 and T.E.A.*)

Brush management

Management and manipulation of stands of **brush** by mechanical, chemical, or biological means or by **prescribed burning**. (*After D.E.H. and B. W.*)

Buffer (Buffer strip, Buffer zone, Environmental corridor, Filter strip)

1. A designated land or water area, along the perimeter of some land use, whose own use is regulated so as to resist, absorb or otherwise preclude unwanted **development** or other intrusions into areas beyond the buffer. (*After U.S. Bur. Outdoor Recreation 1974*)

2. A strip of undisturbed vegetation that retards the flow of runoff water, causing deposition of transported material and thereby reducing sedimentation of receiving streams. (*U.S. Environ. Prot. Agency 1974*)

Also see **Environmental corridor**.

Buffer strip. See **Buffer**.

Buffer zone. See **Buffer**.

Bulk density

The mass or weight of oven-dry soil per unit of bulk volume, including air space. (*Hanson 1962*)

Bundle of rights. See **Property rights**.

C

Cable, logging. See **Logging, Cable**.

Calefaction. See **Thermal pollution**.

Canopied landscape. See **Landscape, canopied**.

Capability (Inherent capability, Inherent carrying capacity, Natural capability, Natural carrying capacity, Physical carrying capacity, Resource bearing capacity, Site capacity)

1. In land use planning literature the widely used terms "suitability" and "capability" (whether alone or accompanied by various modifiers) are often used interchangeably to refer to ratings based on two basically different evaluation procedures. One basic type of evaluation procedure is the rating of use or productivity potentials based on the present state of the resource. This type of rating therefore is an evaluation based on the resource's inherent, natural or intrinsic ability to provide for use and includes that existing ability which is the result of past alterations or current management practices. A second basic type of evaluation procedure rates the potential ability of a resource to produce goods or services on the basis of the maximum possible outputs for a given type and level of future,

alternative site or resource management inputs.

G. Angus Hills was probably the first prominent wildland planner to recognize the importance of retaining the distinction between these and other types of evaluations in a process for land use planning. Hills used the terms **use capability** to refer to evaluations based on a resource's inherent or present condition abilities, **use suitability** for evaluations based on potential management inputs, and **use feasibility** to refer to usability potential ratings based on an evaluation of offsite factors—such as **accessibility** present and **forecasted** socioeconomic conditions, technological developments, etc. (*Belknap and Furtado 1967; Hills, Love and Lacate 1970*)

Perhaps even earlier than Hills, the U.S. Soil Conservation Service began widespread use of its **land capability classification** system (*Wohletz and Dolder 1952*) which also uses "capability" evaluation in the sense of an inherent ability rating.

To avoid confusion in the future we recommend that the Hills and Soil Conservation Service usages be recognized as having established the precedent for

the proper usage of these terms, thus "capability" should be used when referring to evaluations for usability based on the present state of the resource and "suitability" should only be used for evaluations based on assumptions about potential usability or productivity if specified management alterations were to be made—such as drainage improvements, added irrigation and/or fertilization, etc.

Better yet, both terms should be accompanied by modifiers which make it absolutely clear just what type of an evaluation procedure is implied by the rating given. Thus the word capability should always be presented as "inherent capability", "intrinsic capability", or "natural capability". Similarly "suitability" could be referred to as "managed suitability". (C.F.S.)

2. The intrinsic ability (i.e., ability unaltered by any level of potential, future human management activities or other type of alternation) to support a given use type, intensity, and quality on a sustained basis (i.e., without significant resource deterioration over the time span of renewing **biogeochemical cycles**). (C.F.S.)

Capability, inherent. See **Capability**.

Capability, intrinsic. See **Capability**.

Capability, natural. See **Capability**.

Capacity, highway

The maximum number of vehicles which has a reasonable expectation of passing over a given section of a lane or a roadway in one direction (or in both directions for a two-lane or a three-lane highway) during a given period of time under prevailing roadway and traffic conditions. In expressing capacity it is essential to state the "prevailing roadway and traffic conditions" under which the capacity is applicable. (Highw. Res. Board 1965)

Capital

One of the major factors of produc-

tion consisting of property from which an income is derived, expressed in terms of money. Popularly, the term is frequently used interchangeably with **capital good**. (Sloan 1961)

Capital good

A material economic good other than **land** which is used for the production of wealth. Capital goods are created by man., Capital goods are sometimes called "intermediate goods" because of their function of serving consumers only indirectly in satisfaction of their wants. (After Sloan 1961)

Carbon cycle

1. The sequence of transformation undergone by carbon utilized by organisms wherein it is used by one organism, later liberated upon the death and decomposition of the organism, and returned to its original state to be re-used by another organism. (Soil Conserv. Soc. Amer. 1970)

2. The name given to the **biogeochemical** cycle involving the carbon dioxide of the atmosphere in the metabolism of organisms. The cycle begins with: (1) the photosynthesis of carbohydrates by plant chlorophyll from atmospheric carbon dioxide and water. (2) These carbohydrates are then transformed by plants and animals into the structures and energy for their growth and life processes. (3) The carbon dioxide is returned to the atmosphere by the excreta and decay of their bodies. This third step is aided by the action of bacteria and other microorganisms and by combustion. The carbon cycle operates concurrently with the **nitrogen cycle** and the oxygen cycle. (Marsh 1964)

Cardinal value (Cardinal unit)

The numerical values assigned to a variable which relate directly with some physical property (height, weight, etc.). Each number has some meaning by itself about the measured property. (E.C.T.) Also see **Ordinal values**.

C

Carnivore

An organism (plant or animal) that feeds on animal substances. (*After Hanson 1962*)

Also see **Herbivore**, **Omnivore**, and **Detrivore** for the other types in this classification of organisms by their dominant eating styles.

Carrying capacity (Holding capacity)

All definitions of the concept "carrying capacity" (as it relates to wildland planning) must involve specification of some (1) level of use (2) which will allow for the perpetual maintenance (3) of some level of **environmental quality** (4) within some management objective level set with respect to the cost of maintenance resource quality (5) at a level which will provide resource user satisfaction. (*After G.P.*)

Carrying capacity, aesthetic recreational.

See **Carrying capacity, wildland, recreation**, definition 5.

Carrying capacity, Ecological (Inherent capability, Inherent carrying capacity, Natural capability, Natural carrying capacity, Physical carrying capacity, Resource bearing capacity, Site capacity, Biotic carrying capacity)

1. The number (or weight) of organisms of a given species and quality that can survive in, without causing deterioration of, a given **ecosystem** through the least favorable environmental conditions that occur within a stated interval of time. (*Ford-Robertson 1971*)

2. The limit of a natural ecosystem's ability to sustain user impacts. (*After Conservation Foundation 1972*)

3. Strictly speaking, any level of use greater than zero will always result in some alteration of natural environments, and therefore, it is not useful to define ecological carrying capacity in "no change" terms. Some decision about what is an acceptable amount of alteration of natural values must first

be made before ecological carrying capacity can be operational for setting levels of use. (*C.F.S.*)

4. "Biotic carrying capacity" used in a recreational context. That level of development and use beyond which the site's capacity to provide a sustained high level of satisfaction becomes impaired due to severe damage. (*La Page 1963*)

5. "Physical carrying capacity". The effect of use on the nonliving aspects of the habitat—e.g., the ability of a particular **terrain** to resist trail erosion, but also the ability of the terrain to absorb trails, roads, and other man-made objects. (*Conserv. Found. 1972*)

Carrying capacity, economic recreation (Visitor carrying capacity)

The **econometrically** determined number of people which maximizes total **social benefit**; the number of recreationists represented by the high point on a cumulative benefit curve—with some measure of "enjoyment" on the vertical axis and the number of recreationists on the horizontal axis. At this high point on the curve, no further overall "enjoyment" is gained by adding other recreationists. Rather, adding still more results in a net decline in the totaled "enjoyment" of all recreationists. (*After Alldredge 1972*)

Carrying capacity, facility

1. The number of people which installed facilities have been engineered to handle. (*After Alldredge 1972*)

2. The maximum capacity of the developments and facilities—e.g. number of rooms, etc. (*After Sudia and Simpson 1972*)

3. The number of users which facilities are able to (or designed to) support, within some acceptable rate for facilities deterioration (in relation to amount or intensity of use) and at some level of facilities maintenance—while providing a desirable level of service for users. (*C.F.S.*)

Carrying capacity, natural. See **Carrying capacity, ecological.**

Carrying capacity, optimal. See **Carrying capacity, wildland, recreation, definition 4.**

Carrying capacity, physical. See **Carrying capacity, ecological.**

Carrying capacity, psychological

The level of use beyond which the sensory and conceptual quality of the resource begins to deteriorate for some particular user group because of an unacceptable amount of contact with other similar users or proximity to types of use incompatible with their mental image of an acceptable quality resource environment.

The notion of psychological carrying capacity essentially revolves about the conceptual level of utilization at which resource users (especially wildland recreationists) begin to feel that the number of simultaneous users has become so great that the resource is too crowded to satisfy their demands. (*C.F.S.*)

Carrying capacity, range

In its true sense, the maximum number of individual animals that can survive the greatest period of stress each year on a given land area. It does not refer to **sustained yield**.

In range management, the term has become erroneously synonymous with **grazing capacity**. (*Amer. Soc. Range Manage. 1964*)

Carrying capacity, social. See **Carrying capacity, psychological.**

Carrying capacity, visitor. See **Carrying capacity, economic recreation.**

Carrying capacity, wildland recreation

1. The level of recreational use an area can withstand while providing a sustained quality of recreation. (*After Wagar 1964*)

2. The character of use that can be supported by an area over a specified

time interval and which is developed at a certain level without causing excessive damage to the physical environment or the experience for the visitor. (*After Lime and Stanley 1971*)

3. The number of persons for which an area can provide recreation while maintaining the conditions that originally made it desirable for that purpose. (*After Sudia and Simpson 1972*)

4. The level of use at which the natural resources do not deteriorate faster than they can be restored by a reasonable level of maintenance ("optimal carrying capacity" definition). (*After Sudia and Simpson 1972*)

5. La Page's "aesthetic recreational carrying capacity". La Page considered "recreational carrying capacity" to have an "aesthetic recreational carrying capacity" and a "biotic carrying capacity" component.

His "aesthetic recreational carrying capacity" is that level of development and use beyond which measurable decreases in average satisfaction occur as a direct result of gross numbers of recreationists. (*La Page 1963*)

For La Page's "biotic carrying capacity" see **carrying capacity, ecological**, definition 4.

6. The substitution of the terms "use limits" or "use-intensity-quality relationships" in place of "recreation carrying capacity" and "social carrying capacity" when it is being used in the latter sense has been advocated. The argument is that rather than having a single capacity, which is seen to be implied by using the term "carrying capacity," each site has a whole range of potential capacities, each providing different consequences. Therefore, even if it can be shown how areas and experiences will change with various levels of use and various management practices, someone must still decide what changes are acceptable. Defining what is acceptable is a value choice rather than a technical issue. (*After Wagar 1974*)

Carrying capacity, wildlife

1. The number of animals of a given species that a **habitat** supports, measured at the low stage of any annual population cycle. (*After Allen 1958*)
2. The upper limit of population growth beyond which no major increase can occur. (*After Odum 1959*)
3. The number of animals that a habitat can maintain in a healthy, vigorous condition. (*After Dasmann 1945*)
4. The level at which a population is normally held by hunting and predation. (*After Errington 1945*)
5. The level of population above which intraspecific tolerance permits no further increase. (*After Leopold 1933*)

Catchment area. See **Watershed**.

Catchment basin. See **Watershed**.

Census tract

U.S. Bureau of the Census usage. Census tracts are small areas into which large cities and adjacent areas have been divided for statistical purposes. In each **standard metropolitan statistical area**, tracts were established by the Bureau of the Census in cooperation with a local committee. Tracts were generally designed to be relatively uniform with respect to population characteristics, economic status, and living conditions. The average tract has about 4,000 residents. Tract boundaries are established with the intention of being maintained over a long time so that comparisons may be made from census to census. (*U.S. Bur. of the Census 1971*)

Central city. See **Urbanized area**.

CEQ

Council on Environmental Quality, U.S. Presidential.

Channel storage

The volume of water which is temporarily present (stored) in a stream channel and its **flood plain** while en-route to an outlet. (*After Soil Conserv. Soc. Amer. 1970*)

Characteristic landscape. For U.S. Forest Service usage see **Visual landscape character**.

Character subtype. For U.S. Forest Service usage see **Visual character subtype**.

Character type. For U.S. Forest Service usage see **Visual character type**.

Chemical oxygen demand (COD)

A measure of the amount of a water body's **dissolved oxygen** supply that would be used up in completely oxidizing added inorganic oxidizable compounds—such as in the oxidation of ammonia to nitrate. (*After Feth 1973 and Wash. State Univ., Coop. Ext. Serv. 1972*)

Biological oxygen demand (BOD)

Tests can only measure the biodegradable fraction of the total potential dissolved oxygen consumption by added wastes; however, COD tests may be used to measure the oxygen demand created by toxic organic or inorganic compounds as well as by biodegradable substances. A standard COD test, therefore, can be used to evaluate many industrial type wastes not readily analyzed for water quality factors by the sewage-oriented BOD test. (*After McGauhey 1968*)

Also see **Biological oxygen demand**.

Choropleth map

A map showing discrete areas, such as counties, soil units, vegetation types. These units are considered to be uniform with respect to the statistics collected within them. (*Amidon 1972*)

City planning (Urban planning)

The process of guiding growth and change in urban areas.

"City planning" aims at fulfilling certain social and economic objectives which go beyond the physical form and arrangement of the parts of the physical urban environment. (*Howard 1961*)

Claim. See **Mining claim**.

Classification

1. The forming, sorting, apportioning, grouping, or dividing of objects into classes to form an ordered arrangement of items having a defined range of characteristics. Classification systems may be taxonomic, mathematical, or other types, depending upon the purpose to be served. (*U.S. Forest Serv. 1972B*)

2. The ordering or arrangement of objects into groups or sets on the basis of their relationships. These relationships can be based on observable or inferred properties.

The paramount purpose of classification is to describe the structure and relationships of the constituent objects to each other and to similar objects, and to simplify these relationships in such a way that general statements can be made about classes of objects.

"Natural classification" schemes attempt to reflect the natural processes that have led to the observed arrangement of objects. From such an ordering it is hoped to learn about the laws governing the behavior of these objects.

All classifications aim to achieve economy of memory and an ease of manipulation. (*After Sokal 1974*)

Also see **Taxonomy**.

Class, social. See **Social class**.

Clay

1. "Particle size" usage. Rock type particles which are less than 0.002 (or 0.005 or 0.074) millimeters in equivalent diameter. (*Soil Conserv. Soc. Amer. 1970 and Amer. Geol. Inst. 1962*)

2. "Clay Mineral." Naturally occurring inorganic, crystalline minerals composed of fragments of hydrous aluminum silicate minerals found in soil and other earthy deposits. (*Soil Conserv. Soc. Amer. 1970*)

3. "Soil texture" usage. A **soil texture** type consisting of 40 percent or more clay-sized particles, less than 40 percent **silt**-sized particles and less

than 45 percent **sand**-sized particles. (*Soil Conserv. Soc. Amer. 1970*)

4. Material behavior usage. A natural, inorganic material with plastic properties. (*Amer. Geol. Inst. 1962*)

5. Engineering usage. A fine-grained soil that has a high plasticity index in relation to the amount of water it can hold without losing its plasticity. (*Soil Conserv. Soc. Amer. 1962*)

Cleaning cut

Timber management usage. Cleaning is applied to **stands** not past the **sapling** stage. Usually, if otherwise practical, this is best done as soon as the stand has passed **browse** height, but not until the **removal cut** has been completed.

At this stage, genetic differences are likely to be easily recognized; opportunity to improve species composition is at a maximum; and not much production loss to unusable stems will have to be accumulated—with the possible exception of areas where rainfall exceeds vegetative needs. (*U.S. Forest Serv., FSM 2471, June, 1973*)

Clearcutting

1. Removal of virtually all the trees, large or small, in a stand in one **cutting** operation.

This is the meaning of "clearcutting" in its narrowest sense and in its usage as a technical term of **silviculture**. The true clearcutting method lays bare the area treated and leads to the establishment of an **even-aged stand**. (*Smith 1962*)

2. The term "clearcutting" is also loosely applied to any type of cutting in which all the merchantable timber is cut and all trees that cannot be utilized profitably are left.

This broader usage of the term is technically incorrect but is so common that it is sometimes prudent to speak of clearcutting in the silvicultural method sense as "complete clearcutting". (*Smith 1962*)

Also see **Cutting** and **Logging**, defi-

dition 2, for the distinction between **Silviculture** and **Harvesting**.

Clearcutting system

A silvicultural system in which all the trees are cleared over a considerable area at one time. **Regeneration** is generally artificial, but natural regeneration is sometimes possible by seeding from the air, from adjacent stands, or from seed and/or advance growth already on the ground. (*Ford-Robertson 1971*).

Also see **Silviculture** or **Logging** for the distinction between these terms and **Harvesting** and **Cutting**.

Climate

The average course or condition of the **weather** at a particular place over a period of many years as exhibited in absolute extremes, means, ranges and seasonal distribution of air temperature, wind velocity and direction, precipitation type, duration and amount, humidity and other weather elements. (*After Webster 1963*)

Also contrast with **Weather**.

Climax community (Climax)

1. The final or stable **biotic community** in a developmental series (**sere**); it is self-perpetuating and in equilibrium with the physical **habitat**. (*Odum 1971*)

2. The **plant community** which, in a given area, perpetuates itself indefinitely on the best-drained land form and the most differentiated (well-developed) soil. (*Dansereau 1957*)

3. The kind of biotic community capable of self perpetuation under the prevailing climatic and soil conditions; the terminal stage of a sere under the prevailing conditions.

A "physiographic climax" is a "climax" determined in large measure by the nature of the topography or soil—e.g., a particular type of forest may be the "climax" on a north-facing slope while a grassland may be the "climax" on the south-facing slope of the same

ridge.

An "edaphic climax" is a "climax" determined largely by the nature of the soil conditions—e.g., a saltgrass marsh in a poorly drained, alkaline depression in grassland.

A "biotic climax" is a "climax" caused by a permanent influence or combination of influences caused by one or more kinds of organisms, including man. (*Hanson 1962*)

4. That point in the development of a community when the changes that normally occur in ecological succession cease. The main biotic components are not overthrown by new invaders. No new species become dominant in the biotic community. The **environmental** conditions of the habitat are relatively stabilized. (*After Woodbury 1954*)

Also see **Succession**.

Climax species

The members (or a member of) those plant and animal species present in a **climax community**.

Frequently used in the sense of species usually present (or at least common) only as members of a climax community. (*C.F.S.*)

Climax vegetation

1. The group of plant species which is the culminating stage in plant succession for a given set of environmental conditions. (*C.F.S.*)

2. A relatively stable type of vegetation in equilibrium with its environment and with good self perpetuating reproduction of the dominant plant species. (*After Soil Conserv. Soc. Amer. 1970*)

3. The aggregate pattern or complex of **climax plant communities** (which corresponds to the pattern of changing environmental factors and their values) over an area. (*After Hanson 1962*)

Also see **Climax species**.

Closed area

Range management usage. Any area

closed for management purposes for certain types of use. (*Amer. Soc. Range Manage.* 1964)

Closed range. See **Range, closed.**

Cluster development (Planned unit development, PUD)

1. The grouping of the structures in a housing development more tightly together and using the open land thus saved for common greens and squares. (*Whyte* 1964)

2. Residential development in which the subdivision and zoning regulations apply to the project as a whole rather than to its individual lots (as in most tract housing). Densities are calculated on a project-wide basis, permitting among other things the clustering of houses and provision of common open space.

Potential advantages include: an improved site design free of standard lot pattern limitations; lower street and utility costs made possible by reduced frontages; more useful open space due to reduction or elimination of the unusable side and front yards required by traditional zoning; greater flexibility in the mixing of residential building types; the possibility through its greater freedom in design of increasing over-all densities without loss of essential amenities. (*Abrams* 1971)

Cluster zoning. See **Zoning, cluster.**

Coastal state

Coastal Zone Management Act usage. A state of the United States in, or bordering on, the Atlantic, Pacific, or Arctic Ocean, the Gulf of Mexico, Long Island Sound, or one or more of the Great Lakes. For the purposes of this title, the term also includes Puerto Rico, the Virgin Islands, Guam, and American Samoa. (*Coastal Zone Manage. Act* 1972)

Coastal waters

Coastal Zone Management Act usage. "Coastal waters" means (1) in

the Great Lakes area, the waters within the territorial jurisdiction of the United States consisting of the Great Lakes, their connecting waters, harbors, roadsteads, and estuary-type areas such as bays, shallows, and marshes and (2) in other areas, those waters, adjacent to the shorelines, which contain a measurable quantity or percentage of sea water, including, but not limited to, sounds, bays, lagoons, bayous, ponds, and estuaries. (*Coastal Zone Manage. Act* 1972)

Coastal zone

Coastal Zone Management Act usage. The **coastal waters** (including the lands therein and thereunder) and the adjacent shorelands (including the waters therein and thereunder), strongly influenced by each other and in proximity to the shorelines of the several **coastal states**, including transitional and intertidal areas, salt marshes, wetlands, and beaches. The zone extends, in Great Lakes waters, to the international boundary between the United States and Canada and, in other areas, seaward to the outer limit of the United States territorial sea. The zone extends inland from the shorelines only to the extent necessary to control shorelands, the uses of which have a direct and significant impact on the coastal waters. Excluded from the coastal zone are lands the use of which is by law subject solely to the discretion of or which is held in trust by the Federal government, its officers or agents. (*Coastal Zone Manage. Act* 1972)

Coastal Zone Management Act of 1972 (P.L. 92-583) 86 Stat. 1280)

Finds and declares that it is the national policy (A) to preserve, protect, develop, and where possible, to restore or enhance, the resources of the Nation's **coastal zone** for this and succeeding generations, (B) to encourage and assist the states to exercise effectively their responsibilities in the

coastal zone through the development and implementation of management programs to achieve wise use of the land and water resources of the coastal zone giving full consideration to ecological, cultural, historic, and esthetic values as well as to needs for economic development, (C) for all Federal agencies engaged in programs affecting the coastal zone to cooperate and participate with state and local governments and regional agencies in effectuating the purposes of this title, and (D) to encourage the participation of the public, of Federal, state, and local governments and of regional agencies in the development of coastal zone management programs. With respect to implementation of such management programs, it is the national policy to encourage cooperation among the various state and regional agencies including establishment of interstate and regional agreements, cooperative procedures, and joint action particularly regarding environmental problems.

Authorizes the Secretary of Commerce to make annual grants to any coastal state for the purpose of assisting in the development of a management program for the land and water resources of its coastal zone. (*Coastal Zone Manage. Act 1972*)

COD. See **Chemical oxygen demand.**

Cold-water fishery

Stream and lake waters which support predominantly cold-water species of game or food fishes, which have maximum, sustained water temperature tolerances of about 70 degrees Fahrenheit in the summer. Salmon, trout, grayling, and northern pike are examples. (*U.S. Forest Serv., FSM 2605, Sept., 1974*)

Colluvium

Mixed deposits of soil material and rock fragments accumulated near the base of steep slopes through **soil creep**, **landslides**, and local surface runoff.

(*Durrenberger 1973*)

Commensurability

Range management usage. Capacity of a permittee's base ranch property to support permitted livestock during the period such livestock are off public land. (*Amer. Soc. Range Manage. 1964*)

Commensurable values

1. Having a common unit of measure. (*Webster 1963*)
2. The state of being proportionate. (*Webster 1963*)
3. Resource yields which can be objectively compared because their values can be expressed quantitatively on the same measurement scale (such as in dollars, pounds, or cubic feet). (*C. F. S.*)

Commensurate property (Base property)

Range management usage. Land or controlled livestock water which qualifies a person for a **grazing preference** on other land, either public or private. (*Amer. Soc. Range Manage. 1964*)

Commercial/industrial land

Land used primarily for buying, selling, and processing goods and services and including sites for stores, factories, shopping centers, and industrial parks, together with necessary adjacent facilities such as underground and surface utilities, access streets and alleys, and other servicing structures, appurtenances, and measures. (*U.S. Soil Conserv. Serv. 1970*)

Commodity

A transportable resource product with commercial value; all resource products which are articles of commerce. (*C.F.S.*)

Common law. See **Law, common.**

Common variety mineral. See **Mineral, common variety.**

Community. See **Biotic community** or **Human community.**

Community biomass. See **Biomass**, definition 2.

Community development

Deliberate efforts to foster socio-cultural change on the community level, change of a kind seen as valuable or progressive.

Generally, the goals of development include an improved **quality of life** through increases in resources, skills, facilities, technology, social competence, and **social power**. (*O'Connell 1974*)

Community services land

Land used primarily for schools, hospitals, churches, libraries, sewerage and water treatment plants, sanitary land fills, public parking areas, and other community service facilities, together with necessary adjacent facilities such as underground and surface utilities, access streets and alleys, and other servicing structures, appurtenances and measures. (*U.S. Soil Conserv. Serv. 1970*)

Compartment. See Timber management compartment.

Compatible uses

Land uses which can exist together, so that no one use improves nor detracts from the quality of another. In practice this definition is usually relaxed to include uses which can co-exist and conflict only slightly. (*E. C. T.*)

Also see **Incompatible uses**, **Conflicting uses** and **Complementary uses**.

Compensable regulation

Land use regulations which, while restricting the uses which may be made of land, compensate the property owner for any decrease in the value of his land caused by the regulations.

The property is first valued as in a **condemnation** proceeding. Once a fair value is ascertained and agreed upon, the state guarantees the owner that value for his land. The owner then agrees to place the land under regulations controlling its use.

This is a means of strengthening **zoning** by providing compensation for controlled land. (*U.S. Bur. Outdoor Recreation 1974*)

Competition (Ecologic competition)

1. The general struggle for existence (and dominance) in which living organisms compete for a limited supply of the necessities of life. (*Carpenter 1938, citing Yapp 1925*)

2. The condition of rivalry between organisms that exists when a number of organisms (of the same or of different species) utilize common resources that are in short supply; or, if the resources are not in short supply, the condition that occurs when the organisms seeking that resource nevertheless harm one or other in the process. (*Birch 1957*)

Competition typically results in ultimate elimination of the less effective organism from that particular **ecological niche**. (*Webster 1963*)

Competition may be interspecific (i.e., between two or more different species) or intraspecific (i.e., between numbers of the same species). (*Krebs 1972*)

Competition is usually confined to closely related species which eat the same types of food and live in the same sorts of places. (*Krebs 1972*)

Complement

To mutually supply each other's lack. (A design for a site complex which indicates the specific locations of buildings, parking lots, etc. complements the management plans which do not contain this information). (*After U.S. Forest Serv. 1971*)

The distinction between complements and supplements of plans is that complements and the larger plan to which they relate can be viewed as being mutual supplemental because each supplies something which the other lacks; however, plan supplements do not gain anything themselves

by their addition to a plan. (*C.F.S.*)

Also see **Supplement**.

Complementary uses

Land uses, each of which is improved in quality or quantity by the other uses existing with it in the same area. (*E. C. T.*)

Also see **Incompatible uses**, **Conflicting uses** and **Compatible uses**.

Complete clearcutting. See **Clearcutting**, definition 2.

Completeness test

U.S. Water Resources Council (WRC) usage. One of the tests to be applied in choosing among alternatives in planning for water and related land resources while following the WRC **principles and standards**.

The "completeness test" requires that an alternative plan provide and account for all necessary investments or other actions that will be needed to assure the full realization of the contributions provided by the plan to the components of the objectives specified for the planning area. (*U.S. Dept. of Agri. 1974*)

Complete protection

Range management usage. The withdrawal of all grazing animals from a given range. (*Amer. Soc. Range Manage. 1964*)

Comprehensive development plan. See **Comprehensive plan**.

Comprehensive plan (Comprehensive development plan, General plan, Master plan)

1. City planning usage. An official document adopted by a local government setting forth its general policies regarding the long-term physical development of a city or other area. The plan should be broad enough to include all aspects of a development or redevelopment program as distinguished from sporadic, isolated, or piecemeal planning. It is used inter-

changeably with the terms "general plan" and "city plan" and is probably most familiarly or notoriously known as a "master plan". (*Abrams 1971*)

2. Comprehensive planning—the process of designing **futures** not only of three dimensional accomplishments in space but also social mechanisms such as laws, regulations, policies and forms of organization. (*Branch 1967*)

When used in this sense, comprehensive planning is conceptually similar to **extraordinary planning**.

3. U.S. Bureau of Land Management usage. "Comprehensive Plan" is intended to include the following: (1) a land plan map which would show the location of all Bureau land, the inter-relationship between all of the uses proposed on said land, the circulation system required to serve the uses existing or proposed, and the relationship between the Bureau land and non-Bureau land within a reasonable area of influence. (2) Land use policies related to the resources management, conservation and disposal of public lands. (3) Land use policies related to the activities and the regulations thereof as they affect portions of the Bureau land. (4) Implementation schedules which establish priorities for Bureau programs in management, mapping, engineering and public works. (5) A program for the coordination of land use and activity programs with Federal, state, regional, county and other local agencies as well as with private applicants. (*Eisner 1969*)

4. "Comprehensive planning" includes the following, to the extent directly related to area needs or needs of a unit of **general purpose local government**: (A) preparation, as a guide for governmental policies and action, of general plans with respect to (1) the pattern and intensity of land use, (2) the provision of public facilities (including transportation facilities) and other government services, and (3) the

effective development and utilization of human and natural resources; (B) long range physical and fiscal plans for such action; (C) programming of capital improvements and other major expenditures, based on a determination of relative urgency, together with definitive financing plans for such expenditures in the earlier years of the program; (D) coordination of all related plans and activities of the state and local governments and agencies concerned; (E) preparation of regulatory and administrative measures in support of the foregoing. (*Intergovernmental Cooperation Act of 1963, PL 90-577, Sec. 109*)

5. A plan for the development of an area including **policies, goals**, and interrelated plans for private and public land use, transportation systems, community facilities, and all other elements and features that, in composite, represent the decisions of local people. (*Soil Conserv. Soc. Amer. 1970*)

6. Also see **Master plan** and contrast with **Incrementalism**.

Computer graphics

Visual displays of information produced by an electronic computer. This includes both 'hard copy' (paper, film) and cathode-ray tube (CRT) displays. Among the common computer graphics are maps, graphs, still drawings, and motion pictures. (*E. C. T.*)

Computer information system

Two or more interacting electronic **computer programs** designed to facilitate storage, editing, organization, and rapid retrieval and display of large amounts of related information. (*E. C. T.*)

Computer program

1. A complete set of instructions which cause an electronic computer to perform a set task. Several computer programs may operate together to form a computer system. (*E. C. T.*)

2. A plan or routine for solving a

problem on a computer. (*U.S. Forest Serv. 1972B*)

Concentrated recreation. See **Recreation, concentrated**.

Concentration time

The time required for water to flow from the most remote point of a watershed (in a hydraulic sense) to the outlet. (*Soil Conserv. Soc. Amer. 1970*)

Concern

1. Public apprehension about whether some land use action might produce some more or less vaguely defined undesirable results. (*C.F.S.*)

2. A point of dispute which can only be vaguely defined or in which the potential undesirable results of a land use action are more speculative than documentable.

When the relationship between the action and undesirable result can be sharply defined, a point of dispute is referred to as an **issue** rather than a concern. (*C.F.S.*)

Also see **Crisis**.

Condemnation

In real property law, the process by which property of a private owner is taken for public use, without his consent, but requiring payment of **just compensation**. (*U.S. Bur. Outdoor Recreation 1974*)

Also see **Condemnation, reverse**.

Condemnation, inverse. See **Condemnation, reverse**.

Condemnation, reverse (Inverse condemnation)

Land use planning regulations may, for the public benefit, sometimes restrain the economic uses which may be made of private property without making any provision for compensating the owner. Such occurrences are sometimes referred to as being reverse **condemnation** and therefore implicitly constituting a violation of the Fifth

Amendment's prohibition of **taking** property without **just compensation**.

However state land use regulations based on the **police power** authority may substantially diminish the economic value of private property without giving rise to an obligation to compensate the owner. (*After U.S. Dep. Justice comments in U.S. Congr., Senate, Com. Inter. Insular Aff. 1973*)

Also see **Eminent domain** and **Police power**.

Conflicting uses

Land uses by which the quality of each individual use is harmed by the others when they occur together in the same area—due to either competition for limited resources or use byproducts which damage alternative uses. In the extreme when one use prevents another, "conflicting uses" become **incompatible uses**. (*E. C. T.*)

Also see **Incompatible uses**, **Compatible uses** and **Complementary Uses**.

Conservation

1. U.S. Soil Conservation Survey usage. Soil and water conservation means the development, use, and management of soil, water, and related resources in a way that will restore, enhance, protect, and maintain their quality and quantity for the benefit of man and his environment now and into the future. (*U.S. Soil Conserv. Serv. 1970*)

2. Any policy or practice which seeks to increase future usable supplies of a resource by present actions. (*Sesco, et al. 1973*)

3. The use of all methods and procedures which are necessary to bring any **endangered species** or **threatened species** to the point at which measures provided pursuant to this Act (**Endangered Species Act of 1973**) are no longer necessary. Such methods include, but are not limited to, all activities associated with scientific resources management such as research, census,

law enforcement, habitat acquisition and maintenance, propagation, live trapping, and transplantation, and, in the extraordinary case where population pressures within a given ecosystem cannot be otherwise relieved, may include regulated taking. (*Endangered Species Act of 1973*)

4. The continuing protection and management of natural **renewable resources**—e.g., soil, water, wildlife, forest—in accordance with principles that assure their optimum economic and social enjoyment. (*Ford-Robertson 1971*)

5. The protection of the renewable resources—e.g., water, forests, fisheries, wildlife, etc.—of man's environment against depletion or waste and the safeguarding of its beauty. (*After Abrams 1972*)

This term has come to mean many different things to many different people. To the naturalist and nature lover it means preserving wild areas in their pristine virginity. To the lumbermen it means harvesting a stand of timber which is no longer producing adequate new annual increments of wood. To the hunter it means increasing or maintaining the abundance of his favorite game. To the hydroelectric engineer, conservation means the building of dams and reservoirs. There are many other meanings. Insofar as these concepts, and similar concepts, mean the elimination of waste they are in a proper sense, conservation. (*Marsh 1964*)

7. Planned management of a **natural resource** to prevent exploitation, destruction, or neglect. (*Webster 1963*)

8. "Conservation" is concerned with the time distribution of use. More specifically conservation is defined in terms of changes in the intertemporal distribution of physical rates of use. In conservation the redistribution of use is in the direction of the future. More use (or emphasis on the availability of

use) of a resource is allocated for times more distant in the future than for use in times closer to the present. Conservation always implies comparison of two or more time distributions of use. For example that concept is used when comparing expected use if new practices are adopted with what use would have been if the old practices had been continued.

Conservation in itself cannot mean non-use. For **nonrenewable** (stock) **resources**, conservation is meaningless when used in the sense of keeping them permanently undiminished and unimpaired. In that sense rates of use would have to remain zero and that portion of the environment could not be considered to be a **resource**.

Interpretations of conservation as being "wise use" or "the greatest use to the greatest number over the greatest length of time" has little precise meaning and is of no value for economic analysis.

"Conservation" is also sometimes defined as keeping use constantly at or less than the rate of regeneration of renewable resources—i.e., the **sustained yield** concept. Such a usage excludes all those cases in which an attempt is made merely to slow down rather than to stop the decreasing rate of regeneration and use. Yet different levels of sustained yield are frequently economic alternatives. Whether any rate of use should be maintained indefinitely may be less relevant economically than what such a rate should be. (*After Ciriacy-Wantrup 1968*)

9. The concept of "conservation" is concerned with the rate, purpose, and efficiency of utilization of natural resources.

Conservation receives impetus from the social conscience awareness of an obligation to future generations. All the varying definitions of the nature of "conservation" as a utilization policy deal with the judicious development

and manner of use of natural resources of all kinds. (*After Lapedes 1974*)

Conservation district. See **Soil Conservation District**.

Conservation easement. See **Easement, conservation**.

Conservation plan

1. U.S. Soil Conservation Service usage. A document containing all major material needed for making decisions that will assure that the soil and water resources of a unit of land (or group of units of land) will be used and treated so as to achieve the conservation objectives which have been set forth.

A "conservation plan" includes but is not limited to "conservation plan maps"; water, plant, animal and other inventory and management information with needed interpretations and evaluations; a record of the decisions made contributing to sound land use and conservation treatment; the alternatives for sound land use(s) and conservation treatment for which conservation decisions have not yet been made (including positive statements about critical problems such as **soil erosion**, sedimentation, land use and agricultural pollutants); records of understandings as to cooperative agreements between individuals, groups or government representatives and resource conservation districts; and other information useful to the decision maker. (*After Soil Conserv. Soc. Amer. 1970*)

2. Usage for farm, ranch, or non-agricultural land units. The properly recorded decisions of the cooperating landowner(s) or operator on how it is planned, within practical limits, to use the land in an operating unit within its **capabilities** and to treat it according to the needs for maintenance or improvement of the soil, water and plant resources. (*Soil Conserv. Soc. Amer. 1970*)

Conservation treatment unit (CTU)

A field or group of fields or other units of land with similar soil and water conservation problems requiring similar combinations of land use and conservation treatment. (*U.S. Soil Conserv. Serv. 1970*)

Conservation zoning. See **Zoning, conservation.**

Constitutional determinism (Judicial determinism, Legal determinism)

A point of view which places emphasis on the legal and judicial environment within which resource use planning decisions must be made. Because resource use planning must operate within such constitutional constraints and provisions as due process, property rights, taking without compensation and protection of public health safety and welfare, the legal aspects of planning are seen as of primary importance in the planning process. All other planning considerations are considered to be subservient to legal considerations. (*C.F.S.*)

Consumer organism (Consumer)

1. An organism which ingests other organisms or food particles. They may be further classified as "primary consumers", "secondary consumers", etc. depending upon their position in the **food chain**. (*Hanson 1962*)

The "primary consumers" (herbivores) feed directly on plants, and "secondary consumers" (carnivores) feed on the primary consumers. (*Odum 1953*)

2. Organisms, (including some non-green plants but chiefly animals) which ingest and utilize other organisms or particulate organic matter. (*Odum 1971*)

3. For the other two divisions in this particular classification of **biotic community** organisms also see **producer organism** and **decomposer organism**.

Consumer surplus

In economics, the difference be-

tween the price that a consumer pays for a good or a service and the amount that he would be willing to pay rather than be deprived of the good or service. (*U.S. Gen. Account. Off. 1969*)

Also see **Producer surplus** and **Willingness-to-pay**.

Consumptive use

1. Those uses of resources that reduce the supply—such as logging and mining. (*C.F.S.*)

"Consumptive use" as a category does not make any distinction between resources whose supply will, sooner or later, build up again after the initial reduction (i.e., **renewable resources**) and resources whose supply will essentially never be renewed (i.e., **nonrenewable resources**). (*C.F.S.*)

For example, for water some "consumptive uses" are irrigation and domestic and industrial use, while **non-consumptive uses** would include direct power generation as well as boating, swimming, etc. (*E.M.G.*)

2. The quantity of water used and transpired by vegetation plus that evaporated. (*Soil Conserv. Soc. Amer. 1970*)

Contingency planning. See **Adaptive planning.**

Continuing easement. See **Easement, continuing.**

Continuous grazing. See **Grazing, continuous.**

Continuous use grazing. See **Grazing, continuous.**

Contour (Contour line)

1. An imaginary line on the earth's surface connecting points of the same elevation.

A line drawn on a map connecting points of the same elevation. (*Soil Conserv. Soc. Amer. 1970*)

Contour, approximate original

That surface configuration achieved by backfilling and grading of the mined area so that it closely resembles

that surface configuration of the land prior to mining and blends into and complements the drainage pattern of the surrounding terrain, with all **high-walls, walls, spoil banks** and depressions eliminated ... except water impoundments. (*Surface Mining Control and Reclamation Act of 1975*)

Contour interval

The vertical distance between contour lines. (*Soil Conserv. Soc. Amer. 1970*)

Contour line. See **Contour**.

Contour map

A map which portrays the elevational features of an area by joining points of equal elevation with continuous lines, called **contour lines**. (*C.F.S.*)

Contour strip mining. See **Mining, contour surface**.

Controlled burn

1. The planned application of fire to natural fuels, residue left on a site after a logging operation and other **slash**, with the intent to confine it to a predetermined area. (*After Ford-Robertson 1971*)

2. Any deliberate application of fire to an area where control is exercised in some particular respect. (*Ford-Robertson 1971*)

Also see **Prescribed burn**.

Coordinating criteria

U.S. Forest Service usage. **Policy** statements of the opportunities and constraints to be applied in carrying out the more intensive planning of planning units. (*U.S. Forest Serv. FSM 8222.2, Oct., 1973*)

Coordinating requirements (Forest coordinating requirements)

U.S. Forest Service usage. Statements of management policy in a national **forest land use plan**.

Coordinating requirements are policy statements establishing the relationships that are to be maintained be-

tween resources, uses, activities, or ecological systems to meet the objectives set forth in the **planning area guide**. Coordinating requirements state the minimum coordination required in planning and carrying out activities. They consider **assumptions** about future public demands upon national forest land and forest service management policy. The result is a series of specific statements directing management actions and considerations on a national forest.

Forest "coordinating requirements" **supplement** management direction contained in the planning area guide.

The forest coordinating requirements may be more specific or restrictive than that stated in the guide, but in no case may they reduce the standards set in the guide. (*U.S. Forest Serv., FSM 8225, Oct. 1973*)

Cord

Cut or pulpwood measurement term. The equivalent of a stack of wood four feet by four feet by eight feet, or 128 cubic feet. (*Webster 1963*)

Cost

The negative (adverse) effects. Costs may be monetary, social, physical, or environmental in nature. (*After U.S. Forest Serv. 1972B*)

Also see **Social costs**.

Cost-benefit analysis. See **Benefit-cost analysis**.

Cost-benefit ratio. See **Benefit-cost ratio**.

Cost effective analysis

1. A **benefit-cost analysis** process utilized when all **benefits** of the alternatives cannot be quantified in terms of dollars. (*U.S. Gen. Account. Off. 1969*)

2. Cost effectiveness analysis compares alternatives in terms of their contribution to a **goal** by using costs and other effectiveness criteria. (*U.S. Forest Serv. 1974A*)

Also see **Revenue-cost analysis** and **Benefit-cost analysis**.

Cost-revenue analysis. See **Revenue-cost analysis.**

Cost-utility analysis. See **Benefit-cost analysis.**

Cover

1. The proportion of the ground surface under live aerial parts of plants or the combined aerial parts of plants and mulch. (*After Amer. Soc. Range Manage. 1964*)

2. The shelter and protection for fish, wildlife and/or domestic animals. (*After Amer. Soc. Range Manage. 1964*)

The plants or other objects used by wild animals for nesting, rearing of young, resting, escape from predators, or protection from adverse environmental conditions. (*Soil Conserv. Soc. Amer. 1970*)

3. The plants or plant parts, living or dead, on the surface of the ground. (*Hanson 1962*)

Cover type (Plant cover type, Vegetation cover type, Forest cover type)

1. A forest type now occupying the ground, no implication being conveyed as to whether it is temporary or permanent—e.g., aspen (type 217), lodgepole pine (type 218).

Differences in state of development are subordinate to differences in species composition for the purposes of distinguishing cover types. (*Soc. Amer. For. 1950 and 1962*)

2. "Cover type" sometimes refers to actual **stands** of any **vegetation type**, whether dominated by tree, shrub, or grass species. (*C.F.S.*)

Cow month

The tenure on range or artificial pasture of a cow for one month. (*Amer. Soc. Range Manage. 1964*)

CPM. See **Critical path method.**

Creep. See **Soil creep.**

Crisis

1. An unstable state of affairs in

which a decisive change is impending. (*Webster 1963*)

2. A psychological or social condition characterized by excessive stress and either endangering or felt to endanger the continuity of the individual or his group. (*Webster 1963*)

Also see **Concern** and **Issue.**

Criteria

1. Regulatory and pollution criteria usages.

A. Measurements which are used to examine the relative degrees of desirability among alternatives or the degree to which a course of action meets an intended objective. (*U.S. Gen. Account. Off. 1969*)

B. The quality level of a resource necessary for it to be acceptable for a specific beneficial use. (*After McGauhey 1968*)

C. A scientific requirement on which a decision or judgement may be based concerning the suitability of a resource's quality to support a designated use. The terms "criteria" and "requirements" can be used interchangeably. (*U.S. Fed. Water Pollut. Control Adm. 1968*)

Unlike regulatory **standards**, "criteria" carry no connotations of more or less subjectively determined, authoritarian decisions as to acceptable resource quality levels. Rather, "criteria" are resource quality levels which have been determined by the accumulation of scientific data showing the relationship between levels of quality and damage to the resource. "Criteria" should be capable of quantitative evaluation by acceptable analytical procedures. Criteria should also be capable of definitive resolution, i.e., their controlling relationship to acceptable quality levels should not be clouded by possible **synergisms**, **antagonisms**, or other effects. (*After McKee and Wolf 1963*)

For example, one of the criteria for public drinking water supplies is that

fecal coliform counts have an MPN of not more than 1 per 100 milliliters. This criterion reflects (1) epidemiological evidence on the relationship of **indicator species** (*E. Coli*) abundance to incidence of the waterborne disease typhoid fever, (2) Technical and economic limitations on the ability to sample and measure indicator species abundance, and (3) on technological and economic limitations on the ability of water suppliers to reasonably control the abundance of the indicator species. (*C.F.S.*)

2. Predetermined rules for ranking alternatives in order of desirability to facilitate and expedite the decision-making process. (*U.S. Forest Serv. 1972B*)

3. A rule, or test, by which something can be judged. (*U.S. Forest Serv. 1971*)

Also see **Standard**, definition 2.

Critical area. See **Area of critical environmental concern**.

Critical distance

Environmental psychology usage. The zone which separates "flight distance" (the distance within a **personal space** where an intruder will cause a retreat or flight) and "attack distance"—the distance within a personal space where an intruder will force an animal to feel cornered and attack instead of retreating. (*After Worthington 1974, citing Heidiger 1961*)

Critical path method (CPM)

The CPM (Critical path method) and PERT (Program evaluation and review technique) are network analysis models. Each has its own modeling language, but they differ in only one fundamental respect: CPM seeks to determine the expected times of completion of the total project and times of completion of the subprojects of which it is composed. PERT goes further and seeks to estimate variances associated with these expected times

of completion. (*U.S. Gen. Account. Off. 1969*)

Cropland

Land used primarily for the production of adapted cultivated and close-growing crops for harvest, alone or in association with sod crops, and open land recently in such uses.

In some states land in fruit and nut trees, grapes, etc., is designated orchard land or vineyard land rather than "cropland". (*U.S. Soil Conserv. Serv. 1970 and U.S. Dept. Agric. 1967*) Also see **Agricultural land**.

Cross section (X section)

1. Graphic methods usage. A two-dimensional pictorial representation method which shows the characteristics and relationships between land (and/or water) characteristics that would be observed in a vertical slice through that portion of the earth. (*After Durrenberger 1973*)

2. In land use planning, cross sections frequently only show land surface conditions (soil, soil moisture, vegetation type distributions, elevation slope steepness, etc.), though they may also be used to illustrate subsurface geological structures, groundwater relationships, etc.

The vertical scale of projection is frequently exaggerated in relation to the horizontal to emphasize topographic relationships—e.g., while the scale of horizontal projection may be 1 in = 10 ft, the vertical projection scale may be 1 in = 1 ft. Thus slopes will appear steeper and elevation changes more rapid than they truly are.

This graphical method is frequently used to analyze or show the impacts that would result from potential land uses or use practices on an area, by superimposing over the natural profile the changes in land surface (and/or subsurface) conditions that would result. (*C.F.S.*)

2. Also see **Profile view**.

Crown

The upper part of a tree or other woody plant carrying the main branch system and foliage above a more or less clean stem(s). (*Ford-Robertson 1971*)

CTU. See **Conservation treatment unit**.

Cubic feet per second (c.f.s. or ft³/s)

The amount of water, measured in cubic feet, which flows by a point in a channel (or is discharged from a discharge point) in one second. (*E.C.T.*)

Cultural adaptation

The typically human manner of coping with changes in physical environment and interpersonal relations. Instead of adapting physically to changed conditions, as animals do in order to survive and thrive, human beings modify their common patterns of thought and behavior, especially their technologies. (*O'Connell 1974*)

Cultural change

The modification of a society through innovation, invention, discovery or through contact with other societies. (*Webster 1963*)

Cultural eutrophication

Eutrophication which has been caused by man—i.e., nutrient enrichment of a body of water which stimulates the growth of algae to such abundance that it produces more organic matter than the self-purification processes can overcome. (*After Natl. Acad. Sci. 1969 and Durrenberger 1973*)

Cultural history resource

1. U.S. Forest Service usage. Potential knowledge about human cultural systems, in the form of historic and prehistoric products and byproducts of man. (*U.S. Forest Serv. FSM 2361.05, July, 1973*)

2. "Cultural resource". The physical remains (artifacts, ruins, burial

mounds, petroglyphs, etc.) and conceptual content or context (as a setting for legendary, historic, or prehistoric events, as a sacred area of native peoples, etc.) of an area which is useful or important for making land use planning decisions.

In the land use planning process it is frequently convenient to subdivide the cultural resource category into four parts for inventory and evaluation purposes: (1) "archeological"—resource values associated with former occupancy by native cultural groups; (2) "historical"—values dating from first occupancy by settlers; (3) "relic cultural groups"—resource values associated with the existence of native people who continue to live in groups practicing the cultural life styles of their ancestors; and (4) "neoteric"—outstanding examples of contemporary culture representing achievements which, in the future, are likely to become historically significant. (*C.F.S.*)

Cultural resource. See **Cultural history resource**, definition 2.

Culture

1. That complex whole which includes knowledge, **belief**, art, morals, custom and any other capabilities and habitats acquired by man as a member of society. (*O'Connell 1974*)

The total pattern of human behavior and its products embodied in thought, speech, action and artifacts and dependent upon man's capacity for learning and transmitting knowledge to succeeding generations through the use of tools, language and systems of abstract thought. (*Webster 1963*)

2. A distinctive, separable bundle of traditions, one that develops historically and is handed down from generation to generation. "Culture" is inherited from the past and has weight and force to determine the content and limits of a group's behavior.

The body of customary beliefs, social forms, and material traits constituting a distinct complex of tradition of a social group with that complex whole including knowledge, belief, morals, law, customs, opinions, religion. Typical behavior or standardized social characteristics peculiar to a specific group. (*Webster 1963*)

3. A fixed pattern of **norms** or acceptable behavior standards, prescriptions about what one can and proscriptions about what one cannot do in a given society.

Essentially derived from the concept of "custom", this definition over-emphasizes the ways social groups stress and obtain behavioral conformity. (*O'Connell 1974*)

Cumulative use

The stream of resource use over time in its aggregate.

The concept "cumulative use" must be sharply differentiated from the concept "rate of use," with the latter referring specifically to units of use per unit of time. (*After Ciriacy-Wantrup 1968*)

Cunit

Pulpwood measurement term. An equivalent of 100 cubic feet of solid wood. (*Webster 1963*)

Cut

1. The portion of land surface or area from which earth has been removed or will be removed by excava-

tion. (*Soil Conserv. Soc. Amer. 1970*)

2. The depth below the original ground surface to the excavated surface. (*Soil Conserv. Soc. Amer. 1970*)

3. To lower a land surface by removal of earth materials. (*C.F.S.*)

4. For tree cutting usage see **Cutting**.

Cut and fill

The process of earth moving by excavating part of an area and using the excavated material for adjacent embankments or fill areas. (*Soil Conserv. Soc. Amer. 1970*)

Cut-over forest (Logged-over forest)

A **forest** in which most or all of the merchantable timber has been cut. (*Soil Conserv. Soc. Amer. 1970*)

Cutting (Felling)

The cutting down of standing trees.

"Cutting" is not a synonym for **logging** or **harvesting**. These latter terms also include removal of felled trees and some initial processing of the timber prior to removal. (*After Ford-Robertson 1971*)

Cutting cycle (Felling cycle, Cutting interval, Cutting rotation, Felling rotation, Rotation)

The planned, recurring lapse of time between successive major **cutting** operations in a managed forest. (*After Ford-Robertson 1971*)

CZMA. See **Coastal Zone Management Act of 1972**.

D

Data

Any recorded measurements, facts, evidence, or observations reduced to written, graphical, tabular, or computer form. The term connotes reliability, and, as such, implies explanation of source, type, precision, accuracy, etc., which permits reliability examination. (*U. S. Forest Serv. 1972B*)

DBH. See **Diameter at breast height**.

Decision theory

A body of knowledge and related mathematical techniques which have been developed from the fields of statistics, mathematics and logic and which are designed to be of aid in the making of decisions under conditions of **uncertainty**. (*U.S. Forest Serv. 1972B*)

Decision theory is quite similar to **game theory** in several respects but a major difference between the two is that in game theory the decision is being made vis-a-vis an opponent, whereas in decision theory the only opponent is nature with its related uncertainty. (*U.S. Gen. Account. Off. 1969*)

Decomposer organism (Decomposer, Reducer, Detrivore)

1. An organism, usually a bacterium or a fungus, that breaks down the bodies or parts of dead plants and animals into simpler compounds. (*Hanson 1962*)

2. Organisms (chiefly bacteria and fungi) which break down the complex compounds of dead protoplasm into simpler substances usable by green plants. Essentially these organisms bring about the **mineralization** of organic matter. (*Odum 1953*)

For the other two divisions in this particular classification of **biotic community** organisms, also see **Producer organism** and **Consumer organism**.

Decreaser. See **Decreaser plant species**.

Decreaser plant species (Decreaser)

Range management usage. Plant species of the original vegetation that will decrease in relative amount with continued overuse. (*Amer. Soc. Range Manage. 1964*)

Also see **Invader plant species** and **Increase plant species**.

Deferred grazing. See **Grazing, deferred rotation**.

Deferred rotation grazing. See **Grazing, deferred rotation**.

Degree of use. For range management usage see **Use, degree of**.

Delphi method

A recently developed technique, the purpose of which is to arrive at a consensus regarding an issue under investigation. It consists of a series of

repeated interrogations, usually by means of questionnaires, of individuals whose opinions or judgments are of interest. After the initial interrogation of each individual, each subsequent interrogation is accompanied by information regarding the preceding round of replies. The individual is thus encouraged to reconsider and, if appropriate, change his previous reply in light of the replies of other members of the group. (*U.S. Gen. Account. Off. 1969*)

Demand. See **Demand schedule**.

Demand schedule

The relationship between price and quantity demanded. The demand schedule expresses how much of the good or service would be bought or consumed at various prices at a particular point in time. (*U.S. Gen. Account. Off. 1969*)

Depletion

1. The utilization of a natural **renewable resource** at a rate greater than the rate of replenishment. (*Webster 1963*)

2. "Depletion" is defined in terms of changes in the time distribution of physical rates of use. By "depletion" is meant the redistribution of use is in the direction of the present, i.e., more use (or emphasis on availability of use) of a resource is to be made for times closer to the present than on use in times more distant in the future. (*Ciriacy-Wantrup 1968*)

Derived demand

1. The **demand (schedule)** for a commodity which grows out of the desire to satisfy the demand for some other commodity. The demand for housing, for example, may create a demand for lumber, bricks, and many other things needed to build the housing. (*Sloan 1961*)

DES. Abbreviation for **Draft environmental statement**. See **Environmental**

impact statement, draft, and discussion in paragraph 2 under **Environmental impact statement**.

Design

The component of the planning process which controls the actual physical changes that will occur in time and space.

At higher levels of planning, the design component sets the general guidelines for the spatial pattern and physical character of development. At the individual project level design is the activity which sets the precise character, pattern and form of the project environment. (*After Appleyard 1971*)

Design solution (Site planning)

A class of land use planning analytic approaches. The planner/designer generates unique solutions to potential land use conflicts by manipulating the appearance or other physical characteristics of any changes and/or their occurrence in space and time.

"Design solution" potentials are typically evaluated at the individual "project level" or **site specific** level of any land use planning process. However, this technique can also be used at higher **planning levels** by examination of the quality of solutions obtained by superimposing design prototypes or current design practices upon the typical site characteristics in a planning area. (*C.F.S.*)

For contrast with **Engineering solution** and **Technological solution**, see **Engineering solution**, definitions 3 and 4.

For an example of a type of design solution planning see **Site planning**.

Desirable plant species

1. Range management usage. Species of moderate to high **palatability** that are preferred by animals. (*Amer. Soc. Range Manage. 1964*)

2. Species that are beneficial with

respect to soil and water conservation. (*Amer. Soc. Range Manage. 1964*)

Desires. See **Needs**.

Detailed landscape. See **Landscape, detailed**.

Detailed reconnaissance soil map. See **Soil map, detailed reconnaissance**.

Detailed soil map. See **Soil map, detailed**.

Detailed soil survey. See **Soil map, detailed** and **Soil survey**.

Detention storage

The surface runoff which is temporarily present in ground surface irregularities (or even on level surfaces) while it flows overland toward stream channels. (*After Wisler and Brater 1959*)

Deterministic model. See **Model, deterministic**.

Detritivore. See **Detrivore**.

Detrivore (Detritivore)

An organism (plant or animal) that feeds on the organic remains or other organic debris from **autotrophic** (mostly plant) **organisms**. (*After Odum 1971*)

Developed recreation area. See **Recreation area, developed**.

Developer

Usage in the defeated 1973 bill for a national **Land Use Policy and Planning Assistance** Act. Any person or persons who directly or indirectly, through any formal or informal combination or aggregation, own or control a tract or tracts of land for which such person or persons propose a **project**.

"Person includes any individual, partnership, corporation, association, unincorporated organization, trust, estate, or any other legal or commercial entity, except Federal, state or local government agencies.

This definition is designed to make

certain that individuals cannot establish dummy corporations, trusts, or otherwise organize in a manner to avoid the size and time period limitations of the definition of projects (such as using an organizational arrangement to hide the separating of tracts into two areas comprising more than twenty-five, but less than fifty, units; the selling or developing of two such tracts which are functionally interrelated but separated by a short distance; selling or developing one such tract, waiting a few years, and developing a second tract). (*U.S. Congr., Senate, Com. Inter. Insular Aff. 1973*)

Development

1. A built-up tract of land, especially used in the sense of a subdivision having the necessary utilities—i.e., water, gas, electricity, roads, etc. (*After Webster 1963*)

2. In planning, the term "development" is typically used when referring to intensive build-up types of land uses—i.e., uses predominantly consisting of buildings, paved areas and other types of site alterations. "Development" in that sense utilizes the **land** only as a location, not for its **natural resource** properties.

"Development" is sometimes broken into broad use type categories—such as residential, commercial, industrial, etc. (*C.F.S.*)

Development planning

Development planning is most commonly used in the context of planning for economic growth and technological development in undeveloped regions or countries. Planning in these settings involves not only creation of a strategy for resource development and allocation, but also creation of the **infrastructure** and social **institutions** necessary for implementation of the physical and economic features of such a plan. (*C.F.S.*)

Also see **Extraordinary planning** and **Comprehensive plan**, definition 3.

Development rights

A broad range of less-than-fee **simple ownership** interests. It includes mainly various forms of the **easement**, a clearly defined property right. The landowner keeps the title but agrees to continue using the land as in the past, the right to develop the land resting in the holder of the easement. (*U.S. Bur. Outdoor Recreation 1974*)

Development rights, acquisition of

A plan implementation technique which ensures conformity of land use to the plan by purchasing for public ownership the landowner's right to use his land for certain types of potential land uses—such as subdivision housing or industry.

The originating concept was that total public ownership was undesirable and typically fiscally unfeasible. The purchase of only selected **property rights** would be substantially less expensive than total purchase and would still allow the owner to continue making other economic uses of his land. However, in practice public acquisition of development rights has often cost up to 95 percent of the full **market value** of land. (*C.F.S.*)

Also see **Taking**.

Development rights, transfer of

A method of separating and marketing the **development rights** of a property. Owners of developable property can buy rights to develop more intensively while the transferring property is preserved open or less developed. (*U.S. Bur. Outdoor Recreation 1974*)

Development type

Those **land use types** by which the formerly **open spaces** of an area are prominently altered or made to appear built-up—i.e., buildings, paved areas, and other types of site alterations.

"Development" is sometimes broken down into such broad type categories as residential, commercial, and industrial. (*C.F.S.*)

Development zoning. See **Zoning, development.**

Diagrammatic representation (Blob diagram, Schematic diagram)

A land use planning analytical technique in which the physical components (such as parking lots, lavatories, garbage cans, picnic tables, beaches, etc.) in a plan are represented symbolically, usually just by their names written inside individual circles. The relationships between components are then represented by lines connecting those which have necessary or desirable support functions. The individual components are then shifted so as to minimize the extent to which different interconnecting lines cross each other. The resulting solution is assumed to represent the most efficient spatial relationship between project components, and thus represent the idealized goal of the actual physical plan.

While this technique is usually utilized at the project or site planning level, there is no conceptual reason why it cannot also be used for studying the optimal relationships between the more vaguely defined components of the broader levels of land use planning. (*C.F.S.*)

Diameter at breast height (DBH)

The diameter of a tree measured four feet, six inches from the ground level. "Ground level" can follow two conventions; either the highest point of the ground touching the stem, or the mean of the highest and lowest points. (*Ford-Robertson 1971*)

Direct effect (Primary effect)

A condition caused by an action or inaction without an intermediary causal agent; an effect characterized

by a close causal relationship. (*After Webster 1963*)

Disadvantaged groups

Lacking in the basic resources or conditions (as standard housing, medical and educational facilities, civil rights) believed to be necessary for an equal position in society. (*After Webster 1963*)

The current term used by the Federal government for what has in the past been called "poor" and "underprivileged". It covers more than the economic conditions associated with "poor" and does not have the implication of social or economic oppression contained in "underprivileged." (*E. C. T.*)

Discharge

The volume of water flowing past a point per unit time, commonly expressed as cubic feet per second, million gallons per day, gallons per minute or cubic meters per second. (*Soil Conserv. Soc. Amer. 1970*)

Discontinuous easement. See **Easement, discontinuous.**

Discounting

The practice of placing a lesser value (economic or other) on future events than on present events for the purpose of comparison. An item received today is seen to be worth more than an identical item received next year. Discounting refers only to the timing of an event and should not be confused with reduced values based on the uncertainty of future events nor implied quality changes over time. (*E. C. T.*)

Discount rate

The interest rate used in plan formulation and evaluation for **discounting** future **benefits** and computing **costs**, or otherwise converting benefits and costs to a common time basis. (*U.S. Dept. of Agric. 1974*)

Also see **Discounting.**

Disjointed incrementalism. See **Incrementalism.**

Dispersed recreation. See **Recreation, dispersed.**

Dissolved oxygen (D.O.)

1. The oxygen dissolved and freely available in water. (*After Wash. State Univ. Coop. Ext. Serv. 1972*)

2. The oxygen dissolved in water, waste water, or other liquid and usually expressed "in milligrams per liter, **parts per million**, or percent of saturation. (*Amer. Public Health Assoc., et al. 1969*)

Dissolved oxygen concentration (Dissolved oxygen level, DOL)

The amount of oxygen dissolved in a water sample expressed in **parts per million**. (*Sesco, et al. 1973*)

In unpolluted water dissolved oxygen is usually present in amounts of 10 parts per million or less. Adequate dissolved oxygen is necessary for the life of fish and most other aquatic organisms. About 3 to 5 parts per million is the lower limit needed for the support of fish life over a long period of time. (*Wash. State Univ. Coop. Ext. Serv. 1972*)

Dissolved oxygen level. See **Dissolved oxygen concentration.**

Dissolved solids

1. The total amount of dissolved material, organic and inorganic, contained in water or wastewater. (*Wash. State Univ. Coop. Ext. Serv. 1972*)

2. The solid matter that remains after a filtered volume of water has been evaporated. The amount of residue is commonly expressed as a proportion of the original sample in **parts per million** parts of the original. (*Sesco, et al. 1973*)

Diversity index. See **Species diversity index.**

DO. See **Dissolved oxygen.**

DOL. See **Dissolved oxygen concentration.**

Dominant

The land against which an **easement** or privilege exists is called the **servient** tenement and the estate to which it is annexed is the **dominant** tenement and their owners are called respectively **servient** and **dominant** owner. (*U.S. Bur. Outdoor Recreation 1974*)

Also see **Easement.**

Dominant use

A concept in which land and water resources are classified and managed for one main type of use. Other uses may or may not be excluded but are always of secondary importance to the optimum development for the dominant use. (*Sesco, et al. 1973*)

Also see **Dominant use management.**

Dominant use management

Management based on the idea that although land may be capable of many uses it will provide for one use better than any other. The land is managed for the single purpose of maximizing that use to the exclusion of other uses where conflicts exist.

Devoting each land unit to the use it best provides for is assumed to be the most efficient allocation of resources. This assumption has been shown to be erroneous by the science of **operations research**, among others. Dominant use management is prohibited on the National Forests under the **Multiple Use-Sustained Yield Act**. (*E. C. T.*)

Draft environmental impact statement. See **Environmental impact statement, draft.**

Draft environmental statement. See **Environmental impact statement, draft**, and discussion in paragraph 2 under **Environmental impact statement.**

Drainage basin. See **Watershed.**

Durability (Environmental durability)

1. The quality or state of being resistant to breakage or destruction. (*After Webster 1963*)

2. In a land use planning context, the relative ability of resources to tolerate sustained use, without degradation of the resource base (i.e., lowering productivity or desirable resource quality). This ability is sometimes rated on a qualitative scale extending from "fragile" to "durable".

"Durability" ("Environmental durability") in land use planning refers to those resource types or properties which are resistant to degradation in the presence of whatever types of use are considered by the evaluation process. For example, vegetated sand dunes may be classed as "environmen-

tally fragile" for off-road vehicle uses while unvegetated dunes are "environmentally durable". (*C.F.S.*)

Duration curve. See **Flow duration curve**.

Dynamic programming

In a multistage decision process, a systematic method for searching out that sequence of decisions which maximizes or minimizes some predefined objective function.

The method is based on Bellman's Principle of Optimality which states that "an optimal policy has the property that whatever the initial state and initial decision are, the remaining decisions must constitute an optimal policy with regard to the state resulting from the first decision." (*U.S. Forest Serv. 1972B*)

E

EAR. See **Environmental analysis report**.

Easement

1. An interest in the land of another which allows the easement holder specified uses or rights without actual **ownership** of the land. (*U.S. Bur. Outdoor Recreation 1974*)

2. The right of the owner of one parcel of land, by reason of such ownership, to use the land of another for a special purpose not inconsistent with general property ownership. The land against which the easement or privilege exists is called the **servient** tenement and the estate to which it is annexed is the **dominant** tenement and their owners are called respectively "servient" and "dominant" owner. (*U.S. Bur. Outdoor Recreation 1974*)

3. The legal right to use the land of another for a precise and definite purpose. (*Sesco, et al. 1973*)

Easement, affirmative

An interest in land which gives a person or agency the right to do something on the land, such as hiking, fish-

ing, flooding, etc. (*U.S. Bur. Outdoor Recreation 1974*)

Easement, conservation

A group of **negative** and **affirmative easements** [that] pertain to keeping land in open use or a natural state, or provide some other conservation or recreation function. These include **scenic**, flooding, and agricultural easements.

An **easement** to assure the permanent preservation of land in its natural state or in whatever degree of naturalness the land possesses at the time the easement is granted.

An easement that may include one or more of the following provisions: (1) prohibitions against erecting buildings or other structures; (2) restrictions against constructing or altering any private drives or roads; (3) prohibitions against the removal or destruction of trees, shrubs, or other greenery; (4) restrictions against uses other than residential or agricultural, for public utilities, and existing uses; (5) restrictions against the display of



outdoor signs, billboards or any other form of outdoor advertising; (6) prohibitions against dumping or storage of trash, wastes or unsightly or offensive materials of any kind; (7) other kinds of restrictions consistent with open space preservation and reservation. (*U.S. Bur. Outdoor Recreation 1974*)

Easement, continuing

An **easement** which is self-perpetuating, independent of human interventions, as the flow of a stream, or one which may be enjoyed without any act on the part of the persons entitled thereto. (*U.S. Bur. Outdoor Recreation 1974*)

Easement, discontinuous (Noncontinuous easement, Nonapparent easement)

An **easement**, the enjoyment of which may be had only by the interference of man, as a right-of-way or a right to draw water. (*U.S. Bur. Outdoor Recreation 1974*)

Easement, negative

An interest in land which can give the easement-owner the right to prevent the owner of the land from doing something on it. **Scenic easements** are of this type. (*U.S. Bur. Outdoor Recreation 1974*)

Easement, recreational

Affirmative easements allowing public entry on the **servient** land to hunt, fish, or enjoy other recreational activities. (*U.S. Bur. Outdoor Recreation 1974*)

Easement, scenic

Essentially an **easement** of view. Scenic easements restrict the use of land adjacent to public highways, parks, and rivers. They may provide something attractive to look at within the easement area, an open area to look through to see something attractive beyond the easement itself, or a screen to block out an unsightly view beyond the easement area. (*U.S. Bur. Outdoor Recreation 1974*)

Ecoclass

U.S. Forest Service usage. Classification system for the biological and earth sciences based on linking together existing disciplinary classifications of the major ecosystem components. It is a unifying framework for linking three basic biological and earth science stratifications or classifications—the vegetation subsystem, the land subsystem, and the aquatic subsystem. A hierarchical structure is given in which the lowest level units are the "ecological land unit" (ELU), a composite of the land and vegetation subsystems, and the "ecological water unit" (EWU), a composite of elements of the land and aquatic subsystems. (*After Corliss 1974*)

Also see **Ecological land unit** and **Ecological water unit**.

Ecological determinism

A particular point of view in planning which advocates that retention of natural elements and processes should be given priority in planning. Natural elements (such as **aquifers**, wildlife breeding areas, and flood plains) which are valued by segments of society or freely perform necessary life support or **quality of life** functions, or whose alteration will significantly damage other valued resources, should be protected on plans and in plan policies.

Ecological determinism is essentially a synonym for **physiographic determinism**, biological primacy, and **biophysical determinism**. Although "ecological" strictly implies concern with organisms and their environmental relationships, "ecological determinism" also applies to such nonliving environmental elements as aquifers, steep slopes, and severe storm impact zones. (*C.F.S.*)

Ecological land unit (ELU)

1. U.S. Forest Service usage. One of the lowest levels of the "Ecoclass"

system of classifying **ecosystems** into subdivisions for forest description and management. An ELU is a composite of elements from the land subsystem and vegetation subsystem which together define a homogeneous unit. (*After Corliss 1974*)

2. U.S. Forest Service Resource Capability System (RCS) usage. Units of land having strong uniformity in **slope steepness; aspect; microclimate**; rock types and conditions, **geomorphology**, soil characteristics and productive capabilities, type, density and age of vegetation and ground cover, and drainage characteristics.

The basic physical unit of land that scientific disciplines agree must be delineated and examined as a separate entity (for use evaluation or management purposes).

The basic unit that is used in the analysis of onsite potentials, capabilities and limitations. The most significant level of land **stratification** which best communicates the basic (inherent) capabilities and limitations. (*Reid 1972*)

Land (or water) units which because of their strong uniformity in physical and biological characteristics respond similarly to management activities or other stimuli. Sometimes called "response units". (*H.G.*)

Also see **Ecoclass, Ecological water unit** and **Homogeneous response unit**.

Ecological water unit (EWU)

U.S. Forest Service usage. One of the lowest levels of the "Ecoclass" system of classifying **ecosystems** into subdivisions for forest description and management. An EWU is a composite of elements from the land and aquatic subsystems, where aquatic type and the adjacent land types together define a homogeneous unit. (*After Corliss 1974*)

Also see **Ecoclass, Ecological land unit**, and **Homogeneous response unit**.

Ecologic community. See **Biotic community**.

Ecologic competition. See **Competition**.

Ecologic diversity. See **Biologic diversity** and **Species diversity**.

Ecologic indicator. See **Indicator, biologic**.

Ecologic niche. See **Niche**, definition 2.

Ecologic pyramids

Groups of organisms in nature often consist of many small organisms associated with a few larger organisms. This distribution of number and size has been compared to a pyramid with a broad base representative of the numerous small organisms and the point of the pyramid representing the few largest organisms.

There are three ecological pyramids which result from food and energy relationships: the **pyramid of numbers**, the **pyramid of biomass** and the **pyramid of energy** or food production rates. (*Odum 1953*)

Ecologic stability (Balance of nature)

An ecological system may be said to be stable during that period of time when no species becomes extinct (thereby creating a vacant **niche**) and none reaches plague proportions for long enough to destroy the niches of other species and cause them to become extinct.

A stable ecosystem is one in which all niches are fully occupied by appropriate species.

Whatever stability there is in the ecological world is not a static equilibrium, but a fluctuating or dynamic one, and normally a highly fluctuating one. Stability lies in the ability to bounce back, not in the ability to hold tenaciously to ground once taken or numbers once achieved. (*Preston 1969*)

Also see **Balance of nature**.

Ecologic succession. See **Succession**.

Ecology

A branch of science concerned with the interrelationships of organisms and their cycles and rhythms, community development and environments—especially as manifested by natural structure, interaction between different kinds of organisms, geographic distributions, and population alterations. (*After Webster 1963*)

Econometrics

The testing and quantifying of economic theories and the solution of economic problems by their conversion to mathematical forms, application of mathematical processes and the use of statistical techniques. (*After Webster 1963*)

Economic analysis

An analysis of the economic effects of a given action. It includes measurement of all pertinent desirable and undesirable consequences to all segments of the economy stated in comparable quantitative monetary terms. It also includes an objective or subjective analysis of factors not quantifiable in monetary terms. (*P.M.R.*)

Economic base analysis. See **Export base analysis**.

Economic depletion. See **Depletion**.

Economic determinism

1. A point of view which advocates that planning decisions should be based primarily upon the results of analysis of changes in resource supply and demand in response to changes in the "price" for the right to use a resource. That potential user or use which is willing or able to give up the most wins the use rights. Maximizing the total economic welfare is considered to result in the maximization of the benefits to society from resource use allocation and this is viewed as being the goal of all resource use. (*C. F. S.*)

The total economic welfare will be

maximized by providing the resources to the highest bidders in such quantities that the price individuals are willing to pay exactly equals the cost of providing the last unit of the resource, under standard economic assumptions. (*E. C. T.*)

2. The view that economic factors are the only causes of social patterns.

3. The view that economic factors are fundamental or dominant, despite the simultaneous importance of biological, psychological, political, cultural, and social factors. (*O'Connell 1974*)

Economic enterprise (Economic unit)

Range management usage. A ranch business of sufficient resources to provide an acceptable **standard of living** for a family. . . . Often termed an economic unit, but this is considered erroneous because a "unit" is a subdivision of a **management area**. (*Amer. Soc. Range Manage. 1964*)

Also see **Management area** and **Management unit**.

Economic externalities

1. Effects of resource allocation decisions which are not included in the market mechanism, and as such have no economic influence on resource allocation decisions; failures of the market mechanism as a resource allocation tool. (*E. C. T.*)

2. A **cost** or **benefit** that occurs whenever the activities of one or more persons affect the welfare or production functions of others who have no direct control over that activity. (*Sesco, et al. 1973*)

Economic growth

Increased economic activity in real terms over time. This does not necessarily correspond to increased production of physical goods. (*E. C. T.*)

Economic life

That period of time extending from the date of installation [of a facility]

into service to that date when the facility is no longer economically profitable to use. (*Winfrey and Zellner 1971*)

Also see **Physical life**.

Economic scarcity (Resource scarcity)

The condition whereby a limited number of marketable goods are desired in higher quantities than available. The "scarcity" can be eliminated either by increasing the supply of available goods and maintaining a low price, or by raising the price of the goods until the number of people willing to pay the higher price is reduced to the supply level. Which is the socially superior method depends on supply costs and the existence of **economic externalities**. (*E. C. T.*)

Economic subregion

U.S. Bureau of the Census usage. These areas represent combinations of **state economic areas**. The 510 state economic areas in the 1970 U.S. Census are consolidated into a set of 121 economic subregions which cut across state lines but which, as intended, preserve to a great extent the homogeneous character of the state economic areas. (*U.S. Bur. Census 1971*)

Economic unit. See **Economic enterprise**.

Ecosystem (Bioc(o)enosis, Bioc(o)enose, Biogeoc(o)enosis, Biogeoc(o)enose)

1. The system formed by the interaction of a group of organisms and their **environment**. (*Durrenberger 1973*)

2. A complete, interacting system of organisms considered together with their environment, e.g., a marsh, a **watershed**, a lake, etc. (*After Hanson 1962*)

3. An ecological community considered together with the nonliving factors of its environment as a unit. (*Webster 1963*)

4. Any spatial unit that includes all of the organisms (i.e., the **biotic com-**

munity) in a given area interacting with the physical environment so that a flow of energy leads to clearly defined food and feeding relationships, **biologic diversity** and **biogeochemical cycles** (i.e., exchange of materials between living and nonliving parts) operating as an integrated system.

"**Ecosystem**" is the preferred term in English while "biocoenosis" or "biogeocoenosis" is preferred by writers using or familiar with the Germanic and Slavic languages. (*After Odum 1971*)

Some (*Ford-Robertson 1971, Hanson 1962*) make a distinction between the two terms by using **bio(geo)-coenosis** to refer to actual biological units (such as a certain bog) and "ecosystem" when referring to conceptual units. Others (*Odum 1971*) make no such distinction. We prefer Odum's lumping of the terms, while recognizing that in some technical, ecological literature the distinction is significant. (*C.F.S.*)

5. Any complex of living organisms taken together with all the other biotic and abiotic factors which affect them, that are mentally isolated for purposes of study. (*After Ford-Robertson 1971, citing Tansley*)

Ecotone

An ecotone is a transition between two or more **biotic communities**.

It is a junction zone or tension belt which may have considerable linear extent but is narrower than the adjoining community areas themselves.

The ecotonal community commonly contains many of the organisms of each of the overlapping communities and, in addition, organisms which are characteristic of and often restricted to the ecotone. Often, the number of species in the ecotone is greater than in the communities flanking it. Organisms which occur primarily or most abundantly or spend the greatest

amount of time in junctional communities are often called "edge species". (Odum 1959)

Ecotype (Geographical race, Habitat type)

1. A locally adapted population of a species which has a distinctive limit of tolerance to environmental factors. (Soil Conserv. Soc. Amer. 1970)

2. A genetically uniform population of a species resulting from natural selection by the special conditions of a particular **habitat**. (Ford-Robertson 1971)

Edaphic

Pertaining to the soil. (Marsh 1964)

Edaphic climax. See **Climax community**, definition 3.

Edaphic factor (Soil factor)

A characteristic or factor of the soil environment which limits the development or existence of an organism or **biotic community**.

For example, low nutrient or micro-nutrient concentrations, or the presence of toxic concentrations of certain substances, or insufficient or excess soil moisture conditions are typical edaphic factors. (Marsh 1964)

Especially used to refer to soil factors as opposed to **physiographic** or climatic factors. (Sesco, et al. 1973)

Edge

Visual terminology usage. The linear elements in a view which are noted (or considered by the observer) as being the dividing lines between major components of a scene. "Edges" serve as visual boundaries—such as land-water boundaries or forest-meadow boundaries. (After Litton 1966)

Edge species. See **Species**, **edge**.

Effectiveness-cost analysis. See **Cost-effectiveness analysis**.

Effectiveness index

The index used in cost-effectiveness

analysis. (E. C. T.)

See **Cost-effectiveness analysis**.

Effectiveness test

U.S. Water Resources Council (WRC) usage. One of the tests to be applied in choosing among alternatives in planning for water and related land resources while following the WRC **Principles and Standards**.

The "effectiveness test" refers to technical performance of the plan and the level of contribution to the components of the objectives. (U.S. Dep. of Agric. 1974)

Efficiency test

U. S. Water Resources Council (WRC) usage. One of the tests to be applied in choosing among alternatives in planning for water and related land resources while following the WRC **Principles and Standards**.

The "efficiency test" requires that among all acceptable alternatives (Federal and non-Federal, water and non-water, structural and nonstructural) the given alternative plan should be the least cost means, considering all adverse effects, of achieving specified components of the objectives when comparably evaluated according to these standards. (U.S. Dep. of Agric. 1974)

Effluent

The liquids discharged from domestic, industrial and municipal waste collection systems or treatment facilities. (Soil Conserv. Soc. Amer. 1970)

Egalitarianism

1. A belief that all people are equal in intrinsic worth and are entitled to equal access to the rights and privileges of their society. (Webster 1963)

2. A social philosophy advocating the leveling of social, political and economic inequalities. (Webster 1963)

As an ideology, it holds that equality in various specified aspects of social life and organization is just and

proper and should be a goal in the redesign of **social institutions**.

Exactly what aspects of social reality are considered in order to decide what should be equal and what unequal is a rather complex problem that sometimes involves self contradictions; for example, equality of opportunity can result in unequal distributions, because people have different abilities, degrees of motivation, and luck; equality of resource inputs in different schools may result in inequality in educational achievements of the students, if the latter began with unequal advantages, and attempting to equalize output of student achievement from different schools might require unequal resource inputs in order to overcome the initial handicaps of some students. (*O'Connell 1974*)

EIS. See **Environmental impact statement**.

Elasticity

In economics, a measure of the responsiveness of the quantity demanded or supplied to changes in price. Elasticity measures the degree to which price is effective in calling forth or holding back quantity. (*U.S. Gen. Account. Off. 1969*)

Element. See **Plan element** or **Program element**.

Elites

The individuals at the top of any stratification hierarchy, such as economic, social prestige, or political.

The term "power elite" implies a high degree of coordination and a set of common interests among those in top corporate and governmental positions. (*O'Connell 1974*)

Also see **Social class**.

Elitism. See **Pluralism**.

ELU. See **Ecological land unit**.

Eltonian pyramid. See **Pyramid of numbers**.

Eminent domain

1. The right or power of government subject to constitutional and statutory limitations to take private property for public use upon making **just compensation**. (*U.S. Bur. Outdoor Recreation 1974*)

2. The legal right of public agencies to claim private property for public use, if compensation is made to the owner for property so claimed. The use of this power is limited by the "Due Process of the Law" clause in the 14th Amendment of the United States Constitution. (*Sesco, et al. 1973*)

Also see **Taking, Police power, Just compensation**.

Enclosing landscape. See **Landscape, enclosing**.

Endangered species. See **Species, endangered**.

Endangered Species Act of 1973 (PL 93-205; 87 Stat. 884)

Repeals and replaces the Endangered Species Conservation Act of 1969. An act to provide a means whereby **ecosystems** upon which **endangered species** and **threatened species** depend may be conserved, to provide a program for the **conservation** of such endangered species and threatened species, and to take such steps as may be appropriate to achieve the purposes of the (relevant) treaties and conventions . . . (*Endangered Species Act of 1973*)

Also see **Conservation**, definition 3.

Endangered Species Conservation Act of 1969

Now repealed and replaced by the **Endangered Species Act of 1973**.

Endemic organism

A taxonomic category (e.g., genus, species, variety) whose natural occurrence is confined to a certain region and whose distribution is relatively limited. (*After Hanson 1962*)

Also see **Native organism**. Contrast with **Species, exotic**; **Species, feral**; **Species, naturalized**; and **Species, resident**.

Endemic species. See **Endemic organism**.

Energy resource planning

Functional planning for the development and use of energy resources. (*E.C.T.*)

Also see **Functional planning**.

Engineering solution

1. The actual application of technical solutions to solve (or at least minimize) problems associated with particular **land uses** or **land use practices**. (*C.F.S.*)

2. The use of technical knowledge to implement a project by minimizing its land use problems. (*After Webster 1963*)

The distinction between **technological solutions**, and "engineering solutions" is that the first refers just to the development of new technical means for providing solutions whereas the second applies to the application of any technical solution (new or old) to solve the potential problems.

The distinction between "engineering solutions" and **design solutions** is that the second minimizes potential conflicts by manipulating size, shape, appearance, and placement whereas the first utilizes technical solutions.

For example, an engineering solution to stabilizing a stream bank against erosion by increased runoff might be to line certain portions of the channel with concrete. A "design solution" to such a potential problem would be minimization of use of impervious pavings by projects or redirection of such increased runoff into high-infiltration-rate, heavily vegetated portions of the site. (*C.F.S.*)

Environment

1. The complex of climatic, soil and biotic factors that act upon an organism or ecological community and

ultimately determine its form and survival. (*Holland 1970*)

2. Something that surrounds; surroundings.

All the conditions, circumstances, and influences surrounding and affecting the development of an organism or group of organisms. (*U.S. Forest Serv. 1971*)

3. The aggregate of all the external conditions and influences affecting the life and development of an organism, society, etc. (*After Webster 1963*)

Also see **Habitat**.

Environmental analysis. See **Environmental impact analysis**.

Environmental analysis report (EAR)

A report on environmental effects of proposed Federal actions which may require an **Environmental impact statement** (EIS) under section 102 of the **National Environmental Policy Act** (NEPA). The EAR is an "in-house" document of varying degrees of formality which becomes the final document on environmental impacts for those projects which, because their effects are minor, do not require a formal EIS. Although not formally prescribed under NEPA, the EAR is the document normally used to determine whether section 102 of NEPA applied to the project in question, and as such is subject to court challenge if no EIS is filed. (*E. C. T.*)

Also see **Environmental impact statement, final**.

Environmental assessment. See **Environmental impact analysis**.

Environmental corridor (Buffer, Buffer strip, Buffer zone)

1. A strip of land designed to protect the natural environment of an area and to prevent undesirable encroachment such as commercial development along a stream. (*Sesco, et al. 1973*)

Also see **Buffer**.

Philip Lewis' usage. The linear pattern identified in the typical midwestern landscape by combining maps of the major natural environmental elements of importance for recreation (rivers, lakes, wetlands and significant **relief**) with man-made features having recreational value (e.g., historic sites). (*After Belknap and Furtado 1967*)

Environmental durability. See **Durability.**

Environmental fragility. See **Fragility.**

Environmental hazard. See **Natural hazard.**

Environmental impact analysis (Environmental analysis, Environmental assessment, Environmental impact assessment)

1. An activity that involves the consideration of the interaction of physical, natural, social and economic factors and a determination of probable effects of the plan or proposal upon these operating systems. (*U.S. Forest Serv., FSM 8310.5, Oct. 1973*)

2. A process that generates knowledge of environmental and ecological impacts, and evaluates their consequences before activities are undertaken. (*Heyman and Twiss 1971*)

3. An evaluation and objective prediction of the environmental impacts of a proposed action using a systematic, **interdisciplinary approach** that integrates social and natural sciences and environmental design arts. (*After National Environmental Policy Act*)

Environmental impact assessment. See **Environmental impact analysis.**

Environmental impact statement (EIS, 102 statement, Environmental statement)

A document prepared by a Federal agency in which anticipated environmental effects of a planned course of action or development are evaluated. A Federal statute (section 102 of the **National Environmental Policy Act** of

1969) requires that such statements be prepared. It is prepared first in draft or review form, and then, in a final form. An impact statement includes the following points: (1) the environmental impact of the proposed action, (2) any adverse impacts which cannot be avoided by the action, (3) the alternative courses of action, (4) the relationships between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, (5) a description of the irreversible and irretrievable commitment of resources which would occur if the action were accomplished. (*Sesco, et al. 1973*)

Although "environmental impact statement" (EIS) is the popularly used term, some prefer the term "Environmental statement" (ES), feeling that EIS is an inaccuracy due to the negative connotations of the word "impact". Section 102(C) of NEPA mentions that impacts, effects, alternatives, etc. will be contained in the required "detailed statement". Consequently, to name one feature and to exclude others is inaccurate. Thus the draft is the DES and the final statement the FES. (*After J.Z.*)

Environmental impact statement, draft (DEIS, Draft environmental statement, DES)

The version of the statement of environmental effects required for major Federal actions under section 102 of the **National Environmental Policy Act** (NEPA), and released to the public and other agencies for comment and review. It is a formal document which must follow the requirements of NEPA, the Council on Environmental Quality (CEQ) Guidelines, and directives of the agency responsible for the project proposal. Since the adoption of state and local laws modeled after NEPA, this term has also been used to refer to similar statements required to comply with those

laws. (*E.C.T.*)

Also see **Environmental impact statement** and **Environmental impact statement, final**.

Environmental impact statement, final (EIS, Final environmental statement, FES)

The final version of the statement of environmental effects required for major Federal actions under section 102 of the **National Environmental Policy Act** (NEPA). It is a revision of the draft environmental impact statement to include public and agency responses to the draft. It is a formal document which must meet legal requirements and is the document used as a basis for judicial decisions concerning compliance with NEPA. This term is also used for similar statements prepared to comply with state and local laws patterned after NEPA. (*E. C. T.*)

Also see **Environmental impact statement** and **Environmental impact statement, draft**.

Environmental index. See **Index**.

Environmental modification

Deliberate or unintentional changes produced by man in the external conditions that act upon an organism or community to influence its development or existence. (*After T.E.A.*)

Environmental planning

Planning which considers the environment not only in terms of physical configurations, location and space but also in terms of direct experiential and sensory surroundings as a primary source of living experience, and as a primary conditioner of physical and psychological development for each individual human being.

Planning which recognizes the environment as a physical and biological system, with its own natural and technological characteristics and processes.

Planning which is concerned with human activities taking place in the

outdoor environment and which reconciles their demands for and impacts upon the outdoor environment.

Planning which seeks to ensure that policies, programs, designs and actual developments incorporate forecasts of the effects upon environmental amenity and ecology so as to anticipate and evaluate the consequences of decision in light of present and future values at stake. (*Appleyard 1971*)

Environmental psychology

That area of psychology which deals with environmentally induced behavior or mental states of individuals or groups, e.g., whereas psychoanalysis probes for subconscious motivations derived from past experience, or behavioral psychology attempts to alter self concepts through operant conditioning, environmental psychology seeks to determine how the everyday physical environment affects human behavior.

Also, the study of human perception of elements in the environment or of different types of environmental settings. Perception in this context is understood to mean not only direct sensory knowledge but also cognitive discrimination expressed in terms of preferences rated on a scale of desirability vs undesirability. (*L. W.*)

Environmental quality

1. Natural environmental quality. Heyman and Twiss in evaluating management practices on the Federal public lands speak of "environmental quality" as referring "primarily to the continuance, to the extent feasible, of the natural **ecosystems** existing on public lands especially as that ecosystem is important to human health and safety, the provision of direct sensory experiences, and the continued viability of life forms and **biotic communities** that exist naturally on, and surrounding, the public lands." (*Heyman and Twiss 1971*)

2. In general, definition 1 must be expanded to include all **environments** experienced by man and include aspects of **environmental psychology**. Even though qualities may exist without man, it is man who makes the judgments that define qualities. The qualities are both individual and consensus. The "group" may attach some value or measure of quality to some environment, and each individual may give a somewhat different value to the same environment. "Quality" is a "separate reality" for each individual, but may contain universals for a great many individuals. Thus, the environment may be a wilderness or a city street, with each person having his or her own value judgment as to the quality of the environment, but together they may reach a consensus which forms an "environmental quality" basis for planning. (*After A. W.M.*)

3. U.S. Water Resources Council (WRC) usage. Enhancing environmental quality by the management, conservation, preservation, creation, restoration or improvement of the quality of certain national and cultural resources and ecological systems is one of the two main objectives for programs involving water and related land resources administered by Federal agencies whose activities involve planning and development of water resources, as contained in the Water Resources Council **Principles and Standards**.

An evaluation of environmental quality effects should include: (1) areas of natural beauty; (2) water, land, and air quality; (3) biological resources and selected ecosystems; (4) geological, archeological, and historical resources; and (5) irretrievable commitments of resources to future use. (*After U.S. Dep. of Agric. 1974*)

4. One of the four "required accounts" for categorizing, displaying, or "accounting" the beneficial and adverse effects of each alternative plan

formulation for water and related land resources planning specified in the Water Resources Council's **Principles and Standards** and the U.S. Department of Agriculture's "Procedures" for adhering to them. (*After U.S. Dep. of Agric. 1974*)

5. The sum total of the forces and factors which influence people's satisfactions with their work, leisure, living conditions and community. (*Barron 1972*)

Environmental Quality Improvement Act of 1970 (83 Stat. 852; 42 U.S.C. 4371-4374)

Assures that each Federal department and agency conducting or supporting public work activities which affect the environment shall implement the policies established under existing law; and authorizes an Office of Environmental Quality, which shall provide the professional and administrative staff for the Council on Environmental Quality. (*After U. S. Forest Serv. 1974*)

Environmental quality index. See **Environmental quality and Index**.

Environmental setting. For U.S. Forest Service usage see **Management situation**.

Environmental statement. See discussion in paragraph 2 under **Environmental impact statement**.

Environmental system

An arbitrarily defined set of interacting components in the environment, understood to have some degree of unitary integrity. (*L. W.*)

Environment, human

The aggregate of all the external conditions and influences affecting the life and development of an individual, society, etc. (*After U.S. Forest Serv., FSM 8310.5, Oct., 1973*)

Ephemeral stream

1. A stream or portion of a stream that flows only in direct response to precipitation. It receives little or no water from springs and no long-continued supply from snow or other sources. Its channel is at all times above the water table. (*Soil Conserv. Soc. Amer. 1970*)

2. The term may be arbitrarily restricted to streams which have no-flow periods of one month or longer. (*Amer. Geol. Inst. 1962*)

3. In areas where precipitation almost totally consists of rainfall, the term is commonly used to refer to the short-lived streams which flow for only a very short time (a few days at most) after each storm event. (*C.F.S.*)

4. They have no permanent or well-defined channels but follow slight depressions in the natural contour of the ground surface. (*Wisler and Brater 1959*)

Also see **Intermittent stream** and **Perennial stream**.

Erosion

The group of processes whereby earthy or rock material is worn away, loosened or dissolved and removed from any part of the earth's surface. It includes the processes of weathering, solution, corrasion and transportation. (*Amer. Geol. Inst. 1962*)

"Erosion" is often classified by the eroding agent (wind, water, wave, or raindrop erosion) and/or by the appearance of the erosion (**sheet**, **rill**, or **gully erosion**) and/or by the location of the erosional activity (**surface**, or shoreline) or by the material being eroded (**soil erosion** or beach erosion).

Relations between erosion terms: "raindrop erosion" always takes the form of "sheet erosion"—though "sheet erosion" can also be caused by wind action or the movement of thin sheets of water over the ground surface. "Sheet", "gully" and "rill erosion" are all forms of "soil erosion".

"Sheet" and "rill erosion" are the two forms which "surface erosion" may take. "Beach erosion" is always "shoreline erosion"—though, because not all shorelines are beaches, "shoreline erosion" is not always "beach erosion". The term **accelerated erosion** is used in comparing erosion caused by human activities with that occurring at natural rates (i.e., **geologic erosion**). (*C.F.S.*)

Erosion, accelerated

1. **Erosion** that can be attributed directly or indirectly to the activities of man. (*U.S. Forest Serv. 1963*)

2. **Erosion** much more rapid than **normal erosion**, **natural erosion**, or **geologic erosion**, and occurring primarily as a result of the influence of the activities of man or, in some cases, of other animals or natural catastrophes that expose bare surfaces (for example, fires). (*Soil Conserv. Soc. Amer. 1970*)

Erosion, bank

Destruction of land area by active cutting of stream-banks. (*Wash. Dep. Ecol. 1973*)

Erosion, beach

The retreat of the shoreline of large lakes and coastal waters caused by wave action, shore currents or causes other than **subsidence**. (*Wash. Dep. Ecol. 1973*)

Erosion, geologic (Natural erosion)

1. The gradual wearing away of the land surface which occurred prior to the occupancy of a land area by man or the present day wearing away which is not due to the activities of man. (*U.S. Forest Serv. 1963*)

2. The normal or natural erosion caused by geological processes acting over long geologic periods and resulting in the wearing away of mountains, the building up of floodplains, coastal plains, etc. (*Soil Conserv. Soc. Amer. 1970*)

Erosion, gully

1. The removal of soil by the formation of relatively large channels or gullies cut into the soil by concentrated surface runoff. In contrast to rills, gullies are too deep to be obliterated by ordinary tillage practices. (*U.S. Soil Conserv. Serv. 1951*)

2. The widening, deepening and headward cutting of small channels and waterways due to erosion. (*Wash. Dep. Ecol. 1973*)

3. The erosion process whereby water accumulates in narrow **ephemeral stream** channels and, over short periods, removes the soil from this narrow area to considerable depths. (*Soil Conserv. Soc. Amer. 1970*)

Erosion, natural (Geologic erosion)

Wearing away of the earth's surface by natural agents under natural environmental conditions of climate, vegetation, etc., undisturbed by man. (*Soil Conserv. Soc. Amer. 1970*)

Erosion, normal

The gradual erosion of land used by man which does not greatly exceed **natural erosion**. (*Soil Conserv. Soc. Amer. 1970*)

Erosion, raindrop. See Erosion, splash.**Erosion, rill**

1. The removal of soil by the cutting of numerous small, but conspicuous, water channels or tiny rivulets by concentrated surface runoff.

Rill erosion is intermediate between **sheet erosion** and **gully erosion**. (*U.S. Soil Conserv. Serv. 1951*)

2. The process by which numerous small channels, at the most only several inches deep, are formed on recently cultivated or exposed soils. (*After Soil Conserv. Soc. Amer. 1970*)

Erosion, sheet

1. The removal of a fairly uniform layer of soil from the land surface by runoff water or wind. (*Soil Conserv. Soc. Amer. 1970*)

2. The more or less uniform removal of soil from an area without the development of conspicuous water channels. (*U.S. Soil Conserv. Serv. 1951*)

Erosion, soil

The detachment and movement of soil from the land surface by wind or water. (*Soil Conserv. Soc. Amer. 1970*)

Erosion, splash (Raindrop erosion)

The spattering of small soil particles caused by the impact of raindrops on wet soils. The loosened and spattered particles may or may not be subsequently removed by surface runoff. (*Soil Conserv. Soc. Amer. 1970*)

Erosion, surface

Erosion which removes materials from the surface of the land as distinguished from gully or channel erosion.

The two main types of surface erosion are **sheet erosion** and **rill erosion**. (*U.S. Forest Serv. 1963*)

ES. See Environmental impact statement.**Esthetics. A spelling variation of aesthetics. See Aesthetics.****Estuarine area**

U.S. Forest Service usage. The environmental system of an **estuary** and those transitional areas which are consistently influenced or affected by water from an estuary. (*U.S. Forest Serv. 1963, FSM 2605, Sept. 1974*)

Estuarine sanctuary

Coastal Zone Management Act usage. A research area which may include any part or all of an **estuary**, adjoining transitional areas, and adjacent uplands, constituting to the extent feasible a natural unit, set aside to provide scientists and students the opportunity to examine over a period of time the ecological relationships within the area. (*Coastal Zone Manage. Act 1972*)

Estuary

1. U.S. Forest Service usage. All or part of the mouth of a navigable or interstate river or stream or other body of water having unimpaired natural connection with the open sea and within which the sea water is measurably diluted with fresh water derived from land runoff, as defined in Public Law 89-753, and similar lands and waters of the Great Lakes, as directed in Public Law 90-454. (*U.S. Forest Serv. 1963, FSM 2605, Sept 1974*)

2. A water body having an open, natural connection with the sea and within which the sea water is measurably diluted by freshwater runoff. (*C.F.S.*)

3. A body of water in which stream water mixes with and measurably dilutes sea water.

The wide mouth of a river or arm of the sea where the tide meets the river currents, or flows and ebbs. (*Reid 1961*)

4. **Coastal Zone Management Act** usage. That part of a river or stream or other body of water having unimpaired connection with the open sea, where the sea water is measurably diluted with fresh water derived from land drainage. The term includes estuary-type areas of the Great Lakes. (*Coastal Zone Manage. Act 1972*)

Euclidean zoning. See **Zoning, Euclidean.**

Eury- (Euroky-)

A combining prefix denoting ability (of an organism) to tolerate large changes in environmental conditions. For example, eurythermal describes organisms which can tolerate large temperature ranges. (*After Hanson 1962*)

Also see **Steno-**.

Eutrophication

1. The process of overfertilization of a body of water by nutrients that produce more organic matter than the self-purification processes can over-

come. (*Durrenberger 1973*)

2. The term "eutrophic" means well-nourished, and "eutrophication" refers to the natural or artificial addition of nutrients to bodies of water and to the effects of any resulting stimulation of algal growth.

For better understanding a distinction should be made between "eutrophication" in the sense of an increase in nutrient supply as opposed to use in reference to the effects of nutrient enrichment.

When the effects of nutrient enrichment are undesirable, "eutrophication" may be considered to be a form of pollution. (*After Natl. Acad. Sci. 1969*)

Man-caused "eutrophication" is called **cultural eutrophication**.

Evaluation

An examination and judging concerning the worth, quality, significance, amount, degree or condition of something. (*Webster 1963*)

Even-aged management

The actions that will result in a forest, crop, or stand composed of trees having no or relatively small differences in age. (*Ford-Robertson 1971*)

Even-aged stand

A forest **stand** composed of trees having no, or relatively small, differences in age.

By convention the maximum difference admissible is generally 10 to 20 years, though with **rotations** of less than 100 years differences up to 25 percent of the rotation period may be admissible. (*Ford-Robertson 1971*)

EWU. See **Ecological water unit.**

Excepted mineral. See **Mineral, excepted.**

Exception. For the **zoning** terminology usage see **Special exception.**

Exclusive use zoning. See **Zoning, exclusive use.**

Exclusive zoning. See **Zoning, exclusive use.**

Exempt stock

Livestock which are permitted to graze on Federal land free of charge. Usually confined to animals actually used for domestic purposes; saddle horses, milk cows, etc. (*Amer. Soc. Range Manage. 1964*)

Exhaustible resource. See **Nonrenewable resource.****Existence value (Bequest motive)**

The external benefit of natural environments (or any kind of good) that accrues to individuals having no intention of ever visiting the site or using the good in question. These people are willing to give up resources simply to know that the area, feature, or good exists in a particular condition.

The concept of "existence value" has been recognized for some time. John Krutilla (1967) has used the term "bequest motive" to express roughly the same idea. Existence value is preferred because it is less specific in its connotations about motivations; i.e., it does not imply a handing down to later generations.

This type of external benefit is frequently claimed to be associated with wilderness and outstanding natural features. (*Tomhaugh 1971*)

Exotic organism

1. More general than **exotic species** usage. Any organism (plant or animal) that is not native in the area where it occurs. (*Hanson 1962*)

Also see **Naturalized species**, **Feral species**, and contrast with **Resident species**, **Native organism**, and **Endemic organism**.

2. An organism that has been introduced from another continent. (*Soil Conserv. Soc. Amer. 1970*)

Exotic species. See **Exotic organism** and **Species, exotic.****Expectations**

The rules governing social situations, which are specific to particular

societies and even to groups within societies, and which are not consciously thought of, at least until one is not observed.

Expectations are both **normative**, in that they reflect what people believe ought to happen, and statistical, in that they express what people believe probably will happen. (*O'Connell 1974*)

Export base analysis (Economic base analysis)

1. A **multiplier** analysis method for estimating regional economic effects of projects. It is particularly suited to rural areas. The economy is divided into two sectors, "export" and "service". The export sector includes all goods and services produced for consumption outside the region being evaluated. The service sector includes all other economic activity. The export sector is assumed to create the need for the service sector, and a multiplier is calculated for each export industry, relating employment in the service sector to the level of activity in that industry. By determining project effects on the export industries, the total economic effects can be estimated. (*After Convery 1973*)

2. A type of economic base analysis. (*E. C. T.*)

Exposure (Slope orientation, Aspect)

The compass direction that the **slope** of a land surface faces toward (e.g., north, northwest, south). (*After Soil Conserv. Soc. Amer. 1970*)

Extensive recreation. See **Recreation, extensive.****Externalities.** See **Economic externalities.****Extinct or possibly extinct species.** See **Species, extinct or possibly extinct.****Extractive economics**

The economics of industries which remove **natural resources** and supply them to other industries as raw materi-

als. The economic analysis of these industries is more often complicated by depletion of fixed stocks, resource ownership ambiguities, and "common pool" externalities than is true with other types of industries. (*E. C. T.*)

Extraordinary planning

Any type of planning process which, by design, changes existing institutions to obtain alternative desired **futures**. (*H. J. V.*)

Extrinsic resource

1. Philip H. Lewis usage. Recrea-

Farmstead or headquarters

Land used primarily for dwellings, barns, pens, corrals, gardens, and other uses in connection with operating farms or ranches. (*U.S. Soil Conserv. Serv. 1970*)

Fault (Earthquake fault)

A ground surface fracture or fracture zone along which there has been displacement of one side with respect to the other. (*Soil Conserv. Soc. Amer. 1970*)

Fault, active

A linear break in the earth's surface that has undergone movement in recent geologic time (the last 10,000 years) and may be subject to future movement. (*After Soil Conserv. Soc. Amer. 1970*)

Fauna

The animal life of an area, "animal" being used in the broad sense to include birds, fish, reptiles, insects, mollusks, crustaceans, etc., in addition to mammals. (*C.F.S.*)

Feasibility (Use feasibility)

A step in G.A. Hills' system for land evaluation. Evaluation of lands useability under present and forecasted socioeconomic conditions.

tional values created by man-made changes, adaptations, and additions to basic **natural** (i.e., intrinsic) **resources**.

For example the occurrence of mill ponds, historic sites, tourist service facilities, archeological sites, etc. (*Belknap and Furtado 1967*)

2. The term is now used to refer to any resource of human origin—especially in contrast to resources of natural origin (i.e., **intrinsic resources**).

See **Intrinsic resource** for natural recreation resource features.

F

Evaluation based on the present likelihood or under specific management conditions.

The relative advantage of managing or improving a unit considering its **capability** and **suitability** for a specific use under the existing or projected socioeconomic climate. Use feasibility, for example, could be applied on the basis of **accessibility** or population potential. If one unit is closer to a metropolitan center, it would be more accessible and thus would have a higher feasibility rating. (*Belknap and Furtado 1967*)

Feasibility evaluation. See **Feasibility**.

Feature-dominated landscape. See **Landscape, feature-dominated**.

Federal lands

Usage in the defeated 1973 bill for a National **Land Use Policy and Planning Assistance Act**. All Federal land, no matter how it was acquired and no matter what agency has responsibility for its management, except **reservation and other tribal lands**. (*U.S. Congr., Senate, Com. Inter. Insular Aff. 1973*)

Feed

Any non-injurious edible material having nutrient value; may be harvested **forage**, range or artificial pas-

ture forage, grain, or other processed food for livestock or game animals. (*Amer. Soc. Range Manage.* 1964)

Feedback

Negative feedback is a return input which reduces the quantity or quality of outputs, and positive feedback is returned input which increases subsequent outputs. (*After Webster* 1963)

Feedback loop

The pathway by which a portion of the **output** of a system or process returns to become a part of its **inputs**. (*After Webster* 1963)

Fee simple ownership. See **Ownership, fee simple**.

Felling (Cutting)

The cutting down of standing trees. "Felling" is not a synonym for **logging** nor **harvesting**. These latter terms also include removal of felled trees and some initial processing of the timber prior to removal. (*After Ford-Robertson* 1971)

Felling cycle. See **Cutting cycle**.

Felling rotation. See **Rotation**.

Feral species. See **Species, feral**.

Fertility. See **Soil fertility**.

FES. See **Environmental impact statement, final**, and **Environmental impact statement**.

Filter strip. See **Buffer**, definition 2.

Final cutting

The logging operation which removes the last of the old crop trees in a stand being managed under the **shelterwood system** of silviculture. (*After Ford-Robertson* 1971)

See **Shelterwood system** for timing of the cuttings in that silvicultural system.

Final environmental impact statement. See **Environmental impact statement, final**.

Final environmental statement. See **Environmental impact statement, final**, and **Environmental impact statement**.

Fire break

A natural or artificial barrier usually created by the removal of vegetation and used to prevent or retard the spread of fire. (*Amer. Soc. Range Manage.* 1964)

Also see **Fuel break**.

Fire planning

Functional planning for the prevention or detection of **wildfires** or the control of a wildfire. (*E. C. T.*)

Also see **Functional planning**.

Fire, prescribed. See **Prescribed burn**.

Fish

U.S. Forest Service usage. Includes all species of fresh or salt-water fishes, as well as crustaceans, mollusks, and other underwater organisms which are considered part of the fishery resource. (*U.S. Forest Serv., FSM* 2605, Sept. 1974)

Fishery

U.S. Bureau of Land Management usage. Any premises upon which breeding, hatching or fish-rearing facilities are situated when such premises are required to have a license by the state fish and game code, including ponds for commercial use. (*Eisner* 1969)

Flood

1. An overflow or inundation that comes from a river or other body of water and causes or threatens to cause property damage. (*Soil Conserv. Soc. Amer.* 1970)

2. Any relatively high streamflow which overtops the natural or artificial banks in any extended portion of a stream. (*Amer. Geol. Inst.* 1962)

Flood, annual

The highest **peak discharge** for a stream in a **water year**. (*Soil Conserv. Soc. Amer.* 1970)

Flood basin

1. The tract actually covered by water during the highest known floods. (*After Amer. Geol. Inst. 1962*)
2. The flat areas between the sloping low plains of the valley sides and the river banks (and commonly containing heavy soils and either no vegetation or a strictly swampy vegetation). (*After Amer. Geol. Inst. 1962*)

Flood frequency

Over a period of years, the average number of times a flood of a given magnitude is likely to occur. (*Amer. Geol. Inst. 1962*)

Flood peak

The maximum volume of flow attained at a given point during a flood event. (*Amer. Geol. Inst. 1962*)

Flood plain

That portion of a stream valley, adjacent to the channel, which is built of **sediments** during the present regimen (i.e., the state of equilibrium between a stream and its ability to transport sediments) of the stream and which is covered with water when the stream overflows its banks at **flood stages**. (*Amer. Geol. Inst. 1962*)

The nearly level land situated on either side of a channel which is subject to overflow flooding. (*Soil Conserv. Soc. Amer. 1970*)

The extent of a flood plain obviously fluctuates with the size of overbank stream flows. Thus, no simple, absolute flood plain commonly exists. As a consequence, flood plains are delineated in terms of some specified flood size (e.g., the 50-year flood plain—the area that would be flooded by the largest stream flow that will, on the average, occur once within a 50-year period). Such expected flood-return frequencies are estimated from historic records of stream flows. The largest, absolute flood plain that is ever likely to occur is sometimes referred to as the **flood basin**. (*C.F.S.*)

Flood plain zoning. See **Zoning, flood plain**.

Flood stage

The water surface elevation above some chosen reference level at which overflow of the natural banks of a stream begins to cause damage in the area in which the depth of the flow is measured. (*After Soil Conserv. Soc. Amer. 1970*)

Flora

1. The plant life of an area. (*Dur-enberger 1973*)
2. The sum total of the kinds of plants in an area at one time. (*Hanson 1962*)

Flow duration curve (Duration curve)

A graphical representation of the number of times given stream flow volumes are equalled or exceeded during a certain period of record. (*Soil Conserv. Soc. Amer. 1970*)

Flow resource. See **Renewable resource**.

Fluvial

1. Of or pertaining to streams and flowing waters. (*Soil Conserv. Soc. Amer. 1970*)
2. Growing or living in streams. (*Soil Conserv. Soc. Amer. 1970*)
3. Produced by stream action, as a fluvial plain. (*After Soil Conserv. Soc. Amer. 1970*)

Focal landscape. See **Landscape, focal**.

Folkway

A mode of thinking, feeling or acting common to a people or to a **social group**—especially a social habit that has not been rationalized or given ethical force. (*Webster 1963*)

Food chain

1. A series of spatially associated species, each of which lives (at least in part) as a predator, parasite or absorber of the next lower down in the series.

This concept is useful for analyzing

the feeding relations between associated animals. (*Carpenter 1938*)

2. The transfer of food energy from the initial source in plants through a series of organisms by repeated eating and being eaten.

"Food chains" are not isolated sequences but are interconnected with one another. The interlocking pattern is often spoken of as the **food web**. (*Odum 1953*)

Food web (Food cycle, Web of life)

1. The more or less complex feeding relationships between all the species occurring in a **biotic community**, showing where each species obtains its food and what other organisms in turn derive their food from it. (*Carpenter 1938*)

A "food web" typically shows all the **food chains** and interconnections between food chains in a biotic community.

2. The total complex pattern of feeding relations of an independent, self-maintaining, major, biotic community. (*Allee 1949*)

Forage

All **browse** and nonwoody plants that are available to livestock or game animals and used for grazing or harvested for feeding. (*After Soil Conserv. Soc. Amer. 1970*)

Forage acre

Grazing measurement term. Theoretically, an acre with a complete areal cover of **forage**. A concept used to estimate **grazing capacity**. (*Amer. Soc. Range Manage. 1964*)

Forage acre requirement

The amount of forage, expressed in forage acres or fractions thereof, needed to sustain a mature grazing animal for a specified period without injury to the range resource. (*Amer. Soc. Range Manage. 1964*)

Forage, green

Range forage consisting of all avail-

able and **palatable** live plant material and dead tips of growing grasses. (*Amer. Soc. Range Manage. 1964*)

Forage production (Forage yield)

The weight of forage that is produced within a designated period of time on a given area.

The weight may be expressed as either green, air dry or oven dry. The term may also be modified as to time of production such as annual, current year's or seasonal forage production. (*Amer. Soc. Range Manage. 1964*)

Forage, unavailable

That which cannot be grazed by livestock. (*Amer. Soc. Range Manage. 1964*)

Forage yield. See **Forage production**.

Forb

1. Any herbaceous plant other than those in the Gramineae (true grasses), Cyperaceae (sedges) and Juncaceae (rushes) families—i.e., any nongrass-like plant having little or no woody material on it. (*After Amer. Soc. Range Manage. 1964*)

2. A **palatable**, broad-leaved, flowering **herb** whose stem, above ground, does not become woody and persistent. (*Grim and Hill 1974*)

Forecast

A prediction of future conditions and occurrences based on the perceived functioning of the system in question. The accuracy of a forecast is highly dependent on a proper understanding of the system. A "forecast" differs in a strict sense from a **projection**, which is also a prediction of future conditions and occurrences, but is based on an extrapolation of past trends. While the distinction may exist, the dividing line between the two terms is imprecise. (*E. C. T.*)

Also see **Projection**.

Foreground

1. That part of a scene, landscape,

etc., which is nearest to the viewer. (*Webster 1963*)

2. The portions of a view between the observer and up to $\frac{1}{4}$ or $\frac{1}{2}$ mile distant.

The surface patterns on objects and visual elements are important in the "foreground" portions of views. In the foreground portions of a view, observers are able to relate themselves to the size of individual visual elements (such as a tree) and are able to begin to sense their **scale** relationship to the landscape. Aerial perspective is absent or insignificant in the "foreground", and the intensity and lightness or darkness of colors are seen in maximum contrast. Wind motion in trees or on grass can be seen in this close-in area but seldom beyond. (*Litton 1968*)

Also see **Background** and **Middle-ground**.

Forest

1. Generally, an **ecosystem** characterized by a more or less dense and extensive tree cover.

More particularly, a **plant community** predominantly of trees and other woody vegetation, growing more or less closely together. (*Ford-Robertson 1971*)

2. An area managed for the production of timber and other forest produce, or maintained under woody vegetation for such indirect benefits as protection of catchment areas (**watersheds**) or recreation. (*Ford-Robertson 1971*)

3. A common usage reduction of the term "National Forest". The area within the administrative boundaries of a National Forest, irrespective of ground conditions or cover. (*E.C.T.*)

Forest and Rangeland Renewable Resources Planning Act of 1974 (P.L. 93-378); (88 Stat. 476-480) (Humphrey-Rarick Act, Resources Planning Act, RPA)

In recognition of the vital impor-

tance of America's **renewable resources** of the forest, range, and other associated lands to the Nation's social and economic well-being, and of the necessity for a long term perspective in **planning** and undertaking related National renewable resource programs administered by the Forest Service, the Secretary of Agriculture shall prepare a "renewable resource assessment"; shall prepare and transmit to the President a recommended "renewable resource program"; shall develop and maintain on a continuing basis a comprehensive and appropriately detailed inventory of all **National Forest System** lands and renewable resources; and shall develop, maintain, and, as appropriate, revise land and resource management plans for units of the National Forest System, coordinated with the land and resource management planning processes of state and local governments and other Federal agencies. In addition the Secretary of Agriculture may utilize the assessment, resource surveys, and program prepared pursuant to this act to assist states and other organizations in proposing the planning for the protection, use, and management of renewable resources on non-Federal land.

The assessment shall include but not be limited to— (1) an analysis of present and anticipated uses, **demand** for, and **supply** of the renewable resources, with consideration of the international resource situation, and an emphasis of pertinent supply and demand and price relationship trends; (2) an inventory, based on information developed by the Forest Service and other Federal agencies, of present and potential renewable resources, and an evaluation of opportunities for improving their yield of tangible and intangible goods and services, together with estimates of investment cost and direct and indirect returns to the Federal government; (3) a description of

Forest Service programs and responsibilities in research, cooperative programs and management of the National Forest System, their interrelationships, and the relationship of these programs and responsibilities to public and private activities; and (4) a discussion of important policy considerations, laws, regulations, and other factors expected to influence and affect significantly the use, ownership, and management of forest, range, and other associated lands.

The program transmitted to the President may include alternatives, and shall provide in appropriate detail for protection, management, and development of the National Forest System, including forest development roads and trails; for cooperative forest service programs; and for research. The program shall be developed in accordance with principles set forth in the **Multiple-Use Sustained-Yield Act** of June 12, 1960, and the **National Environmental Policy Act** of 1969.

In the development and maintenance of land management plans for use on units of the National Forest System, the Secretary shall use a systematic **interdisciplinary approach** to achieve integrated consideration of physical, biological, economic, and other sciences. (*Forest and Rangeland Renewable Resources Planning Act of 1974*)

Forest coordinating requirements. See **Coordinating requirements.**

Forest cover type. See **Cover type.**

Forest land

1. Land at least 10 percent occupied by forest trees of any size or formerly having had such tree cover and not currently developed for nonforest use. (*U.S. Forest Serv. 1972C*)

2. Lands that are at least 10 percent stocked by trees capable of producing timber or other wood products or that exert an influence on the cli-

mate or water regime. (*Anderson, et al. 1972 and U.S. Dep. Agric. 1967*)

3. Land formerly at least 10 percent stocked by forest trees of any size and not currently developed for other uses. (*U.S. Dep. Agric. 1967*)

Forest land use plan (National Forest land use plan)

U.S. Forest Service usage. A plan which gathers and coordinates the direction to be followed in the overall management of a National Forest. Included in the Forest land use plan are applicable national and regional management direction. **Planning area guides**, and **management zone descriptions** (optional), **Forest coordinating requirements**, **basic assumptions**, the Forest situation statement, planning unit identification and priority for study determination, unit plans and maps, and other necessary graphics Regional Foresters may prescribe additional items to be included. (*U.S. Forest Serv., FSM 8224, Oct., 1973*)

Forest plan. See **Forest land use plan.**

Forest type

A descriptive term used to group **stands** of similar character of development and species composition (due to given ecological factors) by which they may be differentiated from other groups of stands. (*Soc. Amer. For 1950*)

Also see **Cover type** for actual units of "forest types."

Forest use zoning. See **Zoning, forest.**

Forest zoning. See **Zoning, forest.**

Fragile lands

Those land or water areas containing **ecosystems**, possibly but not necessarily rare, that are sensitive to external stimuli which may disturb their balance, especially in an irreversible direction. (*A. W. M.*)

Fragile or historic lands

Usage in the defeated 1973 bill for

a National **Land Use Policy and Planning Assistance Act**.

Areas where uncontrolled or incompatible development could result in irreversible damage to important historic, cultural, scientific, or esthetic values or natural systems which are of more than local significance. These lands include shorelands of rivers, lakes, and streams; rare or valuable ecosystems and geological formations; significant wildlife habitats; and unique scenic or historic areas.

Coastal areas are specifically deleted from this definition. In an amendment to this act relating to the **Coastal Zone Management Act**, the words "coastal wetlands, marshes and other lands inundated by the tides, beaches, dunes and significant estuaries" were deleted from the definition of **fragile or historic lands**. A state is free to add these areas to its state land use program. However, the state need not do so, but rather can keep such areas separate and accountable only to the requirements of the Coastal Zone Management Act. (*U.S. Congr., Senate, Com. Inter., Insular Aff. 1973.*)

This is one of the three types of **areas of critical environmental concern** specifically set forth in this bill. The others are **renewable resource lands** and **natural hazard lands**.

Fragility (Environmental fragility)

1. The quality or state of being:
(A) Easily broken or destroyed (B) Unusually susceptible to ill health or harm (C) Barely able or unable to endure without harm the normal day-to-day physical demands of existence. (*After Webster 1963*)

2. In a land use planning context the relative ability of resources to tolerate sustained use without degradation of the resource base (i.e., lowering productivity or desirable resource quality) is sometimes rated on a qualitative scale extending from "fragile"

to "durable." "Fragility" in this usage applies to those resource types or locations which are more or less susceptible to degradation under the presence of whatever use categories have been considered in the evaluation process.

For example, areas of vegetation-covered sand dunes may be characterized as being "environmentally fragile" for off-road vehicle uses, whereas beaches or unvegetated dunes may be said to be "environmentally durable" for the same uses. (*C.F.S.*)

Framework studies and assessments (Type I plan, Level A plan)

U.S. Water Resources Council usage. One of the "levels of planning" for water and related land resources planning by Federal agencies whose activities involve planning and development of water resources as contained in the **Principles and Standards** of the Water Resources Council.

"Framework studies and assessments" will evaluate or appraise on a broad basis the needs and desires of interested people for the conservation, development, and utilization of water and land resources; will identify regions or basins with complex problems which require more detailed investigations and analyses; and may recommend specific implementation plans and programs in areas not requiring further study. They will consider Federal, state, and local means of implementation.

"Framework studies and assessments" are designed to: (1) determine the extent of water and land resource problems and needs; (2) indicate approaches appropriate for their solutions; and (3) when applicable, identify specific areas where regional, river basin, or implementation studies are needed. (*U.S. Dep. of Agric. 1974*)

Free range

Range open to grazing regardless of

ownership and without payment of fees; not to be confused with **open range**. (*Amer. Soc. Range Manage.* 1964)

Frost heave

The pushing up of a surface by the accumulation of ice in the underlying soil. (*Soil Conserv. Soc. Amer.* 1970)

Fuel break

A wide strip with a low amount of fuel in a brush or wooded area to serve as a line of fire defense and usually covered with grass to provide soil cover. It may contain a **fire break** in the center. (*Amer. Soc. Range Manage.* 1964)

Also see **Fire break**.

Full use

Range management usage. The maximum use that can be made of a range during a **grazing season** without inducing a downward trend in **range condition**. (*Amer. Soc. Range Manage.* 1964)

Functional plan. See **Functional planning**.

Functional planning (Activity planning, System planning)

1. Establishing the specific management actions to be taken in the management of a single resource or activity. Preferably this is undertaken only to detail the implementation of a more general plan involving multiple resources and activities. (*E. C. T.*)

2. Planning which focuses on a particular aspect of the total problem such as production scheduling, or high-ways or forest conservation in civil governmental planning. (*Branch* 1961)

3. Functional plans—documents prepared for separate resources or activities that identify those separate resource or activity management actions that are necessary to implement the coordinated land management di-

rection established in the National **Forest land use plans**. Examples include timber management plans, transportation plans, land ownership adjustment plans. (*U.S. Forest Serv. FSM* 8213, Oct., 1973)

4. Functional plan—a plan for one element or closely related elements of a **comprehensive plan**, e.g., transportation, sewer and water, recreation, open spaces, etc. prepared by units of government.

Such functional plans of necessity should be closely related to the land-use plan. Plans that do not consider all elements of a comprehensive plan may be considered as functional plans. Functional plans are sometimes referred to as comprehensive for the particular element involved, such as a "comprehensive sewer and water plan" or a "comprehensive open space plan." (*U.S. Soil Conserv. Serv.* 1970)

Futures

1. Unlike a **scenario** which is constructed for examining specific causal relationships or to aid in making a specific decision, in planning a "future" is an all-inclusive description of what it is believed the planning region will be like if a possible plan or course of action is followed. (*E. C. T.*)

2. The intent here is not to predict the future, but to try to understand where the existing trends will lead if they continue. Once the trends are understood, it is possible to use them to move in a number of desired directions, as in the analogy to the sail boat and wind. In order to create a vision of the future of a region it is necessary to understand the forces that are working on that present system. To fail to understand these trends is to fail to understand the options that are open to the region. (*After Poirier and Vitt* 1974)

G □

Game. See **Species, game.**

Game species. See **Species, game.**

Game theory

The study of decision problems in competitive situations. Game theory is concerned with the derivation of rules for making decisions when two or more persons or organizations are competing for some objective. (*U.S. Forest Serv., 1972B*)

General assumption. See **Assumption.**

Generalized soil map. See **Soil map, general.**

General plan. For city planning usage see **Comprehensive plan**, definition 1.

General purpose local government

Usage in the defeated 1973 bill for a National **Land Use Policy and Planning Assistance Act**. Any general purpose unit of local government as defined by the bureau of census and any regional, inter-governmental, or other public entity which is deemed by a governor to have authority to conduct land use planning on a general rather than a strictly functional basis. (*U.S. Congr., Senate, Com. Inter. Insular Aff. 1973*)

General soil map. See **Soil map, general.**

General soil survey. See **Soil survey and Soil map, general.**

General systems theory

A set of logical deductions about the behavior of a class of objects called systems. General systems theory has been developed in order to explain and explore the general behavior that is common to all of the various empirical systems found within the different disciplines. It is interdisciplinary in nature and finds a place between the level of complete generalization of mathematics and the level of specific relations within each academic field. (*Williams 1971*)

General welfare

1. The state of well-being (i.e. health, happiness, prosperity, etc.) of all persons in a society. (*After Webster 1963*)

2. The sum of the individual **utilities** in a society. (*After Webster 1963*)

Geographic specific

This term is typically used in land use planning to apply to actions, consequences, or evaluations considered to be valid only for a specified portion of the earth's surface. In other words, one cannot, with validity or without detailed documentation of the similarity between areas, transfer the observations connected with that particular location to others.

"Geographic specific" is used to describe relatively large blocks of land without reference to ownership while **site specific** is used to describe a specific parcel of land. (*C.F.S.*)

Geological area

U.S. Forest Service usage. A unit of land which has been designated by the Forest Service as containing outstanding formations or unique geologic features of the earth's development, including caves and fossils. (*U.S. Forest Serv., FSM 2362.43, July, 1973*)

Areas of this type and all other **Special interest areas** are identified and formally classified primarily because of their recreational values. Areas with similar types of values of scientific importance are formally classified as "Research Natural Areas" (see **Natural Area, Research**). (*W. W.*)

Geologic erosion. See **Erosion, geologic.**

Geologic materials

Any of the naturally occurring mineral or rock substances.

Especially used with reference to classes of such substances whose properties are so significantly different that

a knowledge of their distribution is important in land use planning decisions. (C. F. S.)

Geomorphic processes

The physical and chemical means which cause a modification of the earth's surficial form—e.g., volcanic activity, weathering, **mass-wasting**, **erosion**, sedimentation, glacial action, running water, etc. (Thornbury 1969)

Geomorphic province. See Region, physiographic.

Geomorphology

The science that deals with land and submarine relief features of the earth's surface and seeks a genetic interpretation of them using the principles of physiography (see **physiographic**) in its descriptive aspects and of dynamic and structural geology in its explanatory phases. (Webster 1963)

Goal (Plan goals, Management goal)

1. A concise statement of an organization's central strategy in addressing a problem expressed in terms of a desired state or process that operating **programs** are designed to achieve.

A goal is normally expressed as a broad, general statement, is usually not quantifiable, and is timeless in that it usually has no specific date by which it is to be completed. Often, it would not be expected that a "goal" could ever be completely achieved. The "goal" is the principal statement from which **objectives** must be developed.

For example, U.S. Department of Agriculture goals relating to their **mission** to work on problems associated with agricultural production are (1) to work for disease and pest control and (2) to conduct research on production. (U.S.D.A. *Off. Manage. and Finance* 1974)

2. Characteristically, "goals" are enduring statements of purpose, often not attainable in the short term, and frequently incapable of expression in

quantifiable terms. (U.S. Forest Serv. 1972B)

3. The broad end toward which effort is directed. In the context of land use planning, goals are normally stated in terms of the fulfillment of broad public needs, the preservation of fundamental constitutional principles, the achievement of targeted levels of excellence, the alleviation of major problems, or other justifiable **missions** or purposes to be served by government effort. (U.S. Forest Serv. 1972B)

A goal is societal consensus of that which is good for the constituency at some level of generalization—the particular level being determined by the **planning level** (such as state, metropolitan region, city). (After Hills, Love and Lacate 1970)

Goal programming

A mathematical approach to optimization. A series of goals are established which can be expressed as mathematical equations. However, due to constraints on the original problem, not all the goals can be met simultaneously. It is necessary to allow positive and negative slack within these goals equations. This slack is allocated to "slack variables," which are combined with the goals to form a linear equation to be minimized or maximized and a series of accompanying constraint equations. This system of equations is then solved by standard **linear programming techniques**. (After Goodman 1974)

Graphic scale

A bar, or other such graphic device, on a **scale** drawing, divided into properly scaled-down measurement units—such as 100, 500, 1000, 5000 yards or 0.25, 0.5, 1.0, 5.0 miles. In subsequent photographic reduction or enlargement of a drawing, the "graphic scale" becomes a device from which distances can be readily and accurately measured. (C.F.S.)

G

Grazing

Consumption of range or artificial pasture forage by animals. (*Amer. Soc. Range Manage. 1964*)

For the different types of grazing practices see **Grazing, continuous; Grazing, deferred; Grazing, deferred rotation; Grazing, heavy; Grazing, intermittent; Grazing, light; Grazing, moderate; Grazing, premature; Use, proper; Grazing, rest-rotation; Grazing, rotation; and Grazing, spot.**

Grazing, alternate. See **Grazing, rotation.**

Grazing capacity

The maximum **stocking rate** possible without inducing damage to vegetation or related resources. (*Amer. Soc. Range Manage. 1964*)

Also see **Carrying capacity, range.**

Grazing capacity, maximum

The maximum number of animals that a given range area is capable of supporting without injury to soil, vegetation or watershed. (*Amer. Soc. Range Manage. 1964*)

Grazing, continuous

Allowing domestic livestock to graze a specific area throughout the grazing season.

The term is not necessarily synonymous with grazing for a 12-month period or a calendar year. (*Amer. Soc. Range Manage. 1964*)

Grazing, continuous use. See **Grazing, continuous.**

Grazing, deferred

Discontinuance of grazing by livestock on an area for a specified period of time during the growing season to promote plant reproduction, establishment of new plants, or restoration of vigor by old plants. (*Amer. Soc. Range Manage. 1964*)

Grazing, deferred rotation

Discontinuance of grazing on various parts of a range in succeeding years, allowing each part to rest suc-

cessively during the growing season to permit seed production, establishment of seedlings, or restoration of plant vigor.

Two, but usually three or more separate **grazing units** are required. Control is usually insured by unit fencing, but may be obtained by herding on sheep ranges. (*After Amer. Soc. Range Manage. 1964*)

Grazing district

1. An administrative unit of Federal range established by the Secretary of Interior under the provisions of the Taylor Grazing Act of 1934, as amended. (*Amer. Soc. Range Manage. 1964*)

2. An administrative unit of state, private, or other rangelands, established under certain state laws. (*Amer. Soc. Range Manage. 1964*)

Grazing, heavy

A comparative term (often used in research but may apply to practical management as well) which indicates that the **stocking rate** of a pasture is relatively greater than other pastures. Often erroneously used to mean **overuse**. (*Amer. Soc. Range Manage. 1964*)

Also see **Grazing, moderate** and **Grazing, light.**

Grazing, intermittent

Grazing range or artificial pasture for indefinite periods at indefinite intervals. (*Amer. Soc. Range Manage. 1964*)

Grazing land, native

Grazing land used primarily for production of native **forage** plants maintained or manipulated primarily through grazing management. Native grazing lands include **rangeland**, grazeable woodland, and **native pasture** individually or collectively. (*D.E.H. and B. W.*)

Also see **Rangeland** and **Pasture, native.**

Grazing, light

A comparative term (often used in research but may apply to practical management as well) which indicates that the **stocking rate** of one pasture is relatively less than that of other pastures.

Often erroneously used to mean "underuse" of **grazing capacity**. (*Amer. Soc. Range Manage. 1964*)

Also see **Grazing, heavy** and **grazing, moderate**.

Grazing management plan

A program of action designed to secure the best practicable use of range. (*Amer. Soc. Range Manage. 1964*)

Grazing, moderate

A comparative term (often used in research but may apply to practical management as well) which indicates that the **stocking rate** of a pasture is in between the rates of other pastures.

Often erroneously used to mean **proper use**. (*Amer. Soc. Range Manage. 1964*)

Also see **Grazing, heavy** and **Grazing, light**.

Grazing permit (Grazing license)

Official, written permission to graze a specified number, kind and class of livestock for a specific period on a defined **range allotment**. (*Amer. Soc. Range Manage. 1964*)

Grazing preference (Preference)

1. Selection of certain plants over others by grazing animals. (*Amer. Soc. Range Manage. 1964*)

2. In the administration of public lands, the basis upon which permits and licenses are issued for grazing use. (*Amer. Soc. Range Manage. 1964*)

Also see **Grazing privilege** and **Grazing right**.

Grazing, premature

1. Grazing before **range readiness**. (*Amer. Soc. Range Manage. 1964*)

2. Grazing before range plants have reached sufficient seasonal develop-

ment to avoid over-use or before the soil has become firm enough to withstand or before the plant community is ready to withstand the presence of grazing animals.

The stage of **range readiness** is reached when these conditions are met and range utilization may properly begin. (*Ford-Robertson 1971*)

Grazing pressure

The actual animal-to-forage ratio at a specific time.

For example, three **animal units** per ton of standing forage. (*Amer. Soc. Range Manage. 1964*)

Grazing privilege

Permissive use of lands for grazing by livestock. (*Amer. Soc. Range Manage. 1964*)

Also see **Grazing right** and **Grazing preference**, definition 2.

Grazing, proper. For range management usage see **Use, proper**.

Grazing rate. See **Stocking rate**.

Grazing, rest-rotation

An intensive system of management whereby grazing is deferred on various parts of the range during succeeding years, allowing the deferred part complete rest for one year.

Two or more units are required. Control by fencing is usually necessary on cattle range, but may be obtained by herding on sheep ranges. (*Amer. Soc. Range Manage. 1964*)

Grazing right

A right to graze public lands, permanently vested in the beneficiary as specified by the terms of the law or contract. (*Amer. Soc. Range Manage. 1964*)

Also see **Grazing preference** definition 2 and **Grazing privilege**.

Grazing, rotation

Grazing two or more **pastures** or parts of a **range** in regular order, with definite recovery periods between

grazing periods. Where only two fields are involved, sometimes called alternate grazing.

Contrasts with **continuous grazing**. (*Soil Conserv. Soc. Amer. 1970*)

Also see **Planned grazing system**.

Grazing season

1. A period of grazing to obtain optimum use of the **forage** resource.

2. On public lands—An established period for which **grazing permits** are issued. (*Amer. Soc. Range Manage. 1964*)

Grazing, selective

The grazing of certain plant species on the range to the exclusion of others. (*Amer. Soc. Range Manage. 1964*)

Grazing, spot

Repeated grazing of small areas while adjacent areas are lightly grazed or unused. (*Amer. Soc. Range Manage. 1964*)

Grazing system

The manipulation of livestock grazing to accomplish a desired result. (*Amer. Soc. Range Manage. 1964*)

Grazing trespass

The grazing of livestock on a range area without proper authority. (*Amer. Soc. Range Manage. 1964*)

Grazing unit

An area of rangeland, public or private, which is grazed as an entity. (*Amer. Soc. Range Manage. 1964*)

Great soil group. See **Soil great group**.

Green belt

1. Areas around villages, towns or cities in which development is strictly controlled and usually not permitted at all. A useful device for preventing the endless sprawl of towns or the coagulation of one town with another, providing townspeople with a welcome release from the strain of city life, and protecting the special character of some towns. The main deficiency of

green belt preservation is that it encourages the leap-frogging of development over the green belt to the land beyond it. (*Ashworth 1973*)

2. "Green belts" are a particular type of **open space**.

Green forage. See **Forage, green**.

Gross residential density. See **Residential density**.

Ground-lead logging. See **Logging, ground-lead**.

Groundwater

Water within the earth that supplies wells and springs. Specifically, water in the zone of saturation where all openings in soils and rocks are filled—the upper surface of which forms the water table. (*After Webster 1963*)

Groundwater recharge area. See **Groundwater and Recharge**.

Groundwater table. See **Water table**.

Group. See **Social group**.

Group culture. See **Subculture**.

Group cutting

1. U.S. Forest Service usage. A **clearcutting system** variation in which the logging operation removes all merchantable timber from an area smaller than that normally recognized in timber type and condition class mapping.

Group cuts should not exceed ten acres, nor usually be less than one-fifth acre. (*U.S. Forest Serv., FSM 2471 R-3, date unknown*)

Group cuts normally will not exceed 25 acres in size nor rarely less than 5 acres in size. (*U.S. Forest Serv., FSM2471.21 R-5, Sept. 1971*)

2. U.S. Forest Service usage of group, patch, strip, and stand cutting. These are essentially size designations of the same logging approach—commonly known as clearcutting. All require the removal of all merchantable trees except a few which may

sometimes be carried over where needed for other forest values such as nesting sites, food caches, etc.

"Group cuts" are on areas which are smaller than the size normally recognized in type and condition class mapping. These should not exceed 10 acres, nor usually be less than one-fifth acre.

Patch cuts are on areas which are of a size generally mapped for type and condition and for control, but which do not include the entire stand of which they are a part.

Strip cuts are on areas running through a stand and usually of a width equal to one to two times the general stand height.

Stand cuts are on areas large enough to be practical for management. (*U.S. Forest Serv., FSM 2471.21, June, 1973*)

Guide. See **Planning area guide.**

Guideline

U.S. Forest Service usage. A steering or usual course of action, but not mandatory nor requiring a superior's approval for deviation from it. (*U.S. Forest Serv. 1972B*)

Gully

A channel or miniature valley cut by concentrated runoff but through which water commonly flows only during and immediately after heavy rains or during the melting of snow. The distinction between "gully" and **rill** is one of depth. A gully is sufficiently deep that it would not be obliterated by normal tillage operations, whereas a rill is of lesser depth and would be smoothed by ordinary farm tillage. (*Soil Conserv. Soc. Amer. 1970*)

Gully erosion. See **Erosion gully.**

H □

Habitat

1. The natural environment of a plant or animal. (*Durrenberger 1973*)

2. The natural place of abode of a plant or other organism. The locality where the organism may generally be found, and where all essentials for its development and existence are present. A geographical **niche**. Habitats are described by their geographical boundaries, or with such terms as "shady woodlands", "banks of streams", "dry hillsides", etc. (*Stamp 1961*)

3. From the point of view of plant ecology a "habitat" may be described as the place of abode of a plant, a **plant community** or in some cases even a group or a **succession** or related plant communities, together with all factors operative within the abode, but external to the plants themselves. This is said to correspond more or less closely to **environment**. (*March 1964, citing Yapp 1922*)

4. The type of locality and immediate environment in which an organism grows. (*After Lawrence 1955*)

Also see **Environment**.

Hardpan

A hardened soil layer in the lower A or in the B **horizon** caused by cementation of soil particles with organic matter or with materials such as silica or calcium carbonate.

The hardness does not change appreciably with changes in moisture content, and pieces of the hard layer do not disintegrate in water. (*Soil Conserv. Soc. Amer. 1970*)

Hard pesticides. See **Persistent pesticides.**

Harvesting

A loose term for the removal of produce (i.e., a merchantable material) from the forest for utilization; comprising therefore **cutting**, sometimes further initial processing (e.g., with trees, topping and trimming) and extraction (removal from the forest).

H

When "harvesting" timber, "harvesting" is a rough or quasi-synonym with **logging**. (Ford-Robertson 1971)

In imprecise usage **logging**, **harvesting**, and **silviculture** are used seemingly interchangeably by different people, often with vehemence as to which is the correct term in a given situation. According to Ford-Robertson (1971) "silviculture" has as its primary concern the establishing, growing, and tending of forests. "Harvesting" and "logging", however, deal specifically with the extraction of resources from the forest. "Logging" is restricted to the cutting and extraction of timber (wood other than fuel wood after **primary conversion**) and "harvesting" expands this to include the cutting, initial processing if any, and extraction of any forest product. (After Ford-Robertson 1971)

Hayland

1. U.S. Soil Conservation Service usage. Land used primarily for the production of hay from longterm stands of adapted forage plants. (U.S. Soil Conserv. Serv. 1970)

2. Land permanently used for forage, such as land on which the stand is improved occasionally by preparing a seedbed or applying other measures. (U.S. Dep. Agric. 1967)

3. Land from which grasses and legumes are harvested for hay or seed and which is then pastured or left to grow forage. (U.S. Dep. Agric. 1967)

4. Land in wild hay. (U.S. Dep. Agric. 1967)

5. Land in mountain meadows. (U.S. Dep. Agric. 1967)

Hazard

1. A possible source of peril, danger, duress, or difficulty. (Webster 1963)

2. A condition which tends to create or increase the possibility of loss. (Webster 1963)

Heat island

1. An area with air temperatures measurably greater than that of its surroundings. Urban areas form "heat islands". (Durrenberger 1973)

2. "Heat island effect". An air circulation phenomenon generally found in cities. Warm air tends to concentrate in the city's center, probably because of the mass of tall buildings and concentration of paved surface. This warm air rises, carrying with it its burden of pollution. As the polluted air moves up over the city, spreads out, cools, and sinks at the city's periphery, it forms a distinctive ceiling (composed of suspended pollutants) known as a haze hood or dome. Cooler air from the edge of the city flows into the center to replace the rising air and is followed again by cool air from the city's edge. Thus, a self-contained circulatory system is set up that is altered only by a strong wind capable of breaking up the pollution-formed ceiling. Such a heat island, if it becomes stabilized for a sufficient length of time, can create hazardous concentrations of pollutants. (Sesco, et al. 1973)

Heavy grazing. See **Grazing**, **heavy**.

Heavy metals

Metals having a specific gravity (i.e., weight in comparison to weight of an equal volume of water) of 5.0 or over, and generally toxic in relatively low concentrations to plant and animal life. Such metals can persist in animal tissue and are capable of increasing in concentration as they pass upward through the **food chain**. Major sources of heavy metal contamination are pesticides, limestone and phosphate fertilizers, manures and sewage sludges, and mine wastes. Examples include lead, mercury, cadmium, and arsenic. (Sesco, et al. 1973)

Hedging

Range management usage. A term

used to describe the appearance of **browse** plants that have been browsed so as to appear artificially clipped.

The consistent browsing of terminal buds of browse species causes excessive lateral branching and a reduction in upward growth. (*Amer. Soc. Range Manage. 1964*)

Herb

Any flowering plant except those developing persistent woody stems above ground. (*Amer. Soc. Range Manage. 1964*)

Herbage

Herbs taken collectively, usually used in the same sense as **forage**, except that it may include material not acceptable to grazing or browsing animals. (*Amer. Soc. Range Manage. 1964*)

Herbicide (Weedicide)

A substance used to inhibit or destroy plant growth. If its effectiveness is restricted to a specific plant or type of plant, it is known as a selective herbicide. If its effectiveness covers a broad range of plants, it is considered to be a non-selective herbicide. (*Sesco, et al. 1973*)

Herbivore

An animal that feeds on plant substances. (*Durrenberger 1973*)

Heterogeneous

Differing in kind; having qualities which are significantly not uniform throughout; possessed of different characteristics; opposed to **homogeneous**. (*After Soil Conserv. Soc. Amer. 1970*)

Heterotrophic organism

An organism that is dependent on organic matter for food. (*Geckler, et al. 1963*)

In contrast, an **autotrophic organism** is capable of using inorganic substances as its source of food. (*After Geckler, et al. 1963*)

Hierarchical

1. Of, relating to or constituting a sequentially related series of levels in a classification scheme. (*After Webster 1963*)

2. A type of classification technique whose successively lower (i.e., more specific) level units must fit entirely within the separate units delineated by the next higher (i.e., less specific) level in that system. The boundaries of the more specific level units must occur within or coincide with (and not cross) those boundaries delineated for the units of the next less specific level in the classification system. (*C.F.S.*)

Highwall

The unexcavated face of exposed **overburden** and coal or ore in an **open-pit mine** or the face or bank on the uphill side of a **contour strip mine** excavation. (*Thrush 1968*)

High-lead logging. See **Logging, high-lead.**

Historical area

U.S. Forest Service usage. Sites and areas which have been designated by the Forest Service as containing important evidence and remains of the life and activities of early settlers and others who used or visited the area or the sites where important events took place. Examples are battlegrounds, remnants of mining camps, old cemeteries, important pioneer roads and trails, and early trading sites. (*U.S. Forest Serv., FSM 2361.22, July 1973*)

Areas of this type and all other **special interest areas** are identified and formally classified primarily because of their recreational values. (*W. W.*)

Historic and cultural sites

These sites are associated with the history, tradition or cultural heritage of national, state or local interest and are of enough significance to merit preservation or restoration.

The location of the feature establishes the site. Recreational activities on these sites center around sight-seeing, enjoyment and study of the historic or cultural feature. Management is generally limited to activities that would effect such preservation and restoration as may be necessary to protect the features from deterioration and to interpret their significance to the public. Administration is by all levels of public agencies and private landowners who identify, set aside and manage historic and cultural areas. (Eisner 1969)

Historic preservation

National Historic Preservation Act of 1966 usage. The protection, rehabilitation, restoration, and reconstruction of districts, sites, buildings, structures and objects significant in American history, architecture, archeology or culture. (U.S. Forest Serv., FSM 2361.01, Feb. 1974)

Historic Sites Act (49 Stat. 666)

The Historic Sites Act of 1935 authorizes the programs that are known as the Historic American Buildings Survey, the Historic American Engineering Record, and the National Survey of Historic Sites and Buildings; authorizes the establishment of National Historic Sites and otherwise authorizes the preservation of properties "of national historical or archeological significance"; authorizes the designation of **National Historic Landmarks**; establishes criminal sanctions for violation of regulations pursuant to the act; authorizes interagency, inter-governmental, and interdisciplinary efforts for the preservation of cultural resources; and other provisions.

The program is administered by the U.S. National Park Service. (U.S. Forest Serv., FSM 2361.01, Feb. 1973)

Holding capacity. See **Carrying capacity**.

Holistic

1. Emphasizing the organic or functional relation between parts and whole. (After Webster 1963)

2. In accordance with the theory or doctrine according to which a whole cannot be expressed as the simple sum of its parts. (After Webster 1963)

Homeostasis

One of the most important features of a **biotic community** is that it possesses mechanisms for self-regulation. All communities, except possibly the very simplest types, contain within themselves regulatory mechanisms which enable them constantly to adjust themselves to the changing conditions of their physical environments. This ability for self-regulation is called "homeostasis." (Dice 1952)

Homogeneous

Of the same kind or nature; consisting of similar parts or of elements of a like nature; having qualities which are significantly uniform throughout; opposed to **heterogeneous**. (After Soil Conserv. Soc. Amer. 1970)

Homogeneous response unit (Response unit)

A particular land (or water) unit which is delineated on the assumption that it is sufficiently uniform within its boundaries to respond in a **homogeneous** manner throughout the area to any set of inputs. That is, any treatment, stimulus, or set of conditions will cause the same reaction, response, or set of outputs when applied to each location within the unit. (E. C. T.)

Also see **Ecological land unit**, **Choropleth map** and **Resource capability unit**.

Hot spoils. For mining usage see **Mining debris**, **hot**.

Human and Community Development System

U.S. Forest Service usage. This sys-

tem is concerned with actions that help people and communities to help themselves. The system includes activities that provide (1) youth development through working and learning experiences, (2) adult employment and training opportunities through various Federal manpower programs, (3) community planning and development information and services for rural areas, and (4) technical forestry assistance for urban areas in the establishment, management, and protection of needed open space and the use of trees and woody shrubs.

One of the six "systems" established by the U.S. Forest Service to have a systematic, orderly way to view and evaluate its many diverse but interrelated activities. The Forest Service has developed this approach to better respond to the mandates of the **Forest and Rangeland Renewable Resources Planning Act of 1974**. It has grouped its various **programs** into these six "systems," each of which incorporates all the activities concerned with developing and managing a specific resource. (*U.S. Forest Serv. 1974A*)

The six "systems" are: **Land and Water, Timber Resource, Outdoor Recreation and Wilderness, Rangeland Grazing, Wildlife and Fish Habitat, and "Human and Community Development"**.

Human community

1. The spatial, or territorial, unit in social organization. (*O'Connell 1974*)

2. "Sense of community". The psychological cohesiveness or feeling of belonging that is associated with spatial or territorial units of social organization. (*O'Connell 1974*)

Social activity marked by a feeling of unity but also by individual participation completely willing and not

forced or coerced and without a loss of individuality. (*Webster 1963*)

Human environment. See **Environment, human.**

Humphrey-Rarick Act. See **Forest and Rangeland Renewable Resources Planning Act of 1974.**

Hydraulic mining. See **Mining, placer.**

Hydric. See **Hygric.**

Hydrograph

A graph showing variation in the water depth in a stream or the volume of water flowing past a point in a stream over a period of time. (*After Soil Conserv. Soc. Amer. 1970*)

Hydrologic cycle (Water cycle)

The circuit of water movement from the atmosphere through various stages or processes on the ground (such as precipitation, interception, **runoff, infiltration, percolation,** storage) and then back to the atmosphere again by evaporation, and transpiration. (*Soil Conserv. Soc. Amer. 1970*)

Hydrology

A science dealing with the properties, distribution, and circulation of water, specifically the study of water on the surface of land, in the soil and underlying rocks, and in the atmosphere, particularly with respect to evaporation and precipitation. (*After Webster 1963*)

Hydrosere. See **Succession.**

Hygric (Hydric)

1. Refers to a **habitat** characterized by wet or moist conditions rather than **mesic** (moderate) or **xeric** (dry) conditions. (*Hanson 1962*)

2. The nature of an organism adapted to wet conditions. (*Dansereau 1957*)

Ice cream species

Range management usage. An exceptionally **palatable** species sought and grazed first by livestock and game animals.

Such species are usually overutilized under proper grazing. See **Use, over.** (*Amer. Soc. Range Manage.* 1964)

Igneous rock. See **Rock, igneous.**

Implementation plan

A document for giving practical effect to, or ensuring the actual fulfillment of, some regulatory **standard** or goal by specific measures. (*Sesco, et al.* 1973)

Implementation studies (Level C plan)

U.S. Water Resources Council usage. One of the "levels of planning" for water and related land resources planning by Federal agencies whose activities involve planning and development of water resources as contained in the **Principles and Standards** of the Water Resources Council.

Implementation studies are project feasibility studies undertaken by the Department. These studies may be conducted to implement findings, conclusions, and recommendations of **framework and assessment studies**, regional or river basin studies, other Federal-state investigations or at the request of local government organizations. Implementation studies are directed toward carrying out the project installation authorities of Public Law 83-566, Public Law 78-534, and the "Resource Conservation and Development" Program.

Plan formulation for implementation studies will focus on a recommended plan of action to follow within the next 10-15 years. Long-range projections of water and land resource needs will be considered; however, primary attention will be toward a plan



to meet the near-term needs and alleviate problems. Plans will be directed toward a set of specific components of the two objectives (national economic development, and environmental quality, see **Principles and Standards**) which will be determined for the planning area. The plan formulation process will be responsive to the identified needs and problems that relate to the water and land resources in the area and the planning functions that may be employed to meet the needs. (*U.S. Dep. of Agric.* 1974)

Imponderable value. See **Intangible value.**

Improvement cutting

1. The elimination or suppression of less valuable trees to increase growth rates of more valuable trees, typically in mixed uneven-aged forest. (*Ford-Robertson* 1971)

2. U.S. Forest Service usage. Cutting made in an immature stand to improve the stand composition by removing trees of poor form and/or poor genetic qualities. (*U.S. Forest Serv., FSM 2471 R-3, date unknown*)

Income distribution effects

Effects of proposed activities on the proportion of the total income of an area received by each segment of the population.

As an example, "the rich get richer and the poor get poorer" is talking about income distribution effects. A doubling of everyone's income, so the shares of the total remain the same, has no income distribution effect. (*E. C. T.*)

Incommensurable values

Resource yields for which no method yet exists for conversion to a common measurement scale or unit (such as dollars) for purposes of comparative evaluation of relative importance. For example, comparison of the aesthetic with the timber yields of land is diffi-

cult because it is often impossible to express the former objectively in dollar values. (C.F.S.)

Also see **Intangible value**.

Incompatible uses

Land uses which cannot exist together by reason of either competition for limited resources or use by-products which prevent the alternative use. For example, timber harvesting and wilderness preservation are incompatible uses for one piece of land. (E. C. T.)

Also see **Conflicting uses**, **Compatible uses**, and **Complementary uses**.

Increaser plant species (Increaser)

Range management usage. Plant species of the original vegetation that increase in relative amount, at least for a time, under **overuse**. (Amer. Soc. Range 1964)

Also see **Invader plant species** and **Decreaser plant species**.

Incrementalism (Muddling through, Dis-jointed incrementalism, Incremental planning)

An alternative planning approach to **comprehensive planning** based on the assumption that due to practical difficulties true comprehensive planning cannot exist. As an alternative it is suggested planners concentrate on a **recursive** process of choosing among policies based on incremental changes to existing policies without trying to set overall goals and without basing the policies on theoretical predictions of the consequences of the policies or on an understanding of the system being regulated. Instead the planners would rely heavily on the record of past experience with small policy steps to predict the consequences of similar steps extended into the future. (After Lindblom 1959)

Neither social scientists, nor politicians, nor public administrators yet know enough about the social world

to avoid repeated error in predicting the consequences of policy moves. A wise policy-maker consequently expects that his policies will achieve only part of what he hopes and at the same time will produce unanticipated consequences he would have preferred to avoid. If he proceeds through a succession of incremental changes, he avoids serious lasting mistakes in several ways. In the first place, past sequences of policy steps have given him knowledge about the probable consequences of further similar steps. Second, he need not attempt big jumps toward his goals that would require predictions beyond his or anyone else's knowledge, because he never expects his policy to be a final resolution of a problem. His decision is only one step, one that if successful can quickly be followed by another. Third, he is in effect able to test his previous predictions as he moves on to each further step. Lastly, he often can remedy a past error fairly quickly—more quickly than if policy proceeded through more distinct steps widely spaced in time. (Lindblom 1959)

Because practitioners of this approach expect to achieve their goals only partially, they would expect to repeat endlessly the sequence just described, as conditions and aspirations changed and as accuracy of prediction improved. (Lindblom 1959)

Any significant problem for planners or policy makers involves **trade-offs** among conflicting values, and when dealing with incrementally different alternatives this is always a problem of adjustments at a margin. But there is no practicable way to state marginal objectives or values except in terms of particular policies. The only practicable way to disclose one's relevant marginal values even to oneself is to describe the policy one chooses to achieve them. Consequently no overall goal is developed



and means and ends are simultaneously chosen. (*After Lindblom 1959*)

Ideally, rational-comprehensive analysis leaves out nothing important. But it is impossible to take everything important into consideration unless "important" is so narrowly defined that analysis is in fact quite limited. Limits on human intellectual capacities and on available information set definite limits to man's capacity to be comprehensive. In actual fact, therefore, no one can practice the rational-comprehensive method for really complex problems, and every administrator faced with a sufficiently complex problem must find ways drastically to simplify. In the method of successive limited comparison, simplification is systematically achieved in two principal ways. First, it is achieved through limitation of policy comparisons to those policies that differ in relatively small degree from policies presently in effect. Such a limitation immediately reduces the number of alternatives to be investigated and also drastically simplifies the character of the investigation of each. The second method of simplification of analysis is the practice of ignoring important possible consequences of possible policies, as well as the values attached to the neglected consequences. (*Lindblom 1959*)

Almost every interest has its watchdog. Without claiming that every interest has a sufficiently powerful watchdog, it can be argued that our system often can assure a more comprehensive regard for the values of the whole society than any attempt at intellectual comprehensiveness. (*Lindblom 1959*)

Also contrast with **Comprehensive plan**.

Incremental planning. See **Incrementalism**.

Index (Index number)

1. A ratio or some other number

derived from a series of observations which is used as an **indicator** or measure of conditions, properties, phenomena or trends. (*Webster 1963*)

2. A composite numerical value for some environmental component (such as air or water quality) for which we have more than one **indicator**. (*Thomas 1972*)

3. A number used to indicate change in magnitude (as of cost, price or volume of production) of some complex variable as compared with its magnitude at some specified time—usually taken as having an index number of 100. (*Webster 1963*)

Index, economic

1. A measurable aspect of society which indicates the extent to which certain more complex aspects are present. [Examples: the "consumer price index" or "gross national product."] (*Webster 1963*)

2. A figure which discloses the relative change, if any, of prices, costs, or some similar phenomena between one period of time and some other period of time selected as the "base period." The latter period is usually assigned the index number of 100. There are numerous methods of calculating an index number. (*Sloan 1961*)

Index number. See **Index**.

Index species. See **Indicator species**.

Indicative planning

A method of planning (notably used in France) which primarily restricts itself to analyzing the economy and then making this information available to industry. The modern economy requires the employment of large investments whose profitability may be profoundly affected by changes in the environment. These changes not only occur rapidly, they are difficult to predict. The individual business concern has no valid basis for such calculation. The entire economy

is interdependent beyond the analysis capabilities of a single firm. The guiding principle of "indicative planning" is to integrate all the effects of interdependence by, on a nationwide scale, studying the markets and making detailed analyses and **forecasts**. The instrument used in making these forecasts is the economic **input-output analysis**.

This information is then distributed to the private sector, which is primarily left alone. By providing this complete information it is assumed that industry will adjust its production, use of resources, and investments to satisfy the projected demands, thus avoiding bottlenecks, smoothing business cycles, and increasing harmony and growth. The planning is implemented by "indicating" to all individuals involved the future consequences of their actions, helping individuals to arrive at a common view on the future of a particular economic activity in relation to the national development aims, demonstrating the advantages of conforming to this common view, and only occasionally coercing conformance.

Thus, "indicative planning" is not a planning for land managers, but a planning for managers of societies and economics. (*After Masse 1961*)

Indicator, biologic (Ecologic indicator)

An organism or a class of organisms (such as a species) or an ecologic community that is so strictly associated with particular environmental conditions that its presence is a fairly certain sign or symptom of the existence of these conditions. (*After Webster 1963*)

Indicator organism. See **Indicator species**.

Indicator plant. See **Indicator species**.

Indicator species (Index species, Indicator organism)

1. A particular type of plant or ani-

mal whose presence in a certain location or situation is a fairly certain sign or symptom that particular environmental conditions are also present.

For example, the presence of *Escherichia coli* bacteria in water is used to indicate probable pollution by human fecal matter. (*C.F.S.*)

2. Index species—A plant or animal species so highly adapted to a particular kind of environment that its mere presence is sufficient indication that specific conditions are also present. (*After Webster 1963*)

A living label of the presence of a specific set of conditions. (*After Webster 1963*)

Biologic indicator can be used to refer to signs or symptoms associated with any level of organic organization while **indicator species** only refers to those associated with the species level. (*C. F. S.*)

4. Any organism which by its presence or absence, its frequency or its vigor, indicates a particular property of its surrounding environment. For example, a particular plant might indicate a soil type or the presence or absence of an air or water pollutant. (*Sesco, et al. 1973*)

Indices. See **Index**.

Indifference curve

A graphical delineation of all combinations of two goods or services with which an individual would be equally pleased (indifferent between). (*E. C. T.*)

Also see **Indifference map**.

Indifference map

A two-dimensional graph of a combination of **indifference curves** denoting an individual's preference system to various combinations of two goods or services. Each line of the family of curves represents equally desirable mixtures of the quantities in question. With different curves representing differing levels of satisfaction it is

possible to determine what quantities an individual will consume when faced with different prices and incomes. (After Sloan 1961)

Indigenous, species. See **Species, indigenous.**

Indirect effect (Secondary effect)

A condition caused by an action or inaction through intermediary causal agents. An effect for which the causal linkages to the action or inaction are not readily apparent. Contrasts with **direct effect**. This is not a measure of importance, but merely a classification by causal linkages. Direct effects are usually easier to detect and measure with certainty, but they may be either more or less important than indirect effects. (E.C.T.)

Individual distance (Personal distance)

1. **Environmental psychology** usage. The normal spacing maintained by non-contact animals. (Worthington 1974, citing Heidiger 1961)

2. Individual distance exists only when two or more members of the same species are present, and is greatly affected by population density and territorial behavior. "Individual distance" and **personal space** interact to affect the distribution of persons. The violation of "individual distance" is the violation of society's expectations. (Sommer 1969)

Induced output. See **Output, induced.**

Inexhaustible resource

"Inexhaustible resource" is a term which should be discouraged, for in the final analysis probably no resource is absolutely inexhaustible, and the term may have an undesirable reaction (or lead to misunderstanding) among the lay public. (E.M.G.)

Also see **Renewable resource.**

Infiltration

The movement of water into the soil through pores or other openings, connoting flow into a soil in contradis-

inction to the word **percolation** which connotes flow through a soil. *Soil Conserv. Soc. Amer.* 1970)

Infiltration capacity. See **Infiltration rate.**

Infiltration rate (Infiltration capacity)

The maximum rate at which the soil under various specified conditions (including the presence of an already excess amount of water) can absorb falling rain or melting snow. (After *Soil Conserv. Soc. Amer.* 1970)

Information system

A combination of personnel, efforts, forms, formats, instructions, procedures, data, communication facilities and equipment that provides an organized and interconnected means (automated, manual, or a combination of these) for recording, collecting, processing, transmitting and displaying information in support of specific functions. (U.S. Forest Serv. 1972B)

Also see **Computer information system.**

Infrastructure (Social overhead capital)

1. The foundation underlying a nation's, region's, or community's economy (transportation and communications systems, power facilities, schools, hospitals, etc.). (U.S. Forest Serv. 1972B)

2. The basic equipment, utilities, productive enterprises, installations and services essential for the development, operation, and growth of an organization, a city, or a nation. (Abrams 1971)

Inherent carrying capacity. See **Carrying capacity, ecological** and **Capability.**

Inherent suitability. See **Capability.**

Input-output analysis (Interindustry analysis, Leontief analysis)

1. A systematic technique for quantitatively analyzing the interdependence of producing and consuming units in an economy. It studies the interrelations among producers as

buyers of each other's outputs, as users of scarce resources and as sellers to final consumers. The technique has been useful for the study of the way in which the component parts of an economy fit together and influence each other, for short-run forecasting, and for policy guidance. (*U.S. Gen. Account. Off. 1969*)

2. A quantitative study of the interdependence of a group of activities based on the relationship between inputs and outputs of the activities. The basic tool of analysis is a square input-output table, interaction model, for a given period that shows simultaneously for each activity the value of inputs and outputs, as well as the value of transactions within each activity itself. It has especially been applied to the economy and the industries into which the economy can be divided. (*U.S. Forest Serv. 1972B*)

Inputs

1. A term used broadly to refer to anything that is taken in by or enters into the workings of a process or a **system**—e.g., as nutrients or energy into an **ecosystem**, effort or information into a planning process, **silt** into a stream, etc. (*After Webster 1963*)

2. The basic resources of land, labor, and capital required in carrying out an activity. (*U.S. Forest Serv. 1974A*)

Institutional land uses

All buildings, grounds and parking lots composing the facilities for educational, religious, health, correctional and military installations. (*Anderson, et al. 1972*)

Institutions

A significant and persistent element (as a practice or relationship) in the life of a culture that centers on a fundamental human need, activity or value, occupies an enduring and cardinal position within a society and is usually maintained and stabilized through so-

cial regulatory agencies (e.g., the special legal status of the social institutions of marriage and the family unit). (*Webster 1963*)

Also see **Institutions, social and Institutions, legal**.

Institutions, legal

A society's system of legal rules and principles. (*Webster 1963*)

The components of "legal institutions" that are usually of interest in land use planning include landownership patterns, administrative jurisdictions, land use patterns and the legal framework affecting planning decisions. (*W. W.*)

Institutions, social

1. A set of informal and formal rules, behaviors, and practices that deal with a specific basic function in society.

The five basic social institutions are: the economy, the political system, the educational system, the religious system, and the family. Each of these social institutions is seen as carrying out a basic function in society—the educational system is responsible for passing on knowledge to new members of the society, and for creating new knowledge in the society; the political system distributes power and maintains order; the economic system produces and distributes goods and services; the family establishes responsibility for the caring of the young, and, with the educational system, transmits knowledge to "new" members of society; and the religious system is concerned with basic questions of the meaning of life and with other social values.

Sociologists use the institutional approach as a kind of checklist in studying a society, as it is assumed that all societies (nations, regions, communities) find some way to carry out these basic functions. (*Gale 1975*)

2. A relatively prevalent way of

thought or action that centers around such basic social functions as marriage, government, or education.

Social institutions are common to all societies and are part of the customs of a people. **Culture** may be viewed as a synthesis of institutions, each functioning to establish **social norms** and give direction to human behavior. Thus institutions provide the forms for the activities of human beings. (*O'Connell 1974*)

Intangible value (Imponderable value)

Those resource yields which are not directly quantifiable, or if quantifiable, cannot be valued by market mechanisms. The net yields from resource use in this sense extends beyond the concept of secondary benefits, and includes psychic and indirect monetary benefits to the users. Normally intangible values accrue from the aesthetic, scientific, educational, historical or recreational aspects of the natural environment. (*After Coomber and Biswas 1973*)

Also see **Incommensurable values**.

Intensive recreation. See **Recreation, intensive**.

Interaction matrix (Matrix)

A table with actions, conditions, resources, effects, etc., listed along two perpendicular axes and a matrix structure so created where each position in the matrix corresponds to one element from each axis. By either marking or assigning values to the positions in the matrix structure interactions between pairs of elements (one from each axis) can be indicated. A matrix structure can be thought of as a rectangular cross-hatching, where each square in the cross-hatching belongs to one row and one column and corresponds to a position in the matrix structure or an element in the matrix. (*E. C. T.*)

Interdisciplinary approach

The utilization of a team of individ-

uals representing two or more areas of knowledge, learning, or skill focusing on the same subject.

This approach provides for integrating two or more mental processes into a common, problem-solving effort that is likely to be more effective than the independent thought processes of a single person trained or skilled in one area of knowledge. (*U.S. Forest Serv., FSM 8211, Oct., 1973*)

Interdisciplinary team

A group of individuals with different training assembled to solve a problem or perform a task. The team is assembled out of recognition that no one scientific discipline is sufficiently broad to adequately solve the problem. The members of the team proceed to solution with frequent interaction so that each discipline may provide insights to any stage of the problem and disciplines may combine to provide new solutions. This is different from a **multidisciplinary team** where each specialist is assigned a portion of the problem and their partial solutions are linked together at the end to provide the final solution. (*E. C. T.*)

Interest group. See **Special interest group** and **Pressure group**.

Interflow

That portion of rainfall that infiltrates into the soil and moves laterally through the upper soil horizons until intercepted by a stream channel or until it returns to the surface at some point of **infiltration**. (*Soil Conserv. Soc. Amer. 1970*)

Intermediate cutting (Stand tending)

Any removal of trees from a stand between the time of its formation and the harvest cutting. Generally taken to include **cleaning**, **thinning**, liberation and **improvement cuttings**, increment fellings, and sometimes even **salvage** and **sanitation cuttings**. (*Ford-Robertson 1971*)

Intermittent grazing

Grazing range or artificial pasture for indefinite periods at indefinite intervals. (*Amer. Soc. Range Manage. 1964*)

Intermittent stream

1. A stream or portion of a stream that flows only in direct response to precipitation. It receives little or no water from springs and no long-continued supply from melting snow or other sources. It is dry for a large part of the year, ordinarily more than 3 months. (*Soil Conserv. Soc. Amer. 1970*)

2. Streams which, in general, flow during wet seasons and are dry during dry seasons. The **groundwater** table lies above the bed of the stream during the wet season but drops below the bed during dry seasons. Hence the flow is derived principally from surface runoff, but during wet seasons receives a contribution from ground water. In many arid areas the stream channels are always above the water table and therefore carry only surface runoff. Flow may also be interrupted by freezing of the ground-water to some depth below the stream bed in smaller streams. (*Wisler and Brater 1959*)

Also see **Ephemeral stream** and **Perennial stream**.

Interspecific competition. See **Competition**, definition 2.

Intraspecific competition. See **Competition**, definition 2.

Intrazonal soil. See **Soil horizon**, definition 2.

Intrinsic capability. See **Capability**.

Intrinsic resource

1. Philip H. Lewis' usage. The features of the natural environment which are recreation resources.

For example, the occurrence of significant topographic **relief**, rivers, lakes, wetlands, waterfalls, caves, etc.

(*Belknap and Furtado 1967*)

2. The term is now used to refer to any resource of natural origin—especially in contrast to resources of human origin (i.e., **extrinsic resources**).

See **Extrinsic resource** for man-made recreation resource features.

Intrinsic suitability. See **Suitability**, **intrinsic** and **Capability**.

Introduced species. See **Species**, **exotic**.

Invader. For range management usage see **Invader plant species**.

Invader plant species (Invader, weed species)

Range management usage. Plant species that were absent in undisturbed portions of the original vegetation and will invade under disturbance or continued **overuse**. (*Amer. Soc. Range Manage. 1964*)

Also see **Increaseer plant species** and **Decreaser plant species**.

Inventory

1. The gathering of data for future use. (*U.S. Forest Serv. 1972B*)

2. The quantity or count of physical entities (such as trees, lakes, etc.) in an area. There are two basic types of inventories in land use planning.

A. Existing—measurement of what is actually "on-the-ground" (in terms of number), and

B. Potential—total identified undeveloped capability. (*U.S. Forest Serv. 1972B*)

Inverse condemnation. See **Condemnation**, **reverse**.

Irreplaceable asset. See **Unique resource**.

Irreversible effect

One of the categories of impacts specifically mentioned in section 102 of the **National Environmental Policy Act** (NEPA) for inclusion in the statement of environmental impacts required for Federal actions. Although not defined in NEPA it has been the subject of judicial review.

An irreversible effect is any effect of an action or inaction which (due to physical, biological, or socioeconomic constraints) cannot be reversed (by returning the object of the effect to its previous condition) within a reasonable length of time.

While a swamp which is channelled and drained after evolving for centuries may be returned to its pre-drained condition over many decades of being undisturbed, the time span involved is such that a reasonable man would consider the effect irreversible. Similarly, it may be physically possible to raze a city and plant a forest again, but a reasonable man would recognize that socioeconomic constraints would prevent this from happening. (*E.C.T.*)

Isochrons

1. Travel-time zones. (*U.S. Forest Serv. 1971*)
2. A concentric set of lines each of which joins distances with equal travel times from some central reference point of concern. (*C.F.S.*)

Isohyetal line

A line drawn on a map joining points that receive the same amount of precipitation. (*Amer. Geol. Inst. 1962*)

Isolated land. See **Alienated land.**

Jackson turbidity unit. See **Turbidity.**

JTU. Jackson turbidity unit. See **Turbidity.**

Just compensation

As regards property taken for public use, the term is comprehensive and includes all elements; but does not exceed **market value**. It is the value of

Issue

1. A controversial subject or topic.

A point of debate or controversy. (*Webster 1963*)

2. A point in question of law or fact.

A single material point of law or fact. (*Webster 1963*)

3. Something entailing alternatives between which to choose or decide. (*Webster 1963*)

4. A matter that is in dispute between two or more parties or that is disputed by the parties. (*Webster 1963*)

5. A well defined, discrete subject of controversy—such as whether the Supersonic Transport (SST) development program should or should not proceed because of the possibility that their exhaust gases might significantly reduce the ozone concentration in the stratosphere, or whether phosphates in detergents should be banned because of their alleged controlling role in the **eutrophication** of many water bodies.

When the point of controversy can only be vaguely defined or when the causality relationships between use actions and undesirable results are more speculative than documentable the dispute is referred to as a **concern** rather than an **issue**. (*C.F.S.*)

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property taken at the time of taking, plus compensation for delay in payment, if appropriate, and plus damages to the owner for value of use of property from date of taking possession to date of judgment if possession is taken by condemnation prior to judgment. (*U.S. Bur. Outdoor Recreation 1974*)

Also see **Eminent domain, Police power, Taking.**

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Key area. For range management usage see **Key grazing area**.

Key facility

Usage in the defeated 1973 bill for a National **Land Use Policy and Planning Assistance Act**.

Public facilities, as determined by the state, on non-Federal lands which tend to induce development and urbanization of more than local impact, including but not limited to: (1) any major airport designed to serve as a terminal for regularly scheduled air passenger service or one of state concern; (2) major interchanges between the interstate highway system and frontage access streets or highways; major interchanges between other limited access highways and frontage access streets or highways; (3) major frontage access streets and highways, both of state concern; (4) major recreational lands and facilities; (5) major facilities on non-Federal lands for the development, generation, and transmission of energy (including such facilities as major powerplants, transmission lines, oil and gas pipelines, refineries, tank farms, etc. However, not included in this definition are any facilities for the extraction of fuels, such as

those associated with oil and gas drilling, strip or shaft mining, etc.). (*U.S. Congr., Senate, Com. Inter. Insular Aff. 1973*)

Key grazing area

That portion of a pasture or **grazing unit** which, because of its nature, location, and grazing use, serves to control the pattern of grazing use for the pasture as a whole. (*Soil Conserv. Soc. Amer. 1970*)

Key management species

Major **forage** species on which management should be based. (*Soil Conserv. Soc. Amer. 1970*)

Key site

Range management usage. Synonymous with **key area** except the area is restricted to a specific **range site**. (*Amer. Soc. Range Manage. 1964*)

Keystone species. See **Species, keystone**.

Key utilization species

Range management usage. Forage species whose use serves as an indicator to the degree of use of associated plant species. (*Amer. Soc. Range Manage. 1964*)

Key winter range. See **Range, key winter**.

Land

1. A term denoting the entire complex of surface and near-surface attributes of the solid portions of the surface of the earth which are significant to man. Water bodies occurring within land masses are included with land in some land classification systems. (*After Mabbutt 1968*)

2. U.S. Forest Service usage. For planning purposes land is defined as a specific area of the earth's surface. Its characteristics embrace all reasonably

stable, or predictably cyclic, attributes of the **biosphere** directly above and below this area including those of the atmosphere, the **soil** and underlying geology, the **topography**, the **hydrology**, the plant and animal populations, and the results of past and present human activity, to the extent that these attributes exert a significant influence on present and future uses of the land by man.

As defined, the term "land" embraces all but the purely socioeconomic

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is (human) attributes of the environment. It is assumed that all approaches to interpretative **land classification** would, to a varying extent, take additional socioeconomic factors into account but these are not considered to be attributes of the "land" itself.

"Land" is a broader concept than soil. Thus, in developing interpretative land classification from **soil survey** data, additional aspects of the natural environment, notably macrotopography, vegetation, surface and groundwater hydrology, and **climate** as well as certain stable manmade features need investigation and integral interpretation. (*U.S. Forest Serv., FSM 8210, Oct. 1973*)

3. Economic theory usage. One of the major factors of production consisting of a good which is supplied by nature without the aid of man. The term may include not only the earth's surface, both solid land and water, but also anything that is attached to the earth's surface. Thus, all **natural resources** in their original state, such as mineral deposits, **wildlife**, timber, and fish are land within the technical meaning of the term; so are sources of energy, outside of man himself, such as water, coal deposits, and the natural **fertility** of the soil. (*Sloan 1961*)

4. In the most general sense, any ground, soil, or earth whatsoever. "Land" may include not only the soil or earth, but also things of a permanent nature affixed thereto or found therein, whether by nature, as water, trees, grass, herbage, and other natural or perennial products, growing crops or trees, minerals under the surface; as well as works constructed for use of water such as dikes, canals, etc. (*U.S. Bur. Outdoor Recreation 1974*)

5. The total natural and cultural environment within which production takes place; a broader term than "soil". In addition to soil, its attributes include other physical condi-

tions, such as mineral deposits, climate, and water supply; location in relation to centers of commerce, populations, and other land; the size of the individual tracts or holdings; and existing plant cover, works of improvement, and the like.

Some use the term loosely in other senses: as defined above but without the economic or cultural criteria especially in the expression "natural land"; as a synonym for "**soil**"; for the solid surface of the earth; and also for earthy surface formations, especially in the geomorphological expression **landform**. (*Soil Conserv. Soc. Amer. 1970*)

Land, alienated

Lands of one ownership enclosed within boundaries of another ownership. Often refers to land in private ownership within the boundaries of public land. (*Amer. Soc. Range Manage. 1964*)

Land and Water Conservation Fund Act (78 Stat. 897, as amended; 16 U.S.C. 4601-4 to 4601-11, 23 U.S.C. 120 (Note))

Provides funds for and authorizes Federal assistance to the states in planning, acquisition, and development of needed land and water areas and facilities and provides funds for the Federal acquisition and development of outdoor recreation resources. (*After U.S. Forest Serv. 1974*)

Land and Water System

U.S. Forest Service usage. One of the six "systems" established by the U.S. Forest Service to have a systematic, orderly way to view and evaluate its many diverse but interrelated activities. The Forest Service has developed this approach to better respond to the mandates of the **Forest and Rangeland Renewable Resources Planning Act** of 1974. It has grouped its various **programs** into these six "systems", each of which incorporates all the activities

concerned with developing and managing a specific resource. (*After U.S. Forest Serv. 1974A*)

The role of this system is to protect, conserve, and enhance the basic resources of air, soil, and water on forest and range land. It provides the base on which the other resources grow. Activities on National Forest land include land-use planning, administration of special land uses, easements, and land adjustments, and management of mineral areas in addition to the protection, conservation, and enhancement role. (*U.S. Forest Serv. 1974A*)

The six "systems" are: "Land and Water", **Timber Resource**, **Outdoor Recreation and Wilderness**, **Rangeland Grazing**, **Wildlife and Fish Habitat**, and **Human Community Development**.

Land capability

U.S. Soil Conservation Service usage. The inherent ability of land to be used without permanent damage. Land capability, as ordinarily used in the United States, is an expression of the effect of physical land conditions, including climate, on the total ability to be used without damage for crops that require regular tillage, for grazing, for woodland, and for wildlife.

Land capability involves consideration of (1) the risks of land damage from **erosion** and other causes and (2) the difficulties in land use owing to physical land characteristics, including climate. (*After Soil Conserv. Soc. Amer. 1970*)

Also see **Capability** and **Suitability** for comments on the preferred usage of those terms.

Land capability class

U.S. Soil Conservation Service usage. One of the eight classes of land in the **land capability classification** system of the Soil Conservation Service.

The eight land capability classes in this system are distinguished according

to the risk of land damage or the difficulty of land use. The first four classes distinguish land inherently able to be used for cultivation and other uses. (I). Soils in class I have few limitations that restrict their use. (II). Soils in class II have some limitations that reduce the choice of plants or require moderate conservation practices. (III). Soils in class III have severe limitations that reduce the choice of plants or require special conservation practices, or both. (IV). Soils in class IV have very severe limitations that restrict the choice of plants, require very careful management, or both. The second four classes distinguish land generally inherently unable to be used for cultivation (without major treatment). (V). Soils in Class V have little or no erosion hazard but have other limitations, impractical to remove, that limit their use largely to **pasture**, **range**, woodland, or wildlife food and **cover**. (VI). Soils in class VI have severe limitations that make them generally not able to be used for cultivation and limit their use largely to pasture or range, woodland, or wildlife food and cover. (VII). Soils in class VII have very severe limitations that make them not able to be used for cultivation and that restrict their use largely to grazing, woodland, or **wildlife**. (VIII). Soils and landforms in class VIII have limitations that preclude their use for commercial plant production and restrict their use to recreation, wildlife, water supply, or aesthetic purposes. (*Soil Conserv. Soc. Amer. 1970*)

Land capability classification

U.S. Soil Conservation Service usage. A grouping of kinds of soil into special units, subclasses, and classes according to their **capability** for intensive use and the treatments required for sustained use. (*Soil Conserv. Soc. Amer. 1970*)

Land capability map

U.S. Soil Conservation Service usage. A map showing land **capability units**, **land capability subclasses**, and classes or a soil survey map colored to show **land capability classes**. (*Soil Conserv. Soc. Amer. 1970*)

Also see **Soil map**.

Land capability subclass

U.S. Soil Conservation Service usage. Groups of **land capability units** within classes of the **land capability classification** system that have the same kinds of dominant limitations for agricultural use as a result of soil and climate.

For example, some soils are subject to erosion if they are not protected, while others are naturally wet and must be drained if crops are to be grown. Some soils are shallow or droughty or have other soil deficiencies. Still other soils occur in areas where climate limits their use.

The four kinds of limitations recognized at the subclass level are: risks of erosion; wetness, drainage, or overflow; other root zone limitations; and climatic limitations.

The subclass provides the map user information about both the degree and kind of limitation. (*Soil Conserv. Soc. Amer. 1970*)

Land capability unit

1. U.S. Soil Conservation Service usage. A group of soils that are nearly alike in inherent ability to be used for plant growth and in their responses to the same kinds of soil management.

Capability units provide more specific and detailed information for application to specific fields on a farm or ranch than the "subclass" of the **land capability classification**. (*Soil Conserv. Soc. Amer. 1970*)

Land capability zoning. See **Zoning, land capability**.

Land classification

1. Land classification is the process

whereby the complex of surface and near-surface attributes of the solid portions of the earth's surface are identified and organized into some system of mappable units according to some set of criteria or principles for relatedness.

"Land classification" creates a framework of generalization about the complexity of "land" properties which enables common characters to be defined and described, and units with similar properties to be regarded as equals although geographically separate.

Classification is a prerequisite if there is to be any transfer of knowledge about the relationships between land properties and land use **suitability** and **capability** from one unit to others—i.e., if there is to be any element of expectation in land use planning. (*After Mabbutt 1967*)

2. The arrangement of land units into various categories based on the properties of the land or its inherent capability for some particular purpose. (*Soil Conserv. Soc. Amer. 1970*)

Land district

Canada Biophysical Land Classification System Usage. A relatively homogeneous unit of land characterized by a distinctive pattern of **relief**, **geology**, **geomorphology** and regional vegetation. (*Bajzak 1973*)

This is the second largest of the four classification levels of that system. The largest unit is the **land region** and the two smaller units in order of decreasing size are **land system** and **land type**.

Land evaluation (Terrain evaluation)

The assessment of the inherent **capability** and managed **suitability** of land for man's use in agriculture, forestry, engineering, hydrology, regional planning, recreation, etc. (*After Stewart 1967*)

Land feasibility. See **Feasibility**.

Land form

The form of the surface of the land.

The three-dimensional shape of the surface of the ground.

"Land form" may have a different meaning than **landform** when used in geomorphological contexts. "Land-form" is always used for surface features whose origin can be attributed to particular geological processes or particular structures. (*After Savigear 1965*)

Landform

1. Term used to describe the many types of land surfaces which exist as a result of geological activity, such as a plateau, plain, basin, mountain, etc. (*U.S. Forest Serv. 1972B*)

2. A feature of the earth's surface with distinctive form characters which can be attributed to the dominance of particular processes or particular structures in the course of its development and to which the feature can be clearly related. (*Savigear 1965*)

3. **Land form** may have a different meaning than "landform" when used in geomorphological contexts. "Land form" is sometimes used when referring only to the three dimensional shape of the ground surface—without any reference to the processes responsible for that shape. (*Savigear 1965*)

Land management

The intentional process of planning, organizing, **programming**, coordinating, directing, and controlling land use actions. (*After U.S. Forest Serv. 1971*)

Land, marginal

Land of questionable economic abilities to be used for a specific purpose. (*Amer. Soc. Range Manage. 1964*)

Land region

Canada Biophysical Land Classification System Usage. An area of land with a certain type of vegetation

which manifests a distinctive climate. (*Bajzak 1973*)

This is the largest unit of the four classes of that system. The other three classes in order of decreasing size are **land district**, **land system** and **land type**.

Land resource area

1. U.S. Forest Service usage. Broad geographic areas having similar soil, climatic, geologic, vegetative and topographic features. (*U.S. Forest Serv. 1972B*)

2. An area of land reasonably alike in its relationship to agriculture with emphasis on combinations and/or intensities of problems in soil and water conservation.

It is ordinarily larger than a **land resource unit** and smaller than a **land resource region**. (*Soil Conserv. Soc. Amer. 1970*)

Also see **Conservation**, definition 1.

Land resource region

A generalized grouping of **land resource areas** reflecting regional relationships to agriculture with emphasis on soil and water conservation. (*Soil Conserv. Soc. Amer. 1970*)

Also see **Conservation** definition 1.

Land resource unit

A subdivision of a **land resource area** with emphasis on a specialized type of agriculture, intensities, or problems in soil and water conservation.

It has a narrower range in relationship to agriculture (than a **land resource area**) with emphasis on soil and water conservation. (*Soil Conserv. Soc. Amer. 1970*)

Also see **Conservation** definition 1.

Land sales or development project. For usage of this term in the defeated 1973 bill for a National **Land Use Policy and Planning Assistance Act** see **Project**.

Landscape

1. An areal entity which is a composite of all of the characteristics that distinguish a certain area on the earth's surface from other areas. (*Holland 1970*)
2. An expanse of natural scenery seen by the eye in one view. (*Webster 1963*)
3. An area made up of a distinct association of forms, both physical and cultural. (*Stamp 1961, citing Sauer 1925*)
4. The sum total of the characteristics that distinguish a certain area on the earth's surface from other areas. These characteristics are a result not only of natural forces but of human occupancy and use of the land. (*U.S. Forest Serv. 1963*)

Landscape, canopied

The type of visual landscape to be found under an extensive, continuous **crown** cover of trees—as within a forest. The overhead foliage and branches define the ceiling plane and the perspective closure of tree stems or screens of understory shrubs and young trees or land forms define the side enclosures. (*After Litton 1968*)

This is one of the six general types in Litton's scenic composition classification system. The others are **panoramic landscape, feature dominated landscape, enclosing landscape, focal landscape, and detailed landscape**.

Landscape, cultural

1. The aspect of the face of the earth which results from the presence of man—the natural landscape modified by man. (*Stamp 1961*)
2. The material features, in compact areal association, which are the result of the transformation of a natural landscape through human occupancy. (*Stamp 1961*)

Landscape, detailed

The close view of objects or features, particularly surface character-

istics, color or touchable nature. There is little or no sense of space and attention is restricted to the intimate details of features. (*Litton 1966*)

This is one of the six general types in Litton's scenic composition classification system. The others are **panoramic landscape, focal landscape, feature-dominated landscape, enclosing landscape and canopied landscape**.

Landscape, enclosing

An outdoor space (rather than strictly a view type) with definite visual sidewalls or **edge** lines (formed by **terrain**, tree, lake or meadow surfaces) which enclose or define the field of vision.

A small scale landscape in which the viewer has a sense of presence by being within the **foreground** which is most apt to form the floor of the space.

"Enclosing landscapes" are always seen from a viewing position below the tops of the surrounding sidewalls. (*Litton 1966*)

This is one of the six general types in Litton's scenic composition classification system. The others are **panoramic landscape, focal landscape, feature-dominated landscape, detailed landscape and canopied landscape**.

Landscape, feature-dominated

A view in which a single feature (or landmark), either natural or man-made, dominates the landscape because of sharp contrast with the general surroundings.

Often, but not necessarily, a landscape dominated by the **middle-ground** plane in the field of vision.

Feature-dominated landscapes may be recognized from any viewing position—i.e., above, level with or below the feature or its surrounding landscape. (*Litton 1966*)

This is one of the six general types in Litton's scenic composition classification system. The others are **pan-**

oramic landscape, focal landscape, enclosing landscape, detailed landscape, and canopied landscape.

Landscape, focal

A view characterized by convergent lines which lead the eye to the principal point of their apparent origin.

Parallel lines in **perspective** will appear to have a focal point origin at the horizon. The eye's attention will be concentrated upon and follow these dominant lines toward the horizon or their focal point.

"Focal landscapes" are always seen from a viewing position level with or above the horizon line. (*Litton 1966*)

This is one of the six general types in Litton's scenic composition classification system. The others are **panoramic landscape, feature-dominated landscape, enclosing landscape, detailed landscape** and **canopied landscape**.

Landscape, panoramic

A landscape viewing situation characterized by an unobstructed or complete view of the area in all directions or a continuous series of scenes extending to the distant horizon.

The visual feeling is one of expanding or unbounded space, receding directly ahead toward the limits of distance on visibility and also extending laterally to the limits of peripheral vision. Although indicating the availability of a view in every direction, inherent physiological limitations on the extent of what an observer can see without turning the head suggests that a possible view of 180 degrees is a more likely condition for defining a "panoramic landscape".

The term should be reserved for use where distant or **background** scenes are under observation, not horizontal scene compositions in the **middle-ground** or **foreground**. (*After Litton 1966*)

This is one of the six general types

in Litton's scenic composition classification system. The others are **feature-dominated landscape, enclosing landscape, focal landscape, canopied landscape** and **detailed landscape**.

Landscape planning

A portion of the land use planning process which deals with physical (i.e., biological, geological and hydrologic) values, aesthetic and cultural (i.e., historical and anthropological) values and with the relationships between these values and land uses. (*Fabos, et al. 1973*)

Landscape unit

G.A. Hills' land evaluation usage. A regrouping of patterns of **physiographic site types** and **physiographic site phases** into larger (16 sq. mi. minimum) units to facilitate the making of broad scale planning decisions. (*After Belknap and Furtado 1967*)

Land sensitivity. See **Sensitivity, land**.

Landslide (landslip)

1. Downslope movement of a relatively dry or coherent mass of earth and/or rock at a rate fast enough to be readily perceived. (*After Amer. Geol. Inst. 1962*)

Readily perceptible downslope movement of a wet, incoherent mass of earth is termed a mudslide. (*C.F.S.*)

2. The failure of a slope in which the movement of the soil mass takes place along an interior surface of sliding. (*Soil Conserv. Soc. Amer. 1970*)

Landslide hazard

Some evaluation (almost always qualitative and relative to adjacent locations) of the chance that a **landslide** will occur on a given site. (*C.F.S.*)

Landslip. See **Landslide**.

Land stratification. See **Stratification**.

Land subdivision. See **Subdivision**.

Land, submarginal

1. Land that does not return

enough to pay costs of operation in a specific use. (*Soil Conserv. Soc. Amer. 1970*)

2. Land which is economically incapable of sustaining indefinitely a certain use or ownership status. (*Amer. Soc. Range Manage. 1964*)

Land suitability. See **Suitability.**

Land system

1. Canada Biophysical Land Classification System usage. An area of land with a recurring pattern of **land form** having homogeneous soil characteristics and supporting a particular type of vegetation. (*Bajzak 1973*)

The second smallest of the four classification levels of that system. The other three classes in order of decreasing size are **land region**, **land district** and **land type**.

2. U.S. Forest Service usage. Typically used to categorize all the land in an area into each of various **hierarchical** levels by the application of increasingly more specific delineation criteria at successively lower (i.e., smaller units) levels in the system. Each set of delineation criteria is unique to its classification level but is also logically and systematically related to the other higher and/or lower levels in that classification system.

A hierarchical framework of land type units. (*After Nelson 1975*)

Land systems inventory

U.S. Forest Service usage. A land **stratification** system based on geomorphic principles. An understanding of geologic structure, **land form** genesis and **geomorphic processes** (as reflected in land surface form and features), individual kinds of soil and the factors which determine the behavior of ecosystems (i.e., climate, vegetation and animal life, relief, **parent materials** and time), is used as the basis of this classification system.

The various hierarchical levels in the "land systems inventory" classifi-

cation scheme are: (1) the "physiographic province" (a division of the land in which the pattern of topographic elements of altitude, **relief** and type of land forms are uniform throughout an area of several thousand square miles or larger); (2) the "section" (land units in which the combined factors of geologic structure, geomorphic processes, climate and time have been essentially the same and thus produced a uniform pattern of topography over areas of hundreds to several thousand square miles); (3) the "subsection" (the smallest land unit which can be identified using the basic criteria of uniform geologic factors and climate operating over time to delineate essentially uniform areas of tens to hundreds of square miles); (4) the "land type association" (units tens of square miles in size over which the uniformity of geomorphic processes has produced different types of landscapes which can be visually identified on maps, air photos or on the ground); (5) the "landtype" (visually identifiable unit areas of a tenth to one square mile resulting from homogeneous geomorphic and climatic processes which have produced defined patterns of soils and vegetation potentials); (6) the "landtype phase" (.01 to .1 square mile areas delineated on the basis of being characterized by uniform, specific kinds of soils or **soil phases** or sometimes on the basis of **physiographic**, vegetative or **bedrock** characteristics) and; (7) the "site" (areas of less than an acre defined and characterized by the occurrence of individual kinds of soils or discrete **plant communities**. (*After Wertz and Arnold 1972*)

Land tenure

1. The holding of land or the right to hold it. (*Abrams 1971*)

2. The holding of land and the rights that go with such holding, including all forms of holding from **fee**

simple title (embracing all possible rights within the general limitations imposed by the government) to the various forms of tenancy or holding of land owned by another. (*Soil Conserv. Soc. Amer. 1970*)

3. The rules by which members of a social group customarily exercise control, inheritance, and usage rights over land. The rules cover such practices as individual ownership, group ownership with allocation procedures, and various kinds of lending possibilities. (*O'Connell 1974*)

Also see **Property rights**.

Land type

Canada Biophysical Land Classification System usage. An area of land having a fairly homogeneous combination of soil features at a level corresponding to the **soil series**—i.e., a group of soils having horizons similar in distinguishing characteristics and arrangement in the profile and developed from the same parent material and chronological sequence of vegetation.

The land type is the basic biophysical land unit that can be interpreted to provide land evaluation data useful for planning and development. The mapping scale at the land type level ranges from 1/20,000 to 1/10,000. The dominant ecological variables are soil moisture regime, physical and chemical soil properties and **microtopography**. (*Wells and Roberts 1973*)

The units in that classification system, in order of decreasing size are **land region, land district, land system** and **land type**.

Landtype (Watertype)

1. G. A. Hills' land classification usage. Units created by isolating areas of differing landform, geologic composition and water content within the **site region**.

A "landtype" is a subdivision of a "site region" and determined by certain soil properties (such as texture,

depth, mineral composition, water content, etc.) and nature of parent material in large-scale land features. (*After Belknap and Furtado 1967*)

The second largest unit in Hills' land classification system. The various levels, in order of decreasing size are **site region, "landtype", physiographic site class, physiographic site type** and **physiographic site phase**.

2. U.S. Forest Service usage. Visually identifiable unit areas resulting from homogeneous **geomorphic** and climatic processes and having defined patterns of soils and vegetative potentials.

Landtype units range in size from about one-tenth to one square mile. Their size and composition depend upon the significance of physical characteristics which can be readily interpreted to identify hazard, capability and productivity potentials that are reliable for land use planning purposes.

Landtype units generally have uniform management response characteristics and so can be used to identify areas for which **zoning** and resource allocation decisions can be made. (*After Wertz and Arnold 1972*)

Also see **land system**, definition 2.

3. Veatch's usage of "natural landtype". A natural division based upon the intrinsic nature of the soil, the nature of the **soil association** or **soil complex**, the topography, the natural drainage and the native vegetation. (*After Veatch 1937*)

Land units

G. A. Hills' land evaluation usage. A portion of a **landscape unit** — i.e., groupings of **physiographic site types** and **physiographic site phases** into 16 sq. mi. minimum units—with special significance for some specific use. (*After Belknap and Furtado 1967*)

Land use

The occupation or reservation of land or water area for any human activity or any defined purpose. It also

includes use of the air space above the land or water. (*Calif. Counc. Intergov. Relat.* 1973)

Also see **Land use type**.

Land use allocation

The committing of a given area of land or a resource to one or more specific uses—e.g., to campgrounds, wilderness areas. (*U.S. Forest Serv., FSM 8200R-8*)

Land use capability. See **Capability**.

Land use constraints

Any factor that may act to reduce management options or discourage various uses—e.g., erosive soils, unstable slopes, steep topography, presence of archeological or historic remains. (*U.S. Forest Serv., Colville Natl. Forest* 1974)

Land use feasibility. See **Feasibility**.

Land use plan

1. The concrete expression in map and text form of objectives which are considered desirable by a governing body with the power to approve and implement the plan. (*Hills, Love and Lacate* 1970)

2. U.S. Bureau of Land Management usage. A "land use plan" is a coordinated composite of information, ideas, policies, programs, and activities related to existing and potential uses of land within a given area, starting with the **planning unit**, extending through an integrated system of planning units that comprise a district and ultimately becoming part of a land use plan for all Bureau land holdings within the state and nation.

It, in part, identifies where these activities take place or where additional activities could take place under future conditions or circumstances, either under Bureau jurisdiction or the control by other public agencies or private parties.

The total comprehensive land use plan provides the basis for the more

complete coordination of existing and future Bureau programs and activities with those either under way or contemplated on land adjoining public lands. (*Eisner* 1969)

3. "Land use plans" will serve as (1) a basis for the implementation of action plans and (2) the foundation for future planning efforts, as well as (3) a guide for direct actions and decisions. (*Rupp* 1974)

4. A community plan outlining proposed future land uses and their distribution. (*Soil Conserv. Soc. Amer.* 1970)

Land use planning

1. Land use planning is the process of organizing the development and use of lands and their resources in a manner that will best meet the needs of people over time while maintaining maximum flexibility for a dynamic combination of resource output for the future. (*After Camp* 1974)

2. Land use planning is a process which allocates geographically fixed resources to a variety of uses. (*After Camp* 1974)

3. Land use planning is the never-ending process of inventorying and assessing the status, potentials, and limitations of a particular geographic area and its resources; interacting with the populations associated and/or concerned with the area to determine their needs, wants, and aspirations for the future; hypothesizing patterns of use compatible with both the area's **capabilities** and human needs and wants; proposing and assessing the consequences of, and implementing the best of alternatives for achieving the desired patterns of use, documenting the history of use to enable comparison of expected and experienced consequences; and repeating the entire process over and over to account for changing environmental status, changing technology, and

changing human wants. (*After Camp 1974*)

4. The ordering of future activities in space. (*Ackerman 1963*)

5. The process by which decisions are made on future land uses, over extended time periods, that are deemed to best serve the **general welfare**. (*Soil Conserv. Soc. Amer, 1970*)

Land Use Policy and Planning Assistance Act

1. U.S. Senate bill 268, 93rd Congress usage. This proposed act was defeated in committee in February 1974.

The Congress, recognizing that the Nation's land is its most valuable national resource and that the maximum benefit to all from this resource can be achieved only with the development and implementation of sound and coordinated land use policies, declares that it is the continuing policy of the Federal government to cooperate with and render assistance to state and local governments in the development and implementation of the policies which will govern the wise and balanced use of the Nation's land resource. The purpose of this Act is to establish a National land use policy, to authorize the Secretary of the Interior to make grants to assist the states to develop and implement state land use programs, to coordinate Federal programs and policies which have a land use impact, to coordinate planning and management of Federal lands and planning and management of adjacent non-Federal lands, and to establish an office of land use policy administration in the Department of the Interior.

The purpose of the Act is to encourage comprehensive, balanced—not **functional planning**. Thus, whenever levels of government below the state government are to be included in the important decisionmaking and financial assistance activities in the Act, the language of the Act limits the governments involved to **general purpose lo-**

cal government. (*U.S. Congr., Senate, Com. Inter. Insular Aff. 1973*)

2. U.S. Senate bill 924, 93rd Congress usage. This Nixon-Administration-proposed act was defeated in Congress.

This Act was first proposed in 1971 and followed the concepts contained in the draft "model land development code" developed by the American Law Institute (ALI). That code called for the states to take a highly selective approach, focusing on land use questions of more than local significance. Under the ALI code some 90 percent of all land use questions would continue to be disposed of by local agencies without interference from state government. Through compromise, since their introduction, the two land use planning bills have become quite similar, and this proposed Act was abandoned in favor of the Senate bill 268 version. (*After Carter 1973*)

Land use practice (Discrete land use operation)

1. A term used to refer to the various kinds of altering actions and/or activities associated with or utilized in facilitating or making possible different types of land uses—e.g., clearing of vegetation, land grading, paving, landscaping, fencing, fertilizing, irrigating, etc.

"Land use practices" are distinct from **land use types**. "Land use types" is a classification system based on the purpose for which the land is being used—e.g., timber production, range, second home subdivisions, farming, heavy industry, etc. "Land use types" are bundles of more or less shared "land use practices"—though the precise types and amounts of practices that are utilized in conjunction with a specific use type may vary from one specific instance to another.

"Land use practices" is an alternative to "land use types" as a way of classifying for study and/or regulation

the problems created by use. By restricting practice alternatives the problems associated with specific uses can sometimes be eliminated or reduced while not necessarily preventing use—because there may be an alternative acceptable practice. (*C.F.S.J*)

Land use suitability. See **Suitability**.

Land use survey

A survey of the uses to which land is put in a particular area, usually summarized both in map form and statistically. (*Abrams 1971*)

Land use type (Land use)

1. U.S. Forest Service usage. The primary use of a tract of land—e.g., crops, pasture, forest, urban and other. (*U.S. Forest Serv. 19728*)

2. A classification system based on the purposes for which land is being used—e.g., timber production, range, second home subdivisions, farming, etc. "Land use types" are bundles of more or less shared **land use practices**—though the precise types and amounts of practices that are utilized in conjunction with a specific use type may vary from one specific instance to another. (*C.F.S.*)

Large-lot zoning. See **Zoning, large-lot**.

Large scale development

1. Usage in the defeated 1973 bill for a National **Land Use Policy and Planning Assistance Act**. Private development on non-Federal lands which, because of its magnitude or the magnitude of its effect on the surrounding environment, is likely to present issues of more than local significance in the judgment of the state.

In determining what constitutes "large scale development" the state is asked to consider, among other things, the amount of pedestrian or vehicular traffic likely to be generated; the number of persons likely to be present; the potential for creating environmental problems such as air, water, or noise

pollution; the size of the site to be occupied; and the likelihood that additional or subsidiary development will be generated.

The purpose of this definition is to focus on the size and nature of the project rather than on ascertaining the precise individual or organization which is the **developer**. First, the definition of the project insures that it is of a size which would have significant impacts upon the environment and urban services. Second, it provides that the state develop a program for those projects only in remote, rural or other areas where local government is ill-equipped to regulate the project itself. (*U.S. Congr., Senate, Com. Inter. Insular Aff. 1973*)

Law, common (Precedent law)

1. A body of rules based on judicial decisions rather than legislation.

It is the basis of the Anglo-American legal tradition. The "common-law" judge relies on judicial decisions of the past in rendering his rulings. Under the "common-law" approach the law can change gradually at the hands of the judges to meet the changes in society. In the United States the "common-law" system is evident in the supremacy of the judiciary in determining the constitutionality of legislation. In contrast, the system of civil law prominent on the continent of Europe is based on Roman law and later codes of legislation. (*O'Connell 1974*)

2. The system of unwritten law (as distinguished from written statute laws) that has been declared in written opinions by judges and is based either on the general customs or on reason and fixed principles of justice. (*Webster 1963*)

Law, natural

1. An abstract concept of law based on the relation between God, man, and nature. An ideal higher than

man-made law, it forms the basis of justice in the ethical sense. It embodies such ideas as the existence of a universal order governing all men and the unalienable rights of the individual. (*O'Connell 1974*)

2. A body of law derived from nature and binding upon human society in the absence of or in addition to institutional law. (*Webster 1963*)

3. The body of rules or customs derived from the general maintenance of human society. (*Webster 1963*)

LD₅₀. See **Median lethal dose.**

Leasable mineral. See **Mineral, leasable.**

Legal institution

A society's system of legal rules and principles. (*Webster 1963*)

Leontief analysis. See **Input-output analysis.**

Lexicography

1. The editing or making of a dictionary. (*Webster 1963*)

2. Decision theory usage. A method of choosing among alternatives based on an analogy to the way words are arranged in a dictionary. A single objective or attribute is rated as most important, and alternatives are ranked according to how well they satisfy this objective. If an alternative is clearly superior in this attribute to other alternatives it is selected. Otherwise the second most important attribute is used to rank the top alternatives from the first ranking. This process continues, constantly reducing the number of alternatives ranked and ranking by less important attributes, until a single project is clearly superior for the attribute being used to rank the alternatives. (*After Mac Crimmon 1968*)

Life cycle

1. The successive stages through which an organism passes from the spore or fertilized egg of one genera-

tion to the spore or fertilized egg of the next generation.

A continuous, descriptive account of a life cycle is called the life history of an organism. (*Ford-Robertson 1971*)

2. The series of stages in the form and mode of life of an organism between successive recurrences of a certain primary stage, such as the spore, fertilized egg, seed or resting cell. (*Wash. State Univ., Coop. Ext. Serv. 1972*)

Life history

A continuous, descriptive account of the **life cycle** of an organism. (*Ford-Robertson 1971*)

Life quality index. See **Quality of life and Index.**

Life style

1. A characteristically different way of living which may be an individual variant within the cultural mainstream or may be an individual expression of a subculture. "Life styles" are generally expressed through the means of economic sustenance, dwelling site and type, types of group associations, and social practices such as family form, religious practices, sexual mores, and style of dress, type of diet, etc.

The "life style" which is most common for a given culture is sometimes referred to as the "mainstream life style" and those which are uncommon (culturally unusual, atypical) as "alternative (or subculture) life styles". (*L. W.*)

Life zone

1. An altitudinal or latitudinal biotic region or belt with distinctive faunal and floral characteristics. (*Hanson 1962*)

2. Areas of land classified into gross **habitat** types by a combination of elevational and climatic zones and other factors which determine the

type of animal and plant life found in them—e.g., the Upper Sonoran, Transition, Canadian, Hudsonian and Alpine life zones. (*After U.S. Forest Serv., FSM 2800 R-8, date unknown*)

Light grazing. See **Grazing, light.**

Limiting factor

1. Any environmental factor whose presence, absence or abundance is the main factor restricting the distribution, numbers or condition of an organism. (*After Durrenberger 1973, SESCO, et al. 1973*)

2. The environmental influence by which the limit of tolerance of an organism is first reached and which, therefore, acts as the immediate restriction to one or more of its functions or activities or in its geographic distribution. (*Hanson 1962*)

Limits

Range management usage. The number of livestock which may be grazed under provisions of a **grazing preference**. (*Amer. Soc. Range Manage. 1964*)

Linear perspective. See **Perspective, linear.**

Linear programming

1. A mathematical method used to determine the most effective allocation of limited resources between competing demands when both the objective (e.g., profit or cost) and the restrictions on its attainment are expressible as a system of linear equalities or inequalities (e.g., $y=a+bx$). (*U.S. Forest Serv. 1972B*)

2. A **deterministic model** which assumes linear behavioral relationships and in which an optimal solution is sought (by maximizing or minimizing) subject to one or more limiting constraints.

Linear programming is used to determine the best or optimum use of resources to achieve a desired result when the limitations on available re-

sources can be expressed by simultaneous linear equations. (*U.S. Gen. Account. Off. 1969*)

3. A class of **programming** techniques used to analyze or solve problems in which the linear function of a number of variables is to be maximized or minimized when those variables are subject to a number of constraints in the form of linear inequalities. (*U.S. Forest Serv. 1972B*)

Litter (Forest litter, Leaf litter)

The uppermost layer of organic debris on the ground under a vegetation **cover**—i.e., essentially the freshly fallen or only slightly decomposed vegetable material, mainly from foliage but also bark fragments, twigs, flowers, fruits, etc. (*After Ford-Robertson 1971*)

Littoral

1. Belonging to the shore, as of seas and the great lakes; **riparian** proprietors on a stream or small pond are analogous to littoral proprietors on a sea or lake. (*U.S. Bur. Outdoor Recreation 1974*)

2. Of or pertaining to the shore; existing, taking place upon or adjacent to the shore. Applied loosely and generally to the seashore as well as to the shores of lakes and rivers. (*Stamp 1971*)

3. Also see **Riparian**.

Lobbying

1. Activity engaged in by individuals or organizations (directly or through hired representatives) that is directed at the various elements of government in an attempt to influence legislation or policies in a way that is favorable to the interests of the lobbying group.

A potential source of conflict lies in the fact that the public, viewed as a collection of individuals, is seldom represented in such activities. (*O'Connell 1974*)

Local economic effects

Effects of an action or inaction on dollar market transactions in the immediate area of the action or inaction. The "local" area would include an area encompassing the primary sources of employment and retail outlets for basic commodities such as food utilized by the people of that area. (*E. C. T.*)

Local government

Usage in the defeated 1973 bill for a national **Land Use Policy and Planning Assistance Act**. Any **general purpose local government** or any regional combination thereof, or, where appropriate, any other public agency which has land use planning authority. (*U.S. Congr., Senate, Com. Inter. Insular Aff. 1973*)

Local overgrazing

Overgrazing in localized areas on a range, as, for example, near watering places. (*Amer. Soc. Range Manage. 1964*)

Local species. See **Species, local.****Locatable mineral.** See **Mineral, locatable.****Locatable mineral deposits.** See **Minerals, locatable.****Location (Mineral location)**

The acts or series of acts pursuant to the general mining laws by which the right of exclusive possession of **locatable mineral** deposits is vested in the locator. (*U.S. Forest Serv., FSM 2811.1.F, Sept., 1958*)

A **mining claim** is sometimes called a "location" but those terms may often mean different things—e.g., "mining claim" may refer to a parcel of land containing soil or rock which has value because of its chemical composition, while "location" is the act of appropriating such land according to certain established rules. (*Thrush 1968*)

Also see **Minerals, locatable.**

Location theory

The theory which attempts to ex-

plain and predict the location of individual, commercial, and industrial development. It is important to the planner for predicting population and industrial distributions which would result from alternative plans. (*E. C. T.*)

Lode mining. See **Mining, lode.****Logged-over forest**

A **forest** in which most or all of the merchantable timber has been cut. (*Soil Conserv. Soc. Amer. 1970*)

Logging

The cutting and extraction of timber, particularly logs. (*Ford-Robertson 1971*)

In imprecise usage **logging**, **harvesting**, and **silviculture** are used seemingly interchangeably by different people, often with vehemence as to which is the correct term in a given situation. According to Ford-Robertson (1971) "silviculture" has as its primary concern the establishing, growing, and tending of forests. "Harvesting" and "logging", however, deal specifically with the extraction of resources from the forest; with "logging" restricted to the **cutting** and extraction of timber (wood other than fuel wood after **primary conversion**) and "harvesting" expanding this to include the cutting, initial processing if any, and extraction of any forest product. (*After Ford-Robertson 1971*)

Logging, aerial

A system for hauling timber from the stump to a collecting point which employs aerial means of transportation—e.g., balloons or helicopters. (*Ford-Robertson 1971*)

Logging, cable

A method for transporting logs from stumps to collecting points which utilizes a cable system as the main device for moving them. (*Ford-Robertson 1971*)

For some of the different types of "cable logging" see **Logging, skyline**;

Logging, high-lead; and Logging, ground-lead.

Contrast with **Logging, tractor**.

Logging, ground-lead (Low-lead cable logging)

A method for transporting logs from the stumps to a collecting point by dragging them along the ground with a powered cable passing through a block fastened close to ground level. (*After Ford-Robertson 1971*)

Logging, high-lead

A method for transporting logs from the stumps to a collecting point by using a powered cable, passing through a block fastened high off the ground, to lift the front end of the logs clear of the ground while dragging them. (*After Ford-Robertson 1971*)

Logging, low-lead. See Logging, ground lead.

Logging, skyline (Skyline yarding)

A method for transporting logs from stumps to collecting points that uses a heavy cable stretched between high points (such as in tall trees braced with guy lines) to function as an overhead track for a load carrying trolley. Logs are lifted up by cables or other devices attached to the trolley and powered cables are used to move the load back and forth along the main cable. (*After Ford-Robertson 1971*)

"Skyline logging" is a particular type of **cable logging**.

Logging, tractor

Any logging method which uses a tractor as the motive power for transporting logs from the stumps to a collecting point—whether by dragging or

carrying the logs. (*Ford-Robertson 1971*)

Contrasts with **Logging, cable**.

Long-range planning

1. U.S. Forest Service usage. Planning for the period covered by basic resource management plans, usually ten or more years. (*U.S. Forest Serv. 1972B*)

2. Planning in the long-range sense is the selection or identification of the overall, long-range **objectives**. The analysis of various possible courses of action in terms of their relative costs and accomplishments or benefits is then used to decide on which courses of action to follow in order to achieve those objectives. (*U.S. Gen. Account. Off 1969*)

3. Planning for a future more than 5 years distant. (*After U.S. Forest Serv. 19728*)

4. The continuous process of making present (risk-taking) decisions systematically and with the best possible knowledge of their futurity for some 10 to 30 years, organizing systematically the efforts needed to carry out these decisions, and measuring the results of these decisions through organized, systematic feedback. The scheduling of needed improvements is on a less detailed basis with more flexible timing and a recognition of the adjustments and re-analysis that the passage of time will inevitably compel. (*After Winfrey and Zellner 1971*)

"Long range planning" does not deal with future decisions. It deals with the future attainment of present decisions. (*Drucker 1959*)

Low-lead logging. See Logging, ground lead.

Macroclimate (Regional climate)

The general large-scale climate of a large area or country, as distinguished from the **mesoclimate** and **microclimate**. (*Huschle 1959*)

Macroeconomics

Economic studies or statistics that consider aggregates of individuals or groups of commodities; for example, total consumption, employment, or income. (*Sloan 1961*)

Also see **Microeconomics**.

Majority determinism

A point of view in resource planning which advocates making resource use and allocation decisions on the basis of some sort of a simple expression of the most popular choice of use or mixes of uses. (*C.F.S.*)

This conceptually simple one-man one-vote approach has severe problems in the land use planning context on several grounds. How are the alternative resource use mix choices formulated and presented to the "voters"? How is the planned-for populace defined, located and canvassed? How are the desires of transient resource users (such as campers and hikers who do not belong to organized groups) to be counted, and how are they to be weighed against the needs and desires of permanent residents and users? (*C. F. S.*)

Major land use

U.S. Forest Service usage. A grouping of primary uses together into classes with similar characteristics—e.g., cropland, pasture, and forest. (*After U.S. Forest Serv. 1972B*)

Also see **Land use type**.

Management area

Range management usage. The total holdings under a single management. (*Amer. Soc. Range Manage. 1964*)

Management direction

U.S. Forest service usage. A statement of goals and a detailed specification of the ways and means for attaining them. (*W. W.*)

Management goal. See **Goal**.

Management objective. See **Objective**.

Management policy. See **Policy**.

Management program

Coastal zone management act usage. "Management program" includes, but is not limited to, a comprehensive statement in words, maps, illustrations, or other media of communication, prepared and adopted by the state setting forth **objectives**, **policies**, and **standards** to guide public and private uses of lands and waters in the coastal zone. (*After Coastal Zone Management Act 1972*)

Management situation

U.S. Forest Service usage. A section of the **planning area guide** which contains a comprehensive statement of the planning area resources, its history as it may influence planning, past and present uses, and a review of the publics directly concerned with the area. The significance of the information about the area as it relates to national **objectives** and program targets is also important as it will describe how that area is unique in its ability to contribute to the satisfaction of human needs. A projection of **program** attainment targets is also included. (*After U.S. Forest Serv., FSM 8222.2, Oct. 1973*)

This term is similar, but not identical to the term "environmental setting" as used in FSM 8412.2 item 3A.

Management unit

1. U.S. Forest Service usage. Under the "Multiple Use Planning" system used until 1972 they were subdivisions

of the "multiple use management zone" in the **ranger district multiple use plan**. It was the finest delineation of land areas.

Under the newly adopted U.S. Forest Service "Land Use Planning" system they are subdivisions of **planning units** which identify the area of land or water to which specific management decisions apply. All lands within a planning unit are included in one of the identified management units. (*U.S. Forest Serv., FSM 8226, Oct., 1973*)

2. Range management usage. A subdivision of a **management area**. (*Amer. Soc. Range Manage. 1964*)

Management zone

1. U.S. Forest Service usage. For planning purposes, areas of land with similar characteristics, whether they be social, economic, or environmental characteristics, may be delineated into management zones. Such a **stratification** is used for planning areas to help in delineating more precisely the particular area of land on which certain **coordinating criteria** apply. Three **management zones** are defined for forest service-wide use—**water influence**, **travel influence**, and **special management zones**. Other zones may also be designated by Regional Foresters. (*U.S. Forest Serv. FSM 8223, Oct., 1973*)

Where planning areas encompass lands in portions of two or more Forest Service Administrative Regions, the same zone name and description will be used throughout the **planning area**. The use of management zones is optional. However, if management zones are used, they will be applied uniformly throughout the planning area.

Map, operational

A precise, detailed, large-scale map, usually with small **contour intervals** but sometimes only planimetric (i.e., representing only the horizontal position of features), constructed for spe-

cific uses—such as administrative site development, road location, bridge sites, dam sites, campground development, ski areas, and geological area maps. (*U.S. Forest Serv. 1973*)

Map overlay (Overlay map)

1. A transparent sheet accompanying a map, on which information, coloring, or symbols are entered so that when the overlay is placed on the map the effect is identical to having entered the overlay information on the map itself. By combining several overlays it becomes a simple matter to display a variety of data combinations and stratifications which would not be possible otherwise. (*E. C. T.*)

2. A map of an area to be superimposed on one or more maps of the same area. The purpose is to find the spatial distribution of data combinations, or more exactly the areas of joint occurrence and unsimilar occurrence. (*After Amidon 1972*)

3. A digital image (as in a computer) of areas as in definitions 1 and 2. (*After Amidon 1972*)

Map plan. See **Paper plan**.

Map, planimetric

A map representing only the horizontal position of features. (*U.S. Dep Def. 1968*)

Contrast with a **topographic map** which shows both the horizontal and vertical position of features.

Marginal land

Land of questionable economic capabilities for a specific purpose. (*Amer. Soc. Range Manage. 1964*)

Market place

A hypothetical construct of economic theory representing the place all potential buyers and sellers of all goods and services come together, express their desires and offer their wares, through bargaining establish a price structure and production schedule, and complete their transactions. In standard

usage it refers to all locations where economic transactions occur treated as a single whole. (*E. C. T.*)

Market price. See **Market value.**

Market value (Market price)

1. A price at which both buyers and sellers are willing to do business; the market or current price. (*Webster 1963*)

2. "Market price": The price actually given in the current market dealings.

The price at which the supply and demand are equal. *Webster 1963*)

Mass diagram

A graphical representation of cumulative quantities over time. Each point on the curve is the sum of all preceding quantities. (*After Soil Conserv. Soc. Amer. 1970*)

Mass instability (Slope stability)

An evaluation of the tendency for the materials on a slope (e.g., rocks, soil, snow) to move downhill as a large mass. (*C. F. S.*)

Also see **Landslide hazard**, **Snow avalanche hazard**.

Mass movement

Downslope, unit movement of a portion of the land's surface—i.e., a single landslide or the gradual simultaneous, downhill movement of the whole mass of loose earth material on a slope face. (*After Amer. Geol. Inst. 1962*)

Also see **Landslide**.

Mass-wasting

A general term for any of the variety of processes by which large masses of earth material are moved downslope by gravitational forces—either slowly or quickly. (*Amer. Geol. Inst. 1962*)

Also see **Landslide**.

Mast

Nuts, acorns, and similar products of hardwood species, which are consumed by animals. (*Amer. Soc. Range Manage. 1964*)

Master plan

1. City planning usage. A comprehensive, long-range plan intended to guide the growth and development of a city, town, or region, expressing official contemplations on the course its transportation, housing, and other community facilities should take, and making proposals for industrial settlement, commerce, population distribution, and other aspects of growth and development. (*Abrams 1971*)

2. Also see **Comprehensive plan**.

3. This term has been commonly used to describe or title any plan which is comprehensive or depicts or describes an ultimate state of development.

There is no unified agreement on its precise meaning or use in either theory or practice. The term is found in many books on planning, and appears in many planning ordinances and state laws—all of which seldom make more than a perfunctory or superficial attempt to define its use precisely. With respect to a suggested proper usage of "master plan", the California Planning Act (Calif. Gov. Code Title 7, Chap. 1, Art. 7, Sec. 65460) states that "Each commission or planning department shall prepare and the commission shall adopt a comprehensive, long-term general plan for the physical development of the city, county, area or region, and of any land outside its boundaries which in the commission's judgement bears relation to its planning. The plan may be referred to as the master or general plan, and shall be officially certified as the master or general plan upon its adoption by the planning commission and the legislative body." In this statement "master" never appears without the word "general". Thus "master" is made synonymous with "general". The statement also implies that adoption by an official body is a mandatory prerequisite for titling a plan "master plan". Thus plans not yet officially adopted should only use the term if it is qualified

by some phrase, such as "study for a . . ." or "proposed . . .".

The term "master" has connotations of grandiose schemes, an ultimate state and inflexible authority. This term has been so loosely, and often incorrectly or dishonestly, used that it has gained disfavor in the urban planning profession. They now prefer to instead use the term "general plan" (see **Comprehensive plan** definition 1) in the titles of their more comprehensive, long-range plans and proposals, because it has connotations of flexibility and thus more accurately reflects the nature of such plans. (*Marsh 1964*)

4. In the past, often defined and considered synonymous with comprehensive plan. More recently considered a component part or functional class of a comprehensive plan, for example, master plan for highways and thoroughfares, master plan for parks and recreation, etc. (*Soil Conserv. Soc. Amer. 1970*)

Material cycle. See **Biogeochemical cycle**.

Matrix

1. Mathematical usage. A rectangular array of rows and columns of real numbers. Matrices may be subjected to mathematical operations such as multiplication of one by another, addition of two or more, and others. Matrices may be manipulated in total in a manner similar to the algebraic manipulation of single numbers, but knowledge of special rules, called matrix algebra, is necessary for such manipulation. (*U.S. Gen. Account. Off. 1969*)

2. For land use planning's more traditional usage, see **Interaction matrix**.

Maximax

A method of choosing among alternatives by noting the attribute with the highest value for each alternative, and comparing these attributes across alternatives to choose the alternative with the maximum highest value. In order to

determine the attribute with the highest value for each alternative and follow this decision rule a very high degree of comparability between attributes within each alternative and among alternatives is needed. (*After Mac Crimmon 1968*)

Maximin

A method of choosing among alternatives by noting the attribute with the lowest value or quality standard least met for each alternative, and selecting the alternative with the most acceptable lowest valued attribute or standard. In order to determine the lowest valued attribute or worst met standard, and follow this decision rule a very high degree of comparability between attributes within each alternative and among alternatives is needed. (*After Mac Crimmon 1968*)

Maximum grazing capacity. See **Grazing capacity, maximum**

MBF (MBM).

Lumber or timber measurement term. One thousand **board feet**.

Meadow

1. Range management usage. A **herb-land** used primarily for hay production. (*Amer. Soc. Range Manage. 1964*)

2. Openings in forests and grasslands of exceptional productivity in arid regions, usually resulting from high water content of the soil, as in stream-side situations and areas having a **perched water table**. (*Amer. Soc. Range Manage. 1964*)

Median lethal dose (LD₅₀)

The amount of concentration of a toxic substance which will result in the death of 50 percent of a group of test organisms upon exposure (by ingestion, application, injection or in their surrounding environment) for a specified period of time. (*After Geckler, et al. 1963*)

Median tolerance limit (TL_m)

The concentration of some toxic substance at which just 50 percent of the test animals are able to survive for a specified period of exposure. (*Geckler, et al. 1963*)

Merit-weights

A system for evaluating differing uses by different sectors of the population. Espoused by Mack and Myers (1965) primarily as a method of comparing different outdoor recreation uses. The number of user-days in each activity by each section of the population is **weighted** prior to comparison by a value representing a societal social welfare function, and alternatives are compared based on these "merit-weighted" user days. (*E.C.T.*)

Mesic

1. Refers to environmental conditions that have medium moisture supplies rather than **Hygric** (wet) or **xeric** (dry) conditions. (*Hanson 1962*)
2. The nature of an organism requiring constant water availability. (*Dansereau 1957*)

Mesoclimate

The climate of small areas of the earth's surface which may not be representative of the general climate of the district area involved. It is rather indefinite and may include **topographic** or landscape features from a few acres to a few square miles, such as small valleys, "frost hollows", forest clearings, and open spaces in towns, all of which may have extremes of temperature differing by many degrees from those of adjacent areas. The mesoclimate is intermediate in scale between the **macroclimate** and the **microclimate**. (*Huschke 1959*)

Metamorphic rock. See **Rock, metamorphic.**

Metropolitan state economic area. See **State economic area**, definition 2.

Microclimate

1. The local climate of a given site or habitat varying in size from a tiny crevice to a large land area, but being usually characterized by considerable uniformity of climate over the site involved and relatively local as compared to its enveloping **macroclimate** from which it differs because of local climatic factors (such as elevation and exposure). (*Webster 1963*)

2. The fine climatic structure of the air space which extends from the very surface of the earth to a height where the effects of the immediate character of the underlying surface no longer can be distinguished from the general local climate (i.e., **mesoclimate** or **macroclimate**).

The microclimate varies with and in turn is superimposed upon the larger-scale conditions. While some rigid limits have been placed on the thickness of the layer concerned, it is more realistic to consider variable thicknesses—e.g., the microclimate of a putting green versus that of a redwood forest. Generally, four times the height of surface growth or structures defines the level where microclimatic overtones disappear.

Microclimate can be subdivided into as many different classes as there are types of underlying surface. With sufficient detail, this could be almost limitless. Currently, the most studied broad types are the "urban microclimate", affected by pavement, buildings, air pollution, dense inhabitation, etc. and the "vegetation microclimate", concerned with the complex nature of the air space occupied by vegetation, and its effects upon the vegetation. (*Huschle 1959, citing Geiger 1951*)

Microeconomics

Economic studies or statistics that consider particular individuals or single commodities; for example, the demand for wheat or for employment in the auto industry. (*Sloan 1961*)

Also see **Macroeconomics**.

Microrelief (Microtopography)

1. Ground surface irregularities which when compared from a fixed point of elevation between them display differences in elevation of not more than 10 feet nor less than 3 inches within a distance of 4 to 64 feet. (*Stone and Dugundji 1965*)

2. Minor differences in surface configuration of the land surface. (*Soil Conserv. Soc. Amer. 1970*)

Microtopography. See **Microrelief**.

Middle distance. See **Middleground**.

Middleground (middle distance)

1. Those portions of a scene, landscape, etc., which occur between the **foreground** and the **background**. (*Webster 1963*)

2. The portions of a view between 1/4 or 1/2 mile and three to five miles distant from the observer. The "middleground" portions of a view are especially critical because they tend to dominate the view. It is in this distance range that the emergence of shapes and patterns on the landscape can be clearly seen. Consequently the "Middleground" portions of a view often best show whether man-made changes rest easily or uneasily on the landscape. (*Litton 1968*)

Also see **Background** and **Foreground**.

Middle term planning. See **Mid-range planning**.

Mid-range planning (Middle term planning, Mid-term planning)

1. Planning that combines elements of both **long-range planning** and **short-range planning**. Generally, mid-range planning is designed for that period beyond the immediate actions of short-range planning, thus allowing a more general identification of long term **objectives** and **goals**, and yet within the time period where reasonably accurate predictions of the future with corresponding specific actions to be taken

are practical—typically between three and ten years in the future. Often, however, the planning process is merely divided into the short-range and long-range planning with a single dividing point, say five years in the future, and the mid-range classification is not used. (*E. C. T.*)

2. As used by the U.S. Water Resources Council in its **Principles and Standards**. Middle term refers to planning for periods up to 15 to 25 years in the future. (*U.S. Dep. Agric. 1974*)

Mineral

1. Mining laws usage. A substance is "mineral" under the general U.S. mining laws: (1) if it is scientifically recognized as such, (2) if it is classified commercially as such or (3) if it derives from the earth and possesses economic value and utility aside from the agricultural purposes of the surface itself. (*U.S. Forest Serv. 1958*)

The word "mineral" is not technical, either as having a special sense by commercial usage, or as having a scientific meaning different from the popular meaning. Mineral is a word of common speech and, as such, its interpretation is within the judicial knowledge and therefore a matter of law. (*Marvel vs. Merritt, 116 U.S. 11*)

2. Mineral rights usage. Every inorganic substance that can be extracted from the earth for profit, whether it be solid, liquid or gas.

This usage of the term "mineral" includes coal, petroleum and natural gas—even though these materials are not truly inorganic. (*Thrush 1968*)

3. Nontechnical usage. In a broad nontechnical sense the term "mineral" embraces all inorganic and organic substances that are extracted from the earth for use by man. (*Thrush 1968*)

Mineral, common variety

Earth materials which, although maybe having value for use in trade, manufacture, the sciences, or in the

mechanical or ornamental arts, do not possess a distinct, special economic value for such use over and above the normal uses of the general sum of such deposits. (*U.S. Forest Serv., FSM 2803.12, Jan 1959, citing 43 C.F.R. 185.121*)

For example, sand and gravel are frequently present in abundance in most areas and that makes them a "common variety mineral".

Neither **mining claims** nor **mining claim patents** can be filed for "common variety mineral" deposits.

Mineral cycle. See **Biogeochemical cycle**.

Mineral entry

The filing of a **mining claim** for public land to obtain the right to any **minerals** it may contain. (*Thrush 1968*)

Mineral entry, withdrawals

U. S. Forest Service usage. The exclusion of mining **locations** and mineral development work on areas required for administrative sites by the Forest Service and other areas highly valued by the public. (*U.S. Forest Serv., FSM 2860.2, Mar. 1969*)

Mineral, excepted

Types of **minerals** which are exempted from the regulations in the general mining laws which authorize prospecting for and development of mineral resources on public lands.

The excepted minerals are: oil, gas, oil shale, coal, potassium, sodium and phosphates and in Louisiana and New Mexico, sulfur. Similarly excepted as to mineral **locations** made after 1955 are the **common variety minerals** sand, stone, gravel, pumice, pumicite or cinders. (*U.S. Forest Serv., FSM 2803.11, Jan. 1959*)

Also see **Mineral, leasable**.

Mineralization

The breakdown of organic compounds to their inorganic (i.e., mineral) forms—e.g., proteins to nitrates, phosphates, etc. (*Hanson 1962*)

Mineral, leasable

Types of minerals whose prospecting and development on public lands under permit or lease was authorized by the Mineral Leasing Act of February 25, 1920, as amended and supplemented (*41 Stat. 437; 30 U.S.C. 181-287*).

For example, coal, phosphate, sodium, potassium, oil, oil shale, gas and in some states sulfur. (*U.S. Forest Serv., FSM 2803.1.5, Jan. 1959*)

Also see **Mineral, excepted**.

Mineral, locatable

Precious or semi-precious **minerals** that are not considered to be **common variety minerals**—i.e., not such materials as sand or gravel.

Locatable mineral deposits can be claimed and the **mining claim patented**, thus converting it to private ownership. (*U. S. Forest Serv., FSM 2800R-8*)

Mineral location. See **Location**.

Mineral rights

The ownership of the **minerals** under a given surface, with the legal right to enter that area and mine and remove them—including the right to use as much of the land surface as may be reasonably necessary for the conduct of mining operations.

"Mineral rights" may be separated from the "surface rights" ownership, but, if not separated by a distinct conveyance, are included in the latter. (*Thrush 1968*)

Also see **Mineral**, definition 2.

Mineral soil

A **soil** consisting predominantly of, and having its properties determined predominantly by inorganic matter.

Usually containing less than 20 percent organic matter but sometimes containing an organic surface layer up to 30 centimeters thick. (*Soil Conserv. Soc. Amer. 1970*)

Also see **Organic soil**.

Mine tailings

1. The waste material remaining

after raw minerals or ore have been processed. (*After Grim and Hill 1974*)

2. Material separated as refuse or separately treated as inferior in quality or value.

The sand, gravel and cobbles which pass through sluices in **placer mining**.

Refuse material resulting from the washing, concentration or treatment of ground ore.

The residual after most of a valuable ore has been extracted. (*Thrush 1968*)

3. The mining waste from **open-pit mining** is termed "spoils" while "tailings" is usually used for the waste from hard rock mining. (*After Grim and Hill 1974*)

Mining, area strip. See **Mining, area surface**.

Mining, area surface (Area strip mining)

A type of **open-pit mining** or **strip mining** that is generally practiced on gently rolling to relatively flat terrain on relatively large tracts of land and is commonly found in the mid and far western United States. A trench is first cut through the **overburden** to expose the deposit of mineral or ore to be removed. The first cut is extended to the limits of the property or deposits. The overburden from the first cut is placed on unmined land adjacent to the cut. The mineral or ore is then removed. Once the first cut is completed, a second cut is made parallel to the first, and the overburden from the succeeding cuts is deposited in the cut just previously excavated. The final cut leaves an open trench equal in depth to the thickness of the overburden and the mineral bed removed, bounded on one side by the last spoil pile and on the other by the undisturbed **highwall**. The final cut may be up to a mile or more from the starting point, and the overburden from the cuts, unless graded or leveled, resembles a plowed field or the ridges of a gigantic washboard. (*Grim and Hill 1974*)

Also contrast with **Mining, contour surface**.

Mining, auger

A mining method often used by **surface mine** operators when the amount of material overlying the seam from which a mineral (or ore) is being extracted gets too thick to be removed economically. Large diameter (2 to 7 feet), closely spaced holes are drilled up to 200 feet into the seam using an auger type bit whose head breaks up the deposit and whose screwlike extensions carry the material back out of the bore hole and into the open.

Auger mining is usually associated with contour **strip mining**. It is a common practice used to recover additional tonnage after the coal to **overburden** ratio has become too small to render further contour strip mining economical. When the slope is too steep for **contour mining**, augering is often performed directly into the hillside from a narrow bench. Augers are also used to recover coal near the outcrop that could not be extracted safely by underground mining. (*After Thrush 1968 and Grim and Hill 1974*)

Mining claim (Claim)

1. That portion of the public mineral lands which a miner, for mining purposes, takes and holds in accordance with mining laws. (*Thrush 1968*)

2. The portion of mining ground held under the Federal and local laws by one claimant or association, by virtue of one **location** and record.

A **lode claim's** maximum size is 600 by 1500 feet and a **placer claim's** 600 by 1320 feet.

A "claim" is sometimes called a "location" but these terms may often mean different things—e.g., "mining claim" may refer to a parcel of land containing soil or rock which has value because of its chemical composition, while "location" is the act of appropriating such land according to certain established rules. (*Thrush 1968*)

3. That portion of the public mineral lands located (see **location**) and

held for mining purposes. (*U.S. Forest Serv., FSM 2811.1.F, Sept., 1958*)

Mining claim, patented

A **mining claim** to which a patent has been secured from the government by compliance with the laws relating to such claims.

The patent is a legal document which conveys the title to the ground (i.e., **ownership**) to the claim's owner. No further annual assessment work need be done, but property taxes must henceforth be paid. (*Thrush 1968*)

Mining claim, valid

A claim where there is an actual discovery of valuable minerals in quantities such that it would be profitable to mine. (*U.S. Forest Serv. Lolo Natl. Forest 1974B*)

Mining, contour surface (Contour strip mining)

A type of **strip mining** that is practiced in areas of hilly topography when the coal seam outcrops on or approaches the surface at approximately the same elevation along a hillside. The conventional method of mining consists of removing the overburden from the mineral seam, starting at the outcrop and proceeding around the hillside. The cut appears as a contour line, thus, the name. Overburden is cast down the hillside and stacked along the outer edge of the operating bench. After the uncovered seam is removed, successive cuts are made until the depth of the overburden becomes too great for economical recovery of the coal. Physical limitations of equipment reach, capacity, etc., may also determine the strippable limit or cut-off point for mining. Contour mining creates a shelf or bench on the side of the hill. On the inside it is bordered by the **highwall**, ranging in height from a few feet to more than 100 feet; and on the outer side the pit is bordered by a high ridge of spoil with a precipitous downslope that is subject to se-

vere erosion and landslides. (*Grim and Hill 1974*)

Also contrast with **Area surface mining**.

Mining debris, hot (Hot waste, Hot spoils, Hot tailings)

Refers to materials in the **overburden, mining refuse, mine tailings or mining spoils** piles that are highly acid producing or difficult to revegetate because of its acid nature. (*Grim and Hill 1974*)

Contrasts with **sweet waste** which is neutral or slightly alkaline.

Mining debris, sweet (Sweet waste, Sweet spoils, Sweet tailings)

Refers to materials in the **overburden, mining refuse, mine tailings or mining spoils** that are neutral or slightly alkaline and capable of supporting certain calcium-demanding plants. (*After Grim and Hill 1974*)

Contrasts with **hot waste** which is highly acid or difficult to revegetate because of its acid nature.

Mining hydraulic. See **Mining, placer**.

Mining, lode

The mining of a valuable mineral which occurs as a tabular deposit between definite, contrasting mineral or rock boundaries.

"Lode", as used by miners is nearly synonymous with the term "vein" or "ore body" as employed by geologists. A lode consists of several veins spaced closely enough together so that all of them, together with the intervening rock, can be mined as a unit.

The maximum size of an individual "lode claim" is 1500 by 600 feet. (*Thrush 1968*)

Mining, open cast. See **Mining, open-pit**.

Mining, open cut. See **Mining, open-pit**.

Mining, open-pit (opencut mining, open cast mining)

A form of mining operation which extracts minerals that occur near the

surface from an open excavation. Waste materials overlying the minerals are first removed and then the mineral materials are broken up and removed.

The mining of metal bearing ores by **surface mining** methods is commonly termed "open-pit mining" as distinguished from the **strip mining** of coal and the "quarrying" of other non-metallic materials such as limestone, building stone, etc. (*Thrush 1968*)

Mining, pit

1. **Surface mining** in which the material mined is removed from below the surrounding land surface. (*Thrush 1968*)

2. Any mine, quarry or excavation area worked by **open-pit mining** methods to obtain material of value. (*Thrush 1968*)

Mining, placer

The extraction of valuable heavy minerals from a placer deposit (a mass of sand, gravel or other similar alluvial material) by concentration in running water.

When water under pressure is employed to break down placer deposits placer mining is generally termed "hydraulic mining". (*Thrush 1968*)

Mining, pre-law strip

A term used to refer to **strip mining** operations conducted previous to the passage of a states' first mining reclamation act. (*Grim and Hill 1974*)

Mining reclamation. See Reclamation.

Mining refuse

The solid waste from a mineral preparation or refining plant. (*After Grim and Hill 1974*)

Mining spoils (Mining waste)

1. The **overburden** or nonore material removed in gaining access to the ore of mineral material in **surface mining**. (*Thrush 1968*)

2. Any dirt or rock which has been removed from its original location by

mining operations-surface or subsurface. (*After Thrush 1968*)

3. All overburden material removed, disturbed or displaced from over a mineral deposit by excavating equipment, blasting, augering or any other means. (*Grim and Hill 1974*)

4. Contrast with **mining refuse** which is the solid waste left by mineral processing operations. **Mine tailings** is also sometimes used in this latter sense. (*After Grim and Hill 1974*)

Mining, strip

1. Any operation in connection with prospecting for, excavating, or mining **minerals** which results in a large-scale surface or stream bottom disturbance from stripping, trenching, dredging, rim cutting or **open-pit** digging. (*U.S. Forest Serv., FSM 2840, Sept., 1958*)

2. The mining of coal by **surface mining** methods as distinguished from the mining of metalliferous ores by surface mining methods which is commonly designated as "open-pit mining". (*Thrush 1968*)

3. Refers to a type of surface mining that removes all the waste material from over a coal deposit in a series of rows (or strips), one cut at a time.

Strip mining methods employed to recover coal can be divided into two general types: **area mining** and **contour mining**. (*Grim and Hill 1974*)

Mining, surface (Strip mining, Open cast mining, Open-cut mining, Open-pit mining)

1. Surface mining is a very broad term and refers to any process of removing the earth, rock, and other strata in order to uncover the underlying mineral or fuel deposit. (*Grim and Hill 1974*)

2. The removal of solid, earth materials having value from surface excavations.

This type of mining is generally

done where the material overlying the materials being sought can be removed without too much expense.

Surface mining of metal bearing ore is commonly termed **open-pit mining** while the surface mining methods used for coal removal are commonly termed **strip mining**. (*Thrush 1968*)

3. Mining activity involving extensive land surface, and/or water body disturbance, including "strip mining", **placer mining**, mineral exploratory activities, etc. (*Sandpoint Zone Planning Team*)

Mining waste. See **Mining spoils**.

Minority groups

A term commonly limited to racial and ethnic minorities, principally blacks and Spanish-speaking, but the meaning is currently in flux, and, by extension, may be applied to other minorities—American Indians, Oriental Americans, Appalachians, women, the young, the old, homosexuals, the imprisoned, the mentally ill, drug addicts, alcoholics and rural migrants. (*O'Connell 1974*)

Miscellaneous land type

U.S. Soil Conservation Service usage. A mapping unit for areas of land that have little or no natural **soil**, or that are too nearly inaccessible for orderly examination, or that occur where, for other reasons, it is not feasible to classify the soil.

Examples are **alluvial land**, badlands, made land, marsh, mine dump, mine wash, river wash, rock land, rough broken land, rubble land, scoria land, swamp, urban land. (*Soil Conserv. Soc. Amer. 1970*)

Mission

A major, continuing problem or concern that **programs** are designed to address. Missions represent the basic reasons for the existence of an organization in a governmental agency and characterize an organization's role in solving problems.

For example, some of the 11 missions of the U.S. Department of Agriculture are to work on problems associated with (1) environmental improvement, and resource development and use, (2) rural development, (3) agricultural production efficiency, etc. (*After U.S. Dep. Agric. Off. Manage. Finance 1974*)

Mobility, social. See **Social mobility**.

Model

1. An idealized representation of reality for purposes of describing, analyzing or understanding the behavior of some aspect of it. The term model is applicable to a broad class of representations, ranging from a relatively simple qualitative description of a system or organization to a highly abstract set of mathematical equations. (*U.S. Forest Serv. 1972B*)

2. A representation of the relationships that define a situation under study. A model may be a set of mathematical equations, a computer program, or any other type of representation, ranging from verbal statements to physical objects. (*U.S. Gen. Account. Off. 1969*)

3. A simplified representation of an operation, containing only those aspects of primary importance to the problem under study. (*U.S. Forest Serv. 1972B*)

Model, deterministic

A **model** in which the variables take on only definite values; that is, a model that does not permit any risk as to the magnitude of the variables. For example, a set of simultaneous equations for which there is a unique solution is a deterministic model. (*U.S. Gen. Account. Off. 1969*)

Also see **Model, probabilistic**.

Modeling. See **Model**.

Model, probabilistic

1. A **model** in which each variable

may take on more than one value. Such models are sometimes called stochastic which means, literally, making a best guess. (*U.S. Gen. Account. Off. 1969*)

2. A model that makes allowances for randomness in one or more of the factors that determine the outputs of the model. (*U.S. Forest Serv. 1972B*)

3. Also see **Model, deterministic**.

Model, stochastic. See **Model, probabilistic**.

Modulation

In land use planning "modulation" is the modification of any aspect of a land use plan in order that it more nearly expresses the constituency's interpretation of the relevant **goals and objectives**.

By "modulation" each part of the plan is kept in proper measure or proportion relative to the whole.

"Modulation" is the regulation of the various controlling factors—i.e., natural environment, institutional control and public demands in such a way that the optimum proportion of public welfare may be obtained. (*Hills, Love and Lacate 1970*)

Mores, social. See **Social mores**.

Morphogenetic region. See **Region, morphogenetic**.

Morphologic. See **Physiographic**.

Morphological map

A morphological map represents the form of the surface of the land.

For example, a map of occurrence of various slope steepness categories is a morphological map.

If some other aspect or classification, or interpretation of the earth's surface is shown a map is, for example a surficial geology, a soils, a morphographic or a morphogenetic map—not a morphological map. A **countour map** is not a morphological map because it only portrays elevation relationships. (*After Savigear 1965*)

Morphological region. See **Region, morphological**.

Morphology

Within the subject matter of **geomorphology**, the meaning of "morphology" is restricted to studies of the surface form of the earth—without any reference to the processes responsible for those forms.

"Morphology" is not synonymous with "geomorphology." (*After Savigear 1965*)

Most probable number (MPN)

A statistical evaluation of degree of water pollution based on presence of coliform bacteria. It is not feasible to identify the exact concentration of coliform bacteria in a water sample. The MPN interprets test results in terms of results observed. (*Feth 1973*)

MPN. See **Most probable number**.

Muddling through. See **Incrementalism**.

Multidisciplinary team

1. A joint effort by two or more people having different scientific training and/or backgrounds all assigned responsibilities in the same activity or effort. Each specialist is assigned a portion of the problem and their individual solutions are combined to provide the complete solution. (*After U.S. Forest Serv. 1972B*)

2. A group of individuals with different training assembled to solve a problem or perform a task. The team is assembled out of recognition that no one scientific discipline is sufficiently broad to adequately solve the problem. The problem is broken into pieces and each specialist works on a portion of the problem. Their partial solutions are then linked together to provide the final solution. This is different from an **interdisciplinary team** which does not break the problem apart by disciplines, but instead works with frequent interaction so that each discipline may provide insights into any part of the prob-

lem and disciplines may combine to provide new solutions beyond the scope of any single discipline. (*E.C.T.*)

Also see **Interdisciplinary team**.

Multifunctional

A joint effort by two or more people, each person having a different functional or resource responsibility such as timber management, engineering, etc., but not necessarily different training or backgrounds. (*U.S. Forest Serv. 1972B*)

Multiple use

1. Three somewhat different ideas are involved: (1) different uses of adjacent subareas which together form a composite multiple-use area, (2) the alternation in time of different uses on the same area, and (3) more than one use of an area at one time.

In the first two ideas it is implicit that direct competition between uses is avoided by alternating them in space or in time. The third idea involves multiple use in the sense of simultaneous use of one space and must concern itself with **complementary** versus **conflicting activities, compatible** and **incompatible uses**.

Where spatially coincident uses are involved at a given time, conflicts between resource users will almost always occur and the concept of such forms of multiple use should be realistically interpreted as a **dominant use** with **secondary uses** integrated only insofar as they are compatible with the first. However where the idea of incompatibility relates to the economics of productivity maximization of single resource yields, management and multiple use can perhaps be validated in terms other than single-resource production efficiency. (*After Rowe and Me Cormack 1968*)

2. Multiple use is also a modern social concept whereby the consumer public demands a variety of values from a resource in ways that, to the

single purpose resource user, may seem inefficient or economically ruinous. Under this concept the aim of resource use allocation is to maximize the national well-being, promoting general social and economic prosperity.

Social needs are not necessarily best served by maximizing the production of a single resource (or even by maximizing the production of several resources) but by that over-all mix of total national resource uses that brings the greatest social and economic benefits. (*After Rowe and Me Cormack 1968*)

Multiple use management

Multiple Use-Sustained Yield Act usage. The management of all the various renewable surface resources of the national forests so that they are utilized in the combination that will best meet the 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 conform to changing needs and conditions; that some land will be used for less than all of the resources; and harmonious and coordinated management of the various resources, each with the other, without impairment of the productivity of the land, with consideration being given to the relative values of the various resources, and not necessarily the combination of uses that will give the greatest dollar return or the greatest unit output. (*Multiple Use-Sustained Yield Act*)

Multiple use planning

U.S. Forest Service usage. The official planning system for the National Forests until replaced in 1972 by the "land use planning" system. Based primarily on subdivisions within National Forests, the principal document was the **ranger district multiple use plan**. Each National Forest was divided into

Ranger Districts, **Management zones**, and **Management Units**. (After U.S. Forest Serv., FSM 8226, Oct., 1973)

In general, planning based on the concepts of **multiple use** and **multiple use management**. "Multiple use planning" is a less complex precursor of **land use planning**.

Multiple Use-Sustained Yield Act (74 Stat. 215; 16 U.S.C. 528-531)

Authorizes and directs that the National Forests be managed under principles of multiple use for outdoor recreation, range, timber, watershed, and wildlife and fish purposes, and to produce a sustained yield of products and services, and for other purposes.

This Act does not affect the use or administration of the mineral resources of National Forest lands or the use or administration of Federal lands not within National Forests. (U.S. Forest Serv. 1974)

Multiplier (Weights)

1. General "land use planning" usage. The numerical value reflecting relative importance which is assigned to a resource yield or use-affecting factor when all values cannot be directly compared by existing techniques for quantitative conversion to one measurement scale. (C.F.S.)

Also see **Weighting**.

2. Econometric usage. Although in simplified analysis "multipliers" are often treated as constants, in more detailed analysis multipliers are given by functions based on levels of, and degrees of change in, some economic activity. "Multipliers", in economic theory, are functions relating a change in some total measure to a change in some component of the total (the derivative of the total with respect to the component). Knowing the "multi-

plier" and the amount of a small change in the component, a simple multiplication gives a prediction of the change in the total. This prediction will be accurate if the basic equilibrium equations used to derive the multiplier accurately describe the economic processes involved. (After Samuelson 1948)

For example, **export base analysis** is a type of multiplier analysis. Here, it is assumed that there is a simple, multiplicative relationship between the "export" sector of the economy and the total economic activity of the region (the derivative of the total with respect to the export sector is a constant). Levels of, and changes in, the total regional economic activity are assumed to be simple multiples of the levels of, and changes in, the economic activity in the export sector. (E.C.T.)

MU-SY. See **Multiple Use-Sustained Yield Act**.

Myth

Sociological usage. A story, rationale or explanation for the **belief(s)** of a culture, **subculture**, **life style** or other **social group**—e.g., the belief of some that the physically rugged experience of wilderness living is good for one's health and many of the other beliefs about man's relationship to nature.

Popular usage regards "myths" as fanciful fiction; but in sociological usages the term is not used in the sense of beliefs which have been shown to be incorrect. Sociological usage of that term with respect to a belief places emphasis on the critical point that the myth (rightly or wrongly) is or has been believed and therefore can be used to explain people's **attitudes**, behavior, preferences, etc. (After O'Connell 1974)

N

National Ambient Air Quality Standards

Standards which define the levels of air quality which the U.S. Environmental Protection Agency judges are necessary to provide an adequate margin of safety to protect the public health. (*Sesco, et al. 1973*)

National economic development

1. U.S. Water Resources Council (WRC) usage.

One of the two main objectives of planning for water and related land resources by Federal agencies whose activities involve planning and development of water resources, as contained in the Water Resources Council **Principles and Standards**.

"National economic development" reflects increases in the Nation's productive output, an output which is partly reflected in a national product and income accounting framework to measure the continuing flow of goods and services into direct consumption or investment.

In addition, national economic development is affected by beneficial and adverse **externalities** stemming from normal economic production and consumption, imperfect market conditions, and changes in productivity of resource inputs due to investment.

National economic development as defined in these procedures is only partially reflected in the gross national product (GNP) and national income accounting framework. (*U.S. Dep. of Agric. 1974*)

2. One of the four "required accounts" for categorizing, displaying, or "accounting" the beneficial and adverse effects of each alternative plan formulation for water and related land resources planning specified in the Water Resources Council's "Principles and Standards" and the U.S. Dept. of Agriculture's "Procedures" for adher-

ing to them. (*After U.S. Dep. of Agric. 1974*)

3. Also see **Principles and Standards**.

National economic effects

Effects of an action or inaction on dollar market transactions in the Nation as a whole. This includes both aggregation of microeconomic effects (individual product, industry or sector effects) and macroeconomic effects (money supply, inflation, total economic growth effects). (*E. C. T.*)

National Environmental Policy Act (P.L. 91-190; 83 Stat. 852; 42 U.S.C. 4321, 4331-4335, 4341-4347)

An act to declare a National policy which will encourage productive and enjoyable harmony between man and his environment, to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man, to enrich the understanding of the ecological systems and natural resources important to the Nation and to establish a Council on Environmental Quality (CEQ). (*U.S. Forest Serv. 1974*)

Also see **Environmental impact statement**.

National Forest land use plan. See **Forest land use plan**.

National Forest System

The National Forest System consists of units of Federally owned forest, range, and related lands throughout the United States and its territories, united into a nationally significant system dedicated to the long-term benefit for present and future generations. The National Forest System includes all National Forest lands reserved or withdrawn from the public domain of the United States, all National Forest lands acquired through

N

purchase, exchange, donation, or other means, the National Grasslands and land utilization projects administered under Title III of the Bankhead-Jones Farm Tenant Act (50 Stat. 525, 7 U.S.C. 1010-1012), and other lands, waters, or interests therein which are administered by the Forest Service or are designated for administration through the Forest Service as a part of the system. (*Forest and Rangeland Renewable Resources Planning Act of 1974*)

National Historic Landmark

The **Historic Sites Act** of 1935 authorized designation of areas of major National historic and cultural significance as "National Historic Landmarks".

The "National Historic Landmark" program is administered by the U.S. National Park Service.

Designation as a "National Historic Landmark" makes management of the resource for its historic values the dominant objective.

The landowner or manager must request that a property be considered for "Landmark" designation. It will not be placed on the Register of Historic Landmarks without his involvement and concurrence in the decision. (*U.S. Forest Serv., FSM 2363, July 1973*)

National Historic Preservation Act of 1966 (80 Stat. 915)

The National Historic Preservation Act of 1966 declares a National policy of historic preservation (defined in the Act as "the protection, rehabilitation, restoration, and reconstruction of districts, sites, buildings, structures, and objects significant in American history, architecture, archeology, or culture"), including the encouragement of preservation on the state and private levels; directs the expansion of the **National Register of Historic Places** to include cultural resources of

state and local as well as National significance; authorizes matching Federal grants to states and the National Trust for Historic Preservation for acquisition and rehabilitation of National Register properties; establishes an Advisory Council on Historic Preservation; provides procedures in Section 106 for Federal agencies to follow in the event a proposal may affect a National Register property. (*U.S. Forest Serv., FSM 2361.01, Feb. 1974*)

National Land Use Policy Act. See Land Use Policy and Planning Assistance Act.

National Natural Landmark. See National Registry of Natural Landmarks.

National Register of Historic Places

A listing (maintained by the U.S. National Park Service) of areas which have been designated as being of historical significance. The Register includes places of local and state significance as well as those of value to the Nation as a whole.

The Register is a National inventory of our historical resources, providing an idea of the total size of this resource base.

The "National Register of Historic Places" is separate and distinct from the **National Historic Landmarks** program—though the latter are routinely entered in the Register to afford them the additional protection of the **National Historic Preservation Act** of 1966 which is not given by the **Historic Sites Act** of 1935.

Federal funds may not be expended on any project which will affect any site or object listed on the Register without first affording the Advisory Council an opportunity to comment. (*U.S. Forest Serv., FSM 2363, July 1973*)

National Registry of Natural Landmarks

A register of areas possessing such exceptional values or qualities for illus-

trating or interpreting the natural heritage of our Nation that they are considered to be of National significance. To possess National significance such an area must be a true, accurate, essentially unspoiled example of nature.

The legislative authority for the Natural Landmarks Program stems from the **Historic Sites Act** of August 21, 1935 (49 Stat. 666, 16 U.S.C. 641). The "Register of National Natural Landmarks" was established in 1963 and later renamed in 1965 to the "National Registry of Natural Landmarks".

The Natural Landmark program does not have the protection features of Section 106 of the National Historic Preservation Act of 1966. Thus, designation of a National Natural Landmark presently constitutes only an agreement with the owner to preserve, insofar as possible, the significant natural values of the site or area. Administration and preservation of Natural Landmarks is solely the owners responsibility. The agreement may be terminated by either party upon notification of the other. (*U.S. Forest Serv., FSM 2363, July 1973 and June 1974*)

National Trails System Act (82 Stat. 919; 16 U.S.C. 1241-1249)

Institutes a national system of recreation and scenic trails. Designates the Appalachian Trail and the Pacific Crest Trail as the initial components of that system and prescribes the methods by which, and standards according to which, additional components may be added to the system. Additional trails should be established primarily near urban areas and secondarily within established, more remotely located scenic areas. (*After U.S. Forest Serv. 1974*)

Native grazing land. See Grazing land, native.

Native organism

Animals or plants which originated

in the area in which they are found—i.e., were not introduced and naturally occur in that area. (*Henderson, Henderson and Kenneth 1963*)

Also see **Endemic organism** and contrast with **Species, resident; Species, naturalized; Species, exotic; and Species, feral.**

Native pasture. See Pasture, native.

Native pasture land. See Pasture, native.

Native species. See Native organism.

Natural

Existing in, or formed by, nature; not artificial. (*Stamp 1961*)

Natural Area. See Natural Area Preserve and Natural Area, Research.

Natural Area Preserve (Natural Reserve, Natural Area, Research Natural Area)

1. An area which retains a natural or relatively natural condition. Within it, wild parks, sanctuaries, refuges or wilderness can be designated. To qualify as a Natural Area Preserve, a site should be under protection, usually by a nonprofit agency or a Government agency. (*U.S. Bur. Outdoor Recreation 1974*)

2. A physical and biological unit in as near a natural condition as possible which exemplifies typical or unique vegetation and associated biotic, soil, geologic and aquatic features. The unit is maintained in a natural condition by allowing physical and biological processes to operate, usually without direct human intervention. (*Buckman and Quintus 1972*)

3. Also frequently used as a synonym for **Natural Area, Research.**

Natural Area, Research (Nature Reserve, Natural Area Preserve)

1. An area set aside by a public or private agency specifically to preserve a representative sample of an ecological community, primarily for scientific and educational purposes.

Commercial exploitation is ordinarily not allowed and general public use is discouraged.

Where the vegetation in the Natural Area is not of a stable, climax type, management measures may be taken to keep it at its present state—i.e., prescribed burning or controlled grazing to conserve certain floral and/or faunal characteristics. (*Ford-Robertson 1971*)

2. U.S. Bureau of Land Management usage. Areas containing typical or unusual faunistic or floristic types, associations, or other biotic phenomena, or characteristic or outstanding geologic, pedologic (i.e., soil), or aquatic features or processes, and which have been established and maintained for the primary purpose of research and education on the ecology, successional trends and other aspects of the natural environment.

Research and study that is nondestructive and consistent with the purpose for which such an area has been established is encouraged. The general public may be excluded or restricted where necessary to protect studies or preserve these areas. (*After 43 C.F.R. 6225.0-5(A)*)

3. U.S. Forest Service usage. Designated areas representing as many as possible of the major, natural **timber types** or other **plant communities** in unmodified condition. Other forest or range conditions that have special or unique characteristics of scientific or educational interest, such as examples of grass or timber types near the limits of their environmental range, unique bog associations, or unusual combinations of flora may also be set aside. To whatever extent is feasible, animal life should also be present in unmodified condition.

As a general guide, these areas should show evidence of no major disturbance by man, such as timber cutting, for at least the past 50 years. On rare occasions, however, in a valuable

plant community that should be preserved, the most suitable area that approached these conditions should be selected.

Research Natural Areas should be large enough to provide essentially unmodified conditions in their interior portions—usually over 300 acres. Exceptions to the usual minimum of 300 acres should be limited to truly outstanding cases.

The criterion for management of these areas is for protection against unnatural encroachments. Logging activities and uncontrolled grazing by domestic livestock are not permitted.

Forest Service Experiment Station directors may authorize such management practices as are necessary to preserve some representation of the vegetation for which the Natural Area was originally created. Only tried and reliable techniques will be used and then only where the vegetative type would otherwise be lost without management.

Research on Natural Areas will be essentially nondestructive in nature. (*After U.S. Forest Serv., FSM 4063, Jan. and Mar. 1975*)

Also see **Natural Area Preserve**.

Natural capability. See **Capability**.

Natural carrying capacity. See **Carrying capacity, ecological**.

Natural erosion. See **Erosion, natural**.

Natural hazard (Environmental hazard)

1. Those elements in the physical environment, harmful to man and caused by forces extraneous to him. (*Burton and Kates 1964*)

2. Those elements in the physical environment, which men perceive as harmful and caused by extraneous forces. (*Sims and Baumann 1974; modification of Burton and Kates 1964*)

Natural hazard lands

Usage in the defeated 1973 bill for

a National **Land Use Policy and Planning Assistance Act**.

Areas where uncontrolled or incompatible development could unreasonably endanger life and property. These lands include flood plains and areas frequently subject to weather disasters, areas of unstable geological, ice, or snow formations, and areas with high seismic or volcanic activity.

This is one of the three types of **areas of critical environmental concern** specifically set forth in this bill. The others are **renewable resource lands** and **fragile or historic lands**. (*U.S. Congr., Senate, Com. Inter. Insular Aff. 1973*)

Natural history resource

U.S. Forest Service usage. Natural phenomena which reference the development of the earth's surface and the evolution of life. Two interrelated categories of natural features are recognized. One, the geological category, results from forces and processes acting on the earth's surface to produce land forms and other nonliving entities. The other, the ecological category, involves living entities and processes between biological forms and their environments. (*U.S. Forest Serv., FSM 2362.05, June 1974*)

Naturalized species. See **Species, naturalized**.

Natural law. See **Law, natural**.

Natural Preserve. See **Natural Area Preserve** and **Natural Area, Research**.

Natural Region. See **Region, Natural**.

Natural Reserve. See **Natural Area Preserve** and **Natural Area, Research**.

Natural Resource

1. A feature of the natural environment that is of value in serving human needs. (*Irland 1974*)

2. Any feature of the natural environment about which choices must be made. It need not be possessable to

be an object of choice. (*Irland 1974*)

3. Capacities or materials supplied by nature. (*Webster 1963*)

4. In the narrow sense, natural resources are original aspects of nature untransformed by man, such as air, water, sunshine, wild animals or wild vegetation, which are able to spontaneously satisfy human wants.

In a wider sense the term "natural resources" also encompasses the substances, forces, conditions, relationships and other aspects of nature which are transformed by man and underlie, shape, affect or inhere in that complex mixture of natural and cultural landscapes which constitute the environment of modern man. (*Stamp 1961, citing Encyclopedia of the Social Sciences 1933*)

5. The term "natural resources" is identical with the formal economic concept of **land**. (*Stamp 1961, citing Sloan and Zurcher 1949*)

6. To be considered a natural resource, a material or an area must be useful, or of value, to a particular culture. It must also, by definition, be basic or primary, not a manufactured or processed product. (*U.S. Bur. Outdoor Recreation 1974*)

Natural resource district. See **Soil conservation district**.

Natural resource zoning. See **Zoning, natural resource**.

Natural vegetation

1. The vegetation native to an area prior to modification by man. (*Durrenberger 1973*)

2. Vegetation which is primarily due to nature rather than to man. (*Stamp 1961, citing Tansley 1939*)

3. Vegetation (condition and/or species composition) that has been but little changed by man. (*Stamp 1961, citing Unstead 1953*)

Ecological research has demonstrated that little of the existing vege-

tation is unmodified by man's activities either directly (i.e., burning or cutting) or indirectly (i.e., introduction of grazing animals or exotic plants). The current tendency is to call all vegetation not deliberately managed or controlled by farming activities "natural vegetation" or to use the term "semi-natural". (*Stamp 1961*)

Nature Preserve. See **Natural Area Preserve** and **Natural Area, Research.**

Nature Reserve. See **Natural Area Preserve** and **Natural Area, Research.**

Needs

The fundamental motivations and requirements of man, not to be confused with "wants" or "desires". (*After U.S. Forest Serv. 1971*)

The distinction between "needs" and "wants" becomes cloudy and subject to debate beyond the minimal levels of basics such as food, clothing, shelter, drinkable water, and breathable air. Items which most Americans would consider necessities of life may be useless extravagances to other cultures. Psychological studies have indicated that conditions which should have no effect on the body may be necessities for maintaining mental health, and therefore physical health and productivity. (*E.C.T.*)

Negative declaration. See **Negative declaration statement.**

Negative declaration statement (Negative declaration)

A statement finding that a proposed action does not constitute a major Federal, state or local agency action significantly affecting the quality of the human environment and therefore does not require an **environmental impact statement**. (*E. C. T.*)

Also see **Environmental analysis report.**

Negative easement. See **Easement, negative.**

Negative feedback. See **Feedback loop.**

Nekton

The whole group of aquatic animals that swim actively and may move long distances for feeding or breeding.

Those aquatic organisms that are carried passively by water currents or the wind are termed **plankton** and those that dwell on the bottom **benthos**. (*Southward 1965*)

Neoteric area

U.S. Forest Service usage. Sites and areas which have been designated by the Forest Service as containing outstanding examples of man's modern culture which will obviously become historic properties in the future. An example would be a present-day building designed by a very popular architect. (*U.S. Forest Serv., FSM 2361.23, June 1974*)

Areas of this type and all other **special interest areas** are identified and formally classified primarily because of their recreational values. (*W. W.*)

NEPA. See **National Environmental Policy Act.**

Net residential density. See **Residential density.**

New study area. See **Wilderness study area.**

New wilderness study area. See **Wilderness study area.**

Niche

1. "Habitat niche" or "spatial niche" usage. A place or position of life suitable for the capabilities or merits of an organism or qualities of a thing.

A **site** or **habitat** supplying the factors characteristically necessary for the successful existence of an organism or species. (*After Webster 1963*)

2. "Ecological niche" usage. The role of an organism in an ecological community, involving especially its way of life and its effect on the envi-

ronment—as through its relations to other **biotic** and **abiotic** factors. (*Webster 1963*)

The "ecological niche" of an organism consists of where it lives, what it does (how it transforms energy, behaves, responds to and modifies its physical and biotic environment), and how it is constrained by other species. The "ecological niche" can be subdivided into a "**trophic** niche" and a "multidimensional or hypervolume niche". (1) "Trophic niche". The feeding role or position of an organism in a **biotic** community—e.g., **producer, consumer, herbivore, carnivore, detritivore**, etc. (2) "Multidimensional or hypervolume niche". An organism's position in the environmental gradients, such as temperature, moisture, **PH**, soil and other conditions controlling existence. (*After Odum 1971*)

Nitrogen cycle

The sequence of biochemical changes undergone by nitrogen, wherein it is used by a living organism, liberated upon the death and decomposition of the organism and converted to its original state of oxidation. (*Soil Conserv. Soc. Amer. 1970*)

Noise

Sound that lacks agreeable quality, is noticeably loud, harsh or discordant. (*Sesco, et al. 1973*)

Noise pollution

1. The addition of energy in the form of sound to the environment beyond what would naturally occur or of a type which would not naturally occur. The degree of pollution is measured in terms of intensity, duration, frequency of occurrence, and sound frequency (wavelength or pitch). (*E. C. T.*)

2. Sound that unreasonably interferes with the enjoyment of life or property. (*Sesco, et al. 1973*)

Nonapparent easement. See **Easement, discontinuous.**

Nonconforming use. See **Use, nonconforming.**

Nonconsumptive quality

The quality of an area or resource for satisfying uses which do not alter the area or resource. (*E.C.T.*)

Also see **Nonconsumptive use.**

Nonconsumptive use

1. Those uses of resources that do not reduce the supply, such as many types of recreation. (*U.S. Forest Serv. 1972B*)

2. A use of an area or resource which does not alter the area or resource, and which the fact of one person partaking of this use does not reduce the quality for another user. (*E. C. T.*)

3. For example, for water some **consumptive uses** are irrigation and domestic and industrial use, while "nonconsumptive uses" would include direct power generation as well as boating, swimming, etc. (*E.M.G.*)

Noncontinuous easement. See **Easement, discontinuous.**

Non-Federal lands

Usage in the now dead, 1973 bill for a National **Land Use Policy and Planning Assistance Act**. All lands which are not **Federal lands** or **reservation and other tribal lands** and which are not held by the Federal government in trust for the benefits of Indians, Aleuts, and Eskimos. (*U.S. Congr., Senate, Com. Inter. Insular Aff. 1973*)

Non-market good valuation

Assessing the value of a good or service which is not traded in the **market place** and has no **market value**. Because it is not bought and sold some other measure than price must be used in establishing the value. (*E. C. T.*)

Also see **Market value.**

Nonmetric scaling

A method of choosing among alter-

natives similar to multiple factor analysis and not based on measuring values of the attributes of alternatives. The decision makers are given pairs of hypothetical alternatives varying in only one attribute. By statistical analysis the decision makers' preferences between the pairs are combined to give an "ideal alternative" as an origin and a coordinate system for measuring variations from the "ideal". The actual alternatives are then measured against this internally derived scale, and the alternative with the smallest distance in the coordinate system from the "ideal" origin is selected. (*After Mac Crimmon 1968*)

Nonpersistent pesticide (Soft pesticides)

A pesticide whose harmful effects are of relatively short duration and, therefore, do not normally contaminate the environment for long periods after application. Phosphate-based pesticides such as Malathion and Parathion are examples of nonpersistent pesticides. (*Sesco, et al. 1973*)

Non-point pollution source. See **Non-point source pollution.**

Non-point source pollution (Non-point pollution source)

Pollution whose source is general rather than specific in location. It is widely used in reference to agricultural and related pollutants. (*Sesco, et al. 1973*)

For example, **logging** operations production of sediments, agricultural pesticide applications, automobile exhaust pollution, etc.

Also see **Point source pollution.**

Nonrenewable resources (Stock resource, Exhaustible resource)

1. "Stock" resources and "exhaustible" resources are grouped here because they are conceptually very similar—if not often identical to—"nonrenewable" resources. (*C.F.S.*)

2. Resources whose total physical

quantity does not increase significantly with time. Thus with the total initial supply being limited in quantity each use must diminish the total stock (Wantrup's stock resources category). (*After Ciriacy-Wantrup 1968*)

3. The concept of an "exhaustible" resource is only meaningful if employed in an economic sense. Long before a given resource is physically used up it may be "exhausted" in the sense that further utilization is indefinitely discontinued because the costs of producing any possible quantity of this resource are larger than the revenues that could be obtained from this quantity. (*After Ciriacy-Wantrup 1968*)

The economic concept of resource exhaustibility typically only applies to **commodity** type resources because biological, locational and amenity type resources can be physically (by extinction or site occupancy) or conceptually (alteration of primeval wilderness conditions) exhausted. (*C.F.S.*)

Nonselected inventoried roadless area.
See **Nonselected roadless area.**

Nonselected roadless area

A roadless or undeveloped portion of a National Forest greater than 5000 acres (or smaller than 5000 acres but contiguous to designated wilderness or primitive areas) which after administrative review by the Forest Service has been deleted from consideration for inclusion in the wilderness area system. (*U.S. Forest Serv., FSM 8261.05, Apr. 1974*)

Also see **Roadless and undeveloped areas** and **Wilderness study areas.**

Non-use. For range management usage see **Use, Non-.**

Non-utilization. For range management usage see **Use, Non-.**

Norm

An ideal standard of conduct or ethical value binding upon the members of a group which serves to guide,

control or regulate proper and acceptable behavior. (*Webster 1963*)

Also see **Social norms**.

Normal erosion. See **Erosion, normal**.

Normative

Of, relating to, or dealing with **norms**—i.e., the ideal standards of conduct or ethical value that are binding upon the members of a group and serve to guide, control or regulate proper and acceptable behavior. (*After Webster 1963*)

Noxious species

Range management usage. An unde-

sirable plant species that is unwholesome to the range or animal. Not to be confused with species declared noxious by certain laws. (*Amer. Soc. Range Manage. 1964*)

NPS. National Park Service, U.S. Department of Interior.

Nutrient cycle. See **Biogeochemical cycle**.

Nutritive value

Range management usage. Relative capacity of a given forage to furnish nutrition for animals. In range management, the term is usually prefixed by high, low, or moderate. (*Amer. Soc. Range Manage. 1964*)

O

OBERS projections

National, regional, and subregional **demand schedule projections** produced by the Office of Business Economics and Economic Research Service (OBERS) under the direction of the Water Resources Council (WRC). These economic projections are available in the WRC "1972 OBERS projections", and represent the Council's current views as to probable rates of growth in population, the gross national product (GNP), employment, productivity, and other factors.

These national baseline projections are the best estimate of what can be expected to materialize if there are no policy or program changes of an unusual or unforeseen nature or magnitude in the factors which have been changing over time and which are expected to continue on course in the future. Of course, identifiable, long-term secular trends are implicitly incorporated into the projections. (*After U.S. Dep. of Agric. 1974*)

Objective (Plan objectives, Management objective, End result, Target)

1. A clear and specific statement of planned results to be achieved within a

stated time period. The results indicated in the statement of objectives are those which are designed to achieve the desired state or process represented by the **goal**. An objective is measurable and implies precise time phased steps to be taken and resources to be used which, together, represent the basis for defining and controlling the work to be done.

An objective must include four essential elements. (1) It must state the desired outcome—i.e., what is to be accomplished. (2) It must indicate the time period within which the expected outcome is to be achieved. (3) It must include measurement factors, such as quantity, quality or cost, so that the fact that the objective has been accomplished can be verified. (4) It must indicate who is responsible for achieving the indicated results. Desirable, but not absolutely essential, elements of objectives are a description of how it will be achieved and an indication of who will determine whether the result has been achieved. (*U.S.D.A. Off. Manage. Finance 1974*)

2. The specific, attainable ends toward which concentrated effort is directed.

When achieved, objectives represent significant and measurable progress toward the attainment of a broader, longer range "goal".

Characteristically, objectives are subordinate to "goals", are narrower and shorter range in nature, have a reasonable probability of attainment within specified time periods and resources, and are attained through measurable and quantifiable achievements. Expected results are defined in terms of milestones accomplished, services produced, or some other objective measure, even though the specific contribution toward achieving the building block objective may not be measurable. (*U. S. Forest Serv. 1972B*)

3. "Objectives" are more specific and quantifiable than "goals" because (1) they mainly apply to a smaller constituency, (2) They usually apply to a narrower field of welfare, and (3) they can be framed with greater detailed understanding of immediate needs. (*After Hills, Love and Lacate 1970*)

Also see **Target**.

Observer inferior

That visual relationship between viewer and viewed which exists when the location from which something is seen is below the level of that object or the dominant visual elements in the surrounding landscape.

From the "observer inferior" position, features in the **foreground** (i.e., up to about ½ mile distant) are most likely to be of maximum visual importance and the **middleground** (i.e., ½ to 3-5 miles) landscape is likely to contain the most distant visible elements. (*After Litton 1966*)

Observer normal

1. That visual relationship between viewer and viewed which exists when the location from which something is seen is at (or approximately at) the level of that object or the dominant visual elements in the surrounding

landscape. (*After Litton 1966*)

2. That viewing position (with respect to a feature or scene) in which a level line-of sight will generally coincide with the visually dominant elements of the landscape.

The "observer normal" viewing position generally concentrates visual attention on the solid or water elements of the landscape rather than on the sky. (*Litton 1968*)

Observer superior

That visual relationship between viewer and viewed which exists when the location from which something is seen is above the level of that object or the dominant visual elements in the surrounding landscape.

From the "observer superior" position, the maximum extent and expanse of view is expected to be visible with atmospheric conditions and earth curvature being ultimate distance limitations. (*Litton 1966*)

OMB requirements

Regulations and directives established by the U.S. Office of Management and Budget (OMB) which all Federal agencies are required to obey and include in their planning and management activities. (*E. C. T.*)

For an example see **Questionnaire**.

Omnivore

An organism that feeds on both animal and plant substances. (*Durrenberger 1973*)

Open cast mining. See **Mining, open-pit.**

Open-cut mining. See **Mining, open-pit.**

Open-pit mining. See **Mining, open-pit.**

Open range

All **suitable range** of an area upon which grazing is permitted. Also, ranges which have not been fenced into management units. (*Amer. Soc. Range Manage. 1964*)

Open space

1. Unbuilt or predominantly un-

built land serving the following purposes; (1) conservation of land and its resource features, (2) ecological protection, (3) park and recreation purposes, (4) historic and/or scenic purposes, (5) shaping and guiding urban form, (6) enhancement of community values and safety, (7) maintenance of options for the future. (*After Assoc. Bay Area Govs. 1970*)

2. Land and water areas which are retained in essentially undeveloped state on a permanent or semipermanent basis. (*U.S. Bur. Outdoor Recreation 1974*)

Open space zoning. See **Zoning, open space.**

Operational map. See **Map, operational.**

Operational planning. See **Ordinary planning** and **Project planning.**

Operations research

1. The use of analytic methods adopted from mathematics for solving operational problems. Among the common scientific techniques used in operations research are mathematical programming, statistical theory, information theory, game theory, Monte Carlo methods, and queueing theory. (*U.S. Forest Serv. 1972B*)

2. The application of mathematical and logical techniques to certain business problems with the object of discovering a best possible course of action. The procedure followed is usually to express the problem in the form of a mathematical equation, the solution of which indicates the effectiveness of a given set of conditions. The method may involve a sampling process, the calculation of probabilities, **linear programming**, or some other such technique. The computations are frequently so involved or so lengthy as to require electronic data processing. Sometimes called "management science." (*Sloan 1961*)

Opinion

A time-bound judgment or speculation that fluctuates unpredictably. In contrast to **beliefs** (i.e., tenaciously held convictions) "opinions" express what we believe at a given moment. "Opinions" generally are short-run impressions or "guesses" about specific objects, ideas, issues, or events that are usually involved with aspects of public affairs. (*O'Connell 1974*)

Also contrast with **Belief** and **Attitude.**

Opportunity cost

The value of the benefits foregone or given up due to the effect of choosing another management alternative that either impacts existing outputs or shifts resources away from other activities so that they are no longer produced and their benefits are lost. (*Dyrland 1973*)

Optimum land use

That **feasible** use which in the opinion of the decision maker provides the greatest increment of public welfare. (*Hills, Love and Lacate 1970*)

Option value

The amount an individual would be willing to pay to preserve (or would have to be paid to get him to sell) his option to participate in some activity or to use some resource at some future time, whether or not he ever actually participates or uses the resource. (*After Cicchetti and Fisher 1973*)

Ordinal value

Numerical values assigned to a variable which represent a ranking only. The numerical values have meaning only when compared to one another. Because of this, mathematical operations performed on the values (means, modes, differences, etc.) will not necessarily be valid, and the results of such operations must be carefully interpreted. (*E. C. T.*)

Also see **Cardinal value.**

Ordinance

1. A local law or regulation enacted by a city council or other similar body under powers delegated to it by the state. (*Webster 1963*)
2. A authoritative decree or direction. (*Webster 1963*)

Ordinary planning (Operational planning)

Any type of planning which, accepting existing **social institutions** as givens, seeks to design optimal alternative strategies for attaining optimal alternative futures. (*H.J. V.*)

Organic soil

A soil that contains a high percentage (greater than 20 or 30 percent) of organic matter in the upper layers (where living roots are primarily found). (*Soil Conserv. Soc. Amer. 1970*)

Also see **Mineral soil**.

Orphan banks. See Orphan lands.**Orphan lands (Orphan banks)**

Disturbed land surfaces resulting from **surface mining** that were inadequately reclaimed by the operator and for which that person no longer has any legally fixed responsibility.

Usually refers to lands surface mined previous to the passage of comprehensive mining reclamation laws. (*Grim and Hill 1974*)

Outdoor recreation. See Recreation, definition 3.**Outdoor recreation and wilderness system**

U.S. Forest Service usage. This system provides outdoor recreation opportunities and wilderness experiences for the Nation. The system includes all activities necessary to (1) develop, protect, and administer the forest recreational, scenic, and wilderness resources of the National Forests so that they will meet their full share of the Nation's existing and anticipated needs for these resources consistent with other uses, (2) develop new knowledge to improve the effectiveness of pro-

viding and managing outdoor recreation opportunities and wilderness, and (3) provide technical assistance and advice to other public and private forest landowners in developing forest-based recreational opportunities.

This is one of the six "systems" established by the U.S. Forest Service to have a systematic, orderly way to view and evaluate its many diverse but interrelated activities. The Forest Service has developed this approach to better respond to the mandates of the **Forest and Rangeland Renewable Resources Planning Act** of 1974. It has grouped its various **programs** into these six "systems", each of which incorporates all the activities concerned with developing and managing a specific resource. (*After U.S. Forest Serv. 1974A*)

The six "systems" are: **Land and water, Timber resource, Outdoor recreation and wilderness, Rangeland grazing, Wildlife and fish habitat, and Human and community development.**

Output

A broad term for describing any result, product, or service that a process or activity actually produces. (*U.S. Forest Serv. 1972B*)

Output, induced

The indirect result of system activities. They are generally the **primary outputs** of another resource system. An example is a specific form of timber harvest (primary) that produces improved wildlife habitat (induced). (*U.S. Forest Serv. 1974A*)

Output, primary

The main goods, services, or environmental conditions of a resource system—the key indicator used to identify with meeting a goal.

For example, the production of **animal-unit-months** of forage for livestock or board feet of timber harvested. (*U.S. Forest Serv. 1974A*)

Overburden

1. Mining usage. Material of any nature, consolidated or unconsolidated, that overlies a deposit of useful materials, ores or coal, especially overlying those deposits that are mined from the surface by open cuts. (*Thrush 1968*)

Overgrazing, local

Overgrazing in localized areas on a range, as, for example, near watering places. (*Amer. Soc. Range Manage. 1964*)

Overland flow (Sheet flow)

The rain storm or snow melt runoff water which flows over the ground surface as a thin layer—as opposed to the channelized (concentrated) runoff which occurs in **rills** and **gulleys**. (*After Soil Conserv. Soc. Amer. 1970*)

"Overland flow" typically causes **sheet erosion**.

Overlay map. See Map overlay.

Overstocking

Range management usage. Placing a number of animals on a given area that will result in **overuse** at the end of the planned grazing period.

Not to be confused with **overgrazing** because an area may be overstocked for a short period, but the animals may be removed before the area

is overutilized. However, continued overstocking will lead to overgrazing. (*Amer. Soc. Range Manage. 1964*)

Overstory

That portion of the trees in a forest, with more than one roughly horizontal layer of foliage, which forms the upper or uppermost layer. (*After Ford-Robertson 1971*)

Overuse. See Use, over-.

Over-utilization. See Use, over-.

Ownership

The exclusive right to occupy, sell, bequeath or mortgage property. (*Abrams 1971*)

Also see **Ownership, fee simple**.

Ownership, fee simple (Fee simple absolute, Fee simple title)

Ownership that may last forever and may be inherited by all heirs of an individual owner. This term is usually used in the sense of "fee simple absolute" which refers to ownership that has no limitation, qualification, or condition affecting it and is the maximum possible ownership in real estate under the system of property rights founded on English common law. (*After Webster 1963*)

Ownership rights. See Bundle of rights.

P

Palatability

Range management usage. The relish that an animal shows for a particular species, plant or plant part. (*Amer. Soc. Range Manage. 1964*)

The characteristics of plants that stimulate a selective grazing or browsing response by animals. "Palatability" is controlled by the plant factors of chemical composition, proportion of plant parts, growth stage, external form of plant parts; environmental factors such as **slope steepness**, wind, sun or shade; and the animal fac-

torn of instinct, learning, physiological state, individual behavioral pattern variations and animal sensory responses. (*H. F. H.*)

Also see **Selectivity**.

Paleontological area

U.S. Forest Service usage. Areas which have been designated by the Forest Service as containing significant remains (usually fossilized) of **flora** and **fauna** (nonhuman) of geologic time periods before the appearance of man.

P

Areas containing scientifically or educationally significant fossilized specimens of flora and fauna from previous geologic periods—e.g., coal swamp forests, dinosaurs, etc.

Vertebrate fossils of historic or scientific significance are considered to be "antiquities" by the **Antiquities Act**.

Extant plants and animals which are **relics** of the flora and fauna or other geologic time periods and are of historic or scientific significance are considered under **botanical areas** or **zoological areas**, respectively. (*After U.S. Forest Serv., FSM 2362.45, July 1973*)

Areas of this type and all other **special interest areas** are identified and formally classified primarily because of their recreational values. (*W. W.*)

Panoramic landscape. See **Landscape, panoramic.**

Paper plan (Map plan)

A term sometimes used to describe formal plan documents which consist mainly of a map on which land use regulation districts are indicated. While a "paper plan" is accompanied by such explanatory written information as is necessary to convey its meaning, the basic regulatory document is the map.

In contrast, plans whose basic regulatory document consists of a set of **policies** are sometimes called **policy plans**, whether accompanied or not by maps differentiating the **planning area** into districts where some specific policies apply while others do not. (*C.F.S.*)

Paradigm

A collection of the major assumptions, concepts, and propositions in a substantive area. Paradigms serve to orient research and theorizing in the area, and in this respect they resemble models.

The usefulness of paradigms derives from their providing a compact codifi-

cation of the central concepts and their interrelations. This codification encourages research and theorizing and may allow qualitative analysis to approach the precision of quantitative analysis. (*O'Connell 1974*)

Parent material

The unconsolidated, chemically weathered mineral or organic matter from which the upper layers (i.e., where living roots are primarily found) of soil develop. (*After Soil Conserv. Soc. Amer. 1970*)

Parent plan

U.S. Forest Service usage. A plan establishing the decision framework in which other plans are made.

For example, the **planning area guide** is the parent plan for individual National **Forest land use plans**, and the National Forest land use plans are parent plans for unit plans. (*U.S. Forest Serv. 1971*)

Parent rock

1. The original rocks from which **sediments** were derived to form later rocks. (*Amer. Geol. Inst. 1962*)

2. The rock from which the **parent materials** of soils are formed. (*Amer. Geol. Inst. 1962*)

Pareto optimum

In welfare economics, a concept that sets a condition necessary to maximize the economic wealth of a given society. The pareto optimum is said to have been achieved when it is impossible to make one person better off without making another (or others) worse off. (*After U.S. Gen. Account. Off. 1969*)

Part per million (PPM)

One part by weight of dissolved chemical, or suspended sediment, in 1 million parts by weights of water. (*Feth 1973*)

Pasture

1. An area devoted to the produc-

tion of **forage** (introduced or native) and harvested by grazing. (*Soil Conserv. Soc. Amer. 1970*)

2. Grass or other growing plants used as food by grazing animals. (*Amer. Soc. Range Manage. 1964*)

3. A grazing area enclosed and separated from other areas by a fence. (*Amer. Soc. Range Manage. 1964*)

Pasture, annual

A **pasture** consisting of introduced forage species planted for only one year or season's duration. (*After Amer. Soc. Range Manage. 1964*)

Contrast with **Pasture, permanent**.

Pastureland

1. Land used primarily for the production of adapted domesticated forage plants to be grazed by livestock. (*U.S. Soil Conserv. Serv. 1970*)

2. Land producing forage plants, principally introduced species, for animal consumption. Management practices usually include one or more treatments such as reseeding, renovating, mowing, liming, or fertilizing. **Native pasture** that because of location or soil limitation is treated like **rangeland** is included in this category. (*U.S. Dep. Agric. 1967*)

Pastureland, native. See **Pasture, native**.

Pasture management

The application of practices to keep pasture plants growing actively over as long a period as possible so that they will provide palatable feed of high nutritive value; to encourage the growth of desirable grasses and legumes while crowding out weeds, brush, and inferior grasses. (*Soil Conserv. Soc. Amer. 1970*)

Pasture, native (Native pasture land)

Land used for grazing on which the climax (natural potential) plant community is forest but which is used and managed primarily to produce native or naturalized plants for forage. Includes cutover forest land, pasture-

land, or cropland originally cleared from forest and managed for native or naturalized forage plants. (*U.S. Soil Conserv. Serv. 1970*)

Pasture, permanent

A **pasture** consisting mainly of introduced perennial plants which are permitted to remain for a number of years. (*Amer. Soc. Range Manage. 1964*)

Contrast with **Pasture, annual**.

Pasture, rotation

1. A pasture of introduced perennial and/or self-seeding annual species, comprising a unit in a crop rotation of 5 years duration or less. (*Amer. Soc. Range Manage. 1964*)

2. May also refer to a pasture within a **rotation-grazing, deferred-rotation grazing, or rest-rotation grazing system**. (*Amer. Soc. Range Manage. 1964*)

Patch cutting

1. A **clearcutting system** variation in which the logging operation removes all merchantable timber in patches of about 40 to 200 acres, separated for as long as practicable (preferably until the regeneration is adequately shading the forest floor) by living forest, so as to both secure the optimum dispersal of seed and to avoid the high hazard of large continuous areas of logging debris. (*Ford-Robertson 1971*)

2. U.S. Forest Service usage. "Patch cuts" are logging operations of the size generally mapped for timber type and condition and for control, but which do not include the entire stand of which they are a part.

The minimum size will be 10 acres and the maximum size, 100 acres. (*After U.S. Forest Serv., FSM 2471R-3, date unknown*)

Patches are usually between 15 and 40 acres in size. (*After U.S. Forest Serv., FSM 2471,2]R-5, Sept. 1971*)

Also see **Group cutting**, definition 2

for a comparison with similar logging approaches.

Patented mining claim. See **Mining claim, patented.**

Peak discharge

The maximum volume of flow attained at a given point in a stream during a runoff event. (*After Amer. Geol. Inst. 1962*)

Perched groundwater table. See **Water table, perched.**

Perched water table. See **Water table, perched.**

Percolation

The downward movement of water within a soil, especially the downward flow of water in saturated or nearly saturated soil.

Flow through a soil in contradistinction to the word **infiltration** which connotes flow through a soil. (*Soil Conserv. Soc. Amer. 1970*)

Perennial stream

Streams that flow throughout the year and from source to mouth. (*Amer. Geol. Inst. 1962*)

Also see **Ephemeral stream** and **Intermittent stream.**

Performance standard zoning. See **Zoning, performance.**

Performance zoning. See **Zoning, performance.**

Periodic allowable cut. See **Allowable cut, definition 2.**

Periodic allowable yield. See **Allowable cut, definition 2.**

Periodic cut. See **Allowable cut, definition 2.**

Periodic yield. See **Allowable cut, definition 2.**

Peripheral species. See **Species, peripheral.**

Permanent pasture

Artificial **pasture** consisting mainly

of perennial plants which are permitted to remain for a number of years. (*Amer. Soc. Range Manage. 1964*)

Permanent water

Range management usage. A watering place which supplies water at all times throughout the year or throughout a grazing season. (*Amer. Soc. Range Manage. 1964*)

Permeability

1. Capacity for transmitting water. It is measured by the rate at which water can move through soil in a given interval of time. (*Soil Conserv. Soc. Amer. 1970*)

2. The readiness with which water moves through the soil pores.

"Permeability" also implies movement into the soil and a "surface permeability" (i.e., an **infiltration** rate) could be measured.

Quantitatively, "permeability" is the rate of readiness with which a soil transmits water under standard conditions. (*U.S. Forest Serv. 1961*)

3. The readiness with which soil or rock allows water, air, or plant roots to penetrate or pass through. (*After Webster 1963*)

Permissible cut. See **Allowable cut, definition 2.**

Permissible soil loss. See **Soil loss tolerance.**

Permissible yield. See **Allowable cut, definition 2.**

Persistent pesticides (Hard pesticides)

Pesticides composed of compounds that retain their toxicity for long periods of time after application such as DDT and many other chlorinated hydrocarbons. Such pesticides do not deteriorate quickly, work their way up the food chain through various animals and may accumulate in the fatty tissues of animals, including man, and remain there indefinitely. (*Sesco, et al. 1973*)

Personal distance. See **Individual distance**.

Personal space

Environmental psychology usage. An area with invisible boundaries surrounding a person's body into which intruders may not come. It is not necessarily spherical in shape, nor does it extend equally in all directions. An invasion of "personal space" is an intrusion into a person's self boundaries.

Individual distance and personal space interact to affect the distribution of persons. (*Sommer 1969*)

Also see **Individual distance**.

Persons at one time (PAOT)

Public recreational usage measurement term. The number of people in an area or using a facility at the same time. Generally used as "maximum PAOT" to indicate capacity of an area or facility to support peak usage loads. (*E.C.T.*)

Perspective

That which suggest the effects of distance upon the appearance of objects. (*Runes and Sehrickel 1946*)

Perspective, aerial

Concerning the effects of distance from the viewer upon the color and distinctness of objects—especially as due to the transparency of the intervening air. Typically objects become bluer, greyer, **edges** less distinct, and there is less contrast of light and shade with increasing distance from the viewer. (*After Runes and Sehrickel 1946*)

Perspective, linear

Pertaining to the effects of distance from a viewer upon the appearance of the size and form of objects. (*Runes and Sehrickel 1946*)

PERT

Program Evaluation and Review Technique. See **Critical path method**.

Pesticide

A general term applied to a variety of chemical pest control measures, in-

cluding insecticides for insects, herbicides for plants, fungicides for fungi, and rodenticides for rodents. (*Sesco, et al. 1973*)

pH

A measure of the hydrogen-ion activity in solution, expressed on a scale 0 (highly acid) to 14 (highly basic); 7.0 pH is a neutral solution, neither acid nor basic. (*Feth 1973*)

Photomontage

1. A combination of several distinct photographic pictures so they often blend with or into each other to produce a composite picture which may or may not appear to be made up of separate pictures. (*Webster 1963*)

2. A composite picture or edited film in which contrasting shots or sequences are juxtaposed or blended for the purpose of suggesting a total idea or impression, or developing a theme. (*After Webster 1963*)

Phreatophyte

1. A type of plant that habitually obtains its water supply from the zone of **groundwater** saturation, either directly from within the ground water level or from the capillary fringe just above it. (*Durrenberger 1973*)

2. Plants which grow from ground water supplies. (*Marsh 1964*)

Physical carrying capacity. See **Carrying capacity, ecological** definition 5.

Physical life

That period of time that a facility exists, not necessarily in a useable condition or used. Often facilities are removed from active service and kept intact some years before they are junked or destroyed, or they may be just left in their service position but never used. (*Winfrey and Zellner 1971*)

Also see **Economic life**.

Physical planning

1. A form of urban land use planning which attempts to achieve a phys-

ically attractive urban **open space** environment by regulating the physical relationships of structures to their sites and surroundings—with such devices as set back requirements, building height controls, maximum lot coverage by structures and unnatural surfaces, etc. (C. F. S.)

The intent of such physical standards is to avoid the claustrophobic and ugly urban open space environments which came to characterize cities in the 1800's. Some feel that rigid application of these regulatory tools is responsible for much of the physical monotony in our present cities. (C. F. S.)

Physiographic (Morphologic)

1. Physiography is the description of the surface features of the earth, as bodies of air, water and land. (Stamp 1961, citing Powell 1895)

2. Physiographic refers to the surface features of the earth's solid crust and with the relations of air and water to it. (Stamp 1961, citing Salisbury 1907)

3. In the United States the term "physiographic" is sometimes used as equivalent to geomorphologic. However, **geomorphology** is definitely limited to the study of landform genesis. Whereas "physiography" may be only descriptive, "geomorphology" must be interpretive of the origins of land surface forms. (Stamp 1961, citing Fenneman 1938 after Stamp 1961)

In the United States "physiographic" is used in the same sense as the British usage of "morphologic"—i.e., relating to the form of land surfaces. (After Stamp 1961)

Physiographic climax. See **Climax community**, definition 3.

Physiographic determinism

A theory that the natural elements of an environment should be respected in planning and given priority consideration in arriving at **policy** determina-

tions. For example, "nature" should have priority in the planning the "**aquifers**" and wetlands, and the rest of nature's assets should be preserved in any development plan. (After Abrams 1971)

Physiographic determinism is essentially equivalent to **ecologic determinism** and **biophysical determinism**. However in its true meaning physiographic only refers to the nonliving elements of an environment while "physiographic determinism" is intended to encompass the living elements as well. (C.F.S.)

Physiographic production

Referring to those controls over the amount of occurring or potential **biotic** productivity which are due to **abiotic** environmental factors (such as **regional climate**, geologic materials, **slope orientation**, elevation, etc.). (C. F. S.)

Physiographic province. See **Region**, **physiographic**.

Physiographic region. See **Region**, **physiographic**.

Physiographic site class

G.A. Hills land classification usage. Units created by isolating areas within the **landtypes** on the basis of local climate considerations—such as slope orientation. (After Belknap and Furtado 1967)

Subdivisions of a "landtype" based on local climate variations in air temperature and humidity. Variation in plant communities is used as the principal indicator of climate variation. (After Belknap and Furtado 1967)

The third largest unit in Hills' land classification system. The various levels, in order of decreasing size, are **Site region**, **Landtype**, **Physiographic site class**, **Physiographic site type** and **Physiographic site phase**.

Physiographic site phase

G.A. Hills land classification usage.

If specific land use activity requirements cannot be determined on the basis of the information contained in **physiographic site types**, a "physiographic site phase" is added to the hierarchy to isolate the other needed significant qualities. (*After Belknap and Furtado 1967*)

A "site phase" is created by adding information on the use requirements (e.g., beach slope and width, water depth) to the map of "physiographic site types". (*After Belknap and Furtado 1967*)

Further subdivision of "site types" to indicate site requirements for specific activities. (*After Belknap and Furtado 1967*)

The various levels in Hills' land classification system, in order of decreasing size, are **Site region, Landtype, Physiographic site class, Physiographic site type and Physiographic site phase**.

Physiographic site type (Landscape type, Facies)

G.A. Hills land classification usage. The smallest unit with any homogeneity in landscape features. (*After Belknap and Furtado 1967*)

The units delineated by differentiation of micro-landform variations (ex. ridge tops, valley bottoms, toeslopes, etc.) within a **physiographic site class**. (*After Belknap and Furtado 1967*)

A subdivision of the physiographic site class based on local variations in soil moisture and depth.

A physiographic site type can vary from 5 to 100 acres.

The site type is the basic unit of plant ecology according to Hills. According to the natural controls of plant succession and the human controls of crop production, a variety of ecosystems may develop on each physiographic site type. Crop production is defined broadly to include such uses as corn, houses, or a recreational activity. (*After Belknap and Furtado 1967*)

Generally the smallest unit in Hills'

land classification system. The various levels, in order of decreasing size, are **site region, landtype, Physiographic site class, Physiographic site type and Physiographic site phase**.

Phytoplankton. See **Plankton**.

Pit mining. See **Mining, open-pit**.

Pitting

Range management usage. Making shallow pits or basins of adequate capacity and distribution on range to speed range improvement by retaining water from rainfall and snowmelt and by reducing competition to desirable species from a dense stand of less desirable vegetation. (*Amer. Soc. Range Manage. 1964*)

Placer claim

A **mining claim** located upon a mass of gravel, sand, or similar material (resulting from weathering, erosion and/or stream deposition) containing particles of gold, platinum, tin or other valuable minerals and whose valuable mineral contents are extracted by concentration in running water.

The maximum size of an individual "placer claim" is 600 by 1320 feet (10 acres). (*Thrush 1968*)

Placer mining. See **Mining, placer**.

Plan

1. A formalized statement of **goals, objectives, and policies**. (*U.S. Forest Serv. 1971*)

2. An assemblage of management directions. (*U.S. Forest Serv. 1971*)

3. A predetermined course of action. (*U.S. Forest Serv. 1971*)

4. A plan is an ordered decision or set of decisions on the ways in which to achieve certain objectives.

A plan is not an end in itself. It is a means to an end, and the end is more important than the means. (*Allen and Sharpe 1960*)

5. Statements in words and graphics of the findings, conclusions, pro-

posals and recommendations of the planning process. When adopted, "plans" become public policies and **programs**.

"Plans" are working instruments—guides for administration, but not end products. As such, plans are never completed. Plans are subject to change as policies change due to unfolding events, such as changing standards of life style, environmental factors, and advancing technology. (*U.S. Civil Serv. Comm. 1973*)

Plan controls

Any of the various legal and administrative methods which are available for implementing a land use plan's **goals, objectives, or policies**. (*C.F.S.*)

"Plan controls" include such devices as **ordinances, zoning**, use permit and hearing procedures, design criteria, performance standards or any other formal means or procedure for attaining a land use plan's goals, objectives or policies. (*C.F.S.*)

Plan element

1. U.S. Forest Service usage. The major land use planning elements of the U.S. Forest Service are: legal requirements and authorities, national and regional objectives and **targets, management situation, basic assumptions, data collection, land capability**, alternative considerations, plan selection, **functional planning** and documentation. (*U.S. Forest Serv., FSM 8213, Oct., 1973*)

2. A discrete topic area or issue of concern in an overall plan—e.g., housing, open space, recreation, transportation. (*C.F.S.*)

Plan goals. See **Goal**.

Planimetric map. See **Map, planimetric**.

Plankton

The small (usually less than 2mm long) floating or drifting life forms in water bodies, plankton includes both plants (phytoplankton) and animals

(zooplankton) that are carried passively in the water currents. Those that can swim do so to change or adjust their depth in the water, not to move from place to place.

Plankton is one of the 3 main divisions of aquatic life with the others being "nekton" (the animals that swim actively and may move long distances for feeding or breeding) and the "benthos" (organisms which crawl about on the bottom, or burrow into the bottom or grow attached to the bottom). (*Southward 1965*)

Planned grazing system

A system of grazing in which two or more grazing units are alternately rested from grazing in a planned sequence over a period of years. The rest may be throughout the year or during the growing season of the key species. (*D.E.H. and B. W.*)

Planned unit development. See **Cluster development**.

Planned unit development zoning. See **Zoning, cluster**.

Planner

1. Anyone who plans—for example, a city planner, economic planner, public health planner, social planner or landscape planner. (*Abrams 1973*)

2. One whose profession consists of identifying community needs, resources and problems and assisting citizens in making decisions on **goals, policies, priorities, plans, programs** and methods of implementation designed to create a physical, economic and social environment in which the human activities desired by the members of the community may flourish. (*U.S. Civil Serv. Comm. 1973*)

Planning

1. The act of deciding, in advance, what to do. A dynamic effort to use decisions to guide future actions and decisions.

A means of solving future problems

by intent. One step in the process of guiding the future. (*U.S. Forest Serv. 1971*)

2. The determination of the **objectives** or **goals** of an enterprise and the selection, through a systematic consideration of alternatives, of the **policies, programs** and procedures for achieving them. (*U.S. Forest Serv. 1972B*)

3. Colloquial context—designing the future organization and relationship of parts. (*Friedman 1963*)

4. Professional context—the process of finding alternative solutions to a problem. A way of thinking about and coming up with solutions for future problems. (*Friedman 1963*)

5. A process oriented predominant toward the future and deeply concerned with the relation of goals to collective decisions in policy and program. (*Friedman 1963*)

6. A process of conflict resolution (usually future) by designing optimum relationships between components without attempting to favor or eliminate any party in the (future) conflict. (*H.J.V.*)

7. The attainment or the effort to attain, some future objective or objectives by a rational determination in the present of the requisite resources, personnel, and procedures needed to achieve that objective or those goals. (*Mc Closkey 1971*)

8. A continuous process through which some **planning agent** identifies goals, designs alternative resource-use programs, selects and activates a program, and analyzes its consequences for the purpose of determining whether the goals are being achieved. (*H.J.V.*)

9. A method of public decision-making which emphasizes explicit goal-choice and rational goals-means determination, so that decisions can be based on the goals people are seeking and on the most effective programs to achieve them. (*Gans 1968*)

10. The planning process can be conceptually divided into five phases: (1) identification of opportunities, problems and **issues**; (2) formulation of policies and objectives; (3) data collection, analysis and interpretation; (4) plan formulation; and, (5) plan implementation. In practice, these are not discrete steps and the sequence may vary. Objectives are refined as the process proceeds. Feedback among the phases is continuous. Work on plan formulation often indicates the need for additional information which may alter the conception of objectives and problems. In addition, experiences with implementation may result in plan modification or the need for additional information. Each phase of the process is strongly interconnected with all the others in a monitoring **feedback loop**. Citizen participation, public input, and reaction are a key part of every phase in the planning process. (*Calif. Council Intergov. Relat. 1973*)

11. The process of preparing a set of alternative courses for decisions in establishing the best action to insure the future availability and development of adequate resources, facilities, and services required to support human activities. (*U.S. Civil Serv. Comm. 1973*)

Planning agent

The person(s) or organization actually doing the planning. A "planning agent" may be a natural person (an individual householder or entrepreneur), a family, a legal person (a corporation, a trade association), or various levels of government (Federal, state, county, public district). (*H.J.V.*)

Planning, anticipatory

Any planning approach which operates by attempting to foresee potential issues and develop solutions to them before they become real, overt problems. (*C.F.S.*)

Planning area

1. U.S. Forest Service usage. A specifically identified geographic area containing social and physical resources and land characteristics of a generally similar nature.

The reason for identifying planning areas is that general similarities in physical characteristics, resources, economics, and social needs should give rise to similar management opportunities, and constraints. Therefore, all planning efforts, irrespective of administration or government boundaries, should be coordinated.

A variety of considerations may interact to determine the size and boundaries of a planning area; topography, vegetation or broad habitat type, climate, history of land use, populations—human and animal, economy and the relationship of these and other elements to each other will affect the definition of a planning area. These areas may, and will likely, cross such administrative boundaries as Forest Service Regions, National Forests, and Ranger Districts. A planning area should be of sufficient size to provide for flexibility in patterns of land development and use of resources. State and multicounty planning districts, and the integrity of counties, should be strong considerations in the establishment of planning area boundaries. Commonality of boundaries will aid in cooperative planning and data exchange. The area should permit a maximum of agencies or governments to contribute and receive resource data and relate demand allocations with the highest degree of compatibility practical.

Planning area level considerations are basic for all Forest Service land and resource management programs in that area. The Regional Foresters in such planning areas provide the management direction for each area by coordinating the managers having

Forest Service land management responsibilities (National Forest Service, State and Private Forests; and Research, as appropriate). They also maintain coordination between Forest Service and other government agencies (State and Federal), and attempt to make coordinated demand projections for the resources located within the land area with specific allocation to the National Forest lands. (*U.S. Forest Serv., FSM 8221, Oct., 1973*)

2. U.S. Forest Service usage. The geographical area to which a **planning area guide** applies.

3. U.S. Forest Service usage. The largest Forest Service land use planning subdivision.

"Planning areas" are delineated by use of county boundaries in the California Region.

Planning area guide (Guide, Area guide)

1. U.S. Forest Service usage.

A Forest Service document which specifies the peculiarities of the **planning area** as compared to other areas and provides an interpretation of the significance to management of these peculiarities.

The objective of the guide is to provide broad land use direction to be followed by all Forest Service administrative units with land management responsibilities within the planning area.

The planning area guide should provide **goals** and **targets** reflecting the National Forest's share of all forest objectives and outputs for the planning area, including, and in relation to, State and private lands. (*U.S. Forest Serv., FSM 8222.1, Oct., 1973*)

A document that provides broad management direction for all National Forest System land planning, management, development, use, and protection activities within the planning area. A separate planning area guide is developed for each planning area. A "plan-

ning area guide" is frequently referred to merely as the "guide" or "area guide".

Planning horizon

1. The time period (fixed by the planner) which will be considered in the planning process. It is assumed to span all activities covered in the plan and all future conditions and effects of alternative actions which would influence the planning decisions. (*E.C.T.*)

2. U.S. Forest Service usage. The furthest point in time for which management systems are specified in a management program for a planning unit.

For example, in the 1970 timber review, the "planning horizon" was 2020. (*U.S. Forest Serv. 1972B*)

Planning level

Referring to the scale of a planning effort—usually denoted by the size of the project or the governmental level at which the planning is being done, e.g., site or project planning, municipal planning, county planning, metropolitan regional planning, state planning, interstate regional planning, national planning, etc. (*C.F.S.*)

Planning process. See **Planning** definition 10.

Planning-Programming-Budgeting System (PPBS)

A planning and decision-making tool that attempts to organize information and analysis so that the consequences of alternative **policies** are clearly revealed and fully comparable. Under PPBS, ordered instituted in each Cabinet agency by President Johnson in 1966, **programs** having the same purpose are grouped together under the same category and compared to see which represents the best use of the government's money. PPBS endeavors to display the allocation of resources in terms of the function; to gather hard, quantitative information on the actual results of programs; and

to analyze the cost of the various efforts to achieve similar ends and rank them in terms of their effectiveness per dollar. (*Abrams 1971*)

Planning unit

1. U.S. Forest Service usage. National Forests (including lands within and contiguous to National Forests) are subdivided into planning units. These units are geographic areas of land, varying in size, that are characterized by particular patterns of topography, climate, and land use. A unit may occur as one major drainage, several separate drainages, or portions of drainages.

Planning units are described as specific, identified and delineated land areas. They are large enough to encompass most of the meaningful or significant relationships within a drainage or series of drainages. Topographic features are logical places for planning unit boundaries because of the need to be able to identify boundaries on maps and photographs, and on the ground.

A number of factors influence the boundaries, size, and layout of planning units, among which are: (1) intensity of planning expected; (2) the resources available for doing planning, such as people and time; (3) presence or absence of particularly unique features; (4) perceived complexity or homogeneity of the land features; (5) public involvement inputs; and (6) planning team judgment.

In defining these units, the objective is to preserve as much uniformity as possible in relationships significant to land management. Such factors as existing transportation systems, population influences, current land use, topography, soils, industrial dependency, ownership, and public feelings are considered in establishing the boundaries for planning units. No two planning units are exactly equivalent in the factors which influence the boundaries of the planning unit.

The purpose of planning units is to provide a focus for planning activities in a small enough area to be workable and large enough to enable a planning team to envision or predict the cause-and-effect relationships of management alternatives. (*U.S. Forest Serv., FSM 8226, Oct. 1973*)

2. U.S. Forest Service usage. That geographical area of land and water, smaller than a Forest Service **planning** area to which a forest service **unit plan** applies.

No size limits are arbitrarily established for planning units. Planning unit boundaries may cross both planning area and **administrative unit** boundaries.

The "planning unit" will be the only area for which a **site specific** plan will be developed. Planning for the other two types of areas in the U.S. Forest Service land use planning system, the planning area and the national forest, concentrate more on general **assumptions, goals, policies, targets**, national and regional conditions, etc., to build the framework within which the "unit planning" will occur. (*After Rupp 1974*)

Plan objective. See **Objective**.

Plan selection

1. U.S. Forest Service usage. Subjected to the planning process, it is essentially a choice governed by a reasonable and rational perception of how the available resources can be most efficiently managed to achieve optimum multibenefits for the American people. The process includes full consideration of the priorities and preferences expressed by the public at all levels to be affected by the plan. (*U.S. Forest Serv., FSM 8213, Oct. 1973*)

2. The selection of one plan from a set of alternative plans. (*E.C.T.*)

Plant association. See **Plant community**.

Plant community

1. Any aggregation of plants. (*Hanson and Churchill 1961*)

2. A group of **stands** (i.e., a particular aggregation of plants having a high degree of uniformity in composition and structure and occupying an area of essentially uniform environment) that are similar in species composition and structure and occupy similar habitats. (*Hanson and Churchill 1961*)

3. Plant species tend to be grouped in different combinations forming more or less definite "communities". Each of these communities is characterized by certain species which are inconspicuous or unrepresented in other communities, and wherever areas of equivalent environment are encountered, whether continuous or detached, essentially the same plant assemblage reappears. In other words, the individuals of each species are not scattered at random, but are distributed in a pattern over the landscape. (*Daubenmire 1968*)

Also see **Biotic community**.

Plant cover type. See **Cover type**.

Plant retrogression

The process of vegetational deterioration whereby the same area becomes successively occupied by different **plant communities** of lower ecological order in **succession**. (*Amer. Soc. Range Manage. 1964*)

Plant succession. See **Succession**.

Plat

A diagram drawn to scale and showing essential data pertaining to boundaries and subdivisions of a tract of land, as determined by survey or drawing to scale.

The primary purpose of a plat is to show boundary survey and ownership information rather than map information. (*U.S. Forest Serv., FSM 7140.5, June 1973*)

Pluralism

A description of society that contends that political power is distributed among a variety of groups and **institutions**. Pluralist theory argues that political resources—wealth, education, prestige, skill, votes—are divided and that no group has a monopoly over all resources.

In contrast, elitist theories of power argue that small groups of individuals rule a country in their own economic interest. Pluralists agree that only small numbers of citizens participate directly in decision-making, but they argue that these elites compete for economic rewards, differ on policy, are open for others to join, and are indirectly influenced by voters. "Elitists" contend that members of the ruling power elite share a procapitalist ideology, are unified by a similar upper-class background, and are linked by institutional and personal ties. (O'Connell 1974)

Pluralistic society (Cultural pluralism)

A society in which there are widely differing and often conflicting points of view as to how the access to or use of a particular resource (or resources in general) should be allocated. The United States is most often cited as the prime example of a pluralistic society. (C. F. S.)

Plutonic rock. See Rock, igneous.

Point pollution source. See Point source pollution.

Point source pollution (Point pollution source)

Pollution whose source is specific rather than general in location. For example, particulate matter emanating from a specific smoke stack is point source pollution. (Sesco, et al. 1973)

Also see **Non-point source pollution**.

Police power

A state's inherent and plenary pow-

er over persons and property which enables the society to prohibit or regulate all things inimical to its comfort, safety, health, and welfare. (*U.S. Bur. Outdoor Recreation 1974*)

Also see **Eminent domain**, **Just compensation**, and **Taking**.

Policy

1. A definite course or method of action selected by a governmental agency, institution, group or individual from among alternatives and, in the light of given conditions, to guide and usually determine present and future decisions.

A specified decision or set of decisions designed to carry out such a chosen course of action. (*Webster 1963*)

2. A specific decision or set of decisions together with the related actions designed to implement them. (*Webster 1963*)

3. The specification in concrete details of ways and means for the attainment of **goals** and **objectives**. (*Hill 1968*)

Policy plan

This term is sometimes used to describe a formal plan document consisting entirely of a set of **policies** unaccompanied by maps differentiating the **planning area** into districts where some policies apply while others do not.

In contrast, a plan whose formal plan documents consist mainly of a map on which land use regulation districts are indicated is sometimes called a **paper plan** or "map plan". While "paper plans" are accompanied by such explanatory written information as is necessary to convey their meaning, the basic regulatory document is still the map. (C.F.S.)

Political boundary

A boundary which marks the limits of a political jurisdiction. The bound-

aries of cities, counties, states and nations are political boundaries. Lesser political boundaries limit tax districts, legislative districts, etc. (*Banks 1964*)

Political determinism

A particular point of view in planning which advocates that all resource use and allocation decisions should be made via the political process—i.e., by elected representatives and legislation.

In theory, politics is our society's means for attaining some needed resolution of issues via compromise from the often conflicting demands on a resource by different groups. This point of view believes that elected representatives' decisions are responsive to and representative of the collective judgments of their constituents [sic]. Politics thus is viewed as the process by which society makes group choices about resource use allocation, passes final judgment upon interim administrative decisions and conveys the right (via legislation) to regulate resource use—be the resource some **commodity** such as timber or the exercise of private **property rights**. It is believed that because political decisions are societal choices they are the best choices that can be made and thus should be the basis for making planning decisions. (*C.F.S.*)

Political institutions

A society's system of legal rules and principles. (*Webster 1963*)

Pollution

1. Any substance or energy form (heat, light, noise, etc.) which alters the state of the **environment** from what would naturally occur. Especially associated with those altered states which human value judgments have decreed as bad. (*E. C. T.*)

2. Pollution is best considered an activity of man, which directly or indirectly results in the addition to water, air or soil, of matter or energy which has a deleterious effect on living organisms or structures it is desirable to pre-

serve, or which reduces the quality of water, air or soil for any subsequent use. In this context such terms as natural pollution and visual pollution (not referring to decreased visibility due to air pollution) are meaningless and should not be used. (*Russell 1974*)

3. Pollution is the presence of matter or energy in an unusual or unintended place. (*Yapp 1972*)

4. The presence in the environment of one or more contaminants, nuisances, and the like in sufficient quantities and of such characteristics and duration as to be injurious or irritating to human, plant, or animal life, to health, or to property, or to unreasonably interfere with the enjoyment of life or property. (*Sesco, et al. 1973*)

Pollution criteria. See **Criteria**.

Pollution standard. See **Standard**.

Positive feedback. See **Feedback loop**.

Possibly extinct species. See **Species, recently extinct or possibly extinct**.

Potential. See **Biotic potential**.

Poverty, absolute

A **standard of living** below the minimum needed for maintenance of life and health. (*O'Connell 1974*)

Also see **Poverty, relative**.

Poverty, relative

A condition characterized by a scarcity rather than a lack of economic necessities. A relatively poverty-stricken person is poor in comparison with a majority of others in his society, but his level of living usually does not constitute an immediate threat to life or health. (*O'Connell 1974*)

Power. See **Social power**.

PPBS. See **Planning-Programming-Budgeting System**.

PPM. See **Parts per million**.

Prairie

An extensive tract of level or rolling

land that was originally treeless and grass covered.

A prairie is usually characterized by a deep fertile soil. (*Amer. Soc. Range Manage. 1964*)

Pre-existing use. See **Use, pre-existing.**

Preferable species

Range management usage. Species that are preferred by animals and are grazed by first choice. (*Amer. Soc. Range Manage. 1964*)

Also see **Ice cream species.**

Preference. For range management usage see **Grazing preference.**

Pre-law strip mining. See **Mining, pre-law strip.**

Premature grazing. See **Grazing, premature.**

Prescribed burn

Intentional application of fire to **wildland** fuels in either their natural or modified state, under such conditions of weather, fuel moisture, soil moisture, etc. as allow the fire to be confined to a predetermined area and at the same time to produce the intensity of heat and rate of spread required to further certain planned objectives of silviculture, wildlife management, grazing, fire-hazard reduction, etc. It seeks to employ fire scientifically so as to realize maximum net benefits with minimum damage and at acceptable cost. (*Ford-Robertson 1971*)

Also see **Controlled burn.**

Prescribed cut. See **Allowable cut**, definition 2.

Prescribed yield. See **Allowable cut**, definition 2.

Pressure group (Interest group, Special interest group)

1. Any **special interest group** which actively advocates for special consideration of its resource use goals. (*C.F.S.*)

2. Any politically active group with a common set of values about re-

source use allocation. Pressure groups seek to influence decisions on resource use allocation in excess of their proportional representation in the planned-for populace by seeking preferential consideration for their resource use choices. (*C.F.S.*)

3. Any group having a distinct ideology or set of goals and attempting to achieve those goals through the use of organized means of interaction, such as **lobbying.**

Pressure groups may be distinguished from the broader category of special interest groups by their somewhat more formal organization and their more noticeable activity over time. (*O'Connell 1974*)

4. A voluntary association of citizens who attempt to influence public policy. An interest group may be formed solely to influence policy or political activity may be only one of its many activities.

Interest groups affect policy through lobbying, raising money for political campaigns, promising to "deliver" votes on election day or workers in political campaigns, developing some special expertise, or having some special relationship with an agency in the government bureaucracy.

Interest groups are the most important unit of analysis in pluralist theory, for they mediate between an individual citizen's desires and the political parties.

Two major differences between American parties and interest groups are that parties compete for office, whereas interest groups do not, and that interest groups present a homogeneous interest, whereas parties have a heterogeneous clientele. (*O'Connell 1974*)

5. Also see **Special interest group**, and **Pluralism.**

Prestige. See **Social prestige.**

Primary conversion

The initial steps in the process of

converting a felled or fallen tree to lumber—e.g., topping, trimming limbs, removal of bark, sawing into logs, etc. (Ford-Robertson 1971)

Primary effect. See **Direct effect**.

Primary facility

Transportation planning usage. Primary facilities provide access and service to large land areas encompassed and served by the public transportation system. They include public transportation facilities and form the basic framework around which the **transportation network** is designed. A substantial percentage of the traffic served by these facilities is public service traffic, and emphasis is given to travel speed and efficiency. (After U.S. Forest Serv., FSM 7705.41, Aug., 1975)

Also see **Secondary facility** and **Tertiary facility**.

Primary output. See **Output, primary**.

Primary range. See **Range, primary**.

Primary sewage treatment. See **Primary wastewater treatment**.

Primary succession. See **Succession, primary**.

Primary treatment. See **Primary wastewater treatment**.

Primary wastewater treatment (Primary treatment, Primary sewage treatment)

The first treatment given to raw sewage collected from household and commercial sources. Typically the process first separates floating solids by screening. The undigested material is then piped into settling tanks where, depending on the temperature and length of stay, varying amounts of suspended solids are removed by gravity precipitation. Primary treatment removes most of the floating solids, 50 percent of the **suspended solids** and at best only about 35 percent of the organic waste and **biochemical oxygen demand** from wastewater. (After SESCO et al. 1973, Wash. State Univ., Coop.

Ext. Serv. 1972 and Mc Gauhey 1968)

Prime agricultural land

1. All land which qualifies for rating as Class I or as Class II in the U.S. Soil Conservation Service land use capability classifications. (Eisner 1969)

Also see **Land capability class**.

2. Land which has returned from the production of unprocessed agricultural plant products an annual gross value of not less than two hundred dollars (\$200) per acre for three of the previous five years. (Eisner 1969)

3. Land identified (after considering the long term productive potential and topographic position of the soil(s), climatic factors, and availability and quality of water) as being required for the economic production of specific agricultural commodities that are designated by local units (of government). (J. H. H.)

4. Land meeting any of the following four criteria: (1) Class I or II of the U.S. Soil Conservation Service land capability classification scheme, (2) a **Storie index** rating of 80 to 100, (3) a carrying capacity (see **Carrying capacity, range**) of one **animal unit** per acre, (4) a gross annual revenue of \$200 per acre in unprocessed, plant production, or (5) land in fruit or nut-bearing trees, vines or bushes that have less than a 5-year nonbearing period and return not less than \$200 per acre. (Anderson, Gustafson and Boxley 1975)

Primitive Area

1. A large tract within a U.S. National Forest set aside for preservation in natural condition with no alteration or development beyond measures for fire protection being permitted. (Webster 1963)

According to the **Wilderness Act** of 1964 the administrative classification "Primitive Area" will cease to exist as of September 1974. By that date those Primitive Areas considered to be of

wilderness quality as defined by the Wilderness Act will be reclassified as **Wilderness Areas**. (*After Wilderness Act 1964*)

2. As defined in the 1929 U.S. Forest Service regulation creating the "Primitive Area" classification. Areas within which, to the extent of the Department of Agriculture's authority, there "will be maintained primitive conditions of environment, transportation, habitation, and subsistence, with a view to conserving the value of such areas for purposes of public education, inspiration, and recreation. Within any area so designated no occupancy under the special-use permit shall be allowed, or the construction of permanent improvements by any public agency be permitted, except as authorized by the Chief of the Forest Service or the Secretary of Agriculture."

Supplemental instructions sent to Forest Service Regions indicated that "the establishment of a Primitive Area ordinarily will not operate to withdraw timber, forage or water resources from industrial use, since the utilization of such resources, if properly regulated, will not be incompatible with the purposes for which the area is designated." (*Calif., Univ., Wildland Res. Cent. 1962*)

3. These areas are extensive natural, wild and undeveloped areas, usually in a setting far removed from the sights, sounds, and smells of civilization. Essential characteristics are that the natural environment has not been disturbed by commercial utilization and that the areas are without mechanized transportation. The area must be large enough and so located as to give the user the feeling that he is enjoying a wilderness experience. Activities in Primitive Areas involve camping out on one's own without mechanized transportation, permanent shelter or other conveniences. There is no development of public roads, permanent

habitations or recreation facilities except trails. No mechanized equipment is allowed except that needed for management and protection purposes. Administration is usually by the Federal Government, some state agencies, or private landowners such as large timber and mining companies. (*Eisner 1969*)

4. In common usage, Primitive Areas are those **backcountry** types of **wildlands** which show no obvious evidence of permanent human uses and in which people are only transitory visitors. Some use the terms "primitive" and "wilderness" interchangeably to refer to all areas displaying no obvious evidence of present or previous human uses—other than foot or pack animal trails. Others make a distinction between the two, using "primitive" to refer to all areas possessing wilderness qualities and restricting the use of "wilderness" to only those portions of the larger primitive area which have been designated as "Wilderness Areas" according to the Wilderness Act of 1964. (*After A.W.M.*)

Primitive recreation. See **Recreation, primitive.**

Principles and Standards

Guidelines for water and related land resources planning established by the U.S. Water Resources Council for Federal agencies whose activities involve planning and development of water resources. (Published in Federal Register; 38(174): 24777-24869, "Water and Related Land Resources, Establishment of Principles and Standards for Planning.") The "Principles" provide the broad framework for planning activities and include the conceptual basis for planning. The "Standards" provide for uniformity and consistency in comparing, measuring, and judging beneficial and adverse effects of alternative plans. (*U.S. Dep. Agric. 1974*)

The "Principles and Standards" specify two main objectives to be reflected in the planning: national economic development and enhancement of environmental quality.

Also specified is the accounting system which gives four required accounts in which all effects of programs are to be discussed; **national economic development, regional economic development, environmental quality, and social well being.** (*After U.S. Dep. Agric. 1974*)

Private property

The exclusive right to the possession, use or disposal of property or goods. Private property can be real property, land and the buildings fixed on it, or personal property—that is movable property.

The concept of "private property" is the creation of man in society and thus subject to such intrusions upon it as society requires for the **general welfare.** (*Abrams 1971*)

Probabilistic Model. See **Model, probabilistic.**

Process

The action of moving forward progressively from one point to another on the way to completion.

The action of passing through continuous development from a beginning to a contemplated end.

The action of continuously going along through each of a succession of developmental stages. (*Webster 1963*)

Land use planning is often described as being a "process" rather than a single, finite, irreversible event in time or space. (*C.F.S.*)

For geologic usage see **geomorphic process.**

Producer organism (Producer, Autotrophic organism)

1. An organism that can utilize radiant energy (i.e., sunlight) to synthesize organic substances from inorganic materials. (*Hanson 1962*)

2. Organisms, largely green plants, which are able to manufacture food from simple inorganic substances by fixation of light energy. (*Odum 1971*)

For the other two divisions in this particular classification of **biotic community** organisms also see **Consumer organism** and **Decomposer organism.**

Producer surplus

In economics, the difference between the price that a producer sells a good or service at and the amount that he would be willing to accept in exchange for the good or service. (*E.C.T.*)

Also see **Consumer surplus.**

Production function

A mathematical relationship (frequently presented as a graph) which shows how inputs of various physical factors are related to changes of output—e.g., the effect of different amounts of fertilizer or thinning on the rate of timber production. (*After H.J.V.*)

Productivity, abiotic

The amount of material yielded by an inorganic, renewable resource process (e.g., abiotic products include water, sand, gravel). (*C.F.S.*)

Productivity, biotic

1. The amount of living matter actually produced by the unit being discussed. (*E. C. T.*)

2. The growth products and by-products of living organisms (e.g., wood, meat, other plant fibers) (*C.F.S.*)

Also see **Productivity, primary, Productivity, secondary** and **Productivity, tertiary.**

Productivity, primary (Basic productivity)

1. The rate at which energy is stored by the photosynthetic and chemosynthetic activity of **producer organisms** (chiefly green plants) in the form of organic substances that can be used as food materials. (*Odum 1953*)

2. The rate of new **biomass** addition (weight growth) on photosynthetic (i.e., plant) organisms. (*After Parsons and Takahashi 1973*)

Also see **Productivity, secondary** and **Productivity, tertiary**.

Productivity, secondary

1. The rate of new **biomass** addition (weight growth) on plant eating (herbivorous) animals. (*After Parson and Takahashi 1973*)

2. The rate of energy storage by **consumer organisms**. (*Odum 1971*)

Also see **Productivity, primary** and **Productivity, tertiary**.

Productivity, tertiary

The rate of new **biomass** addition (weight growth) on meat eating (i.e., carnivorous) animals. (*After Parsons and Takahashi 1973*)

Also see **Productivity, primary** and **Productivity, secondary**.

Profile. For graphic representation methods usage see **Profile view** and for soil terminology usage see **Soil profile**.

Profile view

An illustration in which the features coinciding in space with the plane of sectioning are strongly emphasized (usually by thick linework).

Features in the background are usually shown with much thinner linework and without any reduction in size in proportion to their increasing distance from the plane of sectioning (as would occur if they were drawn according to the rules of **linear perspective**). Underground features are seldom shown in "profile" type drawings nor is there ever any exaggeration of the scale of vertical or horizontal features. (*C.F.S.*)

Also see **Cross section**.

Program

1. An activity or combination of activities carried out to meet an objective. (*US. Forest Serv. 1972B*)

2. A coordinated organizational endeavor which is defined in terms of the

various activities required to produce specified final outputs and end results. (*U. S. Forest Serv. 1972B*)

A major agency endeavor, mission oriented, which fulfills statutory or executive requirements, and which is defined in terms of the principal actions required to achieve a significant end objective. (*U.S. Gen. Account. Off. 1969*)

Program element

A subdivision of a **program** category which comprises the specific products that contribute to an agency's objective. If an agency's operating program is distributed over several program categories each part of the operating program identified by a discrete program category is a program element. (*U.S. Gen. Account Off. 1969*)

Program evaluation and review technique. See **Critical path method**.

Programming

The process of deciding on specific courses of action to be followed in carrying out planning decisions and objectives. It also involves decisions in terms of total inputs required or total costs to be incurred over a period of years as to personnel, material, and financial resources to be applied in carrying out **programs**. (*After U.S. Forest Serv. 1972B and U.S. Gen. Account. Off. 1969*)

Prohibition zoning. See **Zoning, prohibition**.

Project (Land sales or development project)

Usage in the defeated 1973 bill for a National **Land Use Policy and Planning Assistance Act**. Any of the activities set forth below which occur ten miles or more beyond the boundaries of any **Standard Metropolitan Statistical Area** or of any other **general purpose local government** certified by a governor as possessing the capability and authority to regulate such activi-

ties: (1) the partitioning or dividing into fifty or more lots for sale or resale primarily for housing purposes within a period of ten years of any tract of land, or tracts of land in the same vicinity, owned or controlled by any **developer**; (2) the construction or improvement primarily for housing purposes of fifty or more units within a period of ten years on any tract of land, or tracts of land in the same vicinity, owned or controlled by any developer, including the construction of detached dwellings, town houses, apartments, and trailer parks, and adjacent uses and facilities, whatever their form or ownership or occupancy; (3) such other projects as may be designated by a State. (*U.S. Congr., Senate. Com. Inter. Insular Aff.* 1973)

Projection

1. An extrapolation of a series of past data to predict future conditions and occurrences. The accuracy of a projection is very dependent on past trends continuing, or else changing in some known manner.

A "projection" differs in a strict sense from a **forecast**, which is also a prediction of future conditions and occurrences, but is based on an understanding of the system being discussed, from current and past data rather than merely continuing and adjusting past trends. Although the distinction may exist, the dividing line between the two terms is imprecise. (*E. C. T.*)

2. Projections are conditional forecasts of the future. They are based upon stated assumptions about factors that are expected to impact on future conditions. Projections reflect historical development and economic activity as modified by discernible trends determined by analysis of present and past relationships. If there are no changes in the objectives of the people, if limits of resource availability are not reached, if anticipated technology

is attained, and if the influence of external forces remains constant, projections could reasonably be expected to chart the future. (*U.S. Dep. Agric.* 1974)

Also see **Forecast**.

Project planning (Operational planning)

Types of planning concerned with physical undertakings (such as a dam). Project planning incorporates a greater range of specific elements than **functional planning** and, thus, deals with more numerous and diverse parts. (*Branch* 1967)

See **site planning** for the distinctions between project planning and site planning.

Proper grazing. For range management usage see **Use, proper**.

Proper stocking. See **Stocking, proper**.

Property

1. The dominion or indefinite right of use or disposition which one may lawfully exercise over particular things or subjects, land, improvements or objects of value to which rights of **ownership** and control may be acquired. (*U.S. Bur. Outdoor Recreation* 1974)

2. The social, and sometimes legal, set of relationships of rights and obligations between people concerning the use of an object. An object in these relationships may be material or non-material, such as a trademark. (*O'Connell* 1974)

Property rights

The sum total of the rights pertaining to property **ownership**. In the case of real property it embraces the right to quiet enjoyment, the right to sell, to mortgage, to lease, to bequeath, to regain possession at the end of a lease, to build and remove improvements, and to control the property's use within the law. In short, it describes the scope of legal protections granted to property ownership. (*Abrams* 1971)

Proper use. For range management usage see **Use, proper**.

Proper utilization. For range management usage see **Use, proper**.

Prospecting

The removal of **overburden**, core drilling to obtain subsurface samples, construction of roads or any other disturbance of the surface for the purpose of determining the location, quantity or quality of a mineral deposit. (*Grim and Hill 1974*)

Proxemics

The study of man's use of social and **personal space**. (*Worthington 1974, citing Hall 1966*)

Proxy value

A value assigned to a good or service for evaluation purposes when the good or service is not bought nor sold and an established monetary price does not exist. (*E. C. T.*)

Also see **Market value**.

Psychological carrying capacity. See **Carrying capacity, psychological**.

Public domain

The territory ceded to the Federal government by the original thirteen states, together with certain subsequent additions by cession, treaty, and purchase. (*U.S. Forest Serv., FSM 7140.5, July 1967*)

Public involvement

1. The opportunity for maximum feasible participation by citizens in rulemaking, decision making and land use planning, including public hearings, advisory mechanisms and such other procedures as may be necessary to provide public input in a particular instance. (*After U.S. Congr., House Represent., Com. Inter. Insular Aff. 1975*)

2. The use of appropriate procedures for informing the public, obtaining early and continuing public partici-

pation and considering the views of interested parties in planning and decision-making processes.

The "public" referred to includes individuals, local, state, regional and national public service organizations and interest groups. It also includes state, local and other Federal agencies which have jurisdiction, special expertise or information to offer relevant to the total planning and implementation picture. (*U.S. Forest Serv., FSM 8212, Oct. 1973*)

Public land

Land for which the title and control rests with a government—Federal, state, regional, county, or municipal. (*E. C. T.*)

Public participation. See **Public involvement**.

PUD. See **Cluster development**.

Pyramid of biomass

When the total weight of individuals at successive **trophic levels** in a **food chain** is plotted, a gradually sloping pyramid usually results—regardless of the individual size of the **producer organisms** or **consumer organisms**, and regardless of whether predators or parasites are considered. This "pyramid of biomass", in effect, gives a picture of the over-all effect of food chain relations for the ecological group as a whole.

The number of organisms that can be supported at higher trophic levels actually depends not on the amount of food organisms present at any one time, but on the number being replaced as fast as some are eaten. (*Odum 1953*)

In such pyramids if the **biomass** of the various trophic levels is taken at one instant in time, a lowest trophic level consisting of organisms with short life times commonly has a smaller **standing crop** biomass than the next higher level. However if the total

productivity of biomass at different levels in such pyramids is summed on an annual basis, the expected pyramidal biomass relationships will be observed, because of the larger total weight of biomass produced over such periods of time by the commonly small and short-lived but much more numerous and rapidly reproducing organisms in the lowest trophic level. (C.F.S.)

Pyramid of energy

A graphical representation of the rate of energy flow and/or energy productivity at successive **trophic levels** in a **food chain** or for a complete **biotic community**.

Of the three types of **ecological pyramids**, the energy pyramid gives by far the best overall picture of the functional nature of biotic communities since the number and weight of organisms that can be supported at any level in any situation depends not on the amount of fixed energy present at any one time in the level just below, but rather on the rate at which food is being produced. In contrast the **pyramid of numbers** and **pyramid of bio-**

mass, are pictures of the standing states, i.e., organisms present at any one moment, while the energy pyramid is a picture of the rates of passage of food mass through the food chain. Its shape is not affected by variations in the size and metabolic rate of individuals, and, if all sources of energy are considered, it must always be right side up (i.e., with the largest numbers at the base) because of the second law of thermodynamics. (Odum 1971)

Pyramid of food production rates. See **Pyramid of energy**.

Pyramid of numbers (Eltonian pyramid, Food pyramid)

1. A graphic representation of the **food chain** which indicates the large numbers of **producer organisms** (i.e., plants) at the base of the food chain, and the progressively decreasing numbers of herbivores (plant eaters) and carnivores (meat eaters) higher up in the food chain. (After Odum 1971)

2. Elton's concept that in most food chains the number of individuals decreases in each succeeding stage, with large numbers of animals occurring at the base and a few large ones at the top. (Hanson 1962)

Q

Quality of life

1. This quality is seen as a measure of the degree to which a society offers effective opportunity to enjoy the "good life". The components of the "good life" are a combination of goods and services available in a total environment; physical, social, and cultural. Their precise composition would be a matter of personal judgement about which widely differing opinions would be held. The "quality of life", therefore, is an essentially subjective concept. It may, however, be that for a particular community a reasonable

consensus could be found about a range of choice of goods and services and about the qualities of the environment which should be offered. (Coombs 1972)

2. The measure of harmony between individual and cultural value systems and the capacity and opportunity for their realization. (L. W.)

3. A broad, all-encompassing term used to refer to the quality characteristics of all the aspects of one's environment. (Sesco, et al. 1973)

Questionnaire

1. A set of questions for obtaining

statistically useful or personal information from an individual. (*Webster 1963*)

2. U.S. Office of Management and Budget usage. A form provided by a government agency to solicit information and comments from the public which requires prior approval by the Office of Management and Budget (OMB) if submitted to ten or more people, in contrast to a **response form** which does not require OMB approval. A form becomes a questionnaire if (a) it is distributed to members of the public who have not requested information material or are not directly affected by possible management actions, or (b) it asks any questions relative to the nature or attitudes of the respondent beyond name, address, and organizational affiliation, or (c) it con-

tains more than brief descriptions distinguishing alternative actions, chapter headings to aid in review, and space for whatever comments the respondent may wish to make. (*After U.S. Forest Serv. Wash. Off. 1974*)

3. A printed research form presented to the person from whom data are sought. Ordinarily, it is fixed with respect to the wording and order of the questions. These may include agreement/disagreement items, items which are to be ordered by rank, items in which the respondent is asked to choose one of two or three different statements as coming closest to his or her **opinion** or **beliefs**, and open-ended questions in which he or she provides one-word or short-answer responses. (*O'Connell 1974*)

Also see **Response form**.

Q
R

Raindrop erosion. See **Erosion, splash**.

Rainfall intensity

The rate at which rain is falling at any given instant, usually expressed in inches per hour. (*Soil Conserv. Soc. Amer. 1970*)

Range

1. All land producing naturalized or native **forage** for animal consumption, and lands that are revegetated naturally or artificially to provide a forage cover that is managed like naturalized or native vegetation. Generally considered as land that is not cultivated. (*After Amer. Soc. Range Manage. 1964*)

2. Embraces **rangelands** as well as many forestlands which support an understory or periodic cover of herbaceous or shrubby plants suitable for grazing without impairing other forest values. (*D.E.H. and B. W.*)

Range allotment (Allotment)

An area designated for the use of a

prescribed number of cattle or sheep, or by common use of both under one plan of management. (*Amer. Soc. Range Manage. 1964*)

Range, annual

Range on which the principal forage plants are herbaceous species which only live for one year. (*After Amer. Soc. Range Manage. 1964*)

Range, closed

A **suitable range** that is closed to grazing by domestic livestock. (*Amer. Soc. Range Manage. 1964*)

Range condition

The state and health of the **range** based on what it is naturally capable of producing. (*Soil Conserv. Soc. Amer. 1970*)

Range condition class

One of a series of arbitrary categories used to classify **range condition**, usually expressed as either excellent, good, fair, or poor. (*Soil Conserv. Soc. Amer. 1970*)

Range improvement

"Physical improvement." Any structure or excavation to facilitate management of range or livestock.

"Biological improvement". An increase in the **grazing capacity** of range. Improvement in **range condition**. (*Amer. Soc. Range Manage. 1964*)

Range, key winter

The smaller portion of the total year's range where big game animals find food and/or **cover** during severe winter weather.

"Key winter" areas limit the number of animals the range can support. (*U.S. Forest Serv. Lolo Natl. Forest 1974B*)

Rangeland

1. Land on which the natural plant cover is composed principally of native grasses, **forbs** or shrubs valuable for forage. (*U.S. Forest Serv. 1972A*)

2. Land used for grazing by livestock and big game animals on which the natural potential **climax community** of plants is dominated by grasses, grass-like plants, forbs, and shrubs. (*U.S. Soil Conserv. Serv. 1970*)

3. Land where the potential natural vegetation is predominantly grasses, grasslike plants, forbs, or shrubs, where natural grazing and browsing was an important influence in its precivilization state, and that is more suitable for management by ecological rather than agronomic principles.

Some "rangelands" have been or may be seeded to introduced or domesticated plant species. (*Anderson, et al. 1962*)

4. Land on which the (climax or natural potential) plant community is dominated by grasses, grass-like plants, forbs, or shrubs suitable for grazing or browsing and present in sufficient quantity to justify grazing or browsing use. Includes rangelands revegetated naturally or artificially to provide cover

that is managed like native vegetation. Rangelands include natural grasslands, savannas, shrublands, many deserts, tundra, alpine communities, coastal marshes, and wet meadows.

Rangeland Grazing System

U.S. Forest Service usage. This system includes all those activities that bear directly upon management, protection, and development of the National Forests and Grasslands for livestock grazing. It also includes the cooperative aspects of state and private forestry associated with producing livestock on non-Federal forest range. Research provides the system with management alternatives that relate range productivity with other forest and range land resources.

One of the six "systems" established by the U.S. Forest Service to have a systematic, orderly way to view and evaluate its many diverse but interrelated activities. The Forest Service has developed this approach to better respond to the mandates of the **Forest and Rangeland Renewable Resources Planning Act of 1974**. It has grouped its various **programs** into these six "systems", each of which incorporates all the activities concerned with developing and managing a specific resource. (*After U. S. Forest Serv. 1974A*)

The six "systems" are: **Land and Water, Timber Resource, Outdoor Recreation and Wilderness, Rangeland Grazing, Wildlife and Fish Habitat, and Human and Community Development.**

Range management (Range planning)

The art and science of planning and directing range use to obtain sustained maximum animal production, consistent with perpetuation of the natural resources. (*Amer. Soc. Range Manage. 1964*)

Range, open

1. All **suitable range** of an area upon which grazing is permitted. (*Amer. Soc. Range Manage. 1964*)

2. Ranges which have not been fenced into management units. (*Amer. Soc. Range Manage.* 1964)

Range planning. See **Range management.**

Range, primary

Areas which animals prefer to use and over which they will graze when management is limited.

The areas on which overuse will occur before **secondary range** is used when animals are allowed to shift for themselves. (*Amer. Soc. Range Manage.* 1964)

Ranger District multiple use plan

U.S. Forest Service usage. A document, prepared for each Ranger District and consisting of sub-(administrative) Region multiple use guides supplemented at the Ranger District level, that serves to direct and coordinate National Forest land management, development, protection, and use until this role is assumed by part I of the **National Forest land use plan**. (*W. W.*)

Range readiness

The stage of growth of the important **palatable** plants on the **range** and the condition of soil which permit grazing without undue compacting of the soil or endangering the ability of the plants to maintain themselves. (*Soil Conserv. Soc. Amer.* 1970)

Range, secondary

Range which is lightly used or unused by livestock under minimal management and will ordinarily not be fully used until the **primary range** has been overused. (*Amer. Soc. Range Manage.* 1964)

Range site

1. A distinctive kind of **rangeland** that differs from other kinds of rangeland in its potential to produce native plants. (*Soil Conserv. Soc. Amer.* 1970)

2. An area of land having a combination of soil, climatic, **topographic**

and natural biotic factors that is significantly different from adjacent areas.

These environmental areas are considered as units for purposes of discussion, investigation and management. Changes from one site to another represent significant differences in potential forage production and/or differences in management requirements for proper land use. (*Amer. Soc. Range Manage.* 1964)

Range suitability

The adaptability of a range to grazing by livestock and/or game. (*Amer. Soc. Range Manage.* 1964)

Range, suitable

Range which is accessible to livestock or game and which can be grazed on a **sustained yield** basis without damage to other resources. (*Amer. Soc. Range Manage.* 1964)

Range, transitory

Land that is suitable for grazing use of a nonenduring or temporary nature over a period of time. For example, on particular disturbed lands, grass may cover the area for a period of time before being replaced by trees or shrubs not suitable for forage. (*U.S. Forest Serv., Lolo Natl. Forest* 1974A)

Range, unsuitable

An area which has no value for, or which should not be used by livestock because of steep topography, barrenness, dense timber, lack of forage, or unstable soils. (*Amer. Soc. Range Manage.* 1964)

Range use. See **Use, degree of.**

Rare and Endangered Species Act

A misnomer for the Endangered Species Conservation Act of 1969. This act has now been repealed and replaced by the **Endangered Species Act of 1973.**

See **Endangered Species Act of 1973.**

Rare species. See **Species, rare.**

RAU. See **Resource analysis unit.**

Raw land (Undeveloped land)

A term of comparison sometimes used to contrast land which has been built upon (i.e., "developed") or subdivided in preparation for **development** with undeveloped and unsubdivided (i.e., "raw") land. (*C.F.S.*)

RCD. Resource conservation district. See **Soil Conservation District.**

RCU. See **Resource capability unit.**

Recently extinct species. See **Species, recently extinct or possibly extinct.**

Recharge

The addition of water to an **aquifer** that occurs naturally from infiltration of rainfall and from water flowing over earth materials that allow water to infiltrate below the land surface. (*Feth 1973*)

Reclamation

Mining usage. The filling in of open pits, grading of the mined area, reduction of **high walls**, replacement of **top soil**, planting, **revegetation** and such other work as is necessary to restore an area of land affected by **surface mining** operations.

The process of reconverting mined land to other forms of productive uses. (*After Grim and Hill 1974*)

Reclamation, effective

Mining usage. Rehabilitation of mining-affected land to make it acceptable for designated purposes, with protection of the **natural resources** and aesthetic value of adjoining areas. (*Count. Agric. Sci. Technol. 1973*)

Reconnaissance soil map. See **Soil map, reconnaissance.**

Reconnaissance soil survey. See **Soil map, reconnaissance** and **Soil survey.**

Reconnaissance survey

U.S. Forest Service usage. A preliminary survey usually executed rapidly

and at a relatively low cost. (*U.S. Forest Serv., FSM 7140.5, July, 1967*)

Recreation

1. Leisure time activity such as swimming, picnicking, boating, hunting and fishing. (*Federal Register 38(174:24803)*)

2. Use of leisure time for personal satisfaction and enjoyment. Recreation is a basic human need. It may be undertaken individually or with others. It may be planned or spontaneous. It may be passive or active, may or may not require skills and training, and may or may not require a designated area. (*U.S. Bur. Outdoor Recreation 1974*)

3. Recreation is an exceedingly variable term meaning almost anything people do with their leisure. It is not a resource but an activity compounded of two parts, recreationists and recreation environments. Resources such as timber, forage, water, or minerals exist in land. Recreation exists in the mind and takes place in an environment based on the land.

Outdoor recreation involves the protection, preservation, development, public use, and enjoyment of scenery, water, primitive or natural landscape (including roadless areas), wildlife, natural phenomena (e.g., petrified wood), and archeological and historical sites. (*Eisner 1969*)

Recreation easement. See **Easement, recreational.**

Recreational experience levels

U.S. Forest Service usage. The extent to which various classes of outdoor recreation experiences provide opportunities for satisfying some of the basic **needs** of individuals—such as to find isolation and solitude, to socialize, to achieve self-fulfillment, for aggression outlets, etc.

The levels in the Forest Service system are qualitatively broken into six classes based upon the extent to

which; (1) outdoor skills are required, (2) the natural environment has been modified to facilitate use and, (3) comfort and/or convenience facilities are provided. (*After U.S. Forest Serv., FSM 2330.5-3, Jan., 1969*)

Recreational experience quality

The quality of recreational experience is the degree of excellence, value, or worth of any form of recreational experience determined through personal judgments and preferences. Consensus and individual variation form expectations that, depending upon the extent to which they are achieved, specify the degrees of quality judgments. Consensus may provide relative value scales or standards that may offer some universal basis for quality judgments. Individual variation, as shown through personal judgments and preferences, is the deviation from consensus as a consequence of individual intelligence and qualities of personality as influenced by education, experience, perception, and socialization and modified by external influences such as area, design facilities, activities, human relations, impacts, finances, health and safety, weather, travel, and time. (*A.W.M.*)

Also see **Recreational quality**.

Recreational quality

The degree to which a recreational experience or area normally contributes to the physical and psychic well-being of recreationists. Thus a thoroughly worn area usually offers lower recreational quality than areas presenting a fresh and natural scene. Individual tastes differ, and an experience is of high quality only to people for whom it provides a large measure of enjoyment or well-being. (*Wagar 1964*)

Also see **Recreational experience quality**.

Recreational river area

Wild and Scenic Rivers Act usage. Those rivers or sections of rivers that

are 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. (*After U.S. Forest Serv. 1974*)

Recreation and park planning

An organized procedure to determine **goals, objectives**, and actions in recreation and park functions. Such planning is one unit of **comprehensive planning**. It involves the consideration of the total environment, physical and social, and the role that recreation plays in the **master plan** for a given area. (*U.S. Bur. Outdoor Recreation 1974*)

Recreation area, developed

A relatively small, distinctly defined area where concentrated public use for the more traditional recreation purposes predominates—e.g., campgrounds, picnic areas, swimming areas. (*U.S. Forest Serv. Region 9 1975*)

Recreation, concentrated

Those types of activities associated with **developed recreation sites**—such as campgrounds, picnic grounds, ski areas, fishing ramps, scenic overlooks, interpretive sites, etc. (*U.S. Forest Serv., Lolo Natl. Forest 1974B*)

Recreation day

A standard unit of use for an area or activity consisting of a visit by one individual to a recreation development or area for recreation purposes during any reasonable portion or all of a 24 hour period. This corresponds roughly with what is termed a "recreation visit".

For example, if the average stay at a picnic site were four hours then a four-hour visit to the picnic site by one person would be a recreation day. (*Dyrland 1973*)

Recreation, dispersed

1. Recreation of various kinds that occurs generally throughout a large

area, and is not confined to a specific place. (*U.S. Forest Serv., FSM 2300 R-8*)

2. Scattered, individual outdoor recreation activities normally not identified with developed facilities or areas of group concentration. (*U.S. Forest Serv., FSM 2300 R-8*)

3. Recreational use of trails, natural lakes, ponds, rivers, streams and generally undeveloped areas. Includes such activities as hiking, back packing, hunting, fishing, snowmobiling, horse back riding and cross-country skiing. (*U.S. Forest Serv. Region 9 1975*)

Recreation, extensive

Low-density, **dispersed recreation** types—e.g., general hiking and riding, snowmobile use, dispersed camping, hunting, etc. (*Sandpoint Zone Plann. Team 1974*)

Recreation, intensive

High-density recreational activities—e.g., developed camp and picnic grounds, swimming beaches, hiking trails that are major access routes into wilderness areas, all-terrain vehicle areas (except snowmobile courses), etc. (*Sandpoint Zone Plann. Team 1974*)

Recreation land

Land and water used primarily for recreation. (Recreation may be a **secondary use** of land where woodland, cropland, rangeland, etc., is the primary use.) (*U.S. Soil Conserv. Serv. 1970*)

Recreation, primitive

Those types of recreational activities associated with unroaded land—e.g., hiking, backpacking, cross country travel. (*U.S. Forest Serv., Lolo Natl. Forest 1974B*)

Recreation resource

The combination of the natural qualities of land and water areas and the ability and desire of man to use this combination for recreation. (*U.S.*

Forest Serv. 1971)

Also see **Recreation**, definition 3.

Recursive

The process of repeating an operation or group of operations, usually with the result of each repetition being in some way dependent upon the result of the preceding repetition. (*U.S. Gen. Account. Off. 1969*)

Reducer organism. See **Decomposer organism.**

Reforestation

1. The natural or artificial restocking of an area with forest trees; most commonly used in reference to the latter. (*U.S. Forest Serv. 1972B*)

2. Re-establishment of a crop on forest land. (*Ford-Robertson 1971*)

3. "Reforestation" includes measures to obtain natural regeneration as well as tree planting and seeding.

Reforestation is done to produce timber and other forest products, protect watersheds, prevent erosion and improve other social and economic values of the forests, such as wildlife, recreation and natural benefits. (*U.S. Forest Serv., FSM 2472, June, 1973*)

Refuse. See **Mining refuse.**

Regeneration

1. The renewal of a tree crop, whether by natural or artificial means. (*Ford-Robertson 1971*)

2. Regeneration is also used when referring to the young crop itself. (*Ford-Robertson 1971*)

Regeneration cutting

1. Any removal of trees intended to assist **regeneration** already present or to make regeneration possible. (*Ford-Robertson 1971*)

2. "Regeneration cutting" applies generally to the logging stands of **rotation** age or greater, and stands below rotation age which cannot economically be held any longer because of poor stocking, health, thrift, quality, or

composition. (*U.S. Forest Serv., FSM 2471.2*)

3. "Regeneration cutting" applies to all cutting in virgin stands and to all cutting in cutover stands where the overwood components of the stand are over rotation age. (*U.S. Forest Serv., FSM 2471 R-3*)

Region

1. A large tract of land; a country. (*Stamp 1961*)

2. A more or less defined portion of the earth's surface, now especially as distinguished by certain natural features, climatic conditions, a special fauna or flora, or the like.

An area space, or place, of more or less definite extent or character.

An area of the earth's surface differentiated (from adjoining areas) by one or more features or characteristics which give it a measure of unity. According to the criteria employed in differentiation, "regions" are termed **physiographic**, political, economic, etc. (*Stamp 1961*)

3. A U.S. Forest Service Administrative unit consisting of several National Forests in one or more states. Within the Forest Service, Regions of this type are known by their number (e.g., Region 5), and the adjective "Regional" often refers specifically to these administrative units. In planning, the Forest Service equivalent of a region as defined in 2, above, is a **planning area**. (*E.C.T.*)

Also see **Region, natural**.

Regional climate (Macroclimate)

The general large-scale climate of a large area or country, as distinguished from the **mesoclimate** and **microclimate**. (*Huschle 1959*)

Regional economic development

One of the four "required accounts" for categorizing, displaying, or "accounting" the beneficial and adverse effects of each alternative plan

formulation for water and related land resources planning specified in the U.S. Water Resources Council's **Principles and Standards** and the U.S. Department of Agriculture's "Procedures" for adhering to them.

Also see **Principles and Standards**. (*After U.S. Dep. Agric. 1974*)

Regional plan

The plan for a **region** (i.e., an area larger than a single city and whose boundaries have typically been designated according to some **physiographic**, biological, political, administrative, economic, demographic or other criteria). (*C.F.S.*)

Also see **River basin plan**.

Regional planning

1. The planning discipline concerned with the clarification of social objectives in the ordering of activities in supra-urban space—that is in any area which is larger than a single city.

"Regional planning" is a discipline, primarily oriented to the future, that looks to the relation between social purposes and spatial arrangements in any area which is larger than a single city. (*After Friedman 1963*)

In the U.S. Forest Service land use planning this is approximately equivalent to its largest land use planning subdivision (i.e., the geographic area to which a **planning area guide** applies) and should not be confused with Forest Service administrative Regions (i.e., administrative units consisting of several National Forests in one or more states). (*E. C. T.*)

Also see **Planning area**.

Region, morphogenetic (Formkreis)

1. A region whose distinguishing landscape characteristics are the result of the operation of particular dominant **geomorphic processes** which have been caused by the occurrence of a certain set of climatic conditions. (*Thornbury 1969*)

2. A region in which, under a certain set of climatic conditions, the predominant geomorphic processes will give to the landscape **land form** characteristics that will distinguish it from those of other areas developed under different climatic conditions. (*Amer. Geol. Inst. 1962*)

3. Related land forms which owe their existence to the action of the same geomorphic process—such as running water or ice action. (*Stamp 1961*)

For analogous uniform land form pattern concepts also see **Region, morphological** and **Region, physiographic**.

Region, morphological

Land units with a high degree of homogeneity in all their morphological (i.e., land surface form) features. (*After Stamp 1961, citing Linton 1951*)

"Morphological" regions only refer to areas possessing a uniformity of land surface forms without any implied, underlying speculation as to the processes responsible for those forms.

For analogous uniform land form pattern concepts also see **Region, morphogenetic** and **Region, physiographic**.

Region, natural

1. A part of the earth's surface characterized by the comparatively high degree of uniformity of structural and climatic features within it. (*Stamp 1961, citing Mill circa. 1910*)

"Natural regions" deal not merely with the mutual adjustment of drainage and land forms, but also with the well-marked zones of climate, vegetation, and even human distributions which characterize such forms when situated in similar climatic areas. A natural region should have a certain unity of configuration, climate, and vegetation. The mapping of human conditions has less significance in indicating the major natural geographical regions. Political divisions must be eliminated from any consideration of natural regions. (*Stamp 1961, citing Herbertson 1905*)

The basis of the regional division is to be found in nature as a whole, including man, in contrast to a division based on a single element, as in the case of "climatic regions," "agricultural regions" etc. The basis of the regional division is to be found in regions considered in terms of their non-human elements. (*Stamp 1961, citing Hartshorne 1951; interpretation of Herbertson 1905*)

2. The term "natural region" has been used to cover two distinct types of unit-areas of the earth's surface: (1) those, which are marked out as possessing certain common physical characteristics—e.g., a certain kind of structure and surface relief, or a particular kind of climate; and (2) those regions which possess a unity based upon any significant geographical characteristics whether physical, biological or human, or any combination of these, as contrasted with areas marked out by boundaries imposed, frequently for political or administrative purposes, without reference to any geographical unity of the areas. (*Stamp 1961, citing Geographical Association 1937*)

3. The concept of the "natural region" is a much debated problem. Hartshorne (1951) points out that, while some use the term "natural regions" to indicate something inherent and not arbitrarily imposed, we are fundamentally measuring the different natural criteria in terms of their importance to man. Since the relative importance of the different natural elements to man is certainly not determined by nature as distinct from man, it follows that our systems inevitably have a human basis. In the delimitation of regions, the crux of the matter seems to be "is the region inherent in the landscape or is it the product of criteria applied by the individual geographer?" In other words, is the region an objective or subjective concept? (*Stamp 1961*)

Region, physiographic (Geomorphic province, Geomorphic region, Physiographic province)

1. A region having a particular pattern of relief features or land forms that differs significantly from that of adjacent regions. (*Webster 1963*)

2. A region of similar geologic structure and climate that has had a unified geomorphic history. (*Amer. Geol. Inst. 1962*)

3. An area or division of land in which the pattern of topographic elements (altitude, **relief** and **land forms**) are characteristic throughout and as such distinguish it from other areas with different sets of topographic elements. (*Thornbury 1965*)

For analogous uniform land form pattern concepts see **Region, morphogenetic** and **Region, morphological**.

Register of National Natural Landmarks.
See **National Registry of Natural Landmarks**.

Regolith

The layer or mantle of loose, non-cohesive or cohesive rock material, of whatever origin, that nearly everywhere forms the surface of the land and rests on **bedrock**. It comprises rock waste of all sorts; volcanic ash; glacial drift; **alluvium**; wind-blown deposits; and accumulations of vegetation, such as peat; and soil. (*Soil Conserv. Soc. Amer. 1970*)

Regulatory standard. See **Standard**.

Relative poverty. See **Poverty, relative**.

Release cutting

1. Freeing a tree, or group of trees, from more immediate competition by cutting, or otherwise eliminating, growth that is overtopping or closely surrounding them. (*Ford-Robertson 1971*)

2. Three principal operations come under this classification: (A) Treatments to free desired growing stock trees from over-story vegetation; prin-

cipally, scrub trees, brush, and vines that inhibit their growth or desirable development. (B) Treatments to prevent development of brush and trees that threaten to overtop desired growing stock trees. (C) Removal of grass, weeds, or brush from around individual seedlings or small trees to release them from competition for soil moisture, shade, or smothering as under matted grass or weeds. (*U.S. Forest Serv., FSM 2476.41*)

3. Cutting an immature stand to free the crop trees from excessive competition by removing the excess of an undesired age class (such as a young age class which because of excessive numbers is competing severely with an older but desired regulated age class). (*U.S. Forest Serv., FSM 2471 R-3*)

Relic

Historical or archeological remains usage. Something that is left behind after decay, disintegration or disappearance (as of a structure, a culture, etc.). (*Webster 1963*)

For biologic or ecologic usage, see **Relict**.

Relict (Relic)

1. As related to a **climax community**, fragments of presently existing flora on areas with a historical record of no disturbance and the plant community is assumed to be in near virgin condition. (*Amer. Soc. Range Manage. 1964*)

2. A **biotic community** or species which, through the operation of some compensating or protective environmental features has survived some major change (e.g., climatic, land use) that has altered the general vegetation of the surrounding territory. (*Ford-Robertson 1971*)

3. A remnant of the population of a species that was formerly more widespread. (*Hanson 1962*)

Relief

1. The difference in elevation be-

tween the high and low points of a land surface. (*Amer. Geol. Inst. 1962*)

2. The elevations or the inequalities of a land surface, taken collectively. (*After U.S. Geol. Surv. 1954*)

Remote sensing

Any data or information acquisition technique which utilizes airborne techniques and/or equipment to determine the characteristics of an area.

Aerial photos are the most common form of remote sensing product, but side scanning radar (SLAR) and other pictorial and nonpictorial forms of data collections are also produced by some remote sensing techniques. (*C.F.S.*)

Removal cutting

The removal of the seed source, typically the **seed trees**, after adequate regeneration has taken place. (*U.S. Forest Serv., FSM 2471.22.*)

See **Shelterwood system** for the timing relationships between this cutting type and others in that silvicultural system.

Removal regeneration cutting

Cutting a stand which has an advanced manageable **understory** of 1-20 year old age class **reproduction**. The **seed-tree cutting** is bypassed and all the **overstory** competition is removed in one cutting. The stand is reduced to the single age class for future management. (*U.S. Forest Serv., FSM 2471 R-3*)

Renewable resource (Flow resource, Inexhaustible resource)

1. "Flow resource" and "inexhaustible resource" are grouped here because these categories are conceptually very similar, if not often identical to "renewable resource." (*C.F.S.*)

2. Resource inexhaustibility is only a meaningful concept if employed in the economic sense. "Inexhaustibility" need not imply superabundance compared to demand nor rapid, abundant renewal. A resource may be "inex-

haustible" in the sense that utilization can continue indefinitely because it is only economically feasible to use very small amounts, per unit of time, of resources which are available in only comparatively small physical quantities. (*After Ciriacy-Wantrup 1968*)

3. Resources whose supply becomes available for use at different intervals in time. The use of present supply flows does not diminish future flows and it is possible to maintain use indefinitely provided the use rate does not exceed flow rate.

Many renewable resources can be stored—such as water in a reservoir or mature timber in a stand and such stores can be treated as a stock (i.e., exhaustible) resource. The availability of a flow for replenishing the stock, however, differentiates such stores "flow resources" from truly "non-renewable resources."

There are two broad classes of "renewable resources" one in which human resource use activities do not significantly alter future flows (ex. wind, tidal and solar energy) and a second class where human activities may increase or decrease future flows (ex. timber growth, soil productivity). (*After Ciriacy-Wantrup 1968*)

4. **Natural resources** are of two types: "renewable" and **non-renewable**. "Renewable resources" are living organisms and others such as soil and water which are closely associated with and affected by living organisms. Non-renewable resources are non-living materials such as minerals and fuels. (*U.S. Bur. Outdoor Recreation 1974*)

Renewable resource assessment. See **Forest and Rangeland Renewable Resources Planning Act of 1974.**

Renewable resource lands

Usage in the defeated 1973 bill for a National **Land Use Policy and Planning Assistance Act.**

Areas where uncontrolled or incom-

patible development which results in the loss or reduction of continued long range productivity could endanger future water, food, and fiber requirements of more than local concern. These lands include watershed lands, **aquifers** and aquifer recharge areas, significant agricultural and grazing lands, and forest lands.

This is one of the three types of **areas of critical environmental concern** specifically set forth in this bill. The others are **natural hazard lands** and **fragile or historic lands**. (*U.S. Congr., Senate, Com. Inter. Insular Aff. 1973*)

Renewable resource program. See **Forest and Rangeland Renewable Resources Planning Act of 1974**.

Reproductive capacity. See **Biotic potential**.

Reproductive potential. See **Biotic potential**.

Research Natural area. See **Natural Area, Research**.

Reservation and other tribal lands

Usage in the defeated 1973 bill for a national **Land Use Policy and Planning Assistance Act**. "All lands within the exterior boundaries of any Indian reservation, notwithstanding the issuance of any patent, and including rights-of-way, and all lands held in trust for or supervised by any Indian tribe."

The first part of this definition is intended to eliminate pockets of free-patented land inside Indian reservations which might otherwise be subject to laws different from their surroundings. Similarly, the second part of the definition, which includes "all lands held in trust or supervised by any Indian tribe," is intended to cover lands which are Indian country for all practical purposes but which do not enjoy reservation status. The Indian tribal land use planning processes and programs would be largely meaningless if

the tribes could not control key tracts within their reservations which they did not own or lands outside a reservation which they owned or for which they possessed administrative responsibility. (*U.S. Congr., Senate, Com. Inter. Insular Aff. 1973*)

Reservoir Salvage Act (74 Stat. 220)

The Reservoir Salvage Act of 1960 provides for the recovery and preservation of "historical and archeological data (including relics and specimens)" that might be lost or destroyed as a result of the construction of dams, reservoirs, and attendant facilities and activities. (*U.S. Forest Serv., FSM 2361.01, Feb. 1974*)

Residential density

The average number of families living on one acre of land in a given area.

"Gross residential density" is obtained by dividing all land in a defined area used for residences, streets, local schools, local parks and local shopping facilities into the total number of families in said area.

"Net residential density" is determined by dividing the total number of families in a defined area by the total acreage of all parcels of land within the area that is used for residential purposes. (*Eisner 1969*)

Residential land

Land used primarily for permanent dwellings, such as houses, apartments, and housing developments, including adjacent facilities such as underground and surface utilities, access streets and alleys, and other servicing structures, appurtenances, and measures. (*U.S. Soil Conserv. Serv. 1970*)

Resident species. See **Species, resident.**
Resource

1. Anything which is useful for something—be it animal, vegetable, mineral, a location, a labor force, etc. Resources, in the context of land use planning, thus vary from such **com-**

modities as timber and minerals to such **amenities** as scenery or scenic viewing points. (*C.F.S.*)

2. Those aspects of man's environment which render possible or facilitate the satisfaction of human wants and the attainment of social objectives. (*Stamp 1961, citing Encyclopedia of the Social Sciences 1933*)

3. The concept of "resource" presupposes an appraisal of the usefulness of an environment for some purpose. What constitutes a "resource" therefore, is a highly relative concept whose precise definition changes depending upon the **planning agent**, the planning's purpose, with the state of technological means for using an environment for a purpose, and with the ability to make use within the constraints imposed by existing social **institutions** (laws, customs, etc.). (*After Ciriacy-Wantrup 1968*)

Thus, for example, garbage is not a "resource" to those attempting to get rid of their wastes but it is a "resource" to those who are attempting to recover recyclable materials from it—provided existing regulations and separation technology permit them to do this economically. (*C.F.S.*)

Resource allocation

1. The action of apportioning the supply of a resource to specific uses or to particular persons or organizations. (*After Webster 1963*)

2. The division of limited resource capacity or supplies among the competitors for use. (*C.F.S.*)

3. Allocation is necessary when there are limitations on either the amount of resources available or on the way in which they can be used such that each separate activity cannot be performed in the most effective way conceivable. (*U.S. Forest Serv. 1972B*)

Resource analysis unit (RAU)

U.S. Forest Service Resource Capa-

bility System usage. Broad homogeneous soil-vegetation groupings of the **ecological land units** (ELU).

The RAU may be comprised of a single ELU or a group of ELU's which have been determined by analysis to have similar inventory characteristics and which will react in a similar manner to land management activities at the intensity of analysis being undertaken. (*Reid 1972*)

Resource area. See **Land resource area**.

Resource bearing capacity. See **Carrying capacity, ecological**.

Resource capability unit

U.S. Forest Service Resource Capability System (RCS) usage. This term has generally been replaced by **ecological land unit**.

See **Ecological land unit**, definition 2.

Resource conservation district. See **Soil conservation district**.

Resource conservation planning

U.S. Soil Conservation Service usage. SCS technical planning assistance to individuals, groups and representatives of units of government concerning the opportunities and problems involved with the use, development, and conservation of soil and water resources.

Such technical assistance may range from providing aid during the entire planning process (as with individuals developing **conservation plans** for units of land) to helping develop resource inventories and interpretations and assisting in their evaluations, analysis and use. It also includes assisting representatives of units of government develop and carry out resource plans for communities, areas or regions. (*After Soil Conserv. Soc. Amer. 1970*)

Resource depletion. See **Depletion**.

Resource, extrinsic. See **Extrinsic resource**.

Resource, intrinsic. See **Intrinsic resource.**

Resource Management System (RMS)

U.S. Soil Conservation Service usage. A combination of interrelated conservation, practices and management techniques used to maintain or improve soil, water, plant and related resources. The system is designated according to primary use. (*J.H.H.*)

Resource plan

U.S. Soil Conservation Service usage. A plan prepared by a unit(s) of government and used as a guide for public policy and action on the use, treatment, and management of soil and water resources. Resource plans are generally parts of **comprehensive plans** or **functional plans**. (*U.S. Soil Conserv. Serv. 1970*)

Resource region. See **Land resource region.**

Resource scarcity. See **Economic scarcity.**

Resources Planning Act. See **Forest and Rangeland Renewable Resources Planning Act.**

Resource Unit. See **Land resource unit.**

Response form

Federal Executive Branch usage. A form not needing prior approval of the Office of Management and Budget (OMB), which is provided by a government agency to allow interested members of the public to comment on an agency action or publication. To qualify as a "response form" the form must be distributed only to those members of the public who have requested informational material or are directly affected by possible management actions. The form may include (A) name, address, and organizational affiliation of respondent, (B) a brief description distinguishing alternative actions and space where the respondent may express comments on the alternatives, and (C) chapter headings listed for respondent comments to aid

in review. It may not contain any other questions relative to the nature or attitudes of the respondent. Any form eliciting public comment which does not meet all of these criteria is a **questionnaire** and when issued by an office of the federal executive branch to ten or more people must have prior approval of OMB. (*After U.S. Forest Serv. Wash. Off. 1974*)

Also see **questionnaire.**

Response unit. See **Homogeneous response unit** and **Ecological land unit.**

Rest-rotation grazing. See **Grazing, rest-rotation.**

Retention

The amount of precipitation on a drainage area that does not escape as **runoff**. It is the difference between total precipitation and total runoff. (*Soil Conserv. Soc. Amer. 1970*)

Revegetation

The reestablishment and development of a plant cover. This may take place naturally through the reproductive processes of the existing **flora** or artificially through the direct action of man—e.g., **afforestation**, range reseeding. (*Ford-Robertson 1971*)

Revenue-cost analysis

A method of comparing alternatives by analyzing the monetary income each alternative would generate in relation to its cost. (*E.C.T.*)

Also see **Benefit-cost analysis** and **Cost-effectiveness analysis.**

Reverse condemnation. See **Condemnation, reverse.**

Right-of-way

In its strict meaning, it is the right of passage over another man's ground; and in its legal and generally accepted meaning, in reference to a roadway, it is a mere **easement** in the lands of others, obtained by lawful condemnation for public use or by purchase. It is unusual to use the term to apply to an

absolute purchase of the **fee simple ownership** of land to be used for a roadway or other kind of way.

"Right-of-way" has two-fold significance being sometimes used to mean the mere intangible right to cross, and often used to otherwise indicate that strip of land upon which a road is built. (*U.S. Bur. Outdoor Recreation 1974*)

Rights, mineral. See **Mineral rights**.

Rights, subsurface. See **Mineral rights**.

Rights, surface. See **Surface rights**.

Rill erosion. See **Erosion, rill**.

Riparian

1. In loose usage, referring to the land bordering a stream, lake or tide-water. (*Hanson 1962*)

2. Of, pertaining to, or situated on the banks of a river (though by common usage extended to include any stream, irrespective of size). (*Stamp 1961*)

Also see **Littoral**.

Riparian rights

1. The rights of owners of lands on the banks of watercourses or bodies, relating to the water, its use, ownership of soil under the stream, shoreline accretions, etc. (*U.S. Bur. Outdoor Recreation 1974*)

2. The rights accruing to a landowner on the bank of a natural watercourse, lake, or ocean. These rights vary with state law. Riparian rights cease at the water's edge and do not interfere with use of the water area by others offshore. (*After Abrams 1971*)

Risk

1. **Uncertainty** in a situation is characterized as risk if it is possible to describe all possible outcomes and to assign meaningful, objective, numerical, probability weights to each one.

For example, an action might lead to this risky outcome: a reward of \$10 if a "fair" coin comes up heads, and a

loss of \$5 if it comes up tails. (*After U.S. Forest Serv. 1972B*)

Under the Bayesian school of thought the distinction between "risk" and **uncertainty** is not useful and in fact may not exist. In any practical analysis all uncertain situations are assigned probability distributions, either explicitly or implicitly by the selection of the analysis method. Whether or not the true probability distribution is known, a probability distribution is selected for analysis purposes based on experience, intuitive feelings, knowledge, and the lack of knowledge. (*E.C.T.*)

2. The possibility of loss, injury, disadvantages, or destruction. (*Webster 1963*)

Also see **Uncertainty**.

Risk, acceptable

The level of **risk** (see definition 2) below which no specific action by local government is deemed necessary, other than making the risk known. (*Calif. Counc. on Intergov. Relat. 1973*)

Risk, avoidable

Risk (see definition 2) not necessary to take because the individual or public goals can be achieved at the same or less total "cost" by other means without taking the risk. (*Calif. Counc. on Intergov. Relat. 1973*)

Risk cutting

Cutting to remove trees that are likely to die before the next periodic cut. (*U.S. Forest Serv., FSM 2471R-3*)

Risk, unacceptable

The level of **risk** (see definition 2) above which specific action by government is deemed necessary to protect life and property. (*Calif. Counc. on Intergov. Relat. 1973*)

River basin. See **Watershed**.

River basin plan (Regional plan, Level B plan, Type II plan)

1. One of the "levels of planning" for water and related land resources planning by Federal agencies whose activities involve planning and development of water resources as contained in the **Principles and Standards** of the U.S. Water Resources Council.

"Regional" or "river basin plans" are reconnaissance-level evaluations of water and land resources for selected areas and are performed under planning authorities of Public Law 83-566 and Public Law 87-639. They are directed toward resolving the complex problems identified by **framework studies and assessments** or other Federal-state investigations and terminate in a recommended plan or disclosure of possible alternative plans. They may vary widely in scope and detail; will consider present and long-range problems with a focus on middle term (15 to 25 years) needs and desires; and will involve interested Federal, state, and local entities.

Regional or river basin plans are concerned with a broad array of component needs of objectives. Alternate plans will consider effects on many components of objectives. Scheduling for implementation of the recommended plan or alternative plans will be presented to indicate the relationship to needs and the urgency or priority associated with meeting the needs. (*U.S. Dep. of Agric. 1974*)

2. A plan for development of water and related land resources to make the best use of such resources to meet the basin needs and make the greatest long-term contribution to the economic growth and social well-being of the people of the basin and the nation. (*Soil Conserv. Soc. Amer. 1970*)

River basin planning

Comprehensive planning where the planning unit is defined by the natural boundaries of a river basin. (*E. C. T.*)

Also see **Comprehensive planning** and **River basin plan**.

Roadless and undeveloped areas

A portion of a National Forest larger than 5000 acres, or smaller than this but contiguous to designated wilderness or **primitive areas**, which contains no roads and has been inventoried by the Forest Service for possible inclusion in the wilderness areas system. By management directive these areas were not to be developed until a determination was made on an individual basis whether the area should be considered as a possible wilderness area. (*After U.S. Forest Serv., FSM 8261.05, Apr. 1974*)

Also see **Wilderness study area**, **Nonselected roadless area**, and **Wilderness**, definition 2.

Rock, igneous

Rocks formed by solidification from a molten or partially molten state—e.g., various types of lava.

This class of rock types is often subdivided, for convenience, into "plutonic rocks" (those which were formed by the solidification of molten materials below the ground surface—e.g., granite) and "volcanic rocks" (those formed by solidification of molten materials which have been extruded onto the ground surface. (*After Amer. Geol. Inst. 1962*)

Also contrast with the other two main classes of rock—**Rock, metamorphic** and **Rock, sedimentary**.

Rock, metamorphic

Rocks which have been formed in the solid state under the conditions of high pressure, high temperature and the introduction of new chemical substances that, in general occur at great depths within the earth—e.g., slate, marble, jade. (*After Amer. Geol. Inst. 1962*)

Also contrast with the other two main classes of rock—**Rock, sedimentary** and **Rock, igneous**.

Rock, plutonic. See **Rock, igneous**.

Rock, sedimentary

Rocks which have been formed from deposits of **sediment**—whether from fragments of other rock transported from their sources and deposited by water—e.g., sandstone or shale—or by precipitation from solution or fixation by organisms—e.g., rock salt, gypsum, limestone. (*After Amer. Geol. Inst. 1962*)

Also contrast with the other two main classes of rock—**Rock, metamorphic** and **Rock, igneous**.

Role. See **Social role**.

Rotation (Cutting rotation, Felling rotation, Cutting cycle, Cutting interval)

1. The period of years between the initial establishment of a stand of timber and the time when it is considered ready for cutting and **regeneration**. (*U.S. Forest Serv. 1972A*)

2. The planned, recurring lapse of time between successive major **cutting** operations in a managed forest. (*After Ford-Robertson 1971*)

Sacrifice area

1. A relatively small area of land in a grazing unit that may still be overused after practical measures for securing uniform grazing distribution have been installed. (*Soil Conserv. Soc. Amer. 1970*)

2. A portion of the range, irrespective of site, that is intentionally overgrazed to obtain efficient overall use of the management area. (*Amer. Soc. Range Manage. 1964*)

Sacrifice site

Range management usage. A **range site** which is intentionally overgrazed to obtain efficient overall use of the management area. (*Amer. Soc. Range Manage. 1964*)

Salvage cutting

1. Cutting primarily to utilize dead and downed material and scattered

Rotational deferment

Range management usage. A grazing system in which one or more parts of the range are rested during the growing season each year; and rotational use of other segments of the range are not necessarily planned for. (*Amer. Soc. Range Manage. 1964*)

Rotation grazing. See **Grazing, rotation**.

Rotation pasture. See **Pasture, rotation**.

RPA. See **Forest and Rangeland Renewable Resources Planning Act**.

Runoff

1. The total **stream discharge** of water, including both surface and sub-surface flow, usually expressed in **acre feet**. (*Amer. Soc. Range Manage. 1964*)

2. The rate at which water is discharged from a drainage area, usually expressed in cubic feet per second per square mile of drainage area. (*Amer. Soc. Range Manage. 1964*)

S

poor-risk trees that will not be merchantable if left in the stand until the next scheduled cut. (*U.S. Forest Serv., FSM 2471.33, June 1973*)

2. The exploitation of trees that are dead, dying, or deteriorating (e.g., because overmature or substantial damage by fire, wind, insects, fungi or other injurious agencies) before their timber becomes worthless. (*Ford-Robertson 1971*)

Sand

1. Particle size usage. Inorganic particles between 0.05 (or 1/16) and 2.0 millimeters in diameter. (*Soil Conserv. Soc. Amer. 1970 and Amer. Geol. Inst. 1962*)

2. "Soil texture" usage. Soil material that contains 85 percent or more sand and a percentage of **silt** plus 1.5 times the percentage of **clay** that does

not exceed 15. (*After Soil Conserv. Soc. Amer. 1970*)

Sanitary landfill

A site where solid waste materials are disposed of on land—supposedly in a manner which prevents their escape into—or pollution of—the surrounding environment. The waste is spread in layers, then compacted to the smallest practical volume and covered with compacted soil at the end of each working day. (*After SESCO, et al. 1973*)

Sanitation cutting

The removal of dead, diseased, infested, damaged, or susceptible trees essentially to prevent the spread of pests or pathogens and so promote forest hygiene. (*After Ford-Robertson 1970*)

Sapling

A loose term for a young tree greater than a few feet tall and an inch or so in **diameter at breast height** and typically growing vigorously and without dead bark or more than an occasional dead branch. Many countries set arbitrary size limits—2 to 4 inches diameter at breast height in the United States. (*Ford-Robertson 1971*)

Satisficing

A method of choosing among alternatives. Minimum values or quality standards are established for all attributes affected by the alternatives. All those alternatives which do not meet the minimum requirements are eliminated from consideration. By successively raising the minimum requirements you can successively reduce the number of alternatives under consideration. (*After Mac Crimmon 1968*)

Scale

1. Graphics usage. The proportional relationship (ratio) between the reduced size at which something is being represented on a map or other type of drawing and its true distance or size relationships. (*C.F.S.*)

2. Aesthetics of proportions usage. A feeling for the size and/or appropriateness of the size of some construction element (i.e., a building, paved area, etc.) or project. (*C.F.S.*)

Also see **Sense of scale** for a more extensive discussion of this usage of "scale".

Scarcity. See **Economic scarcity.**

SCD. See **Soil conservation district.**

Scenario

1. A hypothetical sequence of future events constructed for the purpose of focusing attention on causal processes and decision points. (*After Kahn and Wiener 1967*)

2. "Scenarios" express a series of integrated objectives for preserving the environment, the fulfillment of which is dependent upon timing as an "urgency" rather than as a "sequence". For example, some strategic natural areas that may be shown on scenarios actually exist on the ground today, but will not be found anywhere in the year 2000 unless they are reserved now. (*Hills, Love and Lacate 1970*)

3. A word picture of a fixed sequence of future events in a defined environment. (*U.S. Forest Serv. 1972B*)

Scenic area

1. U.S. Forest Service usage. A place which has been designated by the Forest Service as containing outstanding or matchless beauty which requires special management to preserve these qualities. (*U.S. Forest Serv., FSM 2362.41, June, 1974*)

Areas of this type and all other **special interest areas** are identified and formally classified primarily because of their recreational values. (*W. W.*)

2. An area preserved primarily because of its present beauty, such as cliffs, streams, vistas, vegetation, and wildlife. (*U.S. Bur. Outdoor Recreation 1974*)

S

Scenic corridor

The visible land area outside the highway **right-of-way** and generally described as "the view from the road" (*Calif. Counc. on Intergov. Relat* 1973)

Scenic easement. See **Easement, scenic.**

Scenic river

Wild and Scenic Rivers Act usage

Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely **primitive** and shorelines largely undeveloped, but accessible in places by roads (*After U.S. Forest Serv.* 1974)

Schematic diagram. See **Diagrammatic representation.**

SCS

Soil Conservation Service, U.S. Department of Agriculture.

Secondary effect. See **Indirect effect.**

Secondary facility

Transportation planning usage.

Secondary facilities provide access to smaller land areas than **primary facilities**. They are multi-resource oriented, providing access and mobility for the utilization of a variety of resource systems, and are usually developed and operated for long-term service. Emphasis is given to achieving a balance between travel efficiency and resource service. (*U.S. Forest Serv., FSM* 7705.42, Aug. 1975)

Also see **Primary facility** and **Tertiary facility**.

Secondary range

Range which is lightly used or unused by livestock under minimal management and will ordinarily not be fully used until the **primary range** has been overused. (*Amer. Soc. Range Manage.* 1964)

Secondary sewage treatment. See **Secondary wastewater treatment.**

Secondary succession. See **Succession, secondary.**

Secondary treatment. See **Secondary wastewater treatment.**

Secondary use (Accessory use)

A use incidental, related, appropriate, and clearly subordinate to the main use of an area, lot or building. An accessory use does not alter the principal use of the subject lot or affect other properties in the zone. (*Eisner* 1969)

Also see **Dominant use** as a contrasting position in the use allocation hierarchy to **secondary use**.

Secondary wastewater treatment (Secondary treatment, Secondary sewage treatment)

1. Any process that takes the effluent from **primary wastewater treatment** and reduces the **suspended solids** and **biological oxygen demand** by approximately 90 percent. During secondary treatment, the wastewater is subject to biochemical action, increased sedimentation, and clarification. (*Sesco et al.* 1973)

2. This wastewater treatment uses biological methods (primarily bacterial action) in addition to the primary treatment's removal of most floating and suspended solids by screening, sedimentation and floatation. In secondary treatment biodegradation by bacteria is used to destroy organic wastes, commonly by trickling the waste water over coarse stones. The process removes up to 90 percent of the dissolved biodegradable pollutants and 93 percent of the **suspended solids** from wastewater, but leaves many other pollutants untouched. (*Wash. State Univ. Coop. Ext. Serv.* 1972 and *Mc Gauhey* 1968)

Second growth

Forest growth that has come up naturally after some drastic interference (e.g., wholesale cutting, serious fire, or insect attack) with the previous forest crop. (*Ford-Robertson* 1971)

Sediment

Solid material, both mineral and organic, that is in suspension, is being transported, or has been moved from its site of origin by air, water, gravity, or ice and has come to rest on the earth's surface either above or below sea level. (*Soil Conserv. Soc. Amer. 1970*)

Sedimentary rock. See **Rock, sedimentary.**

Sediment discharge

The quantity of **sediment**, measured in dry weight or by volume, transported through a stream cross-section in a given time. Sediment discharge consists of both **suspended load** and **bedload**. (*Soil Conserv. Soc. Amer. 1970*)

Sediment load. See **Sediment discharge.**

Seed tree

1. A tree purposely left standing at the time of cutting in a forest, for the purpose of producing seed for regeneration of trees in the cut-over area. (*Hanson 1962*)
2. A tree selected, and often reserved, to be a source of seed for collection. (*Ford-Robertson 1971*)

Seed tree cutting (seed cutting)

1. Removal in one cut of the mature timber from an area, save for a small number of seed bearers left singly or in small groups. (*Ford-Robertson 1971*)
2. A **regeneration cutting** where the planned source of the new stand is from seed existing on, or to be produced by, trees standing on the cut-over area.

The cutting removes all the mature timber except for the number of **seed trees** which are needed to provide seed for reproducing the stand. (*U.S. Forest Serv., FSM 2471 R-3*)

Cutting which leaves the number of seed trees needed to provide the optimum amount of seed required to re-

stock, but not overstock, the area. (*U.S. Forest Serv., FSM 2471.22, June, 1973*)

See **Shelterwood system** for the timing relationships between this cutting type and others in that silvicultural system.

Seed tree removal cutting

Cutting made to remove the seed trees when adequate reproduction above browse height has been established. (*U.S. Forest Serv., FSM 2471R-3*)

Seismic

Pertaining to or caused by an earthquake. (*Calif. Counc. on Intergov. Relat. 1973*)

Seismic hazards

Hazards related to seismic or earthquake activity. (*Calif. Counc. on Intergov. Relat. 1973*)

Selection cutting. See **Selection logging.**

Selection logging (Selection cutting)

Removal of mature timber, usually the oldest or largest trees, either as single scattered trees or small groups at relatively short intervals, commonly 5 to 20 years, repeated indefinitely, by means of which the continuous establishment of natural reproduction is encouraged and an **uneven-aged stand** is maintained. (*Ford-Robertson 1971*)

Selection system

An **uneven-aged silvicultural** system in which trees are removed individually, here and there, from a large area each year.

Regeneration is mainly natural and the timber crop ideally all different ages. (*Ford-Robertson 1971*)

Selective grazing. See **Grazing, selective.**

Selective logging. See **Selection logging.**

Selectivity

Range management usage. The degree to which a plant or plant part is removed differently from that which is

expected by random removal. Selectivity is expressed as the ratio of the proportion of a plant or plant part in a diet to all the other herbage. (*H.F.H.*)

Also see **Palatability**.

Sense of community. See **Human community**, definition 2.

Sense of scale

A feeling for the size and/or appropriateness of the size of some project or construction element (i.e., building, paved area, etc.).

An evaluation of the sense of appropriate size (or mass) relationship of some design material, element, or object to its surroundings, its intended use or user group, etc. For example, the use of brick as a building material is sometimes said to result in constructions of a "human scale"—because people have a strongly developed awareness of the size of individual bricks, and therefore, can sense the size of buildings or paved areas by using the individual brick as the basis of judgement. In contrast, because concrete can be poured into almost any size units, people can have difficulty correctly judging the size of objects made out of concrete. In a similar sense, entire large highrise (i.e., multi-storied) buildings may be described as being out-of-scale when placed in surroundings dominated by 2- or 3-story buildings. (*C.F.S.*)

Sensitivity analysis

1. Varying the value of the parameter or parameters in question and examining the extent to which these changes affect the results of the analysis. (*U.S. Gen. Account. Off. 1969*)

2. Repetition of an analysis with different quantitative values for the variables in order to determine their effects on the results of the basic analysis.

If a small change in an assumption results in a proportionately greater change in the results, then the results

are said to be "sensitive" to that assumption or parameter. (*U.S. Forest Serv. 1972B*)

Sensitivity, land

The degree to which the land cannot sustain or heal itself from externally imposed disturbance or land uses. (*Sandpoint Zone Plann. Team 1973*)

Also see **Fragility** and **Fragile land** for very similar concepts.

Sensitivity level. For U.S. Forest Service usage see **Visual sensitivity level**.

Seral

A biotic community which is a developmental, transitory stage in an ecologic **succession**. (*Carpenter 1938, citing Phillips 1930*)

Sere

1. The series of stages that follow one another in an ecologic **succession**. (*Hanson 1962*)

2. The series of **biotic communities** that follow one another in time on any given area of the earth's surface. (*Carpenter 1938*)

Also see **Succession**, definition 1.

Servient

The land against which an **easement** or privilege exists is called the "servient" tenement and the estate to which it is annexed is the **dominant** tenement. Their owners are respectively the servient and dominant owners. (*U.S. Bur. Outdoor Recreation 1974*)

Also see **Easement**.

Sheet erosion. See **Erosion, sheet**.

Sheet flow. See **Overland flow**.

Shelterwood cutting

Cutting which leaves enough trees to provide about half shade or more on the ground. In some places, more trees than are needed to provide shade for reproduction must be left in order to prevent **windthrow**. (*U.S. Forest Serv., FSM 2471.22, Jan. 1974*)

See **Shelterwood system** for the

timing relationships between this cutting type and others in that silvicultural system.

Shelterwood system

Even-aged silvicultural systems in which (in order to provide a source of seed and/or protection for regeneration) the old crop is removed in two or more successive "shelterwood cuttings", the first of which is ordinarily the **seed tree cutting** and the last is the **final cutting**, any intervening cuttings being termed **removal cuttings**. (Ford-Robertson 1971)

Short-range planning

1. Planning for a future less than 5 years distant. (U.S. Forest Serv. 1972B)

2. U.S. Forest Service usage. Information use for planning and control for the period covered by specific **action plans**—i.e., **functional plans**. (U.S. Forest Serv. 1972B)

Shrink-swell potential

The susceptibility for a soil's volume to change due to loss or gain in moisture content. (Soil Conserv. Soc. Amer. 1970)

Silt

1. Particle size usage. Fragments of rock or organic matter **sediment** most of the individual particles of which are between 1/16 and 1/256 millimeters in diameter. (Amer. Geol. Inst. 1962)

Soil particles which are between 0.05 and 0.002 millimeters in equivalent diameter. (Soil Conserv. Soc. Amer. 1970)

2. "Soil texture" usage. A **soil texture** type consisting of 80 percent or more of silt particles and less than 12 percent **clay** particles. (After Soil Conserv. Soc. Amer. 1970)

Silvics

The natural science which deals with the laws underlying the growth and development of single trees and of the forest as a biological unit. (Smith 1962)

Silviculture

1. Generally, the science and art of cultivating (i.e., growing and tending) forest crops, based on a knowledge of **silvics**. (Ford-Robertson 1971)

2. More particularly the theory and practice of controlling the establishment, composition, constitution, and growth of forests. (Ford-Robertson 1971)

3. In imprecise usage, **cutting**, **logging**, **harvesting**, and "silviculture" are used seemingly interchangeably by different people, often with vehemence as to which is the correct term in a given situation. According to Ford-Robertson (1971) "silviculture" has as its primary concern the establishing, growing, and tending of forests. "Harvesting" and "logging", however, deal specifically with the extraction of resources from the forest; with "logging" restricted to the felling and extraction of timber (wood other than fuel wood after **primary conversion**), whereas "harvesting" expands this to include the cutting, initial processing if any, and extraction of any forest product. "Cutting" refers only to the actual felling of standing trees. (After Ford-Robertson 1971)

Simulation

1. An abstraction or simplification of a real world situation. In its broadest sense any **model** is a simulation, since it is designed to represent the most important features of some existential conditions. (U.S. Gen. Account. Off. 1969)

2. Use of a model to determine results under specific sets of circumstances. (After U.S. Gen. Account. Off. 1969)

3. A technique for solving complex problems that are not amenable to solution using formal analytical techniques. Essentially simulation consists of a representation of a system or organization by means of a model. The behavior of the system under various

possible operational conditions is then analyzed through repeated manipulation of the model. (*U.S. Forest Serv. 1972B*)

Sink

In pollution terminology, any location where wastes are or ultimately become deposited—as in underground burial places, in underwater deposits, in ocean water, etc. (*After SESCO, et al. 1973*)

Site

1. City planning and environmental design professions usage. A plot of land intended or suitable for development.

The ground or area upon which a building or town has been erected. (*Abrams 1971*)

2. Forestry usage. An area considered in terms of its environment, particularly as this determines the type and quality of the vegetation the area can inherently produce.

"Sites" are classified either qualitatively, by their climate, soil and vegetation, into **site types**, or quantitatively, by their potential wood production, into **site classes**. (*Ford-Robertson 1971*)

Site capacity

U.S. Forest Service usage. The number of persons who may, at one time, use the developed capacity (i.e., **facility carrying capacity**) of a location while not exceeding the safe, season-long carrying capacity (i.e., **ecological carrying capacity**) per acre.

The inherent capacity of a resource area to support use without unacceptable damage (i.e., "ecological carrying capacity"). (*After U.S. Forest Service, FSM 2331.110, Oct. 1967*)

Site class (Locality class, Productivity class, Quality class, Growth class, Yield class)

A quantitative measure of the productive capacity of an area which is

essentially uniform with respect to those factors controlling productivity for the crop or stand under study. The quantitative measure is based on the volume, height or maximum mean annual increment that is attained or attainable on that area at a given crop age. (*After Ford-Robertson 1971*)

Site design. See **Site planning**.

Site index

1. A numerical evaluation of the quality of land for plant productivity, especially used in **forest land** where it is determined by the rate of growth in height on one or more of the tree species. (*Hanson 1962*)

2. A particular measure of **site class**, based on the height of the dominant trees in a stand at an arbitrarily chosen age. (*Ford-Robertson 1971*)

Site plan

A plan, prepared to scale, showing accurately and with complete dimensioning, all of the buildings, structures and uses and the exact manner of development proposed for a specific parcel of land. (*Eisner 1969*)

Site planning (Site design)

The organization of the external physical environment up to the largest scale at which it can still be subject to unified and complete control. It deals with structures, land and the entire complex of physical forms above, below and on the surface. It has at its heart the disposition of objects and activities in 3-dimensional space. It begins with the careful analysis of the project site and purpose; and, it concludes with design of a pattern which interacts as a totality with its users, and which is subject to continuous future development and change.

"Site planning" produces plans which can be carried out in one continuous foreseeable process, according to one original design, under the control of one agency, inclusive of all de-

tails of site engineering, landscaping, and architecture.

"Site planning" may take place on areas as small as a single building and its grounds, or as large as the layout of a complete small town. (*Lynch 1962*)

"Site planning" is the smallest level at which "land use planning" is done.

In some instances "site planning" can almost be a synonym for **project planning**. The main difference usually is that "site planning" is more concerned with the specifics of the design aspects of site use—e.g., site circulation, optimum relationships between project components on the site, placement of structures and other changes in relation to any inherent site limitations or potentials, the aesthetics of site use, maintenance of some sense of continuity with surroundings, etc. Those portions of "project planning" which are concerned with the design aspects of site use are sometimes called the "site planning" phase of "project planning". However, "project planning" typically involves many additional considerations which are not within the scope of site planning—such as economic studies of markets and location, optimum organization of facilities within buildings, etc. (*C.F.S.*)

Site quality

A loosely used term denoting the relative productivity of a **site** for a particular tree species. (*Ford-Robertson 1971*)

Also see **Site class** and **Site index**.

Site region

G.A. Hills land classification usage. The subdivision of a region on the basis of broad **macroclimatic** similarities—such as cool humid vs. warm humid.

Broad areas where air temperature and relative humidity generally correspond to similar landform and vegetation **succession**. Site regions vary in size from 1000 to 4000 square miles

and often form administrative and management units. (*After Belknap and Furtado 1967*)

The largest unit in Hills' land classification system. The various levels, in order of decreasing size, are **Site region**, **Landtype**, **Physiographic site class**, **Physiographic site type** and **Physiographic site phase**.

Site specific

In "land use planning" usage this term commonly refers to something only valid for, or confined to, a certain given parcel of land and/or water. The term may apply to data, studies to obtain information, environmental impacts, use restrictions, etc.

The assumption is that mapped land characteristics are, in varying degrees, generalizations about a true distribution of characteristics. Such appropriate-use-affecting generalizations cannot be assumed valid for every parcel of land contained within the larger mapped units. "Site specific" studies may be needed to confirm or change the appropriate land use classification of a particular parcel.

"Site specific" implies limitations on transference or extrapolation of observations beyond a specific parcel of land, while **geographic specific** implies the same limitations with respect to relatively large blocks of land of unspecified ownership. (*C.F.S.*)

Site type

A biotic productivity unit (usually for trees) which is qualitatively defined on the basis of being relatively uniform with respect to climate, soil and natural vegetation cover. (*After Ford-Robertson 1971*)

For quantitative productivity classifications see **Site class**.

Also see **Site**, definition 2.

Skidding

A loosely used term for the transportation of logs from stumps to a collecting point by sliding or dragging

along the ground—as opposed to the use of wheels, helicopters, balloons, cables, etc., to keep them totally off the ground.

The logs may slide more or less wholly along the ground or with their forward end supported. (*After Ford-Robertson 1971*)

Sometimes the term "skidding" is even used to refer to log transportation methods which keep them wholly off the ground during their main journey (especially when sliding logs along a cable as in "aerial skidding") but this usage is clearly in conflict with the central concept, and therefore, should be discouraged. (*C.F.S.*)

Skyline logging. See **Logging, skyline.**

Skyline yarding. See **Yarding, skyline.**

Slash

The residue left on the ground after timber cutting and/or accumulating there as a result of storm, fire or other damage. It includes unutilized logs, uprooted stumps, broken or uprooted stems, branches, twigs, leaves, bark and chips. (*Ford-Robertson 1971*)

Slope

An inclined portion of the surface of the earth. (*Amer. Geol. Inst. 1962*)

Also see **Slope orientation** and **Slope steepness.**

Slope gradient. See **Slope steepness.**

Slope orientation (Aspect, Exposure)

The compass direction that the slope of a land surface faces toward (e.g., north, northwest, south). (*After Soil Conserv. Soc. Amer. 1970*)

Slope stability (Mass instability)

An evaluation (almost always qualitative and expressed as a probability) of the tendency for the materials on or constituting a slope (e.g., rocks, soil, snow) to either remain in place or to move downhill. (*C.F.S.*)

Also see **Landslide hazard, Snow avalanche hazard.**

Slope steepness (Slope, Slope gradient, Slope inclination)

The degree of deviation of a land surface from the horizontal—usually expressed in percent (i.e., amount of elevation change per 100 feet, expressed as a percentage) or degrees. (*After Soil Conserv. Soc. Amer. 1970*)

SMSA. See **Standard metropolitan statistical area.**

Snag

1. A standing dead tree from which the leaves and most of the branches have fallen. (*Ford-Robertson 1971*)

2. A standing section of the stem of a tree broken off at a height of 20 or more feet above the ground. (*Ford-Robertson 1971*)

Snow avalanche

The rapid downslope movement of large quantities of snow. (*Amer. Geol. Inst. 1962*)

Snow avalanche hazard (Snowslide hazard)

Some evaluation (almost always qualitative and relative to adjacent locations) of the chance that a **snow avalanche** will occur on a given site. (*C.F.S.*)

Snowslide. See **Snow avalanche.**

Social analysis

1. An analysis of the social (as distinct from the economic and environmental) effects of a given plan or proposal for action. Social analysis includes identification and evaluation of all pertinent desirable and undesirable consequences to all segments of society, stated in some comparable quantitative terms—such as persons or percent of population in each affected social segment. It also includes a subjective analysis of social factors not expressible in quantitative terms. (*C.F.S.*)

For example, "social analysis" would include effects on **life styles**,

the political process, education, health care, housing, distributions of power and income, and the quality of public services. (*E. C. T.*)

2. A phase in the planning process which (1) identifies groups (whether formally organized as groups or not) who may be affected by or have an interest in planning decisions; (2) gathers and quantifies (objectively when possible) both the preferences of these groups and the possible consequences of proposed alternatives on these groups; (3) evaluates the role of social group preferences and consequences in resource allocation decisions; and (4) determines how a given plan should be formulated (or adjusted) so as to respond to these evaluations and to generally defined **social equity** criteria.

"Social analysis" is a part of both the plan formulation and impact evaluation processes.

The determination of the best method(s) for obtaining the desired information from representative samples of each social group and the collection of that information usually involves use of such survey research procedures as: **questionnaire** design, distribution and retrieval; conducting polls; holding public hearings; forming ad hoc task forces and advisory groups; and conducting behavioral studies.

The determination of how to evaluate the various social groups' diverse (and often conflicting) preferences for allocation choices usually consists of some systematic method for establishing the relative importance of the various social groups and expressing this as **multipliers** or **weightings**.

Establishing how social groups' attitudes, use behavior characteristics, etc. could be reflected in future planning decisions, or how plan decisions which have already been made could be altered so as to better respond to these kind of considerations includes

the evaluation of the extent to which different social groups will be benefited or harmed by any decision that may be made. This usually involves making some hard decisions about balancing the net gains in the **quality of life** for some groups against the gains and losses of others.

In the end, the findings and guidance developed by the "social analysis" process are combined (compromising where necessary) with the analogous findings and guidances originating from analysis of economic, ecological, amenity, and other decision making considerations to arrive at an overall set of plan guiding and/or evaluative criteria. (*C. F. S. and E.C.T.*)

Social benefits

1. The net benefit considerations of long-range societal values at the regional or national level which might not be taken into account in the profit and loss statement of an individual farmer, forest operator, industrialist or other private citizen. (*Wash. State Univ., Coop. Ext. Serv. 1972*)

Note that this term in economic usage does not include the profit and loss statements of such legally defined individuals as corporations. Their profits and losses are assumed to appear in the statement of single individuals.

In common usage "social benefits" is often used when referring to the externality benefits (see **economic externalities**) accruing to groups of individuals or to society as a whole. (*C.F.S.*)

2. The non-monetary and rarely quantifiable returns to society arising from any form of economic activity—e.g., those recreational benefits resulting from the creation of a scenic overlook. (*Ford-Robertson 1971*)

Social carrying capacity. See **Carrying capacity, psychological.**

Social class

1. In its simplest usage, merely a category of people who have been

grouped together on the basis of one or more common characteristics. The characteristics can usually be viewed as **hierarchical**. Basically, then, a class stratum in a hierarchically stratified social structure.

Disputes about a more precise definition of "social class" revolve around two issues—the choice of the factors by which a population is classified, and whether or not a class must have grouplike features in addition to the objective similarities that its members share. Classes are viewed by some sociologists as quasigroups (that is, categories with some grouplike characteristics) or statistical aggregates. (*O'Connell 1974*)

2. The most common usage of "class" implies a definition in terms of categories that share relatively equal amounts of economic, prestige, and political-power resources.

The factors according to which a society may be stratified into classes fall into three broad categories—economic, social, and political.

Economic factors used to define classes include: (1) relationship to the means of production (i.e., basically, ownership or nonownership of capital), (2) similarity of market positions (whether they may or may not have developed a sense of commonality), or most commonly, (3) aggregates of individuals sharing similar amounts of income or wealth.

Social factors used to define classes include differential **life styles (subcultures)**, **prestige** or the clustering of interaction patterns.

Political factors used to define social class structure include (1) the relationship to the means of force and government (viewing political control as not solely dependent on economic control), (2) defining classes as conflict groups (comprised of those with and those without authority) which develop inevitably in any association

or society with a hierarchical command structure, and (3) aggregates of persons in similar power positions (with the basic sources of power being force, position, occupation and property).

In many empirical studies "social classes" are defined as socioeconomic categories on the basis of two or more objective hierarchical indicators (for example, income, occupation, education). (*O'Connell 1974*)

Social costs

1. The net loss considerations of long-range societal values at the regional or national level which might not be taken into account in the profit and loss statement of an individual farmer, forest operator, industrialist or other private citizen. (*Wash. State Univ., Coop. Ext. Serv. 1972*)

Note that this term in economic usage does not include the profit and loss statements of such legally defined individuals as corporations. Their profits and losses are assumed to appear in the statements of single individuals.

In common usage social cost is often used when referring to the externality costs (see **economic externalities**) accruing to groups of individuals or to society as a whole. (*C.F.S.*)

2. The non-monetary and rarely quantifiable losses to society arising from any form of economic activity—e.g., from air pollution whose only deleterious side effect is reduced visibility, over and above the expenditures for the goods and services causing the smoke. (*Ford-Robertson 1971*)

Social determinism (Social primacy)

1. A point of view in planning which advocates that the primary basis for making use and allocation decisions should be satisfaction of current societal demands on resources. The ability of the resource base to sustain such demanded use levels on a long term basis is not recognized as an im-

portant criterion for decision making by the social primist. (*C.F.S.*)

2. Sociological usage. The belief that human behavior is produced by conditions in the social world. In this view, when a person is born, he is essentially unmarked, a clean surface. His potential for good or evil, success or failure, or the various states in between, will be decided by the social environment, which is formed by his family, his friends, his work associates, and overlaying all of these groups, the culture. Sociologists are basically "social determinists". (*O'Connell 1974*)

Social distance

1. **Environmental psychology** usage. The distance maintained by animals and persons based on the social situation involved. "Social distance" is a psychological distance which is not rigidly fixed, but shifts with the situation and varies from species to species. (*After Worthington 1974*)

2. Presuming that people are conscious of having a certain "place" in a social hierarchy and, further, that they are conscious of the places of others, the differences between the respective places is "social distance". For example, the social distance between a physician and a garbage collector will probably be greater than that between the physician and a car salesman.

Occupational status is only one component of "social distance"; others will be relevant to the situation in which the individuals find themselves. For example, on a ski slope, occupation may mean little and skiing ability may be the essential determinant of social distance. Social distance will also vary with the extent to which the two people know each other. On first encounter the determinants of social distance will include appearance, mode of self-introduction, and attributes of social status such as occupational prestige. As the relationship develops, these factors may become less

important, and others, such as intelligence, will enter into the determination of social distance. (*O'Connell 1974*)

Also see **Social role**.

Social dynamics

The forces and processes involved in social change. The processes of interaction leading to change may involve economic, political, ideological, individual, or other variables.

Some theorists see this dynamic as a dialectical one, involving a succession of conflicts and their resolutions. Others see the dynamic as a developmental, cumulative process in which conflict is merely incidental. (*O'Connell 1974*)

Social engineering

Application of sociological principles to problems of society. (*O'Connell 1974*)

Social equity

The distribution of the gains and losses that will accrue to individuals or groups (defined according to social criteria), as a consequence of land use planning decisions, in a manner which is in reasonable conformity to accepted standards of natural rights, law and justice, without prejudice, favoritism or fraud and without causing undue hardship. (*C.F.S.*)

Social group

Generally, an aggregate of people present in some sort of situation involving their interaction with one another. A group may consist of almost any number of people, and the interaction may involve the performance of a complex task or simply being together in the same place at the same time.

In any setting the behavior of the individual is determined by being part of the group, though the ways in which such determining occurs will vary with the settings. (*O'Connell 1974*)

Social inequality

A condition in which various members of a society have unequal amounts of income, prestige, and **social power**. (*O'Connell 1974*)

Social institutions. See **Institutions, social**.

Social mobility

The upward or downward movement of individuals or groups into different positions in a social hierarchy based on wealth, income, occupation, education, **social power**, or any other scarce social resources.

A society with a high rate of social mobility and good opportunities for upward social mobility is not **egalitarian** but does maximize opportunities for one individual or group to get more of the society's scarce resources than other individuals or groups can get. (*O'Connell 1974*)

Social mores

The fixed customs or **folkways** of a particular social group that are morally binding upon all members of the group and necessary to its welfare and preservation. (*Webster 1963*)

Social norms

The shared **expectations** of a **social group** or society.

The concept assumes a relationship between the perceptions of shared expectations by members of the social group and the extent to which the **norm** influences behavior. To the degree to which human behavior is influenced by the **normative** content of the culture of one's society, such behavior might be explained in terms of the collective expectations as perceived, shared, and enforced by the group.

Normative variations exist even in a relatively stable culture. These variations are due to the generalized nature of norms relative to specific social situations and to the variations in their perception and interpretation by indi-

viduals. Moreover, in societies such as the United States, whose structure manifests **subcultural** variations, ambiguities and variations concerning the meaning of norms are to be expected.

Norms are external to the individual to the extent that normative definitions exist in the reality defined by a particular culture, which may preexist his being. There is a hierarchy of such definitions of "right and wrong". These are traditionally identified as "folkways", **mores**, and laws. (*O'Connell 1974*)

Also see **Norm**.

Social planning. See **Advocacy planning**.

Social power

The extent to which a person can impose their will on a group. That is a person has power when he gets the members of a group to do what he or she wants, regardless of what they want. (*O'Connell 1974*)

Social prestige

The respect or favorable regard enjoyed by individuals or groups and linked to the **social status** accorded to these individuals or groups. Prestige is frequently, but not necessarily, the result of the possession of power or wealth. (*O'Connell 1974*)

Social primacy. See **Social determinism**.

Social role

Generally, a role consists of those behaviors typically performed by an individual in a particular situation. The individual's assumption of a role implies his acceptance of the need to act in ways that are socially agreed upon as being appropriate in that situation.

To differentiate role from status, a status generally refers to an **institutionalized** role. Thus, statuses often involve occupational or kinship systems—physician, lawyer, factory worker, or father, mother, uncle. Whereas the physician, by virtue of his profes-

sion, enjoys a certain "status", his "role" in any situation will be more fluid. (*O'Connell 1974*)

Social status

A position based on prestige and **life style**. Status group members share these characteristics to a similar degree.

It is often useful to consider a society's status hierarchy independently from its **social class** hierarchy which is based largely on economic position. Status frequently derives from class position, but it may be achieved independently of economic standing. (*O'Connell 1974*)

Also see **Social class** and **Social power**.

Social well-being

1. U.S. Water Resources Council (WRC) usage. One of the four "required accounts" for categorizing, displaying, or "accounting" the beneficial and adverse effects of each alternative plan formulation for water and related land resources planning specified in the Water Resources Council's **Principles and Standards** and the U.S. Department of Agriculture's "Procedures" for adhering to them. (*After U.S. Dep. of Agric. 1974*)

2. The "social well-being" account includes (at least): (1) real income distribution among individuals, classes, and groups; (2) life, health, and safety; (3) educational, cultural, and recreational opportunities; and (4) emergency preparedness. (*After U.S. Dep. of Agric. 1974*)

Soft Pesticides. See **Nonpersistent pesticide**.

Soil

1. The loose surface material of the earth, usually consisting of disintegrated rock with an admixture of organic matter and soluble salts. (*Webster 1963*)

2. Agricultural usages. The collection of natural bodies occupying portions of the earth's surface that support plants and that have properties due to the integrated effect of climate and living matter, acting upon **parent material**, as conditioned by relief, over periods of time. (*U.S. Soil Conserv. Serv. 1951*)

The unconsolidated mineral and organic material on the immediate surface of the earth that serves as a natural medium for the growth of land plants. (*Soil Conserv. Soc. Amer. 1970*)

The unconsolidated mineral matter on the surface of the earth that has been subjected to and influenced by genetic and environmental factors of **parent material**, climate (including moisture and temperature effects), macro- and micro-organisms, and topography, all acting over a period of time and producing a product-soil—that differs from the material from which it is derived in many physical, chemical, biological, and morphological properties and characteristics. (*Soil Conserv. Soc. Amer. 1970*)

According to these definitions "soil" only extends to the depth important for plant growth—operationally defined for the U.S. Soil Conservation Service surveys as the depth to root growth limiting material or a 60 inch depth, whichever is encountered first. (*C.F.S.*)

In agricultural usage the "soil" is the **solum**.

3. Engineering usages. The layer of loose, incoherent rock material of whatever origin that rests on the hard or **bedrocks**—i.e., the entire **soil profile** down to and sometimes even into the underlying consolidated rocks. (*Jumikis 1962*)

Note that in this definition the lower boundary between a soil and a non-soil is not defined by root growth-limiting material or the operational 5

foot depth—whichever is encountered first. Spatially the engineer recognizes that there is an ungeneralizable, infinite variety of soils, each with slightly differing physical characteristics while the agricultural soil scientist believes that "soils" can be mapped as significantly homogeneous, discrete units—i.e., **soil types**. (*C.F.S.*)

4. Geological usage. Any loose surface material overlying solid rock.

The **regolith**, or blanket of unconsolidated rock material that lies on the **bedrock**. (*Thrush 1968*)

5. Soils are not simple structures, nor are they static. Each soil is the result of the interactions of the parent materials, the climate, and the vegetation and animal organisms which they support. They respond to environmental changes and to alterations in topography. They can be improved or destroyed. (*Marsh 1964*)

6. A kind of soil is the collection of soils that are alike in specified combinations of characteristics. Kinds of soil are given names in the system of soil classification. (*Soil Conserv. Soc. Amer. 1970*)

Soil and water conservation. See **Conservation**, definition 1.

Soil and water conservation district. See **Soil conservation district**.

Soil association

1. A group of defined and named **soil taxonomic units** occurring together in an individual and characteristic pattern over a geographic region. (*Soil Conserv. Soc. Amer. 1970*)

2. A mapping unit used on **reconnaissance soil maps** or **general soil maps** in which two or more defined taxonomic units occurring together in a characteristic pattern are combined because the scale of the map does not enable (nor does the purpose for which it is being made require) delineation of the individual soils. (*Soil Con-*

serv. Soc. Amer. 1970)

Also see **Soil complex**.

Soil climate

The moisture and temperature conditions existing within the soil. The soil has a **microclimate** which is the **environment** of the organisms which live within the soil. (*Marsh 1964*)

Soil complex

A mapping unit used in **detailed soil surveys** where two or more defined taxonomic units are so intimately intermixed geographically that it is undesirable or impractical (because of the scale being used) to separate them.

A more intimate mixing of smaller areas of individual taxonomic units than the **soil association**. (*Soil Conserv. Soc. Amer. 1970*)

Soil condition class

A reference to soil stability based principally on the amount of ground cover weighted by the degree of **accelerated erosion**. (*Amer. Soc. Range Manage. 1964*)

Soil conservation district (SCD, Soil and water conservation district, Natural resource district, Conservation district, Resource conservation district, RCD)

A subdivision of a state or territory organized pursuant to the state soil conservation district law, as amended, for the purpose, with the powers, and subject to the restrictions, determined by that law.

Under amendments to the districts' laws, the names of districts in some states have been changed to conservation districts, soil conservation districts, natural resource districts or, in California, resource conservation districts.

SCD's are locally created and operated. They are controlled by an elected and/or appointed governing body, generally made up of resident landowners. In most states, SCD's are under the general supervision of a state

conservation commission, committee, board, or agency.

Functions, operations, purposes, and powers of SCD's vary widely from state to state. (*U.S. Soil Conserv. Serv. 1970*)

Soil creep (Creep)

The slow, **mass movement** of soil material down relatively steep slopes, primarily under the influence of gravity but facilitated by saturation with water and by alternate freezing and thawing. (*Soil Conserv. Soc. Amer. 1970*)

Soil erosion. See **Erosion, soil.**

Soil family

1. Soil classes defined largely on the basis of physical and mineralogic properties of importance to plant growth. (*Soil Conserv. Soc. Amer. 1970*)

2. In soil classification one of the categories intermediate between the Great soil group and the soil series. (*Soil Sci. Soc. Amer. 1965*)

Soil fertility

The quality of a soil that enables it to provide nutrients in adequate amounts and in proper balance for the growth of specified plants when other growth factors, such as light, moisture, temperature, and the physical condition of the soil, are favorable. (*Soil Conserv. Soc. Amer. 1970*)

Soil great group (Great soil group)

Soil classes that are grouped upon the basis of having the same kind of horizons in the same sequence and similar moisture and temperature regimes. Exceptions to the **soil horizon** sequences are made for horizons near the surface that may get mixed or lost by erosion if plowed. (*Soil Conserv. Soc. Amer. 1970*)

Soil horizon (Soil zone)

1. A layer of soil, approximately parallel to the soil surface, with com-

paratively uniform characteristics produced by soil-forming processes.

One soil horizon is commonly differentiated from an adjacent one on the basis of characteristics that can be seen in the field. (*U.S. Soil Conserv. Serv. 1951*)

2. A term applied to a layer of soil which differs in composition or structure, or in both, from adjacent layers. The various horizons in a soil are generally described by a diagram representing a vertical section of the soil called a profile. The horizons in a **soil profile** are designated as follows: A-horizon, topsoil; B-horizon, mineral soil; and C-horizon, parent soil material, weathered or unweathered rock fragments and minerals.

Between any of the above horizons may be found a waterlogged or "gley" horizon, formed by the influence of ground water and marked by the presence of iron and other reduced compounds, alkaline salts, or aluminum oxides.

A layer under the C-horizon which is unlike the **parent material** may be indicated as a D-horizon on a **soil profile**. The A, B, and C-horizons are quite distinct in mature soils, developed under forest vegetation in temperate and humid climates. These are called "zonal soils". Soils in which the horizons are undistinguished are called "azonal". Where the horizons do not fall into the above pattern or some horizons are absent, the soils are called "intrazonal". (*Marsh 1964*)

Soil liquefaction (Thixotrophy)

The change of the strength of a water saturated, cohesionless soil to that of a liquid, usually from intense ground shaking. On liquefaction a soil loses all its bearing strength. (*Calif. Counc. on Intergov. Relat. 1973*)

Soil loss equation (Universal soil loss equation)

An equation used for the design of

water erosion control systems. A = RKLSPC wherein A = average annual soil loss in tons per acre per year, R = rainfall factor, K = soil erodibility factor, L = length of slope, S = percent of slope, P = conservation practice factor, and C = cropping and management factor. (*Soil Conserv. Soc. Amer. 1970*)

The equation as originally developed predicted soil losses from agricultural lands induced by rainfall. A recent revision takes into account the effect of snowmelt in areas where the contribution from this cause is significant. (*J.H.H.*)

Soil-loss tolerance (Permissible soil loss, T factor)

The maximum average annual rate of **soil erosion** (whether from rainfall or wind) that will permit a high level of crop productivity to be sustained economically and indefinitely.

T factors of 1 through 5 are used, and these numbers represent the amount of soil loss in tons per acre per year that should be permitted on a given soil. The T factor is used in the **soil-loss equations** for rainfall and wind erosion. (*After Soil Conserv. Soc. Amer. 1970 and W.A.B.*)

Soil map

1. A map which shows the location, and extent of the different soils in an area. Soil maps are prepared and published by various agencies of state and local governments, in cooperation with the U.S. Soil Conservation Service and/or Forest Service or by the Forest Service. (*After Marsh 1964*)

2. A map showing the distribution of **soil types** or other soil mapping units in relation to the prominent physical and cultural features of the earth's surface.

The following kinds of soil maps are recognized in the United States: "detailed", "detailed reconnaissance", "reconnaissance", "generalized", and "schematic". (*Soil Conserv. Soc. Amer. 1970*)

Soil map, detailed

1. U.S. Soil Conservation Service usage. Referring to a **soil map** at a publication scale commonly of 2 inches = 1 mile on which **soil types** and **soil phases** are the main types of units delineated. The smallest unit size shown on such maps is about 1 1/3 acres. Survey traverses are usually made at 1/4 mile or more frequent intervals. The unit boundaries on detailed soil maps should have been seen throughout their course and their placement on the map should be accurate to at least 50 to 100 feet. The maximum amount of unlike soil inclusions in mapped units is 15 percent. (*After U.S. Soil Conserv. Serv. 1951 and Soil Sci. Soc. Amer. 1965*)

Soil map, detailed reconnaissance

A **reconnaissance soil map** on which some areas or features are shown in greater detail than usual, or than others. (*Soil Conserv. Soc. Amer. 1965*)

Soil map, general (Generalized soil map)

U.S. Soil Conservation Service usage. Referring to a **soil map** with a publication scale commonly of 1 inch = 1 mile on which **soil associations** and **miscellaneous land types** are the delineated units. The smallest unit size shown is about 3 1/2 acres. The maximum amount of unlike soil inclusions in such mapping units is 15 percent. (*After U.S. Soil Conserv. Serv. 1951 and 1971*)

Soil mapping unit

A kind of soil, a combination of kinds of soil, or **miscellaneous land type** or types, that can be shown at the scale of mapping for the defined purposes and objectives of the survey.

Soil mapping units are the basis for the delineations of a soil survey map. Mapping units normally contain inclusions of soils outside the limits of the taxonomic name, or names, used as

the name for the mapping unit. Mapping units are generally designed only to reflect significant differences in use and management. (*After Soil Conserv. Soc. Amer. 1970*)

Soil map, reconnaissance

U.S. Soil Conservation Service usage. Referring to a **soil map** of highly variable publication scale (1 inch = 1 mile to 1 inch = 8 miles) and quality. The most detailed units commonly shown are **miscellaneous land types** and **soil associations** or one or more phases of **soil families**. The smallest unit that can be shown on such a soil map at a scale of 1 inch = 1 mile is about 3½ acres and at 1 inch = 4 miles about 280 acres. Map unit boundaries are plotted where they cross field survey traverses. Traverses are at intervals varying from about ½ mile to several miles. Between these points of field observation most boundaries are sketched from the appearance of ground patterns on aerial photographs and the general appearance of the landscape. (*After U.S. Soil Conserv. Serv. 1951 and 1970 and Soil Sci. Soc. Amer. 1965*)

Soil order

The category at the highest level of generalization in the soil classification system. The properties selected to distinguish the orders are reflections of the degree of **soil horizon** development and the kinds of horizons present. (*Soil Conserv. Soc. Amer. 1970*)

Soil Permeability. See **Permeability**.

Soil phase

A subdivision of a **soil taxonomic unit**, usually a **soil series** or other unit of classification based on characteristics that affect the use and management of the soil but which do not vary sufficiently to differentiate it as a separate soil series.

For example, a variation in a property or characteristic, such as degree of

slope, degree of erosion, content of stones, texture of the surface, etc.

Phases of soil series are the major components of the **soil mapping units** shown on **detailed soil maps** in the United States. (*Soil Conserv. Soc. Amer. 1970*)

Soil profile

1. A diagram of the vertical section of a soil showing the thickness and character of the various **soil horizons**. (*Marsh 1964*)

2. The succession of zones or "horizons" beginning at the surface that have been altered by normal soil-forming processes of which leaching and oxidation have been particularly important. (*Amer. Geol. Inst. 1962*)

Also see **Soil horizon**.

Soil region

An area with approximately uniform soils. Fifty soil regions are recognized in the United States, excluding Alaska and Hawaii. They are correlated with the climatic provinces and plant growth regions. A map of these regions is included in "Native Plants of the United States" by William R. Vansant, U.S. Department of Agriculture, miscellaneous publication no. 303. (*Marsh 1964*)

Soil resource inventory. In U.S. Forest Service usage this term is approximately equivalent to **soil survey**. See **Soil survey**.

Soil series

1. Soils which have similar **soil profile** characteristics and which are derived from similar **parent materials** are grouped together in a "soil series". A soil series is usually named for the locality where the typical soil was first recorded. (*Marsh 1964*)

2. A group of soils having **soil horizons** similar in differentiating characteristics and arrangement in the **soil profile** (except for texture of the surface portion); or, if genetic horizons

are thin or absent, a group of soils that, within defined depth limits, is uniform in all soil characteristics diagnostic for that series. (*Soil Conserv. Soc. Amer. 1970*)

Soil subgroup

Soil great groups are subdivided into subgroups that (1) show the central properties of the great group or (2) intergrade subgroups that show properties of more than one great group or (3) other subgroups for soils with atypical properties that are not characteristic of any great group. (*Soil Conserv. Soc. Amer. 1970*)

Soil survey

A general term for the systematic examination of soils in the field and in laboratories; their description and classification; the mapping of kinds of soil; the interpretation of soils according to their adaptability for various crops, grasses, and trees; their behavior under use or treatment for plant production or for other purposes; and their productivity under different management systems. (*Soil Conserv. Soc. Amer. 1970*)

The U.S. Forest Service now uses the term "soil resource inventory" rather than "soil survey". (*U.S. Forest Serv., FSM 2250.3, Aug. 1974*)

Soil taxon. See **Soil taxonomic unit**.

Soil taxonomic unit (Soil taxon)

A unit comprising all soils that fall within the defined limits of a class at any categoric level in a system of soil classification.

Commonly used as a member of the lowest class in the present classification scheme and in that use is equivalent to **soil series**. (*Soil Conserv. Soc. Amer. 1970*)

Soil texture

The relative proportions of the three individual particle size classes (i.e., sand, **silt** and clay) in a soil. (*After Soil Conserv. Soc. Amer. 1970*)

Soil type

1. A subdivision of a **soil series** based on surface **soil texture**. At the present time in the United States a soil type is considered as a kind of **soil phase** and is not part of the soil classification system presently being used. (*Soil Conserv. Soc. Amer. 1970*)

2. In Europe, a class roughly equivalent to a **Great soil group**. (*Soil Conserv. Soc. Amer. 1970*)

Soil variant

A kind of soil whose properties are believed to be sufficiently different from recognized **soil series** to justify a new series name but comprising such a limited geographic area that creation of a new series is not justified. (*Soil Conserv. Soc. Amer. 1970*)

Soil zone. See **Soil horizon**.

Solitude

1. An experience where man may commune with his surroundings in a natural setting generally undisturbed by the sound or sight of technology. (*U.S. Forest Serv. Region 9, 1975*)

2. The quality or state of being alone or remote from society. (*Webster 1963*)

Solum

1. The upper part of a **soil profile**, above the **parent material**, in which the processes of soil formation are active. The solum in mature soils includes the A and B **soil horizon**. Usually the characteristics of the material in these horizons are quite unlike those of the underlying parent material. The living roots and other plants and animal life characteristic of the soil are largely confined to the solum. (*Soil Conserv. Soc. Amer. 1970*)

2. In the agriculturally oriented usage of the term **soil**, the "solum" is the soil.

Special cutting

U.S. Forest Service usage. The term usually applies to logging activities in

special areas, such as recreation areas and administrative sites, where other uses or other values override timber production values. (*U.S. Forest Serv., FSM 2471.43, June 1973*)

Special exception (Exception)

An exception (or special exception) is the granting of a permit for a use which is a deviation from standard zoning practice, but it is anticipated within the **zoning ordinance** and provisions for "exceptions" are made within the text. A private school, for instance, would not ordinarily be permitted in an area zoned exclusively residential; yet, since this might be a perfectly desirable and acceptable place for a school, allowance for the exception, subject to close scrutiny by the zoners, will be pre-established on the books. (*Abrams 1971*)

Special interest area

U.S. Forest Service usage. Areas managed to make recreation opportunities available for the understanding of the earth and its geological, historical, archaeological, botanical, and memorial features. (*U.S. Forest Serv., 1971*)

For specific types of such areas see **Archaeological area**, **Botanical area**, **Geological area**, **Historical area**, **Paleontological area**, **Scenic area**, and **Zoological area**.

Special interest group

Any group (whether formally organized or not) with a specialized set of shared preferences about how resource use should be allocated. (*C.F.S.*)

Also see **Pressure group**.

Special management zone

U.S. Forest Service usage. Areas of unusual public interest or other significance. Examples are: wilderness, primitive areas, experimental forests, natural areas, scenic areas, and historical, geological, or archeological areas.

Such areas are classified or formally designated by the Congress, Secretary of Agriculture, Chief of the Forest Service, or Regional Foresters. (*U.S. Forest Serv., FSM 8223.3, Dec., 1974*)

Species biomass. See **Biomass**, definition 2.

Species diversity (Biologic diversity)

The number of different species occurring in some location or under some condition—such as water pollution.

Of the total number of species in a **biotic community** only a few are usually abundant while most are relatively uncommon. Because the large number of uncommon, relatively unimportant species largely determine the amount of "species diversity", this property is often expressed as a **species diversity index** which is calculated so as to better reflect the importance of those few species whose numbers, **biomass**, productivity, etc., so greatly dominate these attributes of the entire biological community. (*Odum 1971*)

Species diversity tends to be low in physically controlled **ecosystems** (i.e., subjected to strong physiochemical limiting factors) and high in biologically controlled ecosystems. Diversity tends to be high in older communities and low in newly established ones. (*Odum 1971*)

Diversity is directly correlated with **ecologic stability**, but it is not certain to what extent this relationship is a cause-and-effect one. (*Odum 1971*)

Species diversity index (Diversity index)

The ratio between the total number of species in a **biotic community** and some rating of the relative importance (numbers, **biomass**, productivity, etc.) of individual species.

"Diversity indices" provide one of the best ways to detect and evaluate pollution. (*Odum 1971*)

Species, edge

Species which occur primarily,

most abundantly or most of the time in the transition zones between two or more **biotic communities**—i.e., in the ecotone. (*Odum 1959*)

Species, endangered

1. An endangered species, or subspecies, of animal or plant is one whose prospects of survival and reproduction are in immediate jeopardy.

Its peril may result from one or many causes—loss of **habitat** or change in habitat, overexploitation, predation, competition, disease or even unknown reasons. An endangered species must have help, or extinction may follow. It must be designated in the Federal Register by the appropriate Secretary as an "endangered species." (*After U.S. Forest Serv., FSM 2605, Sept., 1974*)

Species which are likely to become "endangered species" within the foreseeable future throughout all or a significant portion of their range are designated as **threatened species** in the Federal Register by appropriate Department Secretaries. (*Endangered Species Act of 1973*)

2. Any species which is in danger of extinction throughout all or a significant portion of its range—other than members of the class Insecta which have been determined by the Secretary to constitute a pest whose protection under the provisions of this Act would present an overwhelming and overriding risk to man. (*Endangered Species Act of 1973*)

3. Animals are declared "endangered" by the California Fish and Game Commission because their continued existence is threatened by one or more conditions. If any of the following conditions are true, the species (or subspecies) under consideration is declared "endangered": (A) the mortality rate consistently exceeds the birth rate; (B) it is incapable of adapting to environmental change; (C) its habitat is threatened by destruction or

serious disturbance; (D) its survival is threatened by the unwanted introduction of other species through predation, competition, or disease; or (E) environmental pollution threatens its survival.

Rare and endangered species are listed in the "Red Data Book" published by the International Union for Conservation of Nature and Natural Resources and in "Rare and Endangered Fish and Wildlife of the United States" compiled by the Bureau of Sport Fisheries and Wildlife, U.S. Department of the Interior. (*Calif State Dep. of Fish and Game 1974*)

4. Those species in danger of extinction throughout all or a significant portion of their ranges.

Species or subspecies from very limited areas, e.g., the type localities only, or from restricted fragile habitats usually are considered "endangered". (*Smithsonian Inst. 1975*)

Also see **Species, rare** and **Species, threatened**.

Species, endemic

A species whose natural occurrence is confined to a certain region and whose distribution is relatively limited. (*Hanson 1962*)

Species, exotic

1. U.S. Forest Service usage. Any species of **wildlife** not native to the continental United States. (*U.S. Forest Serv., FSM 2605, Sept., 1974*)

2. Any species that is not native in the area where it occurs. (*Hanson 1962*)

Species, feral

1. Non-native species, or their progeny, which were once domesticated but have since escaped from captivity and are now living as wild animals—such as wild horses, burros, hogs, cats and dogs. (*U.S. Forest Serv., FSM 2605, Sept., 1974*)

2. An organism (and its offspring) that has escaped from cultivation or

domestication and has reverted to a wild state. (*Hanson 1962*)

Feral is seldom used when referring to escaped plants. Escaped non-native plants are usually referred to as **exotics**, while escaped non-native animals are commonly referred to as either feral or exotic species. (*C.F.S.*)

Also see **Species, exotic**, **Species, naturalized**; contrast with **Species, resident**, **Native organism**, and **Endemic organism**.

Species, game

1. U.S. Forest Service usage. Any species of **wildlife** for which seasons and bag limits have been prescribed, and which are normally restricted to possession by sportspersons under state laws and regulations. (*U.S. Forest Serv., FSM 2605, Sept., 1974*)

2. Animals considered worthy of pursuit by sportspersons, especially wild animals hunted for sport or food. (*Webster 1963*)

Species, indigenous

1. U.S. Forest Service usage. Any species of wildlife native to a given land or water area by natural occurrence.

For planning purposes, indigenous species will include introduced or **exotic species** which have established a **niche** in the area's ecology and are compatible with national forest management objectives. Hungarian and chukar partridges are examples. (*U.S. Forest Serv., FSM 2605, Sept. 1974*)

2. An organism (plant or animal) that is native, not introduced, in an area. (*Hanson 1962*)

Species, introduced. See **Species, exotic**.

Species, keystone

A species which plays an important ecological role in determining the overall structure and dynamic relationships within a **biotic community**.

An evolutionary, component species of a biotic community whose

presence is essential to the integrity and stability of a particular **ecosystem**. (*Estes and Palmisano 1974*)

Keystone species may be unimportant as energy transformers in a biotic community (i.e., they may be neither very abundant nor consume large portions of the biotic productivity of a community). However slight variations in keystone species' abundance results in large changes in the abundance of other species and/or in biotic community relationships and structure. (*After Paine 1969*)

Species, local

A species with a relatively small range but which is sufficiently common not to be called rare. (*Little 1975*)

Species, native

Animals or plants which originated in the area in which they are found, (i.e., were not introduced and naturally occur in that area). (*Henderson, Henderson and Kenneth 1963*)

Also see **Endemic organism** and contrast with **Species, resident**; **Species, naturalized**; **Species, exotic**; and **Species, feral**.

Species, naturalized

A (non-native) species established as if it were a **native species**—for example the annual grasses of California's central valley and foothills. (*E.M.G.*)

Also see **Species, exotic**; **Species, feral**; contrast with **Endemic organism** and **Native organism**.

Species, peripheral (Boundary species)

1. U.S. Forest Service usage. A peripheral species, or subspecies, is one whose occurrence in the United States is at the edge of its natural range, and which is **rare** or **endangered** within the United States, although not in its range as a whole. Special attention is necessary to ensure retention in the nation's fauna. (*U.S. Forest Serv., FSM 2605, Sept. 1974*)

2. A species which reaches the limit of its natural range a short distance into a country (especially the U.S.) or some other boundary of significance to making planning area evaluations. (*After Little 1975*)

Species, rare

1. A rare species, or subspecies, is one that, although not presently threatened with extinction, is in such small numbers, throughout its range, that it may be endangered if its environment worsens. (U.S. *Forest Serv., FSM 2606.11, Aug. 1973*)

2. Species which occur in widely separated, small sub-populations, so that inbreeding between sub-populations is seriously reduced or is restricted to single populations. (*Drury 1974*)

3. A species which lacks the ability to displace other species in competition, to increase its population or to expand its range. (*Drury 1974*)

4. Classes of rare species according to geographical distribution:

Species occurring as a very few individuals or small groups at widely scattered localities over a large geographic area of what appears to be suitable habitat.

Species found in very small numbers widely dispersed in each community where they grow, but which occur in many suitable areas over their geographic range.

Species with a range restricted to so few localities that they are considered rare even though they occur in large numbers at each locality. (*Drury 1974*)

5. Animals are declared "rare" by the California Fish and Game Commission because their continued existence is threatened by one or more conditions. If any of the following conditions are true, the species (or subspecies) under consideration is declared rare: (A) it is confined to a relatively small and specialized habitat, and it is

incapable of adapting to different environmental conditions; (B) although found in other parts of the world, it is nowhere abundant; (C) it is so limited that any appreciable reduction in range, numbers, or habitat would cause it to become **endangered**; or (D) if current management and protection programs were diminished in any degree, it would become endangered.

Rare and endangered species are listed in the "Red Data Book" published by the International Union for Conservation of Nature and Natural Resources and in "Rare and Endangered Fish and Wildlife of the United States" compiled by the Bureau of the Sport Fisheries and Wildlife, U.S. Department of the Interior. (*Calif. State Dep. of Fish and Game 1974*)

Also see **Species, threatened** and **Species, endangered**.

Species, recently extinct or possibly extinct

Those species no longer known to exist after repeated search of the type localities and other known or likely places.

Some species may be extinct in the wild but are being preserved by cultivation in gardens or as domesticated animals. (*After Smithsonian 1975*)

Species, resident

Species common to an area without distinction as to being native (i.e., **native organism** or **endemic organism**) or introduced (i.e., **exotic species**, **naturalized species** or **feral species**). (*Amer. Soc. Range Manage. 1964*)

Species, status undetermined

U.S. Forest Service usage. A species, or subspecies, that has been suggested as possibly being **endangered** but about which there is not enough information to determine its true status. (U.S. *Forest Serv., FSM 2605, Sept. 1974*)

Species, threatened

1. Any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range and which has been designated in the Federal Register by the Secretary of Interior as a threatened species. (*Endangered Species Act of 1973*)

This includes species categorized as rare, very rare, or depleted. (*Smithsonian Inst. 1975*)

Also see **Species, endangered** and **Species, rare**.

Species, unique

U.S. Forest Service usage. Species which are not **endangered**, but have considerable scientific, local, or national interest. (*U.S. Forest Serv., FSM 2605, Sept. 1974*)

Splash erosion. See **Erosion, splash**.

Spoil bank (Spoil heap, Spoil pile)

The place on the surface where any dirt or rock which has been removed from its original location by mining operations accumulates or is piled up—especially the waste deposits from **surface mining**. (*After Thrush 1968*)

Spoils. See **Mining spoils**.

Spot grazing

Repeated grazing of small areas while adjacent areas are lightly grazed or unused. (*Amer. Soc. Range Manage. 1964*)

Spot zoning. See **Zoning, spot**.

Stability. For biologic and ecologic usage of this term, see **Ecologic stability**.

Stand (Concrete community, Individual association)

1. U.S. Forest Service usage. A growth of trees on a minimum of 1 acre of forest land that is at least 10 percent stocked by forest trees of any size. (*U.S. Forest Serv. 1972B*)

2. A stand is an aggregation of trees or other growth occupying a specific area and sufficiently uniform in

composition (species), age arrangement, and condition as to be distinguishable from the forest or other growth on adjoining areas. (*U.S. Forest Serv., FSM 2471.4, May, 1972*)

3. A stand need not be limited to trees. Any group of plants satisfying the definition of a **plant community** may be so termed—a mat of lichens on a rock, covering only a few square inches, an algal mat on a pond, or a forest of fairly homogeneous composition extending over a thousand acres or more. (*Oosting 1956*)

Standard

1. A statement which describes a condition when a job is done properly. Standards show how well something should be done, rather than what should be done. (*U.S. Forest Serv. 1971*)

2. Regulatory and pollution standard usage. A plan that is established by governmental authority as a program for prevention and abatement of resource degradation.

The terms "standards" and **objectives** can be used interchangeably. (*After U.S. Fed. Water Pollut. Control Adm. 1968*)

Any definite rule, principle or measure established by authority. (*After Mc Kee and Wolf 1963*)

An authoritative origin does not necessarily mean that a "standard" is fair, equitable, or based on sound scientific knowledge, (e.g., of the functional cause-effect relationship between specific pollutant concentrations and the resulting levels of damage) for it may have been established somewhat arbitrarily on the basis of inadequate technical data tempered by a cautious factor of safety. (*After Mc Kee and Wolf 1963*)

Also see regulatory and pollution criteria under **Criteria**.

Standard metropolitan statistical area (SMSA)

U.S. Bureau of the Census usage. As defined by the Bureau of the Census in 1960, a county or group of contiguous counties that contains at least one city of 50,000 inhabitants or more (or "twin cities" with a combined population of at least 50,000); also, contiguous counties essentially metropolitan in character and socially and economically integrated with the central city. In New England, the SMSA is defined on a town rather than county basis. (*Abrams 1971*)

The SMSA is of importance to planners since much of the information collected in the census and useful for research or analysis is organized on a SMSA basis. (*E.C.T.*)

For the SMSA's relationship to an "urbanized area" see **Urbanized area**.

For SMSA's relationship to "state economic area", see **State economic area**, definition 2.

Standard of living

Standards of living constitute an organic whole, touching every phase of the life of the individual, the family, or the group. They concern the kind and quantity of food consumed, the sort of house lived in, clothing worn, etc., as well as the various cultural elements of existence, such as education, recreation, participation in church and civic organizations, and numerous other activities. (*Soil Conserv. Soc. Amer. 1970*)

Also see **Quality of life**.

Stand cutting

U.S. Forest Service usage. A **clear-cutting system** variation in which the logging operation removes all merchantable timber from areas that are large enough to be practical for future management as uniform **even-aged** stands.

The minimum size will be 100 acres and the maximum size, 500 acres. (*After U.S. Forest Serv., FSM 2471 R-3*)

Also see **Group cutting**, definition

2, for a comparison with similar logging approaches.

Standing crop (Standing biomass, Standing crop biomass, Standing stock)

1. The total amount of the **biomass** of organisms of one or more species within an area. (*Hanson 1962*)

2. The total number or the total weight of one or more species of animals in an area at a given time. (*Ford-Robertson 1971*)

3. Note that the emphasis in the term **biomass** is on weight per unit area; in "standing crop" it is on the summation of all those weights per unit area over some spatial extent of concern.

Stand tending. See **Intermediate cutting**.

State economic area

1. U.S. Bureau of the Census usage. Single counties or groups of counties which have similar economic and social characteristics. The boundaries of these areas have been drawn in such a way that each state is subdivided into relatively few parts, with each part having certain significant characteristics which distinguish it from adjoining areas.

In the 1970 U.S. Census there were 510 "state economic areas." (*U.S. Bur. Census 1971*)

2. Relation to **standard metropolitan statistical areas**. The combination of counties into state economic areas has been made for the entire country, and in this process the larger **standard metropolitan statistical areas** (those in 1960 with a central city of 50,000 or more and a total population of 100,000 or more) were recognized as "metropolitan state economic areas". When a standard metropolitan statistical area was located in two or more states or economic subregions, each state part and each part in an economic subregion became a separate metropolitan state economic area. In New

England this correspondence of "metropolitan state economic areas" and "standard metropolitan statistical areas" did not exist because state economic areas are composed of whole counties, whereas standard metropolitan statistical areas are built up from towns. Here a county with more than half its population in one or more "standard metropolitan statistical areas" was classified as a metropolitan "state economic area" if the county or a combination of counties containing the standard metropolitan statistical area or areas had 100,000 inhabitants or more. (*U.S. Bur. Census 1971*)

Station point

1. The location from which something is viewed. (*After Litton 1968*)
2. The location of the viewer as that person looks upon a visual objective, particularly with regard to being below, at the same level as, or above the visual objective. (*Litton 1968*)

Status, social. See **Social status.**

Status undetermined species. See **Species, status undetermined.**

Steno- organism

A prefix denoting an organism which can only tolerate a narrow range of changes of one or more of its environmental conditions. For example, stenothermal refers to organisms which can not tolerate much change in temperature. (*Hanson 1962*)

Also see **Eury- organism** for organisms that can tolerate large changes.

Stochastic model. See **Model, probabilistic.**

Stochastic process

Any process whose development in time is governed by chance or probabilistic considerations. (*U.S. Forest Serv. 1972B*)

Stocking level

In a forest, a more or less subjective indication of the number of existing

trees as compared to the desirable number for best results—e.g., maximum productivity of wood. (*After Ford-Robertson 1971*)

Stocking plan

The number and kind of livestock assigned to one or more given **management areas** or **management units** for a specified period. (*Amer. Soc. Range Manage. 1964*)

Stocking, proper

Range management usage. Placing a number of animals on a given area that will result in proper use at the end of the planned grazing period.

Continued proper stocking will lead to proper grazing. (*Amer. Soc. Range Manage. 1964*)

Stocking rate (Grazing rate)

Range management usage. The actual number of animals, expressed in either **animal units** or **animal unit months**, on a specific area at a specific time. (*Amer. Soc. Range Manage. 1964*)

Stock resource. See **Nonrenewable resource.**

Storie index

A numerical expression of the degree to which a particular soil presents conditions favorable for plant growth and crop production under favorable climate and adequate moisture conditions.

Four general factors are considered: (1) the character of the **soil profile**; (2) **soil texture**; (3) slope of the land and; (4) other modifying factors such as drainage, salinity, alkalinity, soil acidity, erosion conditions, fertility level and microrelief. Each of these four factors is evaluated on the basis of 100 percent for the most favorable or ideal conditions, with limiting maximum and minimum ratings ascribed to conditions that are less favorable for plant growth. (*Storie 1964*)

Strategic planning

The study of **objectives** and analysis of alternative ways to achieve objectives in terms of their relative costs and accomplishments. (*U.S. Forest Serv. 1972B*)

Strategy

1. A consideration of alternative means to reach an objective. (*U.S. Forest Serv. 1971*)
2. A carefully thought out plan or method for achieving a goal or objective. (*After Webster 1963*)

Stratification (Land stratification)

1. This term commonly infers both mapping and **classification**.

For example, the "soils are stratified"; meaning they have been mapped, examined, grouped, and delineated to a given classification key or base. (*U.S. Forest Serv. 1972B*)

2. A land use planning concept which was probably borrowed from the statistical technique of "stratified sampling" which subdivides a study area into units which are, more or less, internally homogeneous with respect to the (those) character(s) of interest. Subsequently, sampling data is taken to characterize each unit. This strategy provides maximum information for an economy of sampling effort.

Land use planning has adopted the concept in the sense that a planning unit can theoretically be classified into **homogeneous response units** about which useful generalizations can be made without having to make **site specific** studies. (*C.F.S.*)

Stream load

The quantity of solid and dissolved material carried by a stream. (*Soil Conserv. Soc. Amer. 1970*)

Strip cutting

U.S. Forest Service usage. A **clear cutting system** variation in which the logging operation removes all merchantable timber from areas that run

through a stand and are usually of a width equal to one or two times the general stand height. (*After U.S. Forest Serv., FSM 2471 R -3*)

Also see **group cutting**, definition 2, for a comparison with similar logging practices.

Strip mining. See **Mining, strip.**

Strip pit

1. A coal or other mine worked by stripping away the surface soil and rock above a mineral deposit. (*Thrush 1968*)
2. An **open-pit mine**. (*Thrush 1968*)
3. That part of a strip mining operation from which minerals are being or have been removed from their natural state. (*Grim and Hill 1974*)

Stumpage value

The value of timber as it stands uncut in terms of an amount per cubic unit. (*Ford-Robertson 1971*)

Subclimax

A stage in **succession** short of the **climax community** in which further development is inhibited by the influence of some factors other than climatic factors. (*After Hanson 1962*)

Subculture (Group culture)

Refers to the more or less different **folkways** and **mores** developed by each group within a society. Groups with common play, age, vocational, sexual, habitational, or other interests evolve behavior patterns that differ from those of other groups and from society's conventions. (*O'Connell 1974*)

Subdivision (Land subdivision)

1. The process of dividing a given area of undeveloped land into individual home sites and/or blocks of lots with streets or roads and open spaces. (*After Abrams 1971*)
2. Also an area which has been so divided. (*Abrams 1971*)
3. A tract of land surveyed and di-

vided into lots for purposes of sale. (Webster 1963)

Submarginal land

Land which is economically incapable of sustaining indefinitely a certain use or ownership status. (*Amer. Soc. Range Manage.* 1964)

Suboptimization

1. The selection of the best alternative course of action which pertains to a subproblem, that is, to only part of the overall problem or objective.

Suboptimization is usually necessary because alternatives at all the various levels of decision making cannot, as a practical matter, be analyzed simultaneously before decisions are made at any level. (*U.S. Gen. Account. Off.* 1969)

2. Any intermediate stage in a long-run goal attainment program. (*U.S. Gen. Account. Off.* 1969)

Subsidence

A downward movement of the ground surface caused by solution and collapse of underlying soluble deposits, rearrangement of particles upon removal of underground mineral deposits, or reduction of fluid pressures within an aquifer or petroleum reservoir. (*Soil Conserv. Soc. Amer.* 1970)

Subsoil

The B **soil horizon** of soils with distinct **soil profiles**. In soils with weak profile development, the subsoil can be defined as the soil below the soil in which roots normally grow (i.e., below the plowed soil or its equivalent of surface soil).

Although a common term, it cannot be defined accurately. It has been carried over from early days when "soil" was conceived only as the plowed soil and that under it as the "subsoil". (*Soil Conserv. Soc. Amer.* 1970)

Subsurface rights. See **Mineral rights.**

Succession (Ecologic succession, Ecosystem development)

1. It is an orderly process of **biotic community** development that involves changes in species, structure and community processes with time; it is reasonably directional and, therefore, predictable.

It results from modification of the physical environment by the community; that is, "succession" is community-controlled even though the physical environment determines the pattern, the rate of change, and often sets limits as to how far development can go.

It culminates in a stabilized ecosystem in which maximum **biomass** and symbiotic function between organisms are maintained per unit of available energy flow.

The whole sequence of communities that replaces one another in a given area is called the **sere**; the relatively transitory communities are variously called "seral stages" or "developmental stages" or "pioneer stages", while the terminal stabilized system is known as the **climax**.

Species replacement in the sere occurs because populations tend to modify the physical environment, making conditions favorable for other populations until an equilibrium between biotic and abiotic is achieved. (*Odum* 1971)

A "sere" whose first stage is open water is termed a "hydrosere", one whose first stage is dry ground, a "xerosere". Succession is "primary" on sites that have not previously borne vegetation, "secondary" after the whole or part of the original vegetation has been supplanted, "allogenic" when the causes of succession are external to and independent of the community (e.g., accretion of soil by wind or water, or a change of climate) and "autogenic" when the developing vegetation is itself the cause. (*Ford-*

Robertson 1971)

2. The process of replacement of one plant community by another until the **climax** community is reached. (Durrenberger 1973)

Succession, primary (Prisere)

1. **Successions** beginning from newly formed soils or upon surfaces exposed for the first time (as by landslides) which have as a consequence never borne vegetation before. (Carpenter 1938, citing Clements 1905)
2. Any succession beginning on a bare area, such as a lava flow, not previously occupied by plants or animals. (Hanson 1962)

Also see **Succession, secondary**.

Succession, secondary

1. Any **succession** caused by man or human agency. (Carpenter 1938)
Successions on denuded soils. (Carpenter 1938, citing Clements 1905)
2. The kind of succession which takes place following the destruction of part or all of the vegetation in an area, usually caused directly or indirectly by man. (Hanson 1962)

Suitability

1. In land use planning literature the widely used terms "suitability" and "capability" (whether alone or accompanied by various modifiers) are often used interchangeably to refer to ratings based on two basically different evaluation procedures. One basic type of evaluation procedure is the rating of use or productivity potentials based on the present state of the resource. This type of rating therefore is an evaluation based on the resource's inherent, natural or intrinsic ability to provide for use and includes that existing ability which is the result of past alterations or current management practices. A second basic type of evaluation procedure rates the potential ability of a resource to produce goods or services on the basis of the maximum possible outputs for a given type

and level of future, alternative site or resource management inputs.

G. Angus Hills was probably the first prominent wildland planner to recognize the importance of retaining the distinction between these and other types of evaluations in a process for land use planning. Hills used the terms **use capability** to refer to evaluations based on a resource's inherent or present condition abilities, **use suitability** for evaluations based on potential management inputs, and **use feasibility** to refer to usability potential ratings based on an evaluation of off-site factors—such as **accessibility**, present and **forecasted** socioeconomic conditions, technological developments, etc. (Belknap and Furtado 1967; Hills, Love and Lacate 1970)

Perhaps even earlier than Hills, the U.S. Soil Conservation Service began widespread use of its **Land Capability Classification System** (Wohletz and Dolder 1952) which also uses "capability" evaluation in the sense of an inherent ability rating.

To avoid confusion in the future we recommend that the Hills and Soil Conservation Service usages be recognized as having established the precedent for the proper usage of these terms. Thus "capability" should be used when referring to evaluations for usability based on the present state of the resource and "suitability" should only be used for evaluations based on assumptions about potential usability or productivity if specified management alterations were to be made—such as drainage improvements, added irrigation and/or fertilization, etc.

Better yet, both terms should be accompanied by modifiers which make it absolutely clear just what type of an evaluation procedure is implied by the rating given. Thus the word capability should always be presented as "inherent capability", "intrinsic capability", or "natural capability". Similarly

"suitability" could be referred to as "managed suitability". (C.F.S.)

2. Range management usage. The adaptability of an area to grazing by livestock or game or the adaptability of a particular plant or animal species to a given area. (*Amer. Soc. Range Manage.* 1964)

Suitability, inherent. See **Capability**.

Suitability, intrinsic

Ian Mc Harg's usage. Locations within a planning area displaying the maximum coincidence of favorable natural environmental factors relevant to the location of a prospective land use and the fewest constraints on that use. (*Wallace, Mc Harg, Roberts and Todd* 1972)

Also see **Capability**.

Suitability, managed. See **Suitability**.

Suitable range. See **Range, suitable**.

Supplement

1. Something that makes an addition; something that completes, adds a finishing touch, or brings closer to completion or a desired state. (*Webster* 1963)

2. The relationship between complements and supplements to plans is that complements can be viewed as being mutual supplements while supplements do not gain anything unto themselves by their addition to a plan. (C. F. S.)

Also see **Complement**.

Supply. See **Supply schedule**.

Supply schedule (Supply)

The amount of a good or service that will be offered for sale over a given range of prices at a particular point in time. (*U.S. Forest Serv.* 1972B)

The U.S. General Accounting Office titles of output that will be offered for sale or use during a planning period at specified output prices or price assumptions. (*U.S. Forest Serv.* 1972B)

Surface erosion. See **Erosion, surface**.

Surface mining. See **Mining, surface**.

Surface restoration. See **Reclamation**.

Surface rights

1. The ownership of the surface of the land only, where the **mineral rights** have been separately reserved. (*Thrush* 1968)

2. Those ownership rights reserved to the owner of the land beneath or from which ore is being mined. (*Thrush* 1968)

3. The right of a mineral owner to use so much of the surface of the land as may be reasonably necessary for the conduct of mining operations. (*Thrush* 1968)

Surface soil (Topsoil)

The uppermost part of the soil ordinarily moved in tillage (or its equivalent in uncultivated soils) ranging in depth from 5 to 8 inches.

Frequently designated as the "plow layer," the A_p layer, or the A_p **soil horizon**. (*Soil Conserv. Soc. Amer.* 1970)

Surface storage

The sum of **detention storage** and **channel storage**, representing, at any given moment, the total water enroute to an outlet from an area or watershed. (*Soil Conserv. Soc. Amer.* 1970)

Surface water

Water which remains on top of the land, such as a river or lake. (*E.C.T.*)

Suspended load

1. The smaller **sediment** particles that are lifted far from the bottom for long periods by running water and are distributed through the whole body of the current. (*Amer. Geol. Inst.* 1962)

2. The quantity of **suspended sediment** actually transported by a current. (*Amer. Geol. Inst.* 1962)

Suspended sediment

Sediment which remains suspended

in the water for a considerable period of time without coming in contact with the bottom. (*Amer. Geol. Inst. 1962*)

Suspended solids

The small, solid particles in water or sewage that cause a cloudy condition in water. (*Sesco, et al. 1973*)

Sustained production. See **Sustained yield.**

Sustained yield (Sustained production)

1. The achievement and maintenance in perpetuity of a high-level annual or regular periodic output of the various renewable resources . . . without impairment of the productivity of the land. (*After Multiple Use-Sustained Yield Act*)

2. The yield that a forest can produce continuously at a given intensity of management.

Sustained-yield management, therefore, implies continuous production so planned as to achieve at the earliest practical time a balance between increment and cutting. (*Ford-Robertson 1971*)

3. The yield that a **renewable resource** can produce continuously at a given intensity of management. (*After Ford-Robertson 1971*)

Sweet spoils. For mining usage see **Mining**

Tailings. See **Mine tailings.**

Taking

1. A violation of the U.S. Constitutional provision "... nor shall private property be taken for public use without just compensation . . ." by a system of land use regulation. (*After Bos-selman, et al. 1973*)

Although the Fifth Amendment's prohibition of "takings" of property without "just compensation" applied to the states by virtue of the Fourteenth Amendment (Chicago, B. and

debris, sweet.

Synergism

The combined action of two or more agents that is greater than the sum of the actions of each of the agents used alone. (*Webster 1963*)

See **Antagonism** for combined actions which are less than a simple summation of individual actions.

System

1. An organized collection of parts united by regulated interaction. (*U.S. Forest Serv. 1972B*)

2. A group of components which are interrelated to each other in such a way that changes in one component can affect some, or all of the other components. (*Williams 1971*)

System planning. See **Functional planning.**

Systems analysis

An integrated, step by step approach for helping a decision maker choose a course of action by investigating his full problem, searching out objectives and alternatives, and comparing them in the light of their consequences, using an appropriate framework (in so far as possible analytic and quantitative) to bring expert judgment and intuition to bear on the problem. (*Quade and Boucher 1968*)

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O. Rr. vs. Chicago, 166 U.S. 226 (1897)), it has long been established that state regulation based on the police power may substantially diminish the economic value of private property without giving rise to an obligation to compensate the owner. See e.g., *Mugler vs. Kansas*, 123 U.S. 623 (1887); *Euclid vs. Ambler Realty Co.*, 272 U.S. 365 (1926). There is a very hazy boundary between "taking" (compensation required) and "police power" regulation (compensation not re-

quired). The Supreme Court itself has acknowledged that "there is no set formula to determine where regulation ends and taking begins" (Goldblatt vs. Hempstead, 369 U.S. 590, 594 (1962)). In the language of the decided cases, the phrase "police power" normally connotes that the action in question is being taken without compensation to the property owner. By contrast, where compensation for a "taking" is contemplated, the cases speak of "eminent domain" or "expropriation" powers.

Most of the Supreme Court cases in this area have involved zoning laws or other governmental action largely unrelated to environmental concerns. See, e.g., United States vs. Causby, 328 U.S. 256 (1946). However, in recent years, several state court decisions have invalidated, under the Federal or state constitutions, state or local police power (no compensation) initiatives designed primarily to preserve the natural environment. See, e.g., Bartlett vs. Zoning Commission, 232 A. 2D 907 (Conn. 1971); Maine vs. Johnson, 265 A. 2D 711 (ME 1970); Dooley vs. Town Plan and Zoning Commission, 197 A. 2D 770 (Conn. 1964). (*From U.S. Dep. Justice comments in U.S. Congr., Senate Com. Inter. Insular Aff. 1973*)

2. An issue in planning centering around the right of the government to control private use of private land, in effect taking away property rights for the common good. It involves purchasing lands through eminent domain for special purposes, compensation for decreased property values due to regulation, and the rights of private ownership versus public needs. (*E. C. T.*)

Also see **Eminent domain, Just compensation, Police power, and Development rights, acquisition of.**

Target

A clear and concise statement used to express planned results to be

reached within a stated time period. Results must be measured in terms of some specific indicators, may include **standards**, and must be relatable to some **criteria** for how well they were achieved. Often one or more separate targets are used to make an **objective** explicit and to achieve its desired state or purpose. (*U.S.D.A. Off. Manage. and Finance 1974*)

Taxonomy

1. The science of classification of organisms; the arrangement of organisms into systematic groups such as species, genus, family, and order. (*D.E.H. and B. W.*)

2. "Taxonomy" is a term closely related to **classification** but it embodies a broader concept.

Taxonomy is the science of how to classify and identify.

It is the theoretical study of classification including its bases, principles, procedures, and rules.

Taxonomy includes classification as well as identification. (*Sokal 1974*)

Technological assessment (Technological forecasting)

The attempt to estimate or predict the completely new technological developments which will occur in the future; and, to evaluate the extent to which such likely, future new abilities will be able to solve (or at least acceptably minimize) current land use problems, or problems which are expected to be associated with particular land uses in future times. (*C.F.S.*)

Technological change

1. The increase of our ability to solve problems or increase efficiency by technical means with time. (*C.F.S.*)

2. The increase with the passage of time of the availability of alternative or completely new technical methods for solving problems associated with land uses because of the inevitable evolution and development of new ideas.

Thus, for those land use problems

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which are potentially resolvable by technical means, what may be essentially impossible to do now because of the lack of available technology most likely will become possible in some future time period. (C.F.S.)

Technological forecasting. See **Technological assessment.**

Technological solution

1. The application of the devices or techniques developed by science for practical purposes.

A technical method for achieving a practical purpose. (*After Webster 1963*)

2. In land use planning this concept is especially used in the context of the emergence of completely new technical methods for solving current or potential problems for which no "technological solutions" presently exist. (C.F.S.)

Also see the related terms **Technological assessment**, **Technological change**, **Engineering solution**.

The distinction between "technical solutions" and "engineering solutions" is that the first refers just to the development of new technical means while the last applies to the application of any technical means (new or old) to solving potential problems. (C.F.S.)

Temporary license. For range management usage see **Temporary permit**.

Temporary pasture. See **Pasture, supplemental**.

Temporary permit (Temporary license)

Range management usage. A document authorizing grazing a certain number of livestock on public lands during an emergency or for a certain period, terminable at the end of such period and with no guarantee of renewal in whole or in part. (*Amer. Soc. Range Manage. 1964*)

Also see **Term permit**.

Terminal facilities

Terminal facilities are fixed ad-

juncts of the **transportation network** and serve as a transfer interface between the transportation network and resources served or between different transportation modes. Typical terminal facilities are vehicle parking areas, boat ramps and docks, trail heads, log landings and dumps, and air fields and heliports. (*U.S. Forest Serv., FSM 7705.24*)

Term license. For range management usage see **Term permit**.

Term permit (Term license)

Range management usage. A document which authorizes grazing on public lands for a stated number of years as contrasted with an annual or **temporary permit**. (*Amer. Soc. Range Manage. 1964*)

Also see **Temporary permit**.

Terrain (Terrane)

1. The physical features of a tract of land. (*Webster 1963*)

2. An area of ground considered as to its extent and natural features in relation to its use for a particular operation. (*Amer. Geol. Inst. 1962*)

A tract of country considered with regard to its natural features, configuration, etc.; in military use especially as affecting its tactical advantages, fitness for maneuvering, etc.; also an extent of ground, region, district, territory. (*Stamp 1961*)

Terrain analysis

The process of interpreting a geographical area to determine the effect of the natural and man-made features on a particular activity. This interpretation includes the influence of weather and climate on those features. (*Amer. Geol. Inst. 1962*)

Terrain evaluation. See **Land evaluation**.

Terrain factor

1. Terrain factors consist of land forms, drainage features, ground, vegetation, etc. and cultural features or

man-made changes in the earth's surface. (*Amer. Geol. Inst. 1962*)

2. A specific attribute of the **terrain** that can be described in quantitative terms. (*U.S. Dep. Defense 1968*)

Terrain studies

Regional studies usually with an emphasis on **relief** and essential physical features—soil, vegetation, and drainage. (*Stamp 1961*)

Terrane. See **Terrain**.

Territoriality

The behavior by which an organism claims an area and defends it against members of its own species. (*Worthington 1974*)

Tertiary facility

Transportation planning usage. Tertiary facilities are usually intended to provide access for a specific resource utilization activity, such as a timber sale or recreation site, although other minor uses may be served. Emphasis is given to resource service rather than travel efficiency. Tertiary facilities may often be developed and operated for short term or intermittent service. (*U.S. Forest Serv., FSM 7705.43 Aug. 1975*)

Also see **Primary facility** and **Secondary facility**.

Tertiary sewage treatment. See **Tertiary wastewater treatment**.

Tertiary treatment. See **Tertiary wastewater treatment**.

Tertiary wastewater treatment (Tertiary treatment, Tertiary sewage treatment)

Wastewater treatment processes, beyond "primary" and **secondary wastewater treatment**, which remove or reduce the amount of nitrate and phosphate nutrients still present in their effluents. Tertiary treatment may consist of extensions or modifications of secondary treatment processes, additional forms of chemical treatment, electrochemical processing, carbon fil-

tration, and other more complex procedures. (*After Wash. State Univ., Coop. Ext. Serv. 1972*)

Tertiary treatment removes up to 99 percent of the **suspended solids** and **biological oxygen demand**, 95 percent of the phosphate and 75 percent of the nitrate from wastewater. (*Martin and Weinberger 1966*)

T factor. For **soil erosion** related usages see **Soil loss tolerance**.

Thermal enrichment. See **Thermal pollution**.

Thermal pollution (Thermal enrichment, Calefaction)

Altering the amount of energy available in the **environment** by the addition of heat or cold. Most frequently this occurs in the form of the heat added by returning water which has been used for cooling purposes to a river, lake, estuary, bay or the ocean. However "thermal pollution" may also occur with the release of large volumes of the cold, deep water in reservoirs into warmer bodies of water. (*E. C. T.*)

Thinning

Cutting made in an immature crop or stand in order primarily to accelerate the diameter increment (annual growth) of the residual trees but also, by suitable selection, to improve the average form of the trees that remain, without (at least according to classical concepts) permanently breaking the canopy. (*Ford-Robertson 1971*)

Thixotrophy. See **Soil liquefaction**.

Threatened species. See **Species, threatened**.

Threshold level

The minimum concentration or amount of a given substance or condition necessary to produce a measurable physiological or psychological effect. (*Sesco, et al. 1973*)

Timber management compartment

U.S. Forest Service usage. A compartment is defined as an organization unit or small subdivision of forest area for purposes of orientation, administration, and silvicultural operations, and defined by permanent boundaries (either of natural features or artificially marked) which are not necessarily coincident with **stand** boundaries. (*U.S. Forest Serv., FSM 2412.3*)

Timber planning

Functional planning for the growth and harvesting of commercial trees. (*E.C.T.*)

Also see **Functional planning**.

Timber Resource System

U.S. Forest Service usage. The role of the Timber Resource System is to grow and make available wood for the nation on a continuing basis. Thus, the system includes those activities necessary to (1) protect, improve, grow, and harvest timber from forest land and (2) protect, process, and utilize wood and wood-related products. In addition to wood, the system produces other goods and services, either by design or incidentally.

One of the six "systems" established by the U.S. Forest Service to have a systematic, orderly way to view and evaluate its many diverse but interrelated activities. The Forest Service has developed this approach to better respond to the mandates of the **Forest and Rangeland Renewable Resources Planning Act** of 1974. It has grouped its various **programs** into these six "systems," each of which incorporates all the activities concerned with developing and managing a specific resource. (*After U. S. Forest Serv. 1974A*)

The six "systems" are: **Land and Water**, **"Timber Resource"**, **Outdoor Recreation and Wilderness**, **Rangeland Grazing**, **Wildlife and Fish Habitat**, and **Human and Community Development**.

Timber type. See **Cover type**, definition 1.

Time zoning. See **Zoning, time**.

TL_m. See **Median tolerance limit**.

Tolerance

1. The resistance of an organism to the excess or the deficiency of an element or a condition in its **environment**—e.g., elm trees are "resistant" to periodic flooding. (*Dansereau 1957*)

2. The capacity of an organism or biological process to subsist under a given set of environmental conditions, such as high levels of pollution. (*Sesco, et al. 1973*)

For **soil erosion** related usages see **Soil loss tolerance**.

Topography

The configuration of a surface including its **relief**, elevation and the position of its natural and man-made features.

The physical or natural features of an object or entity and their structural relationships. (*Webster 1963*)

Topsoil

1. Earthy material used as top-dressing for house lots, grounds for large buildings, gardens, road cuts, or similar areas. It has favorable characteristics for production of desired kinds of vegetation or can be made favorable. (*Soil Conserv. Soc. Amer. 1970*)

2. The surface plow layer of a soil. Synonymous with **surface soil**. (*Soil Conserv. Soc. Amer. 1970*)

3. The original or present dark-colored upper soil that ranges from a mere fraction of an inch to two or three feet thick on different kinds of soil. (*Soil Conserv. Soc. Amer. 1970*)

4. The original or present "A" **soil horizon** varying widely among different kinds of soil.

Applied to soils in the field, the term has no precise meaning unless defined as to depth or productivity in

relation to a specific kind of soil. (*Soil Conserv. Soc. Amer.* 1970)

Tractor logging. See **Logging, tractor.**

Trade-offs

The combination of **benefits** and **costs** which are gained and lost in switching between alternative courses of action. "Trade-offs" include only those portions of benefits and costs which are not common to all alternative courses of action under consideration. (*E. C. T.*)

Traffic classification. See **Traffic composition.**

Traffic composition (Traffic classification)

The **classification** and grouping of the various sizes and weights of vehicles making up the traffic of a road such as passenger cars and trucks. This is frequently called traffic classification. (*U.S. Forest Serv., FSH 7709.11, May 1969*)

Traffic volume

The number of vehicles traveling in both directions past a given point during a specified period of time. This is usually expressed as seasonal **average daily traffic** for roads that are open only part of the year, or annual average daily traffic for roads (highways) open year round. (*U.S. Forest Serv., FSH 7709.11, May 1969*)

Trampling

Treading under foot; the damage to plants or soil brought about by movements or congestion of livestock and/or people. (*After Amer. Soc. Range Manage.* 1964)

Transitory range. See **Range, transitory.**

Transportation network

U.S. Forest Service usage. The transportation network includes all existing and planned roads, trails, bridges, airfields, and other transport facilities wholly or partly within or ad-

jacent to and serving the planning area. (*After U. S. Forest Serv., FSM 7705.21, Aug. 1975*)

Transportation planning

The process by which new transportation facilities (and improvements to the old facilities) are systematically designed, their adequacy tested, and their future construction **programmed**. Comprehensive transportation planning considers all modes (mass transit, automobile, air, rail, etc.) of transportation and regards the total as a single system. Transportation planning is a type of **functional planning**. (*After Abrams 1971*)

Also see **Functional planning.**

Transportation services land

U.S. Soil Conservation Service usage. Land used primarily for highways, roads, beltways, railroads, utility rights-of-way, airports, and other transportation facilities, together with necessary adjacent facilities such as approaches, underground and surface utilities, and other servicing structures, appurtenances, and measures. (*U.S. Soil Conserv. Serv.* 1970)

Travel influence zone

1. U.S. Forest Service usage. Areas comprising existing or anticipated significant public outdoor recreational occupancy, use, and enjoyment along existing and planned overland routes of travel; areas in and around existing or planned developed recreation sites. These are areas in which beauty of the landscape and other aesthetic values are key management considerations and are an important part of the outdoor environment. These areas offer significant opportunities for existing, planned, or anticipated recreational use and enjoyment by people visiting or traveling through the zone.

Includes area immediately adjacent to and surrounding developed or planned sites where people may stroll.

Comprises areas along existing or planned overland routes of public travel where the immediate scenic frame or **foreground** is subject to close scrutiny. Other foreground and backdrop areas should be recognized in zones with appropriate management emphasis on beauty and other aesthetic values. Roads, trails, railroads, tramways, and ski lifts are included as overland travel routes. This does not include work roads, trails, and other overland routes where public travel is only occasional.

Lands which have these characteristics and are also significantly influenced by considerations related to water will be included in the **water influence zone**. (*U.S. Forest Serv., FSM 8223.2, Dec. 1974*)

2. The area adjacent to selected or proposed highways, roads and trails subject to special management measures to maintain or improve the aesthetic quality for the traveler. (*U.S. Forest Serv. Region 9, 1975*)

Trophic level

In **biotic communities** organisms

Unacceptable risk. See **Risk, unacceptable**.

Unavailable forage

Forage which cannot be grazed by livestock. (*Amer. Soc. Range Manage. 1964*)

Uncertainty

1. Decision making in which there is no objective basis for assigning numerical probability weights to the different possible outcomes or there is no way to describe the possible outcomes. (*U.S. Forest Serv. 1972B*)

Under the Bayesian school of thought the distinction between **risk** and "uncertainty" is not useful and in fact may not exist. In any practical analysis all uncertain situations are assigned probability distributions, either

whose food is obtained from plants by the same number of feeding steps in a **food chain** are said to belong to the same "trophic level". Thus green plants occupy the first trophic level, plant-eaters (i.e., herbivores), the second level, the carnivores (i.e., meat eaters) which eat the herbivores the third level, and secondary carnivores (i.e., carnivores which eat other carnivores) the fourth level. (*Odum 1953*)

Turbidity

Defined as the capacity of materials suspended in water to scatter light. It is measured in arbitrary Jackson turbidity units (JTU). Highly turbid water is often called "muddy", although all manner of suspended particles contribute to turbidity. (*Feth 1973*)

Type conversion

The conversion of one type of vegetation cover to another, e.g., the conversion of brush or forest covered lands to grass as for grazing purposes or the conversion of a white fir forest to a ponderosa pine forest. (*C.F.S.*)

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explicitly or implicitly by the selection of the analysis method, whether or not the true probability distribution is known. A probability distribution is selected for analysis purposes based on experience, intuitive feelings, knowledge, and the lack of knowledge. (*E.C.T.*)

Also see **Risk**.

Underprivileged groups. See **Disadvantaged groups**.

Understocking

Range management usage. Placing a number of animals on a given area that will result in underutilization of the available forage by the end of the planned grazing period. (*Amer. Soc. Range Manage. 1964*)

Understory

The trees and other woody species growing under a more or less continuous cover of branches and foliage formed collectively by the upper portions of adjacent trees and other woody growth. (*After Ford-Robertson 1971*)

Undesirable species

Range management usage. Plant species that are not desirable because they are unpalatable or low in **palatability**, injurious to animals, poisonous, poor stabilizers of soil and water, etc. (*Amer. Soc. Range Manage. 1964*)

Undeveloped land (Raw land)

A term of comparison sometimes used to contrast land which has been built upon (i.e., "developed") or subdivided in preparation for **development** with land on which such activities have not taken place (i.e., raw land). (*C.F.S.*)

Uneven-age management (Uneven-age silviculture)

The course of actions involved in maintaining a forest or stand, composed of intermingling trees that differ markedly in age. (*After Ford-Robertson 1971*)

Uneven-age silviculture. See Uneven-age management.

Uneven-aged stand (All-aged stand)

A forest **stand** composed of intermingling trees that differ markedly in age.

By convention, a minimum range of 10 to 20 years is generally accepted, though with **rotations** of less than 100 years, 25 percent of the rotation period may be the minimum. (*Ford-Robertson 1971*)

Unique resource (Irreplaceable asset)

1. A **resource** which is not duplicated anywhere. (*After Webster 1963*)
2. A **resource** for which no equal (although different) resource in kind

or excellence exists. (*After Webster 1963*)

3. The ability to produce or replicate facilities producing final consumption goods to gratify given tastes will lie at the base of the distinction between "producible" and "irreplaceable" assets. Irreplaceability, of course, will be a function of the closeness of substitutes in final consumption. With this as a point of departure, at least three classes of "irreplaceable assets" can be distinguished. One would be "gifts of individual genius" such as the work of Leonardo da Vinci or Rembrandt. A second might be called "gifts of collective genius", represented by the cultural antiquities of Egypt, Greece, and Rome, among others. Finally, we have the "gifts of nature", namely the accidents of **geomorphology**, biological evolution, and ecological **succession**.

In the latter we differentiate between natural endowments as factors of production, or intermediate goods, that are transformed through some production technology either into other goods in process or into final consumption goods, on the one hand, and natural endowments that directly give rise to stimuli eliciting satisfaction in an ultimate consumption of final-good sense, on the other. If a natural resource is used as a good in process, technology may provide a wide spectrum of substitutes for the particular input without significantly altering the final product either in appearance or performance. (*Krutilla, et al. 1972*)

Unique species. See Species, unique.

Unit. See Planning unit.

Unit plan

U.S. Forest Service usage. The plan for a specifically identified **planning unit**.

Unit planning

The activity of developing a com-

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prehensive general long-range plan for a **planning unit**. (*W. W.*)

Universal soil loss equation. See **Soil loss equation**.

Unpalatable species

Range management usage. Species that are not readily eaten by animals. (*Amer. Soc. Range Manage. 1964*)

Unsuitable range. See **Range, unsuitable**.

Urban and built-up land and (Urban and built-up areas)

1. "Urban and built-up areas." Cities, villages, and built-up areas of more than 10 acres; industrial sites (except **strip mines**, borrow and gravel pits); railroad yards; cemeteries; airports; golf courses; shooting ranges; institutional and public administration sites; and similar kinds of areas. Road and railroad acreage is included, and intermingled Federal acreages may be included. Farmland acreage inside city and village limits is not included. (*U.S. Dep. Agric. 1967*)

2. Areas of intensive use with much of the land covered by structures. Included in this category are cities, towns, villages, strip developments along highways, transportation, power, and communications facilities, and such isolated units as mills, mines, and quarries, shopping centers, and institutions.

Small blocks of land of less intensive or nonconforming use isolated in the midst of built-up areas are generally included in this category. **Agricultural**, forest, or water area on the fringe of urban and built-up areas are not included, except where they are part of low-density urban development. The "urban and built-up land" category takes precedence over others when the criteria for more than one category are met. Thus, residential areas that have sufficient tree cover to meet forest land criteria will be placed in the residential category. (*Anderson,*

et al. 1972)

Also see **Urban land**.

Urban forestry

1. The practice of forestry in an urbanized environment. (*Andresen 1974*)

2. A specialized branch of forestry that has as its objective the cultivation and management of trees in urban areas and the evaluation of their contribution to the physiological, sociological, psychological (and sometimes economic) well-being of urban society. (*After Andresen 1974, citing Soc. Amer. For., Urban For. Work. Group*)

Urban fringe. See **Urbanized area**.

Urbanized area

U.S. Bureau of the Census usage.

An urbanized area consists of a central city, or cities, and surrounding closely settled territory. The specific criteria for the delineation of an urbanized area are as follows: (1) a central city of 50,000 inhabitants or more; or twin cities (i.e., cities with contiguous boundaries and constituting, for general social and economic purposes, a single community) with a combined population of at least 50,000. (2) surrounding closely settled territory, including incorporated places of 2,500 inhabitants or more; or, incorporated places with fewer than 2,500 inhabitants, provided that each has a closely settled area of 100 housing units or more; or, parcels of land normally less than one square mile in area having a population density of 1,000 inhabitants or more per square mile.

An urbanized area is sometimes divided into the "central city (or cities)" and those in the remainder of the area or the "urban fringe." The central city category consists of the cities, having 250,000 inhabitants or more, named in the title of the urbanized area.

The urbanized area can be characterized as the physical city as distinguished from both the legal city and

the metropolitan community. Generally, urbanized areas are smaller than and in most cases are contained in **standard metropolitan statistical areas** (SMSA). However, in a few instances, the fact that the boundaries of SMSA's are determined by political lines, and those of urbanized areas by the pattern of urban land use, means that there are small segments of urbanized areas which lie outside SMSA's. In general, then, urbanized areas represent the thickly settled core of the SMSA's, with the exceptions noted above. (*After U.S. Bur. Census 1971*)

Urban land

1. Areas within the legal boundaries of cities and towns; suburban areas developed for residential, industrial, or recreational purposes. (*U.S. Forest Serv. 1972B*)

2. U.S. Soil Conservation Service usage. An area so altered or obstructed by urban works or structures that identification of soils is not feasible.

A **miscellaneous land type** mapping unit of the Soil Conservation Service. (*Soil Conserv. Soc. Amer. 1970*)

Also see **Urban and built up land**.

Urban planning (City planning)

In its common usage "urban planning" is equivalent to **city planning**.

However, a distinction is sometimes made between the use of the two terms. "City planning" can refer just to planning activities that take place within or at the level of a specific city boundary. "Urban planning" can be used to refer to planning for areas which are in predominantly urban uses but which are larger in extent than a single city's boundaries. (*C.F.S.*)

Urban sprawl

A term used to describe the irregular and often poorly planned spreading of urban development into adjoining land areas. Many suburban residential developments are examples of urban sprawl. (*Sesco, et al. 1973*)

Use (Utilization)

Range management usage. The proportion of current year's **forage** production that is consumed or destroyed by grazing animals.

The putting of range to a purpose by animals such as grazing, bedding, shelter, trailing, watering, etc. (*Amer. Soc. Range Manage. 1964*)

Use, allowable

Range management usage. The degree of use estimated to be proper until proper use is known. Forty or fifty percent of the annual growth by weight is often used as a rule-of-thumb on ranges in good or excellent condition.

The amount of **forage** planned to be used to accelerate range rehabilitation. (*Amer. Soc. Range Manage. 1964*)

Use capability (Capability)

G.A. Hills usage. The first of Hills' three-level system for land evaluation. The process begins with evaluation for "use capability" based upon inherent usability potentials, then to evaluation for "use suitability" on the basis of management level potentials and finally to "use feasibility" evaluation on the basis of usability under present and forecasted socio-economic conditions. (*After Belknap and Furtado 1967*)

Also see **Capability**.

Use, degree of

Range management usage. Utilization or consumption of plant growth in respect to weight. It may be expressed in qualitative terms such as unused, slight, moderate, full, close, severe, over, extreme, destructive, etc., or as percent of weight for either an individual plant or the vegetation as a whole. (*Amer. Soc. Range Manage. 1964*)

Use district

A section of a city designated by a

zoning ordinance that prescribes the use of its land and the type and characteristics of the structures that may be placed on it.

The most common form of zoning in the United States is that in which "use districts" are designated (e.g., light manufacturing, commercial, single-family residential) and only the permitted use or a "higher" one is allowed. Thus in an area zoned for heavy industry, all other uses would theoretically be permitted (though there are some exceptions to this under the principle of **exclusive zoning**), whereas in an area of single-family residences, no other uses are likely to be permitted. (*Abrams 1971*)

Use factor

Range management usage. An index to the grazing use that is made of **forage** species, based on a system of **range management** that will maintain the economically important forage species. (*Amer. Soc. Range Manage. 1964*)

Use feasibility (Feasibility)

G.A. Hills usage. The third of Hills' three-level system for land evaluation. The process begins with evaluation for "use capability" based upon inherent usability potentials, then to evaluation for "use suitability" on the basis of management level potentials, and finally to "use feasibility" evaluation on the basis of usability under present and forecasted socio-economic conditions. (*After Belknap and Furtado 1967*)

Also see **Feasibility**.

Use, full

Range management usage. The maximum use that can be made of a range during a grazing season without inducing a downward trend in **range condition**. (*Amer. Soc. Range Manage. 1964*)

Use, Non- (Non-utilization)

Range management usage. Lack of

the exercise (temporarily) of a **grazing privilege** on grazing lands.

An authorization to refrain, temporarily, from placing livestock on public ranges without loss of preference for future consideration. (*Amer. Soc. Range Manage. 1964*)

Use, nonconforming

A building or use that is inconsistent with a **use district's** zoning regulations. If erected after the enactment of the **ordinance** it may be ordered removed. If in being before the enactment it may continue in use, but a new nonconforming or different nonconforming use may not be substituted. Nor is its extension or enlargement permissible if the ordinance so provides. Many ordinances permit the rebuilding of the nonconforming premises when destroyed by fire. Once the use is abandoned, however, the right to its restoration falls, and the future use of the premises must conform to the zoning. Some states allow for the abatement of such uses at the end of a prescribed and usually lengthy period of time (i.e., use of **time zoning**). (*Abrams 1971*)

Use, over-

Range management usage. Utilizing an excessive amount of the current year's growth which, if continued, will result [sic] in range deterioration or overgrazing. (*Amer. Soc. Range Manage. 1964*)

Use, pre-existing

A land use that does not conform to a **zoning ordinance** but that existed before the enactment and that therefore may not be banned until its abandonment. Sometimes the "pre-existing use", if a nuisance, can be abated by court action. In some jurisdictions "pre-existing uses" have been banned after the lapse of a reasonable period equivalent to a prescribed "depreciation period" or amortization of its use by **time zoning**. (*Abrams 1971*)

Use, proper (Proper utilization)

Range management usage. The degree and time of **use** of current year's growth which, if continued, will either maintain or improve the range condition consistent with conservation of other natural resources. (*Amer. Soc. Range Manage.* 1964)

Use suitability (Suitability)

G.A. Hills usage. Classification based upon the degree to which a unit, in its present condition, can respond to specific management practices. (*Belknap and Furtado* 1967)

The capacity of a unit in its present condition to respond to an assumed management practice. (*Belknap and Furtado* 1967)

The relative ability of a specific area in its present condition to produce specific goods and services. (*Hills, Love and Lacate* 1970)

The second of Hills' three-level system for land evaluation. The process begins with evaluation for "use capability" based upon inherent usability potentials, then to evaluation for "use suitability" on the basis of management level potentials, and finally to "use feasibility" evaluation on the basis of usability under present and forecasted socioeconomic conditions. (*After Belknap and Furtado* 1967)

Also see **Suitability**.

USGS.

Geological survey, U.S. Department of Interior.

Utilitarianism

A political philosophy based on the principle of "the greatest good of the greatest number". Public policy ought to be aimed at maximizing utility (that is, the maximization of pleasure for the maximum number of citizens).

The notion has been ridiculed on the grounds that no objective assess-

ment of utility is possible. (*O'Connell* 1974)

Also see **Utility theory**.

Utility

The usefulness or satisfaction causing qualities of a good or service. (*E.C.T.*)

Also see **Utility theory**.

Utility theory

1. A theory of valuation according to some measure of individual preferences or intrinsic usefulness and satisfaction causing qualities (utility) developed in the study of welfare economics. The valuation can occur either in **cardinal units** of utility (called **utils**) or as a comparison to other available goods given by **indifference curves**. An indifference curve is a delineation of all combinations of two goods with which an individual would be equally pleased (indifferent between). (*E. C. T.*)

2. "Non-market good" valuation usage. In attempting to place a value on goods which are not traded in the **marketplace**, **proxy values** can be derived by developing indifference curves between the non-market good and a good with a well established price. (*E.C.T.*)

3. Decision theory with **uncertainty** usage. In choosing among alternatives where the outcome of each alternative is uncertain, each possible outcome is weighted by its probability of occurrence and a **cardinal value** of the outcome's **utility** should it occur, to obtain an expected utility value for each alternative. The alternative with the highest expected utility is chosen. (*After Mac Crimmon* 1968)

Utilization. For range management usage see **Use**.

Util. See **Utility theory**.

V

Valid mining claim. See **Mining claim, valid.**

Value added

For a given enterprise, the **market value** of goods completed, less the cost of materials purchased from others.

Value, amenity. See **Amenity.**

Value judgement

A more or less subjective opinion about the worth (e.g., good, evil, beautiful, desirable) of a thing, action or entity (even when evaluators protest their lack of prejudice). (*Webster 1963*)

Values (Value system)

1. The particular (frequently subjective) point of view of an individual or the common point of view of a group on an issue, way of life, or concerning the worth of things or experiences. (*C.F.S.*)

2. An individual or collective conception of that which is desirable. This conception usually has both emotional and symbolic components. Values may range from those that are subjectively meaningful to a given individual to those that are shared **cultural norms**. They influence the selection of the means and ends of actions, and they serve as criteria by which objects or actions are evaluated. (*O'Connell 1974*)

Also see **Value judgement.**

For economic usages see **Market value**, **Non-market good valuation**, and **Proxy value.**

Value systems. See **Values.**

Variance (Zoning variance)

1. A license to do some act contrary to the usual rule. (*U.S. Bur. Outdoor Recreation 1974*)

2. The granting of relief from the terms or conditions of a building or

zoning law by a public agency vested with the power to authorize it. It may be given when the application of the law creates unnecessary hardship; where equally safe methods or materials may be used; where there are practical difficulties in meeting the existing requirements literally; or where the deviation or exception would not affect substantial compliance with the regulations and not threaten health or safety. (*Abrams 1971*)

Also see **Special exception.**

Vegetation cover type. See **Cover type.**

Vegetation type

A plant community with distinguishable characteristics. (*Soil Conserv. Soc. Amer. 1970*)

Also see **Cover type.**

Veto group

A **pressure group** that is sufficiently powerful to block any policy or law that it considers inimical to its interests. (*O'Connell 1974*)

Viewer inferior. See **Observer inferior.**

Viewer normal. See **Observer normal.**

Viewer superior. See **Observer superior.**

View landscape (Visual landscape)

A **landscape** which due to its juxtaposition with areas of human use is vulnerable to critical observation by various segments of the public. (*A.W.M.*)

Virgin forest

1. Natural forest virtually uninfluenced by human activity. (*Ford-Robertson 1971*)

2. A mature or overmature forest essentially uninfluenced by human activity. (*Soil Conserv. Soc. Amer. 1970*)

Visible area

The ground or vegetation thereon

that can be directly seen from a given lookout point under favorable atmospheric conditions. (*U.S. Forest Serv. 1972B*)

Visitor carrying capacity. See **Carrying capacity-recreation, economic.**

Visitor day

The use of an area for a total of 12 person-hours by one or more people, either continuously or spread over several visits. (*E.C.T.*)

Visual character subtype (Character subtype, Visual subtype)

U.S. Forest Service, Visual Management System usage. Areas of significant size and visual difference within **visual character type** units—e.g., steep mountain lands, foothill lands, rolling plateau lands.

Subdivisions of "visual character types" which are significantly different in visual characteristics from each other.

"Visual character subtypes" are delineated when a larger "visual character type" unit is too broad or has too great a visual character diversity to provide a logical frame of reference to usefully classify physical features.

"Subtype" units are also used to identify those portions of major character types having distinctive or outstanding common features. (*U.S. Forest Serv. 1974B*)

Also see the related terms of the visual management system, **Visual character type** and **Visual landscape character**.

Visual character type (Character type, Visual type)

U.S. Forest Service, Visual Management System usage. A large area of land that has common distinguishing visual characteristics of landform, rock formations, water forms and vegetation patterns. (*U.S. Forest Serv. 1974B*)

The "visual character type" con-

cept and the types of land units it produces should be about the same as **morphological region** and **physiographic regions**. (*C.F.S.*)

"Visual character type" units are used as a frame of reference for classifying the physical features of a given area as to their degree of scenic quality. (*U.S. Forest Serv. 1974B*)

Also see the related terms of the visual management system **Visual character subtype** and **Visual landscape character**.

Visual landscape. See **View landscape.**

Visual landscape character (Characteristic landscape)

U.S. Forest Service, Visual Management System usage. The overall impression created by a landscape's unique combination of visual features (such as land, vegetation, water, structures) as seen in terms of form, line, color and texture. (*U.S. Forest Serv. 1973*)

The naturally established landscape being viewed as visually represented by the basic vegetative patterns, **land forms**, rock formations and water forms which are in view. (*U.S. Forest Serv. 1974B*)

A "visual landscape character" unit usually makes up a small portion of a **visual character subtype**, depending upon how much of the subtype unit can be viewed at one time. (*After U.S. Forest Serv. 1974B*)



Visual quality objective

U.S. Forest Service Visual Management System usage. "Visual quality objective" should more appropriately be called "visual quality goals" as per the definition of **goals**. Contrast the definition of goal with that of **objective**.

A set of measurable goals for the management of forest visual resources. The stated goals of this visual management system are: (1) preservation,

(2) retention, (3) partial retention, (4) modification, and (5) maximum modification. Except for "preservation" each goal describes a different degree of acceptable alteration of the natural landscape based upon the importance of aesthetics.

"Preservation" allows only natural ecological changes. "Retention" allows management activities which are not visually evident. "Partial retention" allows management activities which are visually subordinate to the **characteristic visual landscape**. "Modification" allows management activities that may visually dominate the original "characteristic visual landscape", but, when vegetation and **land forms** are altered, which must use the form, line, color, texture and/or **scale** of that landscape for its visual characteristics. "Maximum modification" allows vegetation and land form altering management activities that dominate the "characteristic visual landscape" in the **foreground** and **middleground** but which have the same visual characteristics as the surrounding area when seen as **background**. Two additional short-term management goals may be required. The first, "rehabilitation", is used to upgrade landscapes containing visual impacts which do not meet the quality objectives set for that particular area. The second, "enhancement", is for landscapes having a potential for greater natural-appearing variety. Once one of the short-term goals is attained, one of the five quality goals is then applied. (*After U.S. Forest Serv. 1974*)

Visual resource

The composite of basic terrain, geologic features, water features, vegetative patterns, and land use effects that typify a land unit and influence the visual appeal the unit may have for visitors. (*Sandpoint Zone Plann. Team 1974*)

Visual sensitivity level (Sensitivity level)

U.S. Forest Service, Visual Management System usage. A three-level rating system used to delineate areas receiving different amounts of exposure (present or potential) to user groups with differing **attitudes** towards changes in scenic quality (such as might occur as a result of management activities).

The system initially classifies all travel routes, **special interest areas** and water bodies into areas of primary and secondary aesthetic management importance on the basis of their national importance, number of users, duration of use and area size. The system next uses the assumptions that aesthetic quality will be of major concern to recreational users and minor concern to functional users of forest areas (such as daily commuters and loggers) as the other basis for classifying the entire planning area into the three sensitivity levels. (*After U.S. Forest Serv. 1974*)

Visual subtype. For U.S. Forest Service usage see **Visual character subtype**.

Visual variety class (Variety class)

U.S. Forest Service Visual Management System usage. A classification system for establishing three visual landscape categories according to the relative importance of the visual features—i.e., **landforms**, vegetation patterns, stream or lake water forms and rock formations. The class A ("distinctive") category contains those landscape features of unusual or outstanding visual quality, and, that are usually not common in the **visual character type** or **visual character subtype**. The class B ("common") category contains those landscape features which tend to be common throughout the visual character type or subtype and thus are not of outstanding visual quality. The class C ("minimal") category contains those areas with few distinguishing landscape features—including all areas

not classed as A or B.

This classification system is based on the premise that all landscapes have some visual values, but those with the most variety or diversity of visual features have the greatest potential for being or attaining high scenic value. (After U.S. Forest Serv. 1974)

Visual vulnerability

1. The degree to which man-made changes might be seen in the landscape and their potential for degrada-

tion (of scenic quality) –in essence, the landscape's resistance or susceptibility to visual changes. (Litton 1974)

2. The susceptibility of an object or changed condition to critical evaluation as a consequence of its location in a position where it can be readily seen by the public.

As applied to landscapes it means their susceptibility to criticism (pro or con) as a consequence of their availability to public observation. (A.W.M.)

W

Wants. See **Needs.**

Warm-water fishery

Stream and lake waters which support fishes with a maximum summer water temperature tolerance of about 80 degrees Fahrenheit. Bluegills, perch and largemouthed bass are examples. (After U.S. Forest Serv., FSM 2605, Sept. 1974)

Water bloom. See **Bloom.**

Water influence zone

1. U.S. Forest Service usage. Areas comprising existing or anticipated significant public outdoor recreational occupancy, use, and enjoyment along streams and rivers and around lakes, reservoirs, and other bodies of water, areas in which uses and activities are oriented to overwater travel and outdoor recreation. (U.S. Forest Serv., FSM 8223.1, Oct. 1973)

These are areas in which beauty, aesthetic values, and water quality, and usefulness are key management values and an important part of the environment and offer significant opportunities for existing, anticipated, or planned use and enjoyment by persons visiting or traveling through the zone.

Includes areas immediately adjacent to and surrounding developed or planned sites along the banks and shores where people may fish or stroll. Comprises areas adjacent to, the water along

overwater travel routes and watersports use where the immediate scenic frame and foreground are subject to close scrutiny. Other foreground and backdrop areas should be recognized in other zones with appropriate management emphasis on beauty and esthetic values. Live and intermittent streams and waters where developed facilities for occupancy and use do not exist, or are not anticipated or planned, or areas which are seldom visited for recreation and enjoyment, are usually not included. Such areas should be recognized in other management zones with due consideration given to the aquatic and related wildlife habitat and to soil and water values. (U.S. Forest Serv., FSM 8223.1, Dec., 1974)

2. The areas adjacent to lakes and selected streams subject to special management measures to protect water quality and maintain or improve aesthetic quality. (U.S. Forest Serv. Region 9 1975)



Water pollution

Any substance or energy form (heat, light, noise, etc.) which alters the state of a body of water from what would naturally occur. Especially associated with those altered states which human value judgements have decreed as bad. (E. C. T.)

Also see **Pollution.**

Watershed (Drainage basin, Catchment basin, River basin)

1. United States usage. The total area above a given point on a stream that contributes water to the flow at that point.

The entire region drained by a waterway or which drains into a lake or reservoir. (*After SESCO, et al. 1973*)

2. British usage. The topographic dividing line from which surface streams flow in two different directions; the line separating two contiguous drainage areas. (*Stamp 1961*)

Watershed management

1. The management of all the **natural resources** of a **watershed** to protect, maintain, or improve its water yields. (*Satterlund 1972*)

Watershed protection

Watershed protection involves a combination of complementary practices of land treatment and structural works to maintain or improve total yield, quality, stability of flow of surface and subsurface water and prevention of damage and loss due to excessive and uncontrolled runoff, flooding, salination, and siltation. (*Eisner 1969*)

Water table (Groundwater table)

The upper surface of the **groundwater** or that depth below which the soil is saturated with water. (*Soil Conserv. Soc. Amer. 1970*)

Water table, perched (Perched groundwater table)

The upper surface of a local zone of soil water saturation held above the main body of **groundwater** by an impermeable layer or stratum, (usually **clay**) and separated from the main body of groundwater by an unsaturated zone. (*Soil Conserv. Soc. Amer. 1970*)

Watertype. For G.A. Hills' land classification system usage, see **Landtype**.

Water year

The 12-month period, October 1 through September 30, designated by the calendar year in which it ends (used with streamflow data and analyses). (*Soil Conserv. Soc. Amer. 1970*)

Water yield

1. The runoff from a **watershed**, including groundwater outflow. (*U.S. Forest Serv. 1972B*)

2. Water yield is the precipitation minus the evapotranspiration. (*U.S. Forest Serv. 1972B*)

Weather (Meteorological condition)

The state of the atmosphere at a definite time and place with respect to air temperature, humidity, wind, precipitation, cloudiness, etc. (*Webster 1963*)

Also contrast with **Climate**.

Weed cutting (Weeding)

Cutting made in a young stand, not past the sapling stage, to free the small trees from weeds, brush, chaparral, vines, sod-forming grasses, or other competing vegetation. (*U.S. Forest Serv., FSM 2471 R-3*)

Weeding. See **Weed cutting**.

Weighting

1. Assigning numbers to express the relative importance of items in a group or series under consideration. (*After Webster 1963*)

2. The assignment of numerical values to resource yields when their values can not be directly compared by existing techniques for quantification on some measurement scale. The assigned numerical values are usually referred to as "weights" or "multipliers".

As a technique, weighting is usually done according to some more or less objective sense of the relative importance of the different types of resource yields.

While weightings are usually added (i.e., **additive weighting**) to obtain a measure of the total social value of re-

source uses or resource yield mixes for planning areas, they may also be multiplied or divided (or some combination of these processes) to facilitate decision making. (C.F.S.)

Welfare. See **General welfare.**

Wetlands

1. Areas that are permanently wet, or intermittently water covered, such as swamps, marshes, bogs, muskegs, potholes, swales, glades, and overflow land of river valleys. Large, open lakes are commonly excluded, but many kinds of ponds, pools, sloughs, holes, and bayous may be included. (*Veatch and Humphrys 1966*)

2. Inland usage. Any area that is more or less regularly wet or flooded. Where the water table stands at or above the land surface for at least part of the year.

3. Coastal usage. Land types such as salt marshes, and brackish marshes subject to saline and/or tidal influences. (*Durrenberger 1973*)

4. Lowlands covered with shallow and sometimes temporary or intermittent waters. Shallow lakes and ponds, usually with emergent aquatic vegetation (such as reeds or cattails) as a conspicuous feature, are included in the definition, but the permanent waters of streams, reservoirs and deep lakes are not included. Neither are water areas that are so temporary as to have little or no effect on the development of moist-soil dependent vegetation. (*Shaw and Fredine 1956*)

Wet meadow

A **meadow** where the surface remains wet or moist throughout the summer, usually characterized by sedges and rushes. (*Amer. Soc. Range Manage. 1964*)

Wild and Scenic Rivers Act (82 Stat. 906; 16 U.S.C. 1271-1273, 1274(A), 1275(A))

Declares that it is a policy of the

United States that certain selected rivers of the nation which, with their immediate environments, possess outstanding remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations. Implements this policy by instituting a National Wild and Scenic Rivers System, by designating the initial components of that system, and by prescribing the methods by which and standards according to which additional components may be added to the system from time to time. (*After U.S. Forest Serv. 1974*)

Wilderness

1. Popularly, any tract uncultivated and uninhabited by human beings. (*Ford-Robertson 1971*)

2. "Wilderness area". Undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least 5000 acres or is of sufficient size as to make practical its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or features of scientific, educational, scenic, or historical value. (*Wilderness Act 1964*)

A tract of land, including interior bodies of water, open to overnight public use and entry by foot, horseback, or hand-propelled vessel; primarily in public ownership, in the continental U.S.; not less than 100,000

acres in extent; containing no roads constructed for passenger car traffic in mountainous terrain, or suitable for passenger car traffic in desert or plains; existing as a single unit with boundaries reasonably free of indentation; without interruption by on-site influence, except that—effects of domestic livestock are acceptable; effects of **selection logging** before 1920 are acceptable east of the 98th meridian; ecological effects of fire suppression are acceptable in all areas. (*Calif., Univ., Wildland Res. Cent. 1962*)

A continuous stretch of country preserved in its natural state, open to lawful hunting and fishing, big enough to absorb a two weeks' pack trip, and kept devoid of roads, artificial trails, cottages, or other works of man. (*Leopold 1921*)

An area where the earth and its community of life are untrammelled by man, where man himself is the visitor who does not remain. (*Wilderness Act 1964*)

In common usage, "wilderness" refers to those **backcountry** types of **wildlands** which show no obvious evidence of present or previous human uses other than foot or pack animal trails. Some use the terms primitive and wilderness interchangeably to refer to all areas displaying no obvious evidence of present or previous human uses—other than foot or pack animal trails. Others make a distinction between the two, using "primitive" to refer to all areas possessing wilderness qualities and restricting the use of "wilderness" to only those portions of the larger primitive area which have officially been designated as "wilderness" areas. (*After A. W.M.*)

Wilderness Act (78 Stat. 890; 16 U.S.C. 1131-1136)

Establishes a National Wilderness Preservation System to be composed of Federally owned areas designated

by Congress as **wilderness** areas, and these shall be administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as wilderness, and so as to provide for the protection of these areas, the preservation of their wilderness character, and for the gathering and dissemination of information regarding their use and enjoyment as wilderness. (*After U.S. Forest Serv. 1974*)

Wilderness area. See **Wilderness**, definition. 2.

Wilderness study area

An area which has been placed under formal consideration for possible inclusion in the wilderness area system. A new study area in a National Forest is removed from standard management and planning considerations until its status as a wilderness area is determined. After study such areas will be classified as either **nonselected roadless areas** or **roadless and undeveloped areas**. (*U.S. Forest Serv., FSM 8261.05, Apr., 1974*)

Also see **Roadless and undeveloped areas** and **Nonselected roadless area**.

Wildfire (Forest fire)

A free-burning fire.

Any fire other than a **controlled, burn** or a **prescribed burn**, occurring on **wildland**. (*Ford-Robertson 1971*)

Any fire other than one intentionally set for management purposes and whose extent is confined to a predetermined area on wildlands. (*C.F.S.*)

Wildland

1. Non-urban areas that are not intensively managed and manipulated. They include most managed forests but not city parks with their exotic plants, "manicured" lawns, and sprinkler systems. The term is not exact because it includes lands that are under management and are not truly wild. Through long usage it has come to ap-

ply to lands that are sparsely settled and present a fairly natural appearance. Forests, deserts, mountains, grasslands, and other extensive lands are normally included. (*Wagar 1964*)

This term is most often used as one of several terms of comparison contrasting the differing degrees of utilization and alteration of land which occur—e.g., urban lands, agriculture lands and wildlands. The dividing lines between these states cannot be defined in any generally acceptable quantitative terms. The only firm sense of differentiation between these terms exists when they are used to describe broadly contrasting natures and intensities of land utilization. "Wildlands" are simply those natures and intensities of use on the least utilized and altered side of the continuum from totally developed to completely untouched. (*C.F.S.*)

2. Lands unoccupied by crops, pastures, urban, residential, industrial or transportation facilities.

Lands over which man has not extended his complete and permanent domain with his bulldozers, plows and asphalt spreaders. (*After Calif. Univ., Wildland Res. Cent. 1959*)

3. Uncultivated land, except fallow lands. (*Ford-Robertson 1971*)

4. Land that is uncultivated or unfit for cultivation. (*Webster 1963*)

Wildlife

1. U.S. Forest Service usage. All nondomesticated mammals, birds, reptiles, and amphibians living in a natural environment, including both **game species** and nongame species, whether considered beneficial or otherwise.

Animals, or their progeny, which once were domesticated but escaped captivity and are running wild (i.e., **feral animals**), such as horses, burros, and hogs, are not considered to be wildlife. (*U.S. Forest Serv., FSM 2605, Sept. 1974*)

2. Undomesticated vertebrate animals, except fish, considered collectively. (*Soil Conserv. Soc. Amer. 1970*)

3. Generally, all non-domesticated animal life. (*Ford-Robertson 1971*)

4. More particularly, a loose term that includes non-domesticated vertebrates especially mammals, birds and fish and some of the higher invertebrates (such as crabs, crayfish, etc.) (*Ford-Robertson 1971*)

5. Living things that are neither plant, human nor domesticated, especially the mammals, birds and fishes that are hunted by man for sport or food. (*Webster 1963*)

Wildlife and Fish Habitat System

U.S. Forest Service usage. This system protects and improves wildlife and fish habitat with special emphasis on **threatened** and **endangered species**. Management of wildlife and fish habitats is closely coordinated with the states because they control wildlife and fish populations. This coordination includes (1) close working relations among National Forest, State, and private land managers; (2) cooperative forestry programs designed to assist non-Federal land managers; and (3) research programs that define environmental requirements of fish and wildlife and provide management alternatives through which these requirements can be attained.

One of the six "systems" established by the U.S. Forest Service to have a systematic, orderly way to view and evaluate its many diverse but interrelated activities. The Forest Service has developed this approach to better respond to the mandates of the **Forest and Rangeland Renewable Resources Planning Act** of 1974. It has grouped its various **programs** into these six "systems", each of which incorporates all the activities concerned with developing and managing a specific re-

source. (After U.S. Forest Serv. 1974A)

The six "systems" are: **Land and Water, Timber Resource, Outdoor Recreation and Wilderness, Rangeland Grazing, "Wildlife and Fish Habitat", and Human and Community Development.**

Wildlife land

U.S. Soil Conservation Service usage. Land and water managed primarily for fish and wildlife. Wildlife may be a secondary use of land with cropland, rangeland, woodland, etc., as the primary use. (U.S. Soil Conserv. Serv. 1970)

Wild river area

Wild and Scenic Rivers Act usage.

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. These represent vestiges of primitive America. (After U.S. Forest Serv. 1974)

Willingness-to-pay

An economic concept used either in **non-market good valuation** or when the prevailing price of a good or service is thought to be different from its true value to an individual or society. It refers to the price an individual would be willing to pay rather than be deprived of the good or service.

In precise economic theory the validity and applicability of "willingness-to-pay" is dependent on who is assigned initial ownership rights to the good or service being evaluated. (E.C.T.)

Also see **Consumer surplus** and **Producer surplus**.

Wildfall

1. A tree or trees thrown or their stems broken off or other parts (branches, foliage, fruit, etc.) blown down by the wind. (Ford-Robertson 1971)

2. Any area on which (many of) the trees have been uprooted (i.e., **windthrown**) or broken by the wind. (Ford-Robertson 1971)

Windfirm

Trees able to withstand strong winds—i.e., able to withstand the force of wind without being uprooted (i.e., **windthrown**). (Ford-Robertson 1971)

Windthrow (Blow down)

1. Uprooted by the wind. (Ford-Robertson 1971)

2. Also used to refer to a tree or trees so uprooted. (Ford-Robertson 1971)

In forestry "windthrow" becomes particularly important in conjunction with the **clearcutting system** and **clear-cutting logging** methods. Trees tend to develop root systems to support themselves against the forces they face. When either a new forest edge is created by logging or selected trees from a group are removed the remaining trees may face a significant increase in the force of the wind. The trees growing on the edge of a forest tend to shelter the interior trees, and trees in a group protect each other from the full force of the wind. If the remaining trees do not have root systems capable of absorbing this additional stress they will be blown down. (E.C.T.)

Woodland

U.S. Soil Conservation Service usage. Land used primarily for the production of adapted wood crops and to provide tree cover for watershed protection, beautification, etc. Does not include farmstead and field windbreak plantings. (U.S. Soil Conserv. Serv. 1970)

Working circle

A forest area organized -for a particular objective and under one set of **working plan** prescriptions, and embodying one **silvicultural** system or a

designed combination of systems.
(*Ford-Robertson 1971*)

Working group

U.S. Forest Service usage. Those parts of a **working circle** that have the same general management prescriptions.

This designation may be applied to combinations of species, types, or sites, such as pine and hardwood working groups, mixed conifer and douglas-fir working groups, and site I - III and site IV-V working groups. In some working circles a working group is set up for areas where timber man-

agement is to be modified, such as in landscape management areas. (*U.S. Forest Serv., FSM 2412.5, May 1972*)

Working plan

1. A plan for managing a forest.
(*After Ford-Robertson 1971*)

2. The written, often printed and published management plan, aiming at continuity of policy and action, and both prescribing and controlling basic operations in a forest over a period of years. (*After Ford-Robertson 1971*)

WRC

Water Resources Council, U.S.

X

Xeric

1. Refers to a **habitat** characterized by dry conditions rather than **mesic** (moderate) or **hygric** (wet) conditions.
(*Hanson 1962*)

2. The nature of an organism

adapted to dry conditions. (*Dansereau 1957*)

Xerosere. See **Succession**, definition 1.

X section. See **Cross section**.

Y

Yarding

The operation of hauling timber from the stump to a collecting point.
(*Ford-Robertson 1971*)

Yarding, skyline (Skyline logging)

A method for moving logs to a central loading area by the use of overhead cable systems that lift at least one end of the log off the ground. (*After Ford-Robertson 1971*)

Z

Zonal soil. See **Soil horizon**, definition 2.

Zoning

In general, the demarcation of a planning area by **ordinance** into zones and the establishment of regulations to govern the use of the land (commercial, industrial, residential, type of residential, etc.) and the location, bulk, height, shape, use, and coverage of structures within each zone. (*Abrams 1971*)

Zoning, aesthetic

Zoning which regulates property in the interest of protecting **aesthetic** values.

The U.S. Supreme Court in the 1954 "Berman vs. Parker" case upheld this extension of the original legal justification for zoning powers with its finding that "It is within the power of the legislature to determine that the community should be beautiful as well as healthy." (*After Abrams 1971*)



Zoning, agricultural

Zoning which restricts land uses to agriculture and other low-density uses. (*After U.S. Bur. Outdoor Recreation 1974*)

Zoning, cluster (Residential planned development zoning, Planned unit development zoning)

1. A form of **zoning** that allows a developer to reduce his minimum lot size below the **zoning ordinance's** requirements if the land thereby gained is preserved as permanent **open space** for the community. (*Abrams 1971*)

2. Residential planned development zoning is zoning which allows landowners the opportunity to intensively develop one portion of their property while leaving the remaining portion in an undeveloped state.

"Cluster zoning". Instead of the developer covering his tract with equal-sized lots, the local government alters standard lot size regulations to permit tighter patterns of house groupings. This can save money for the developer; he builds the same number of housing units, but does not have to bulldoze as much or lay as much asphalt and service facilities. In exchange, the developer leaves from 40 to 60 percent of the land open and deeds it for common use of the residents.

Cluster zoning is a device for building open space into the everyday environment of residential subdivisions. Planned unit development (i.e., **cluster development**) uses this approach. (*U.S. Bur. Outdoor Recreation 1974*)

Zoning, conservation

Zoning which restrains development of unsuited areas such as steep slopes with fragile soils, areas of scenic beauty, and spaces with other natural values. (*U.S. Bur. Outdoor Recreation 1974*)

Zoning, development

A term used to refer to all types of

zoning which regulate **development**—i.e., types of land use which prominently alter or dominate the original open space of an area with built-up facilities such as buildings, streets and other paved areas, etc. (*C.F.S.*)

For example, **large-lot zoning** and **cluster zoning** are types of "development zoning". (*U.S. Bur. Outdoor Recreation 1974*)

Zoning, Euclidean

Zoning of the type adopted by the city of Euclid, Ohio, and made famous in 1926 by the United States Supreme Court decision in village of Euclid vs. Ambler Realty Company, upholding the nation's first comprehensive zoning ordinance. The Euclid **zoning ordinance** restricted the location of trades, industries, apartment houses, two-family houses, single-family houses, the lot area to be built upon, the size and height of the buildings, etc. The court found these restrictions neither "unreasonable" nor "arbitrary." Since that time the term has come to describe the most common form of zoning in the United States, in which "use districts" are designated (i.e., light manufacturing, commercial, single-family residential) and only the permitted use or a "higher" one is allowed. Thus in an area zoned for heavy industry, all other uses would theoretically be permitted (though there are some exceptions to this under the principle of **exclusive zoning**), whereas in an area of single-family residences, no other uses are likely to be permitted. (*Abrams 1971*)

Zoning, exclusive use

A **zoning** regulation which permits only one type of use in a particular established zone or district. (*After U.S. Bur. Outdoor Recreation 1974*)

Zoning, flood plain

Zoning which prohibits and restricts development within **flood plains** to prevent property loss, to insure

public safety, and to enable the safe and natural flow of streams. (*U.S. Bur. Outdoor Recreation 1974*)

Zoning, forest (Forest use zoning)

Zoning which restricts land uses to forestry and related uses—e.g., timber production, watershed, Christmas tree farms, recreation, etc. (*C.F.S.*)

Zoning, land capability

Zoning which limits **development** in areas which are subject to natural land or water hazards. (*U.S. Bur. Outdoor Recreation 1974*)

Zoning, large-lot

Zoning which prohibits subdivision of land into individual parcels of less than a specified, relatively large lot size—e.g., 1 acre or more. (*C.F.S.*)

Large-lot zoning is used extensively to retard development. (*U.S. Bur. Outdoor Recreation 1974*)

Zoning, natural resource

A blanket term used to refer to all zoning which restricts the uses that are made of **natural resource** lands so as to maintain the benefits which flow from their natural capacities, productivity or material contents. For example **floodplain zoning**, **agricultural zoning** and **forest zoning** are types of "natural resource zoning". (*C.F.S.*)

Zoning, open space

Zoning which restricts land uses so as to retain **open space**. (*C.F.S.*)

"Open space zoning" includes **large-lot zoning** and **cluster zoning** (forms of **development zoning**) and **natural resources zoning**. (*U.S. Bur. Outdoor Recreation 1974*)

Zoning ordinance

A local law or regulation enacted by a city council or other similar body (working under the powers delegated to it by the state) which establishes the appropriate uses within a particular, designated area (i.e., a zone) and the location, bulk, height, shape, use

and coverage of structures, etc. within each zone. (*After Webster 1963 and Abrams 1971*)

Zoning, performance (Performance standard zoning)

Regulations providing general **criteria** for determining the acceptability of certain industries, land uses, and buildings as distinguished from specification **standards** or detailed requirements. This type of zoning does not bar an industry or use by name but admits any use, provided the particular requirements set for admission are met. (*Abrams 1971*)

Zoning, prohibition

Any of the class of zoning regulations which only allows certain types of use in certain kinds of areas. For example, flood plain zoning frequently permits only uses which do not need structures nor reduce the flood water storage capacity of such hazardous areas. (*C.F.S.*)

Zoning permit

An official finding that a planned use or structure complies with the zoning regulations or is allowed by the granting of a **special exception** or **variance**. No new development or substantial change of use can occur until such a permit is issued in a planning area regulated by **zoning ordinances**. (*After Abrams 1971*)

Zoning, spot

The designation of an isolated parcel of land for a use classification harmful to or inconsonant with the use classification of the surrounding area so as to favor a particular owner. The courts have held such zoning to be "unreasonable" and "capricious". To avoid judicial invalidation, zoning of small areas can be enacted only when it is in furtherance of a **general plan** properly adopted by, and designed to serve the best interests of the community as a whole. This does not mean

that an entire city or county must be zoned at one time, but there must be uniformity in the class or type of building to which the zoning applies. (*Abrams 1971*)

Zoning, time

Restricting an existing **non-conforming use** within a **use district** to a specific period, upon the expiration of which it becomes illegal. Sometimes the time period's justification is referred to as "amortization of the use" and it is presumed to afford the non-conforming owner a reasonable number of years within which to recover his investment under the **pre-existing use**. (*Abrams 1971*)

Zoning variance. See **Variance**.

Zoological area

U. S. Forest Service usage An area

which has been designated by the Forest Service as containing authentic, significant and interesting evidence of our American national heritage as it pertains to **fauna**. The areas are meaningful because they embrace animals, animal groups or animal communities that are natural and important because of occurrence, **habitat**, location, **life history**, ecology, environment, rarity or other features. (*U.S. Forest Serv., FSM 2362.44, July 1973*)

Areas of this type and all other **special interest areas** are identified and formally classified primarily because of their recreational values. Areas with similar types of values of scientific importance are formally classified as "research natural areas" (see **Natural area, research**). (*W. W.*)

Zooplankton. See **Plankton**.

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