

CITY OF BOULDER OPEN SPACE DEPARTMENT

Long Range Management Policies



March 1995



OPEN SPACE LONG RANGE MANAGEMENT POLICIES

Prepared by the City of Boulder Open Space Department
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The Open Space Program thanks the hundreds of citizens who gave their time and ideas to improve the Open Space Long Range Management Policies.

The Open Space Long Range Management Policies were recommended for approval by the Open Space Board of Trustees on February 8, 1995. The City Council approved the Long Range Management Policies on March 7, 1995.

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Cover art by Sue Galatowitsch courtesy of the Colorado Natural Areas Program.

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FOREWORD

The management of the Open Space Department of the City of Boulder is directed by the Open Space Board of Trustees (OSBT) and the Director of the Open Space Department. The OSBT is appointed by the Boulder City Council to hear citizen concerns and fulfill the mandates of the City Charter, Boulder Revised Code, and the Boulder Valley Comprehensive Plan (BVCP). Other federal, state, or local laws, regulations, and policies also apply to the management of Open Space lands.

The Open Space Long Range Management Policies (LRMP) set the framework and provide direction for the Open Space planning process and subsequent management decisions. The direction provided herein ranges from the general to the specific and may prescribe the process by which decisions are made, how an action is accomplished, or the results to be achieved.

The LRMP draft will be made available for public review. The final LRMP will be approved by the OSBT and City Council. The LRMP planning horizon is 20 years, and the document will be revised every five years to account for changing conditions. **Accomplishment of the prescriptions outlined in this document is subject to funds being available and will be attained over time.** Other, more specific management plans, will supplement this LRMP. Earlier plans or policy statements not consistent with this LRMP are to be disregarded.

The Open Space Department will implement the LRMP through a planning process emphasizing a balanced, interdisciplinary, team approach drawing upon varied expertise to balance both resource needs within complex ecosystems and public interests. Priorities will be consistent with the purposes of Open Space as specified in the City Charter.

Significant portions of the National Park Service document, *Management Policies* (U.S. Department of the Interior, National Park Service, 1988), were used, in some cases verbatim, as the basis for this document.

I. INTRODUCTION

A. The Role of Open Space

As you drive into the Boulder Valley, with its multi-hued grasses swaying in the breeze, vast red rocks reaching toward the sky, and whitecapped mountains forming a backdrop,--you are struck by what a truly beautiful place you have found.

But it very easily could have been otherwise.

Boulder began its long history of preserving land by purchasing Chautauqua Park in 1898. That purchase was the forerunner of today's Mountain Park system and the Open Space system.

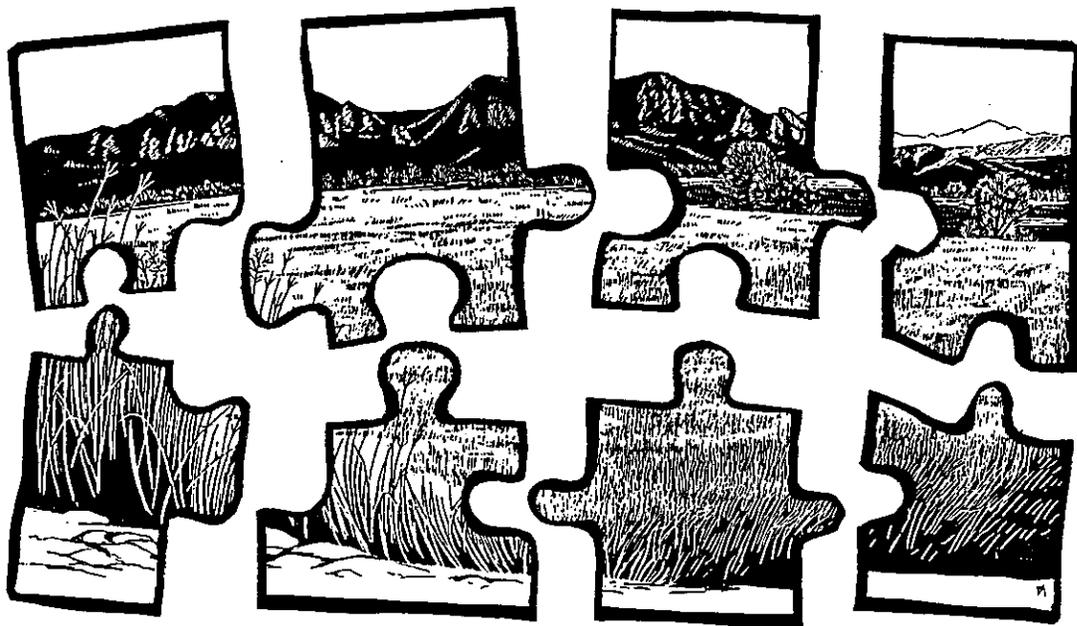
In the 1950s and 1960s, Boulder's population doubled and doubled again. Houses were crawling up the mountain backdrop and sprawling out into the valley. Something had to be done. A group of farsighted citizens banded together to preserve an Open Space greenbelt around and through the city. To them, it would have been irresponsible to do otherwise. They placed an initiative on the ballot in 1967 to increase permanently the city sales tax by four-tenths of a cent to buy, preserve, and maintain greenbelt land. The tax was approved and marked the first time any city in the United States had passed a sales tax specifically to preserve an open space greenbelt. The purposes of the Open Space Program, listed in the following section, and the establishment of the Open Space Board of Trustees (OSBT) were added to the City Charter in 1986. At the same time, provision was made for a public vote prior to sale or conversion of Open Space

land to other uses. The citizens felt so strongly about the Open Space benefits that they increased the Open Space sales tax by one-third of a cent in 1989. Citizens again reaffirmed their support in 1993, in response to a state constitutional requirement, by allowing the Open Space Department to continue to enter into debt and expend all sales tax revenues for Open Space purposes.

In summary, the City's Open Space/Real Estate Department was established in 1967 to acquire, preserve, protect, and manage the Open Space Boulder was buying on behalf of its citizens.

Twenty-seven years after the greenbelt initiative was passed, Boulder controls approximately 25,000 acres of Open Space land in and around the city. The mountain backdrop has largely been preserved, either as Mountain Parks or Open Space. An expanding buffer keeps Boulder's identity distinct from neighboring communities. The erosion of many ecosystems has been slowed and preservation of wildlife and habitats begun. Some Open Space land is leased to farmers and ranchers, helping to preserve this historic use of Boulder-area lands. Much of the Open Space system is available for passive recreation and provides scenic entries into Boulder.

The Open Space program is thriving, but will it continue to do so in the face of constant change? Will we be farsighted enough to manage our lands so that future generations will be able to enjoy what we have worked so hard to preserve?



B. The Need for the Long Range Management Policies (LRMP)

There are now more than 1.7 million visits to Open Space per year. Even with additional acquisitions of Open Space, large increases in use are anticipated. Within the area that includes Boulder County and land slated for annexation by Arvada just south of Open Space, population is projected to double in the next 20 years. With these pressures upon natural systems, it is crucial to plan wisely. To do otherwise would mean more human use conflicts, despoiled wildlife habitat, and a degraded and rundown system, ultimately resulting in a much less enjoyable experience for Boulder Valley residents and visitors. It could also mean less support for the Open Space program.

This LRMP is Open Space's paramount planning document. It provides broad, long-term direction for planning and decision making. The policies will provide the framework and direction for future, more issue-specific or site-specific, planning. The approximate planning horizon is 20 years. The LRMP will be updated every five years. These Long Range Management Policies describe: 1) program goals, 2) decision-making processes, and 3) implementation techniques.

These policies take into account that Open Space lands are a complex mosaic of natural systems with a wide variety of qualities, values, and purposes. Each of these requires special treatment when management strategies and operational plans are developed and implemented. Managers must be able to distinguish and decide among competing priorities for the limited resources available. Such choices must be based on the best available knowledge, the goal of resource preservation, and consistency with the City Charter. These policies recognize that conflicts will inevitably occur between preservation of resources and public use. The Open Space Department is charged with achieving a long-term environmental management balance consistent with the City Charter purposes. As human impacts on Open Space land increase, management and education will become increasingly important to involve the citizens of Boulder in the protection and stewardship of the land.

These long range management policies aim to honor the spirit and intent of Boulder's farsighted citizen. It is the least we can do for the generations to come. It would be irresponsible to do otherwise.

C. Purposes of Open Space

Open space decision making is guided by the "purposes" of Open Space contained in the City Charter, as approved by the City of Boulder voters in

1986. The mission of the Open Space Program is defined in the Charter as follows:

Section 176. Open space purposes-Open space land. Open space land shall be acquired, maintained, preserved, retained, and used only for the following purposes:

- *Preservation or restoration of natural areas characterized by or including terrain, geologic formations, flora, or fauna that is unusual, spectacular, historically important, scientifically valuable, or unique, or that represent outstanding or rare examples of native species;*
- *Preservation of water resources in their natural or traditional state, scenic areas or vistas, wildlife habitats, or fragile ecosystems;*
- *Preservation of land for passive recreation use, such as hiking, photography or nature studies, and if specifically designated, bicycling, horseback riding, or fishing;*
- *Preservation of agricultural uses and land suitable for agricultural production;*
- *Utilization of land for shaping the development of the city, limiting urban sprawl and disciplining growth;*
- *Utilization of non-urban land for spatial definition of urban areas;*
- *Utilization of land to prevent encroachment on floodplains; and*
- *Preservation of land for its aesthetic or passive recreational value and its contribution to the quality of life of the community.*

Open space land may not be improved after acquisition unless such improvements are necessary to protect or maintain the land or to provide for passive recreational, open agricultural, or wildlife habitat use of the land.

Section 177. Disposal of open space land. No open space land owned by the city may be sold, leased, traded, or otherwise conveyed, nor may any exclusive license or permit on such open space land be given, until approval of such disposal by the City Council. Such approval may be given only after approval of such disposal by the affirmative vote of at least three of five members of the Open Space Board of Trustees

after a public hearing held with notice published at least ten days in advance in a newspaper of general circulation in the city, giving the location of the land in question and the intended disposal thereof. No open space land owned by the city shall be disposed of until sixty days following the date of city council approval of such disposal. If, within such sixty day period, a petition meeting the requirements of section 45 above and signed by registered electors of the city to the number of at least five percent of the registered electors of the city as of the day the petition is filed with the city clerk, requesting that such disposal be submitted to a vote of the electors, such disposal shall not become effective until the steps indicated in section 46 and section 47 above have been followed.

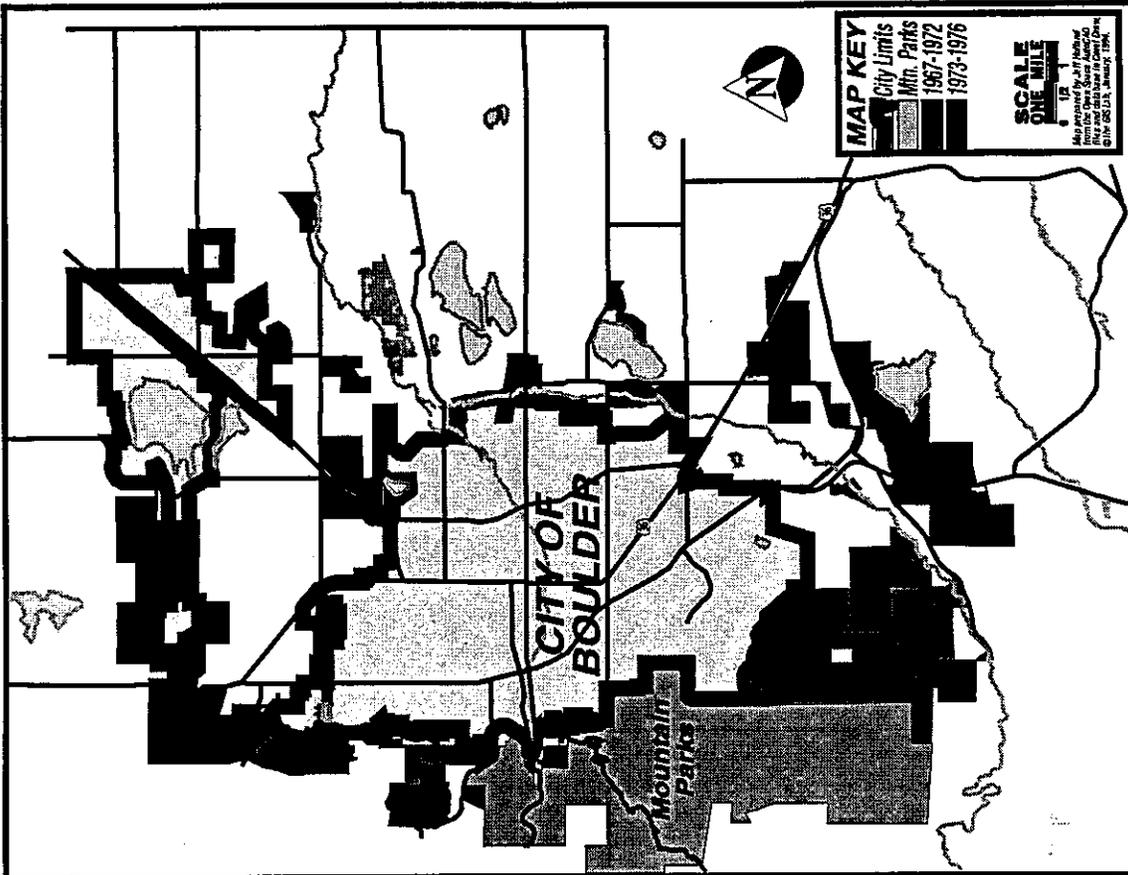
This section shall not apply to agricultural leases for crop or grazing purposes for a term of five years or less.

This section is to be construed liberally in favor of providing opportunities for the citizens of the city to refer measures proposing the disposal of any open space land. (Added by Ord. No. 4996 (1986) - 1, adopted by electorate on November 4, 1986.)

ILLUSTRATION 1: HISTORICAL CHRONOLOGY OF EVENTS

- 1898 Purchase of Chautauqua Park at the foot of Flagstaff Mountain through a bond issue, the beginning of the Boulder Mountain Parks System.
- 1907 Receipt of 1,600 acres on Flagstaff Mountain from a Congressional grant for the Mountain Parks System.
- 1910 Frederick L. Olmstead suggests a program for preserving scenic Open Space lands.
- 1916 Purchase of 1,200 additional acres on Green Mountain and Bear Peak for the Mountain Parks System.
- 1950-1960 Boulder's population nearly doubles from 19,999 to 37,718.
- 1959 Concerned citizens organize to form a group now known as PLAN-Boulder County.
- 1959 An amendment to the City Charter establishes a "blue line" above which City water will not be supplied. Citizens who helped pass the amendment realized that this would slow development of the foothills, but not stop it.
- 1960-1970 Boulder's population again nearly doubles from 37,718 to 68,870.
- 1963 PLAN Boulder County successfully campaigns for a bond issue to save the 160-acre Enchanted Mesa from development. It is added to the Mountain Parks System.
- 1965 Citizens defeat a ballot proposal to extend services to a proposed development south of Boulder.
- 1967 Boulder citizens vote to become the first city in the nation to tax themselves for the acquisition, management, and maintenance of open space land. The measure to permanently increase sales tax by four-tenths of one percent, or \$0.004, passes with 61% of the vote.
- 1971 An amendment to the City Charter authorizes the City to incur debt to acquire Open Space, allowing for an expanded land acquisition program.
- 1973 City Council creates the Open Space Board of Trustees to set policies and priorities for acquisition and management of Open Space land.
- 1978 Boulder Valley Comprehensive Plan (BVCP) states that Open Space shall provide "an important framework for land use planning in the Boulder Valley."
- 1986 An amendment to the City Charter provides more permanent protection for Open Space lands, and establishes the Open Space Board of Trustees and the Open Space Department in the Charter, with support of 79% of the voters.
- 1989 Funding for the accelerated acquisition program passes with 76% of the vote. This adds an additional 0.33 percent sales tax (\$0.0033) for the 15-year period from 1990 through 2004.
- 1993 Authority to spend all Open Space sales tax revenues and continue to enter into debt for Open Space purposes reaffirmed by votes of 66% and 67%, respectively. The vote was held in response to a new state constitutional requirement.

OPEN SPACE ACQUISITIONS 1973-1976



OPEN SPACE ACQUISITIONS 1967-1972

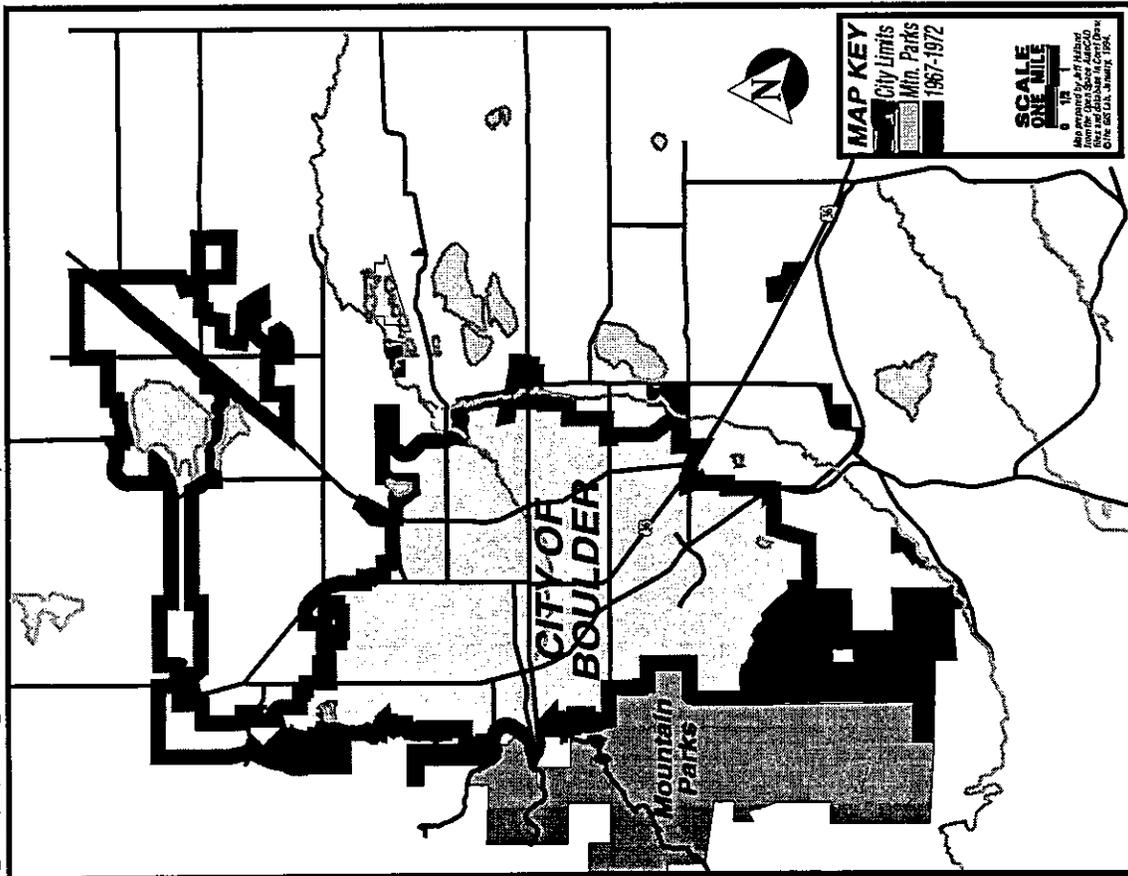
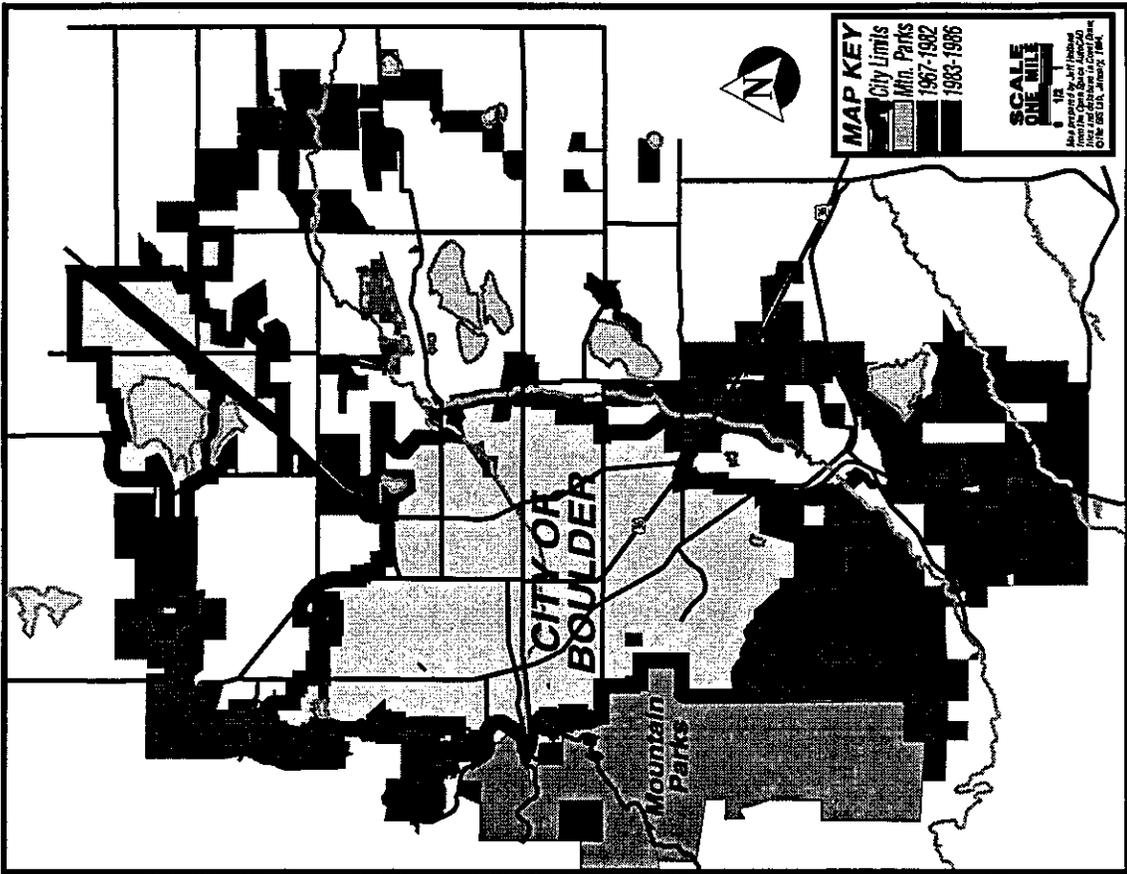
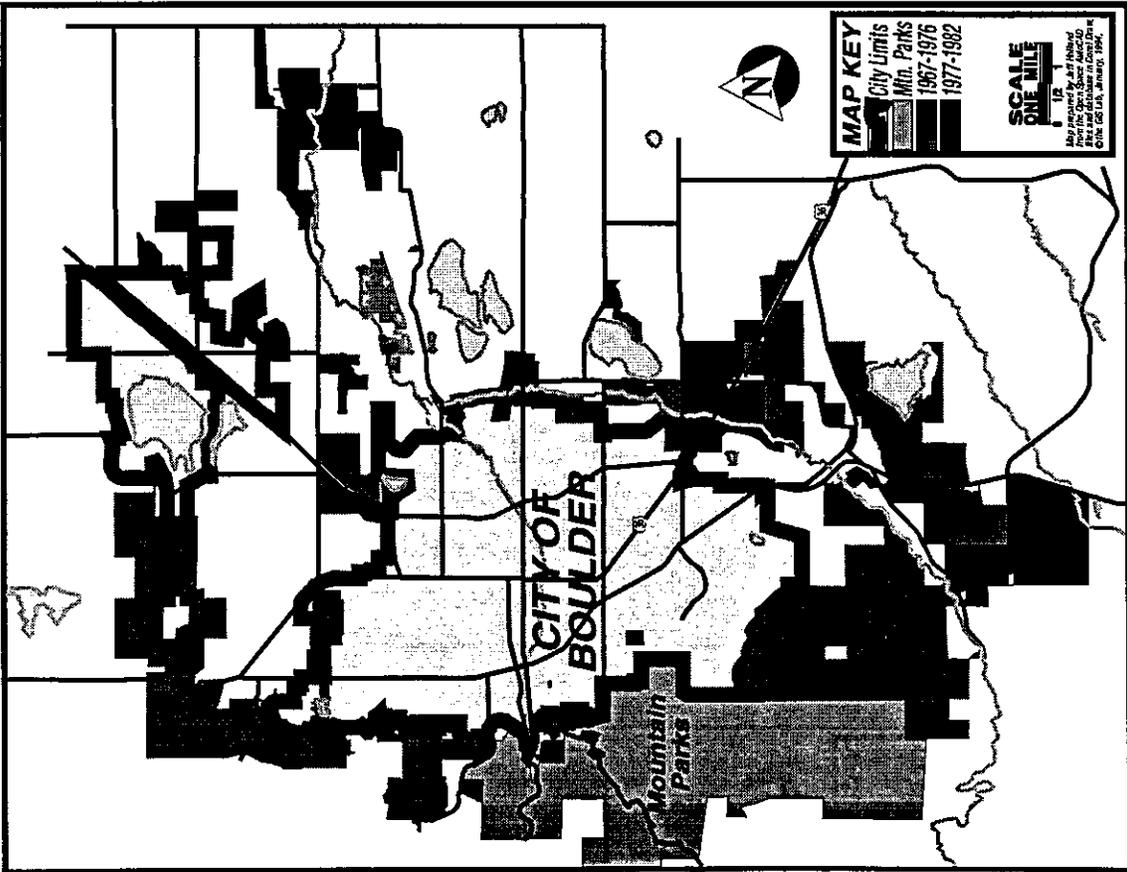


ILLUSTRATION 2: ACQUISITION TIMELINE MAPS (continued)

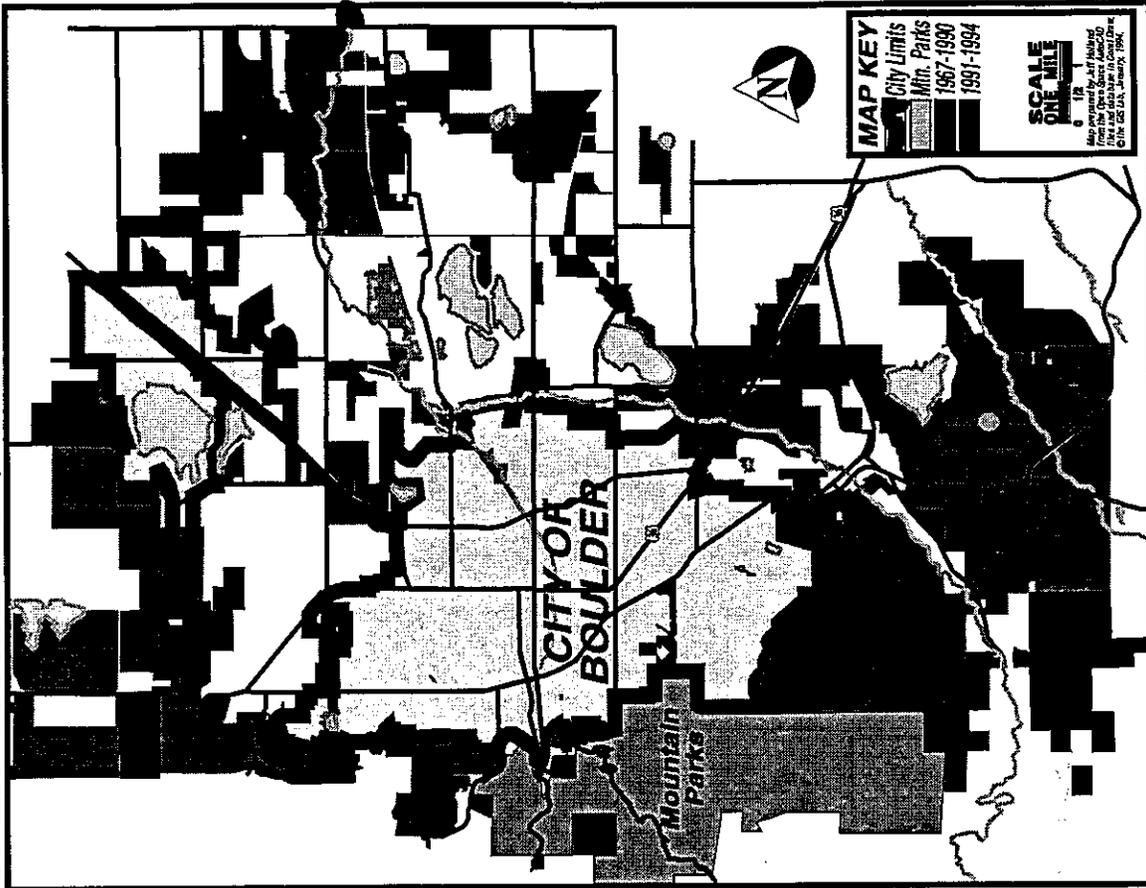
OPEN SPACE ACQUISITIONS 1983-1986



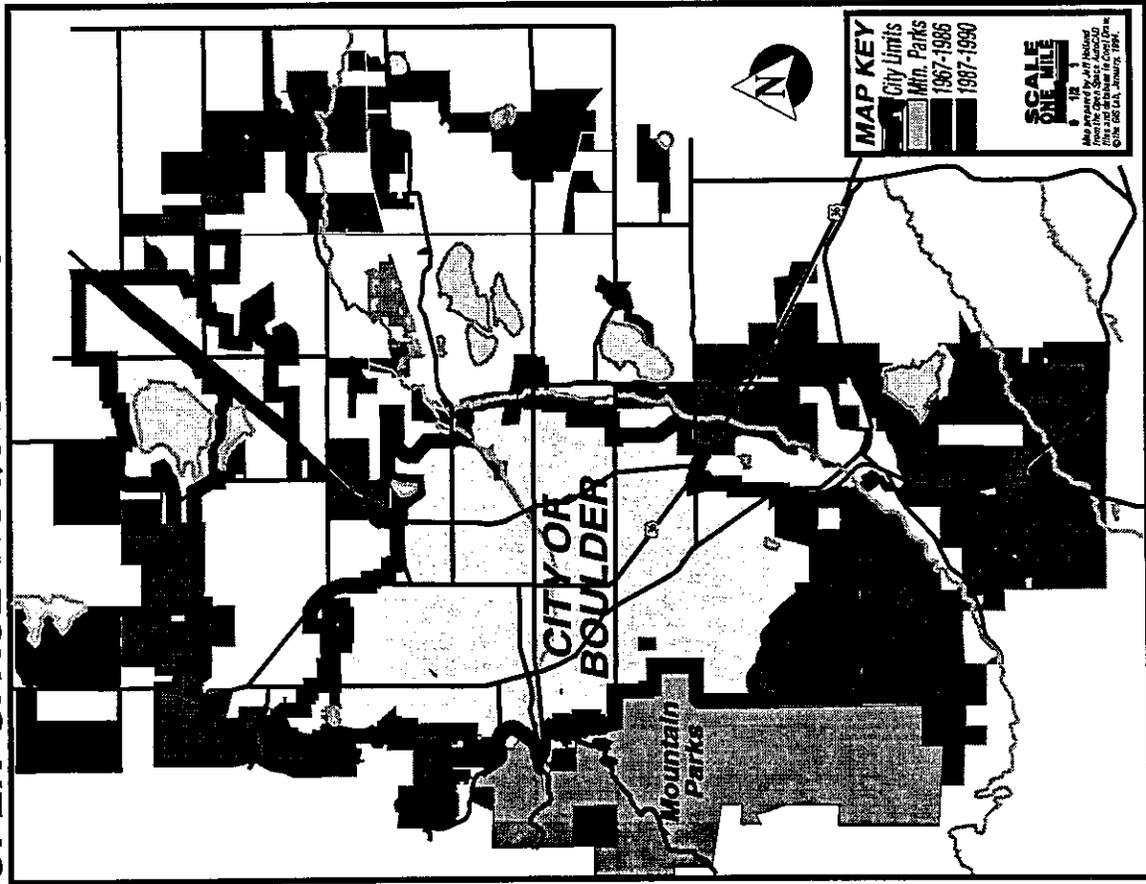
OPEN SPACE ACQUISITIONS 1977-1982



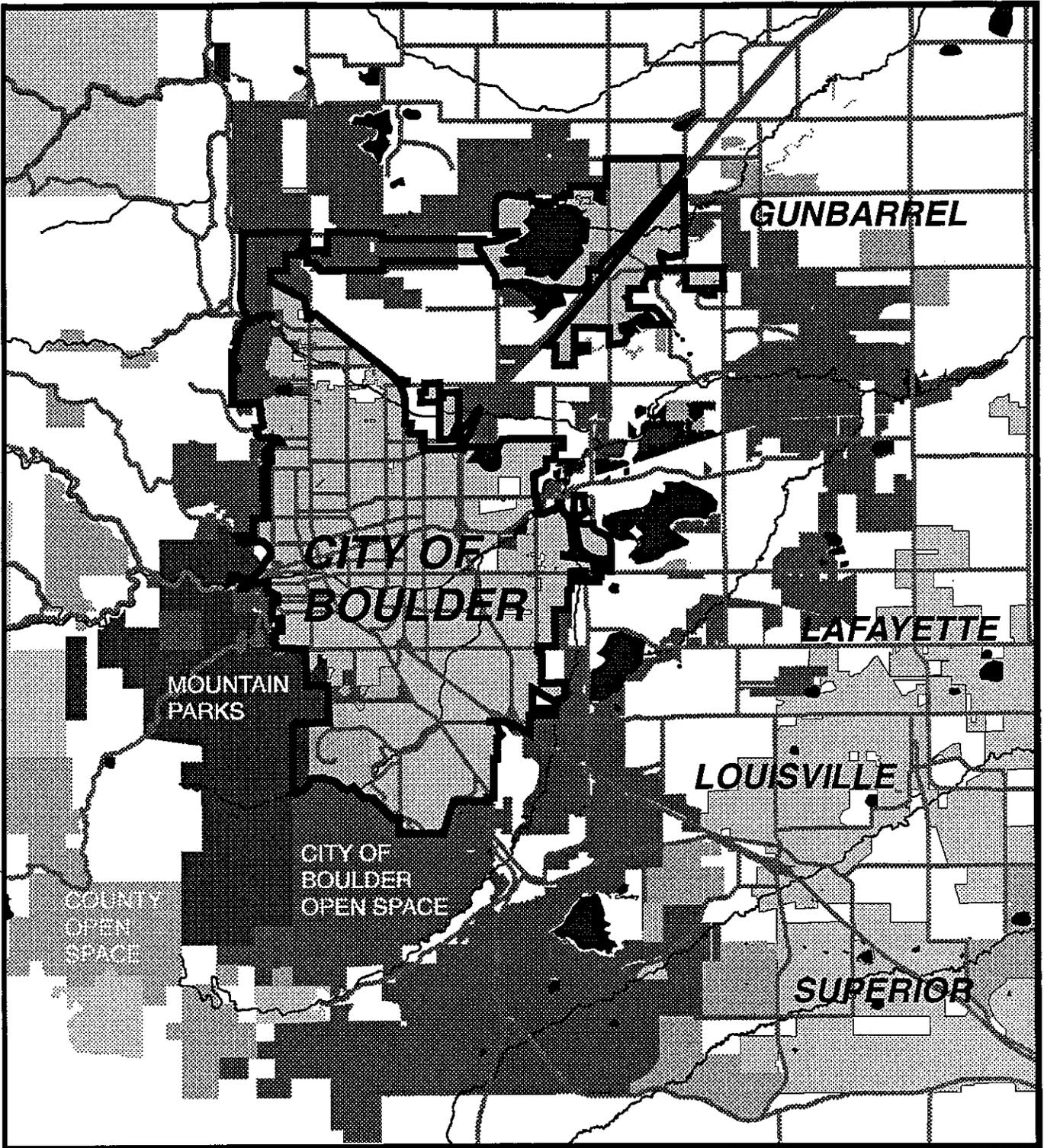
OPEN SPACE ACQUISITIONS 1991-1994



OPEN SPACE ACQUISITIONS 1987-1990

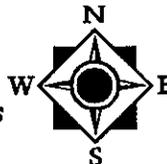


OPEN SPACE & RELATED PUBLIC LANDS



- City Open Space
- County Open Space
- Mountain Parks
- City Limits
- Creeks
- Fed/State Lands

FEBRUARY 1994



Scale in Miles
0 1/2 1

Map produced from the City of Boulder's Open Space/Real Estate Geographic Information System. Computer Cartography - J. Holland - The GIS Lab, Jan. 21, 1994
Original fieldwork completed on PSCO 1:400 1984 orthographic aerial photography, digitized and assembled in AutoCAD. Map created from DXF output in Corel Draw.
For further information, revisions or comments please contact the City of Boulder Open Space GIS Lab at 66 S. Cheryvale Road, Boulder CO 80303 (441-4495).

II. OPEN SPACE ACQUISITION AND LAND PROTECTION

The Open Space Department will cooperate with other agencies and the public to ensure lands of concern to Open Space are protected.

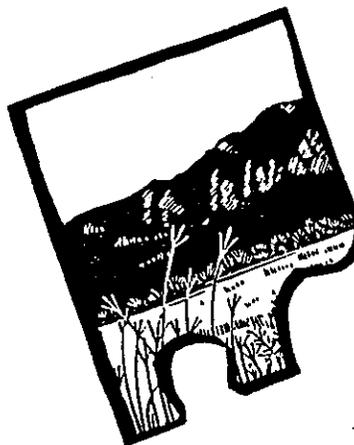
- A. Land and Water Rights Acquisition Criteria**
Open Space land is acquired through purchase, donation, annexation, condemnation, or other appropriate means, on a priority basis as funds are available.

The Department shall pursue acquisition of interests in the following resources (not listed in order of priority):

- Lands designated as Open Space by the Boulder Valley Comprehensive Plan;
- Lands designated for accelerated acquisition according to the 1989 referendum;
- Lands under immediate threat of compromising Open Space purposes as defined by City Charter;
- Other lands that meet Open Space goals and criteria set forth in the City Charter; and
- Water rights that may be used for the management of the land or for preservation of habitat.

Within the above categories, acquisitions will be pursued on the basis of:

- Lands under threat of immediate development or degradation;
- Lands currently for sale;
- Lands that can be acquired under favorable terms and conditions;
- Lands that would allow the Program to better meet its goals, such as areas critical for protecting a watershed, sites critical for the continued existence of a species, significant wetlands or habitat critical for wildlife;
- Lands providing continuity with existing Open Space properties, uses, buffers, ecosystems that complement existing Open Space, or lands that abut existing public lands; and
- Trails for appropriate passive recreation.



The Open Space system may include total or partial fee ownership of the land or partial interests in land that is not in City ownership or managed by the Open Space Department, such as development rights, conservation easements, and development rights restrictions.

The OSBT and City Council provide a public forum to make decisions about what interests may be acquired, the methods of acquisition and preservation, and alternatives for land protection. The OSBT makes acquisition recommendations to the City Council based upon goals of the Charter and policies set forth in this document (above), with the City Council having the final approval. The OSBT will also consult the Boulder Valley Comprehensive Plan (BVCP), which identifies as "designated Open Space" those lands which have been acquired or which may exhibit one or more Open Space purposes. These land use designations may be updated periodically based upon recommendations made by the OSBT, and reviewed by the City Council, the City Planning Board, the County Planning Commission, and the County Commissioners.

Protecting Open Space land and water resources and values requires attention to issues both within and outside of Open Space properties. This land protection policy addresses what land or interests in land need to be acquired, or other methods of protection in addition to outright purchase that may be appropriate to achieve the Open Space mission.

B. Open Space Acquisition Process

Open Space acquisition is guided by input from citizens, the OSBT, Open Space staff, City Council, and requests for joint acquisitions from other agencies, such as Boulder County Parks and Open

Space. The Open Space staff identifies alternative methods of protecting or using specific properties. It also identifies the minimum interests necessary for these purposes, and evaluates/ proposes priorities for acquisition of land or interests in land subject to OSBT and City Council approval. Acquisition procedures are subject to all applicable federal, state, and local statutes and regulations, City ordinances and regulations, City Charter restrictions, and Department policies.

Open Space can be protected through:

- Cooperative approaches, such as intergovernmental agreements, and other measures that do not involve acquisition of any interest in real property;
- Acquisition of less-than-fee interests, such as conservation easements, rights-of-way for access, or development rights; or
- Acquisition of fee interests, occasionally with arrangements for some rights to be reserved by the grantor, such as leasebacks or life estates.

When Open Space interests are to be acquired, the Department uses various techniques as authorized by the City Council including:

- Purchase with designated Open Space sales tax revenues, state lottery funds, including the Great Outdoors Trust Fund, or other funds as may be deemed appropriate by the City Council;
- Acceptance of donation or bargain sale;
- Conveyance as a condition of annexation or other discretionary review;
- Transfer from other governmental agencies; and
- Condemnation.

Fee ownership provides the greatest flexibility for management and resource protection. In some areas or circumstances, continued private ownership and use of protected land, subject to restrictive easements, may be consistent with Open Space purposes. For example, privately managed farming or ranching or limited single-family residential use allowed under the terms of a permanent conservation easement may be consistent with the goals of the Open Space program.

When private land is proposed for acquisition, the Department will make every effort to reach an

agreement with the owner on the terms and the purchase price. If an agreement cannot be reached, and the acquisition is considered critical to the health, safety, and welfare of the citizens, Open Space staff will take further steps in accordance with local, state, and federal laws, subject to Council direction, to proceed with the acquisition. Condemnation is generally considered a last resort and will be referred to the appropriate Boards for recommendations and shall be submitted to City Council for approval.

The identification of appropriate land protection techniques will be based on a careful analysis of long range goals for preservation and use. This will require a clear definition of which public and private uses of the land are compatible with Open Space goals and objectives now and in the future.

Recommendations by Open Space staff about appropriate protection measures may include an analysis of the benefits, which may include habitat and environmental protection, aesthetic and/or buffer needs, ability to attain resource management goals, permanence of protection, appropriate passive recreation opportunities, or effect on quality of life in the community. Short- and long-term costs for operations, maintenance, management, monitoring and enforcement will be considered, along with the initial purchase price. Costs to the Open Space program of future development impacts if the land were not purchased may also be considered. Both fee ownership and alternative methods of protection require a commitment to maintenance and monitoring. Decisions about what protection methods are cost effective will be based on objective case-by-case evaluations rather than broad generalizations.

Recommendations for alternative methods of land protection will include consideration of costs, available Open Space resources, individual resource values, and need for public access, if any. Fee purchase will usually be considered necessary and appropriate when other means of protection are determined to be inadequate.

Acquisition may be precluded or delayed by budgetary constraints or other priorities. The Open Space staff will seek to minimize harmful impacts of use and development of private lands through cooperative efforts with landowners. Cooperation with state, local, and federal governments will be used to help protect Open Space resources. Although some alternatives to fee purchase, such as intergovernmental agreements, may not ensure permanent protection, they may be considered where appropriate.

C. Acquisition of Mineral and Water Rights

The Department will attempt to acquire mineral and water rights associated with or of benefit to its land interests if financially feasible, and if such purchase is consistent with the objectives and priorities of the Open Space program.

D. Hazardous Materials and Toxic Waste Surveys

Identification of potential hazardous waste problems will be included in the site evaluation/acquisition process. The Open Space staff may contract with third parties to survey potential acquisitions for hazardous materials and toxic wastes. Clean-up responsibilities will be articulated in the acquisition documents.

E. Property Maintenance Needs Assessment

As part of the acquisition process, Open Space staff may assess the maintenance needs for the property.

F. Disposal of Land

Because the purpose of the Open Space program is to preserve open lands in perpetuity, removing or modifying Open Space land from Open Space purposes conflicts with the mission of the program. Therefore, no interest in Open Space land may be disposed of without an affirmative recommendation of a majority of the Open Space Board of Trustees and approval by the City Council. The procedure for disposal of Open Space lands is found in Section 177 of the City Charter. The OSBT's Easement Request Guidelines must be followed before easements are granted.

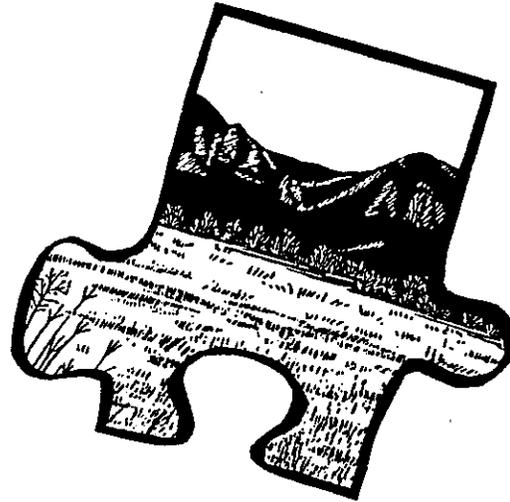
III. OPEN SPACE PLANNING AND MANAGEMENT

The planning process used to manage Open Space is outlined below. The planning levels are listed from general to specific. The more general plans and policies are conceptual and less likely to change over time, while the more specific plans are responsive to changing conditions. The prescriptions outlined in planning documents will provide guidance in budgeting.

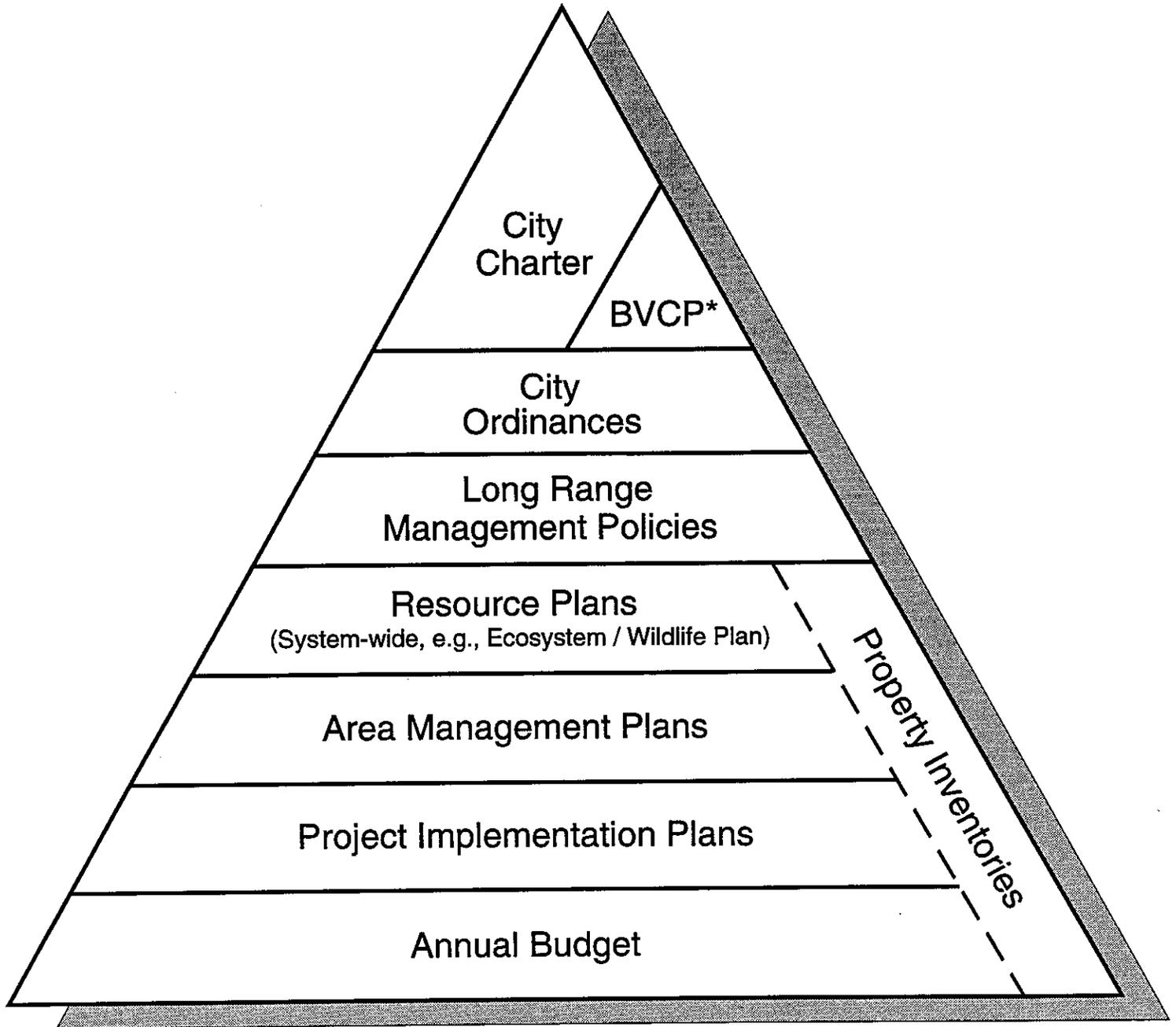
To support the planning process, inventories of Open Space real property interests will be made, maintained, and revised as necessary. These inventories may include a description of the properties and assets such as water and mineral rights, the nature and significance of the resources, existing uses and conditions, adjacent land uses, legislative and contractual requirements, and the status of cooperative planning beyond Open Space jurisdiction. Issues, needs for additional information, and specific management goals will also be recorded in the inventory. All components of the inventory will be monitored continuously.

A. Planning Levels

1. **City Charter.** Defines the mission of the Open Space program, i.e., the preservation of lands of interest to the City of Boulder as described in Chapter 1 of the LRMP.
2. **The Boulder Valley Comprehensive Plan.** Contributes to the Open Space mission. States that the environment of the Boulder Valley is a critical asset that must be preserved and protected, and provides the framework within which growth and development may be permitted to take place.
3. **City Ordinances.** Establish rules for regulation and enforcement.
4. **Long Range Management Policies.** Expand on the City Charter goals for Open Space and provide broad, long-term guidance for planning and management efforts. The LRMP provides general policy direction for a 20-year period and are updated every five years.
5. **Resource Management Plans.** Provide guidance on how to manage a specific resource throughout the entire Open Space system. Examples include plans for managing ecosystems, and plant or animal species.
6. **Area Management Plans.** Provide guidance on managing all the resources of a geographic area. Examples would be plans for managing the Eldorado Mountain area, South Boulder Creek, or Boulder Creek.
7. **Project Implementation Plans.** Define the objectives and steps for implementing a specific project, including schedules and budgets. They are used for project implementation and are interrelated with the annual budget.
8. **Annual Plan and Budget.** Describes the priorities for the coming year, and allocates resources accordingly. The priorities will be proposed by the Open Space staff and Director after considering available budget, the identification process, applicable management plans, and the Open Space mission. The priorities and budget will be reviewed annually by the OSBT. Its recommendations will be submitted to the City Council during the Capitol Improvement Project process and its annual budget approval process. Priorities consistent with the City Charter will be updated annually or as directed by the City Manager, OSBT, or City Council.
9. **Property Inventories.** Contain information organized by property. This information will be used in planning and management decisions.



OPEN SPACE PLANNING DOCUMENT RELATIONSHIPS



* Boulder Valley Comprehensive Plan

B. Planning Principles

- 1. Involve the Public.** Input from individuals and organizations will be encouraged; opportunity for public comment will be provided throughout the planning process. A variety of citizen participation techniques may be used.
- 2. Involve other Government Agencies.** Ongoing communication with other government agencies will be fostered. Appropriate government agencies, both within and outside of the City, will be asked to comment on proposals.
- 3. Employ Team Approach.** Interdisciplinary teams of Open Space personnel will be used to better ensure consideration of all pertinent issues. These teams may include members from other City departments or consultants with special expertise. Professionals from other agencies, planners, and others possessing specialized knowledge of Open Space resources may serve as advisors to the planning team. A team leader from the Open Space staff will be designated to coordinate each team effort. The Open Space staff will prepare and determine the content of all plans.
- 4. Use Best Information.** The best information available will be used in decision making and planning subject to budget and time constraints. Information critical to the planning and management of Open Space lands will be continuously compiled, analyzed and updated for natural and cultural resources, uses and impacts. These data will serve as an information base for formulating proposals, evaluating alternatives, and making decisions for management planning. Sources of information may include Open Space staff, other City staff, research projects, consultants, other agencies, environmental and professional groups, the general public, and others.
- 5. Utilize a Geographic Information System.** A geographic information system (GIS) will be utilized to assist in understanding and communicating spatial information. When obtaining information from other governmental agencies and outside parties, Open Space staff may require the information to be compatible with Open Space software.
- 6. Evaluate Alternatives.** Planning and decision making will consider a range of alternatives and perspectives. Ecologically responsible, practical, innovative, and cost-effective alternatives shall be considered. A no-action alternative will always be considered. The planning team will weigh the benefits and costs of each alternative before making a recommendation. The Department will document the decision-making process so the public and decision makers will understand the basis of the recommendation.
- 7. Employ Ecosystem Approach.** Planning and management of Open Space will occur within the context of an ecosystem approach as described in Section IV. A. 1. An ecosystem approach includes considering all of the interactions and connections between natural areas, and between developed and undeveloped areas.
- 8. Manage Competing Purposes.** Some proposals regarding management of Open Space properties may include the consideration of competing purposes. The Charter does not specify the relative priorities of the purposes. Weighing of potential benefits and impacts of proposed management actions will include consideration of the long-term viability and health of natural ecosystems.

IV. NATURAL RESOURCE MANAGEMENT

The Department shall manage the natural resources of the Open Space system to maintain, restore and preserve native ecosystems. As defined in the City of Boulder Charter and the BVCP, these systems include plants, animals, water, soil, terrain, geologic formations, aesthetic values such as scenic vistas, and natural buffers between cities. The Open Space staff is committed to working cooperatively with other agencies, academia, concerned citizens, interest groups, and others in the study and management of its natural resources to achieve the Open Space purposes.

A. Basic Management Concepts

- 1. Ecosystem Approach.** Natural resources shall be managed to maintain fundamental ecological processes, as well as for individual species and features. Open Space resource managers ordinarily will not focus on the preservation of individual species, except threatened or endangered species, or individual natural processes; rather, managers will attempt to balance all the elements and processes of naturally evolving ecosystems, including the natural abundance, diversity, and ecological integrity of the plants and animals.

Just as all elements of a natural system must be recognized as important, ecological change shall be recognized as an integral part of the functioning of natural systems. The Open Space program shall work to preserve this natural process. Naturally evolving plant and animal populations and the human influences on them will be monitored to assess the ecological conditions and trends. Appropriate responses will be made.

Management actions may be necessary to restore ecological processes. The Open Space Department will work to restore natural regimes disturbed as a result of human activities. Removal of non-native (exotic) species, reintroduction of native species, and prescribed burning of grass and forest land are examples. The extent and type of management actions undertaken to protect or restore Open Space ecosystems will be based on the management goals and prevailing scientific theory and methods. If human life or property are at risk, appropriate management actions will be taken.



Management actions shall be taken that weigh human use and the protection of natural resources, including the health and function of ecosystems, habitat, or resident plants or animals. Public safety shall also be weighed. Management actions shall be appropriate to the situation and can range from educational efforts to permanent closures of an area.

Facilities required to meet Open Space program goals will be designed and constructed to minimize impacts on natural processes. (See Chapter X, Open Space Facilities, Facility Planning, and Facility Construction).

- 2. Interdisciplinary Planning for Natural Resource Management.** An interdisciplinary team of Open Space personnel will develop and periodically update resource management plans. In these plans the staff will identify, define, and recommend implementation techniques to accomplish the monitoring, inventory, research, mitigation, and enforcement actions required to protect Open Space natural resources and natural processes, achieve the Open Space program goals, and regulate Open Space use.
- 3. Science and Research.** Scientific research by qualified individuals or organizations will be encouraged consistent with Open Space goals and research procedures and suitability of the proposed site. Scientific studies may also be conducted by consultants at the request of Open Space staff. Research will provide a scientific basis for planning and management decisions. As more land is lost to development, Open Space lands will become more important as

environmental baselines. Research activity requires an Open Space research permit subject to criteria specified in the Open Space Department research guidelines. (See Chapter IX Use of Open Space, Science and Research, Conduct of Research.)

4. **Resource Inventories and Surveys.** Inventories of plants, animals, soils, natural and artificial disturbance, and other elements will be completed and iteratively updated, based on field studies, anecdotal information, and research.

B. Program Cooperation

The Open Space Department will seek the cooperation of others to preserve and protect Open Space resources such as wetlands, habitat critical for plants and animals, endangered species and air quality. Cooperation may involve coordinating management activities among Open Space and other departments, entities, or individuals for adjacent lands, areas critical to plants and animals, integrating management practices to reduce conflicts, coordinating educational activities, coordinating research, sharing data and expertise, and encouraging protection of essential habitats adjacent to Open Space boundaries. The Open Space program may also work with other entities to minimize the impacts of outside influences, such as noise, light, water pollutants or flows, toxic substances, threats to scenic views, exotic species, pesticides, and reducing fire hazards. The following are examples of opportunities for cooperation.

1. **Natural Areas.** Prime examples of natural ecosystems and areas with significant genetic resources and habitat critical to native plants and animals may be recommended to the OSBT for designation as a State of Colorado Natural Area. Open Space will cooperate with public land managers and private land owners in identifying sites for this designation. Natural Areas will be managed to provide the greatest possible protection of site integrity. Activities and access to natural areas will be restricted to nondestructive research, education and other activities that will not detract from the natural or research values of such areas.
2. **National Natural Landmarks.** Open Space will cooperate with the National Park Service in managing any geologic or ecologic site that has been nominated by the Secretary of the Interior for inclusion in the National Registry of Natural Landmarks.

3. **Biosphere Reserves.** Open Space lands that are components of regional ecosystems believed to be internationally significant examples of one of the world's natural regions may be nominated for affiliation with the U.S. Man and the Biosphere Reserve Program. General guidance for that program is provided by the United Nations Educational, Scientific and Cultural Organization (UNESCO). Working within applicable programs, the Open Space staff may assist in determining the suitability and feasibility of including Open Space land in U.S. biosphere reserve nominations, educational activities, resource management, investigations of the human-wildland interface, and biodiversity research.

C. Biological Resource Management

1. **Protection of Animals.** Native animals are defined as all animal species that as a result of natural processes occur or occurred locally. Non-native (exotic) animals are those species that have been introduced into native ecosystems through human activities. The Open Space program's goal will be to seek the perpetuation of the native animal life, including mammals, birds, reptiles, amphibians, fish, insects, arachnids, mollusks, and crustaceans as part of the natural ecosystems of Open Space lands. The emphasis shall be on minimizing human impacts on the native animal populations and their dynamics.

Native and non-native animal populations will be protected from harvest, removal, destruction, harassment, or other harm through human action.

Removal of individual animals within a population may be permitted only:

- Where fishing is not specifically prohibited;
- When ecosystem integrity or human safety is threatened by animal populations or individual animals;
- When removal is part of an Open Space research project described in an approved resource management plan or is part of research being conducted by others who have been issued an appropriate collection permit;
- When such removal is incidental to other approved uses of Open Space lands (For example, harvesting hay may result in losses

of birds or small mammals; Losses should, however, be minimized);

- When it is part of an approved attempt to increase populations of native species by removing exotic species;
- When it is part of an approved attempt to increase or support rare and endangered native species.

- 2. Population Management.** Natural processes will be relied on to control populations of native species to the greatest extent possible. Unnatural concentrations of native species caused by human activities may be managed if the activities causing the concentrations cannot be controlled. Non-native species may also be managed to prevent the displacement of native species.

Animal populations or individuals may be managed when they present a direct threat to human safety and health or when such management is necessary to protect property and natural resources. The decision to initiate a control program will be based on scientifically valid resource information obtained through research or consultation with knowledgeable individuals. When there is a conflict between humans and animals, the curtailment or modification of human use will be considered. The removal of problem animals may also be considered under these circumstances. The need for, and results of, controlling animal populations will be evaluated and documented by research studies within the context of the resource management planning process. This process will include the assessment of impacts of the control methods on non-targeted as well as targeted elements of the ecosystem.

Management measures may include live trapping, habitat management, biological control, and extermination by Open Space personnel or authorized agents. Open Space staff may consult with the Colorado Division of Wildlife (CDOW) and other public and private agencies on ways to manage animal populations.

- 3. Management of Migratory Animals.** Many species of vertebrates and invertebrates regularly travel from one location to another at yearly or other intervals. Migratory species include, but are not limited to, bats, elk, frogs, birds, and butterflies. Migratory species require two or more significant habitats. Habitats on Open

Space may provide only one of the major habitats of the species; therefore, survival of migratory species on Open Space lands may depend on the existence, quality, and protection of habitats outside Open Space boundaries.

The Open Space program will seek to ensure the preservation of habitats critical to migratory species on Open Space lands. Management actions may include:

- Participation in regional land use planning;
- Cooperating in population monitoring and data gathering for the U.S. Fish and Wildlife Service and the Colorado Division of Wildlife;
- Presentation of information about species' life cycles, ranges, and population dynamics in Open Space educational programs.

- 4. Aquatic and Wetland Ecosystems and Fisheries Management.** The management of aquatic ecosystems will aim to preserve or restore aquatic habitats and the abundance and distribution of native species, including fish, together with associated terrestrial habitats and species. Aquatic and wetland ecosystems, fisheries, and associated riparian areas will be managed for the protection of their natural integrity.

Fishing may be restricted in certain waters and at certain times if it is determined that such actions are needed:

- To protect the natural integrity of aquatic ecosystems, such as riparian areas and wetlands;
- To protect rare, threatened, or endangered plant or animal species in the water or adjacent habitat;
- To meet Open Space objectives for scientific study, interpretation, environmental education or appreciation of aquatic ecosystems;
- To protect and restore habitats for native fish;
- To maintain natural distributions, densities, age-class distributions and behavior of fish or native wildlife species that use fish for food.

Reservoirs and, in some cases, channelized or otherwise manipulated streams are altered environments that may reduce populations of some native fish species and encourage others. The Department may cooperate with the CDOW or other agencies or individuals to develop appropriate management programs for waters on Open Space land. However, environments created by the alteration or impoundment of natural waterways will give precedence to native species over non-natives wherever natives are adaptable to the altered environment.

Streams and reservoirs may be stocked with non-native species of fish only when it has been determined that non-natives already are present and established and where scientific data indicate that introducing additional non-natives would not diminish native plant and animal populations. Reservoirs that have been historically stocked with non-native fish may continue to be stocked with the same species if the species is not allowed to escape to streams or other water bodies.

5. **Landscapes and Plants.** The Department will seek to perpetuate native plants as part of natural ecosystems. Landscapes and plants may be manipulated only when necessary to accomplish approved management goals. To the maximum extent possible, plantings, except for agricultural crops, will consist of species that are native to local ecosystems. Landscapes and plants may be manipulated to maintain habitat for native plants with preference given to threatened or endangered species. Manipulation of existing plants will be carried out in a manner designed to restore or enhance the functioning of the native plant and animal communities.

Landscape conditions caused by natural phenomena, such as landslides, high winds, floods, tornadoes, and wildfires, may be modified if required for habitat restoration, public safety, for reconstruction of facilities such as trails, or to protect essential cultural or natural resources. Revegetation with native species to prevent erosion, soil loss, and siltation may be done as part of a management plan.

Terrain and plants may be manipulated where necessary to restore natural conditions on lands altered by human activity. Management activities may include, but will not be restricted to:

- Removing constructed features, restoring natural gradients, and revegetating sites with native species;
- Restoring a natural appearance to areas disturbed by activities such as fire, fire control, and removal of trees that present a hazard;
- Rehabilitating areas disturbed by human use;
- Maintaining open areas, grasslands, and meadows that were formerly maintained by natural processes.

Wherever possible, revegetation efforts will use seeds, cuttings, or transplants from species and gene pools native to the Boulder Valley. Where a natural area has become so degraded that restoration with native species has proven unsuccessful, similar native species may be used. Non-native species may only be used under the limitations described in IV. C.9.a.

In specific areas screen plantings of plant varieties described in the previous paragraph may be used to protect the land from undesirable impacts of adjacent land uses.

Landscapes and plants in areas that have been developed to meet the needs of human use and management may be manipulated as necessary to achieve the purpose of the facility. Native species will be used to the maximum extent possible.

6. **Genetic Resources.** The Open Space program will strive to protect habitat critical for the full range of genetic types (genotypes) of plant and animal populations native to Open Space lands by perpetuating natural evolutionary processes and minimizing human interference with evolving genetic diversity.

The introduction of native plants and animals will be accomplished by using individuals taken from populations as closely related as possible, both genetically and ecologically. Individuals will be taken or selected from similar habitats in adjacent or local areas, except where the management goal is to increase the genetic variability. Transplants for purposes of restoring genetic variability through gene flow between native breeding populations will be preceded by research on the genetic compatibility of the populations.

The need to maintain appropriate levels of genetic diversity will guide decisions on what actions to take to manage isolated populations of species or to enhance populations of rare, threatened, or endangered species. All resource management actions involving planting or relocating species, subspecies, or varieties will be guided by knowledge of local adaptations, species ranges, habitat requirements, and detailed knowledge of the ecological histories of the sites.

When individual plants or animals must be removed as specified in Open Space management plans, the Department will consider the need to maintain appropriate levels of genetic diversity in the residual populations of the species.

7. Restoration of Native Plants and Animals.

The Department will strive to restore extirpated native species to Open Space lands, subject to OSBT review and recommendation, whenever all the following criteria are met:

- Analysis based upon scientific data justifies the reintroduction of species as essential to maintaining the functions of a native ecosystem;
- Habitat sufficient to support the species either exists or can reasonably be restored in Open Space land and, if necessary, on adjacent public lands and waters;
- Sustainable populations can be achieved in a reasonable length of time;
- The species does not pose a serious threat to Open Space resources, or persons or property outside Open Space boundaries;
- The species disappeared, or was substantially diminished, as a direct or indirect result of human-induced change to the species population or to the ecosystem.

Such programs will be carried out in cooperation with adjacent land managers and other affected agencies, organizations, or individuals.

8. Threatened or Endangered Plants and

Animals. Consistent with the purposes of state and federal endangered species acts and with the City Charter, the Department shall promote the conservation of species within Open Space boundaries. Active management programs may

be conducted to perpetuate the natural distribution and abundance of species of special concern as determined by federal, state, county, and natural heritage lists, and ecosystems on which they depend. Open Space staff shall control human access to and use of critical habitats, and may close such areas to protect critical habitats. The Department will cooperate with the U.S. Fish and Wildlife Service and the Colorado Department of Natural Resources, the lead agencies in matters pertaining to federally listed threatened and endangered species, and appropriate county agencies in activities such as the delineation of critical habitat on Open Space lands, and will participate in recovery efforts as appropriate.

- 9. Non-Native Plants and Animals.** Non-native species are plants and animals indigenous to other regions that are known to occur as a result of direct or indirect, deliberate or accidental actions by humans or other animals. (Cultivated crops are excepted. See Agricultural Management, Chapter V, for management of human-introduced crops.)

a. Introduction of Non-Native Species.

Intentional introduction of a non-native species will be undertaken only after rigorous review of such a proposal by qualified Open Space staff and/or appropriate specialists. The OSBT shall be notified of the proposal before its implementation.

Non-native plants and animals shall not be introduced into Open Space I where they may be used to control eands exceptstablished non-native species. Non-native species of plants and animals may be introduced to carry out Open Space goals only when all the following conditions exist:

- Available native species will not meet the needs of the management program;
- Based on scientific advice from appropriate federal, state, and local governmental and nongovernmental sources, the non-native species will not become a pest;
- Such introductions will not spread, or disrupt adjacent native plant and animal communities and associations.

b. Management of Existing Non-Native Species. Management of populations of non-native plant and animal species, up to and including eradication, will be undertaken wherever such species threaten Open Space resources or public health and when control is prudent and feasible. Management of non-native species will be directed by an Open Space Integrated Weed Management Plan, or an Open Space Integrated Pest Management (IPM) Plan and will occur in compliance with the County Undesirable Plant Management Plan, the City IPM policy, and the Colorado Weed Management Act. Examples of threatening situations may include:

- Posing a public health hazard as determined by the appropriate public health authority;
- Damaging historic or archeological resources;
- Interfering with natural processes and the perpetuation of natural features or native species, especially those that are endangered, threatened, or otherwise unique;
- Interfering with the management of Open Space lands.

High priority will be given to the management of non-native species that have a substantial negative impact on Open Space resources and that can reasonably be expected to be successfully controlled; lower priority will be given to non-native species that have almost no impact on Open Space resources or that probably cannot be successfully controlled. The decision to initiate a management program will be based on existing and, where necessary, newly acquired scientific information that identifies the status of the non-native species, demonstrates its impact on Open Space resources, and indicates alternative management methods and their probability of success. A management plan will be developed and implemented according to established planning procedures and, where appropriate, will include provisions for public review and comment. Care will be taken that programs to manage non-native species do not result in significant damage to

native species, natural ecological communities, natural ecological processes, or historic objects.

10. Pests

a. Pest Management. Pests are animal or plant populations that interfere with the natural functions or agricultural purposes of Open Space lands. All pest management activities shall be in accordance with the City of Boulder's Integrated Pest Management Policies and the Open Space Integrated Pest Management Plan or Integrated Weed Management Plan.

Strategies for managing pest populations depend on whether the pest is a non-native or native species. Many fungi, insects, rodents, other species, and diseases that may be perceived as pests are native plants, animals, or conditions existing as natural elements of the ecosystem. Native species that are considered pests in certain situations will be allowed to function unimpeded except where management is desirable to:

- Prevent the loss of the host or host-dependent species from the ecosystem;
- Manage the spread of the pest when it is determined that spread of the pest presents an unacceptable threat to significant natural or agricultural values or other Charter purposes;
- Conserve threatened, endangered, or unique plant specimens or communities;
- Preserve, maintain, or restore the historical integrity of cultural resources;
- Manage human health hazards as defined by the Centers for Disease Control, Colorado Department of Health, Boulder County Health Department, or to protect against a significant threat to public safety.

b. Integrated Pest Management. Integrated pest management (IPM) is the coordinated use of environmental information with available pest management methods to prevent unacceptable levels of damage, with the least possible hazard to people, property,

and the environment. IPM procedures shall be used to determine when to control pests and whether to use mechanical, physical, chemical, cultural, biological, or other means.

The decision to use a chemical pesticide such as insecticide, herbicide, or rodenticide will be based on a review by resource management staff of all other available options and a determination that these options are either not acceptable or not feasible. Chemical pesticides that are not specifically exempt from reporting (regardless of the identity of the applicator) will be used only with prior annual approval by the Open Space Director. The applicator of such pesticides is subject to the Federal Insecticide, Fungicide and Rodenticide Act, Environmental Protection Agency regulations in 40 CFR, Occupational Safety and Health Administration regulations, and applicable state and local statutes, ordinances, and regulations. A report on pesticide and herbicide use on Open Space lands will be submitted annually to the OSBT and the City Council.

D. Fire Management

Wildfire is a powerful phenomenon with the potential to alter drastically the flora and fauna of Open Space and affect neighboring land. Uncontrolled wildfires where wildlands are adjacent to developed areas can have high economic costs and environmental and aesthetic consequences. Fire is a natural process which can be used as a tool to achieve land management goals by approximating natural processes. Open Space fire management programs will be designed around resource management and community objectives subject to the limitations of equipment, personnel, and safety considerations. These programs will be further defined in the City's wildfire fire management plan. The City's wildfire management plan will be reviewed periodically by the OSBT as it relates to Open Space. The department will coordinate its plan with other city and government agencies.

Fires on Open Space will be classified as wildfires, prescribed fires, or prescribed natural fires.

1. Fire Types

- a. Wildfires.** Wildfires are fires of natural or unauthorized human origin that do not meet an approved prescription or resource

management plan. The Wildland Fire Coordinator, in conjunction with Open Space staff, will conduct wildfire prevention and education programs. The Open Space staff will work with adjacent landowners, land managers, and local agencies to reduce the potential impacts of wildfire on human life, private property, and the cultural and natural resources of Open Space.

All wildfires (those not defined below as prescribed natural fires or prescribed fires) will be suppressed where possible. Suppression techniques that least damage natural resources will be considered and employed subject to considerations of fire fighter and citizen safety. An Open Space resource advisor will be assigned to any wildfire on Open Space to participate in the evaluation and implementation of fire suppression alternatives.

- b. Prescribed Fires.** Prescribed fires are deliberately ignited by staff under the direction of the Wildland Fire Coordinator according to strict guidelines to achieve specific land management. When properly administered, prescribed fires can contribute to Open Space land management objectives. In some instances they are the preferred means of managing some resources. Prescribed fire may be the most cost-effective way to eradicate noxious weeds, reestablish or improve native vegetation, and mitigate wildfire hazards and fuel loads. Prescribed fires will be recommended by the OSBT and will be carried out only under written and approved prescriptions under the direction of the Wildland Fire Coordinator.

Any deviation from the conditions set in the prescription will result in cancellation of the burn, either before or during burning operations. All prescribed fire management plans will consider effects on air quality, visibility, fire fighter safety, public safety, and resource management objectives. A major component of a prescribed burn plan is smoke management. Minimizing the impacts of smoke will be a major objective for all Open Space prescribed burns. All Open Space prescribed burns will comply with local, state, and federal air quality guidelines.

- c. Prescribed Natural Fires.** Prescribed natural fires are fires of natural origin

permitted to burn under certain conditions to achieve predetermined resource management objectives. Wildfires originating in areas that meet all prescription parameters may, with the prior written agreement with managers of adjacent land and wildland fire control agencies, be reclassified as prescribed natural fires and managed in line with the approved fire management plan for that area. All management plans for prescribed natural fires will be recommended by the OSBT.

2. **Fire Suppression Contracts.** Suppression techniques, resource damage and restoration success (if restoration is recommended) for all Open Space fires will be documented and evaluated. Wildfire suppression contracts with cooperating agencies will be reviewed annually and modified as necessary to facilitate the fire management activities necessary to protect Open Space resources.
3. **Wildfire Training.** All wildfire suppression training on Open Space will be coordinated by the City's Wildland Fire Coordinator. Basic fire fighter and fire management training courses will be offered regularly for all Open Space personnel. Only qualified personnel will be permitted to participate in active fire suppression activities.

E. Water Management

1. **Water Rights.** Water for the preservation, management, and use of the Open Space system will be acquired and used in accordance with legal authority. The Department will generally obtain water rights with the purchase of irrigated lands on which the water rights have historically been used. Water rights separate from Open Space land acquisitions may be purchased from willing sellers when those rights can be used consistent with Open Space goals. During the acquisition of water rights, separately or with land acquisitions, the Department will request from the seller an affidavit describing historic uses.

The Department will maintain the integrity of all water delivery and storage structures on its property and cooperate with the office of the State Engineer to the greatest extent possible to meet applicable requirements. When appropriate, the Department will coordinate activities with environmental goals, the City of Boulder 1988 Raw Water Master Plan, the Non-Point Source

Pollution Control Program, and other adopted plans.

The Open Space Department will responsibly manage water for beneficial uses to ensure protection of water rights to help achieve the purposes of Open Space as directed by the City Charter. To meet these purposes, the Open Space program may at some future date wish to file an application with the appropriate water court for change of use, for example, from agricultural to storage or instream flow. Such a change request would include adequate documentation to demonstrate a change from a previously decreed use.

2. **Water Quantity and Quality.** The Department will seek to perpetuate surface and ground waters as integral components of Open Space aquatic and terrestrial ecosystems. Open Space waters, either surface water or ground water, will be withdrawn for consumptive use only consistent with Open Space management goals and uses specified in the City Charter, in accordance with Open Space management plans, and in accordance with the administration of the office of the State Engineer. Decisions regarding use of surface and ground waters will take natural processes and ecosystem functions into consideration and comply with county, state, and federal regulations.

The Open Space program will seek to restore, maintain, or enhance the quality of all surface and ground waters on Open Space lands consistent with the Clean Water Act, the City of Boulder Drainage Master Plan, and other applicable federal, state, and local laws and regulations. The quality of water originating within the boundaries of Open Space properties will be maintained through the following management actions:

- Adequate sewage treatment and disposal will be provided for all public use and administrative facilities;
- Human activities will be managed to control erosion;
- Agricultural leases will be managed to protect or enhance riparian areas, wetlands, and waterways on Open Space lands and to maximize the protection or enhancement of water quality whenever possible in accordance with the City of Boulder Non-Point Source Pollution Program;

- Toxic substances, such as pesticides, petroleum products, and heavy metals, will be managed to minimize the risk of water contamination;
- The nature and intensity of human use shall be regulated in certain areas and at certain times to protect water quality;
- Activities with high potential for point or non-point source water pollution will be regulated and controlled as necessary.

Consistent with state law, the Department will maintain the integrity of its water resources. This may include monitoring stream diversions, adjacent land uses, and ground water withdrawals and their effects on the occurrence, quantity, and quality of water necessary for the continued preservation of Open Space biota and ecosystems.

The Department may seek the support of, or recommend agreements with, other agencies, governing bodies, or individuals, as appropriate, to secure their cooperation in avoiding degradation of water resources.

3. **Floodplains and Wetlands.** Adverse impacts to floodplains and wetlands will be avoided wherever possible. Where avoidance cannot be achieved, mitigating measures will be implemented to minimize potential harm to the natural values of floodplains, riparian areas, and wetlands in accordance with the City's Wetlands Ordinance and other applicable regulations. Losses to wetlands will be compensated by restoration or creation of similar habitats elsewhere according to the standards set forth in the Wetlands Ordinance and other applicable regulations.

The Department will:

- Develop inventory methodologies and conduct inventories of wetlands, riparian areas, and floodplains as needed on Open Space lands;
- Identify areas subject to flooding and take actions to limit risks to people and property, as appropriate;
- Inventory existing facilities and uses that affect floodplains, riparian areas, and wetlands and prepare plans for protection or restoration, as appropriate; and

- Identify native plants and animals that require these habitats and prepare plans for their protection.

F. Air Resource Management

1. **Air Quality.** The Department recognizes the importance of clean air to Open Space values. Vegetation, visibility, water quality, wildlife, historic and prehistoric structures and objects, and other elements of Open Space lands are sensitive to air pollution. Open Space staff will cooperate with appropriate agencies to perpetuate the best possible air quality in the Open Space system.

Management activities may include:

- Cooperating with entities wishing to study air quality issues;
 - Evaluating air pollution impacts and identifying causes;
 - Ensuring healthful indoor air quality in Open Space facilities;
 - Planning and managing such activities as prescribed burns so as to minimize adverse impacts on air quality;
 - Minimizing soil loss and blowing dust by appropriate agricultural and soil management practices;
 - Minimizing vehicle use by Open Space staff and encouraging alternative transportation to reach Open Space.
2. **Noise.** The Department will strive to preserve the natural quiet and the natural sounds associated with the physical and biological resources of Open Space lands. The Open Space staff will monitor activities causing excessive or unnecessary unnatural sounds on Open Space lands. Use of equipment or sound devices that create noise disturbances are not consistent with the City Charter purposes.
 3. **Artificial Light.** The Department will cooperate with adjacent land owners and local government agencies to minimize the intrusion of artificial light onto Open Space lands. Artificial outdoor lighting, if provided for facilities, will be the minimum sufficient to satisfy basic safety requirements.

4. **Weather and Climate.** The Department may gather or cooperate with efforts to gather and maintain baseline climatological data for resource management purposes, including fire danger ratings.

G. Paleontological Resource Management

Paleontological resources, including both organic and mineralized remains in body or track form, will be protected and preserved for educational and scientific purposes in accordance with management plans and scientific research programs.

Paleontological research by the academic community will be encouraged and facilitated under the terms of a research permit provided that the proposed project will answer an important question about the resource and that information obtained through the research is made available to the Department.

Management actions will be taken to prevent illegal collecting and may be taken to prevent damage from natural processes such as erosion. Protection may include construction of shelters over specimens for on-site interpretation, stabilization in the field, or collection, preparation, and the authorized placement of specimens in Department or designated museum collections. The localities and geologic settings of specimens will be adequately documented when specimens are collected. Such information will be subject to confidentiality policies outlined in the Cultural Resources Guidelines.

H. Geological Resource Management

1. **Protection of Geologic Features.** Geologic features on Open Space will be protected. Certain geologic features may be monitored to determine if measures are needed to prevent or stop human-caused damage. The Open Space program will seek further protection of geologic features as outlined in Chapter IX, Use of Open Space, Development of Minerals, Oil and Gas, Coal, and Aggregate.
2. **Soil Resource Management.** The Department will preserve the soil resources of Open Space lands and prevent, to the extent possible, the erosion, physical removal, or contamination of the soil, or its contamination of other resources. Detailed soil maps defining the distribution of soil series will be used to provide interpretations needed to promote soil conservation and to guide management decisions by Open Space staff.

Impacts on soil resources will be monitored, as feasible. Management actions may be taken to mitigate adverse, potentially irreversible, impacts on soils caused by compaction, contamination, and erosion. Conservation practices will be implemented to reduce these impacts. Soil degradation will be minimized. If soil is imported, actions will be taken to avoid introduction of exotic species.

3. **Stream Management.** Geomorphological processes, such as erosion, deposition, and flooding, that are not influenced by human actions will be allowed to continue except where control measures are required by law or to meet Open Space purposes.

Open Space facilities and cultural and paleontological resources may be protected when threatened by geomorphic processes. To determine an appropriate course of action, Open Space staff will consider the nature and velocity of the geomorphic processes, including the threat, the significance of the process, alternatives for protection, and the effect on other natural resources.

Where erosion control is required by law, or where present facilities must be protected to achieve Open Space purposes, a natural-appearing and effective method will be used.

Control structures may be placed in areas subject to processes like erosion provided that the following conditions are met:

- The project protects Open Space resources;
- The project meets Open Space purposes;
- Alternative locations are not available;
- The project corrects the problem without the need for additional artificial control measures in its planned life span.

Where no practical alternative exists, steps will be taken to minimize safety hazards and harm to property and natural values.

V. AGRICULTURAL MANAGEMENT

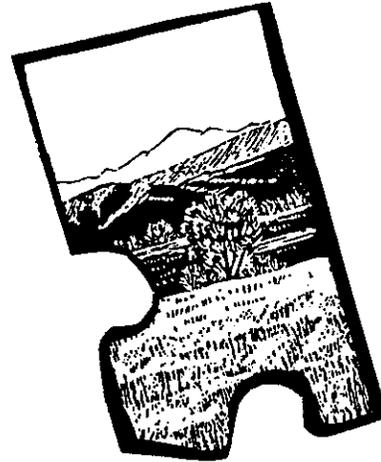
The Open Space program is charged in the City of Boulder Charter with responsibility for preserving land suitable for agriculture not only for agricultural uses, but also for its aesthetic value and its contribution to the quality of life of the community. The BVCP and the Boulder County Comprehensive Plan also promote the preservation of agricultural lands. Agricultural practices may also be used to achieve other Open Space resource management objectives.

The Open Space staff will strive for environmental and economic sustainability in the planning and implementation of agricultural activities on Open Space land. Wildlife, water quality and other resource management concerns will be integrated into all agricultural management plans. Agricultural management decisions will be based on historical agricultural uses, up-to-date scientific knowledge, current best management practices, sound ecological principles, appropriate community needs, and economic feasibility.

A. Resource Management and Sustainability

1. Land Management. The primary agricultural activities in Boulder County are raising grains, vegetables, livestock, and livestock feed. Appropriate Open Space properties will be evaluated for their suitability and sustainability for agricultural uses. Agricultural activities will be supported by management plans that will include consideration of

- Natural resource concerns;
- Sensitive plants, wildlife, and habitats critical to wildlife;
- Environmental compliance;
- Water resources, water quality, and water conservation;
- Soil conservation and/or restoration;
- Terrain and accessibility;
- Integrated pest management;
- Public health and safety;
- Management goals;



- Tract size;
- Cultural resources; and
- Passive recreational uses, where appropriate.

While preservation of agricultural uses and land suitable for agriculture is a specified purpose of the Open Space program, many historic agricultural practices have resulted in unacceptable resource damage. The Open Space program will not perpetuate historic land uses that are environmentally unsound.

Existing conditions and conservation practices, such as those promoted by the United States Department of Agriculture (USDA) Soil Conservation Service, and other responsible land use and management agencies, will be considered during the planning process. Practices that protect soil resources, sensitive plants, animals, and habitats critical to wildlife and discourage undesirable plants will be fostered.

Lands previously farmed or grazed may be converted from agricultural use to other uses when the previous uses or practices are deemed inappropriate or as a means of balancing the objectives of the Open Space program. Land may also be taken out of agricultural use to mitigate impacts from such use. Areas not historically used for agricultural purposes will not be managed for this use; however, prescribed agricultural practices may be employed to achieve other management objectives, such as grazing, for the management of noxious weeds or to reduce wildfire fuels.

2. **Land Management Agreements.** The Department may enter into leases, permits, or other land management agreements with qualified parties to preserve agricultural uses on appropriate lands. These land management agreements shall be written to protect the Open Space system. A fiscal analysis of the lessee's, permittee's, and contractor's ability to perform according to the terms and conditions of the agreement will be conducted. All land management agreements will be issued and managed under prudent agricultural management policies and will include appropriate details regarding implementation of the management plan for the subject area. Its impact on adjacent Open Space land will be analyzed and included in the staff recommendations. The Open Space staff will monitor compliance with the land management agreement and accomplishment of land management goals. The staff will work to foster cooperation between the land managers, lessees, permittees, or other contractors and the Department and other land management agencies, to achieve the land management goals for the lease area.

Open Space staff will work with agricultural managers, lessees, and permittees towards implementation of ecologically responsible agricultural practices. Such activities may include, but are not limited to, educational programs and seminars, research, and experimental solutions to resource management problems. The lessees, permittees, or contractors shall, when appropriate, carry liability insurance and identify and hold harmless the City (See Chapter IX, Section F, Management Agreements).

In order to reach an agreement with a landowner and preserve land in its current use, the Department may recommend some land purchase agreements in which the seller retains some interest, such as a single-family residence or agricultural use. Therefore, in some instances agricultural activities or management practices that are not directly managed by the Open Space Department may continue on specific parcels. These agreements may terminate after a specified time. Previously issued long-term agreements exist that currently limit the Open Space staff's management flexibility. Where resource damage is occurring within the rights granted through previously existing agreements, the staff shall work with agricultural managers, lessees, permittees, or previous owners to encourage modification. Inappropriate land management

practices will be brought into compliance with all appropriate Open Space program provisions when the contracts lapse.

The program may also pursue other avenues to preserve appropriate agricultural land uses. The staff or the OSBT may recommend, for example, that the City enter into cooperative agreements with other agencies, educational institutions, or organizations.

3. **Agricultural Facilities.** Existing agricultural facilities will be maintained in a safe and cost-effective manner. Maintenance responsibilities for facilities managed by third parties will be specified in management agreements. Construction of new or replacement agricultural facilities, including buildings, access routes, and utility structures, will be permitted only if necessary to support the approved activities specified in an Open Space management plan and will be constructed in accordance with Open Space facility planning and construction guidelines (see Chapter X, Open Space Facilities, Section a, Facility Planning, and b, Facility Construction). Historical agricultural facilities will be managed in accordance with the Cultural Resource Guidelines and other Open Space policies.

As part of their ability to sustain agricultural practices in the Boulder Valley, land managers, lessees, or permittees or their assigns may be allowed to reside in existing dwellings on Open Space lands when such residency facilitates effective and efficient preservation and management of Open Space.

4. **Agricultural Economics.** The Open Space program will consider alternative or innovative strategies to facilitate agricultural activities in the increasingly urban environment in the Boulder area. Alternatives to be explored include alternative cropping systems and agricultural products, non-traditional marketing strategies, improved irrigation systems and water uses, and other strategies consistent with the environmentally responsible protection and maintenance of significant agricultural resources.
5. **Sensitive Resources.** Agricultural activities shall be conducted with consideration for the needs of rare, threatened, or endangered species, or sensitive resources. Where appropriate, special protected areas will be created within agricultural areas to provide for such needs.

6. **Integrated Pest Management.** Pests are non-native (exotic) animal or plant populations that interfere with the natural functions or agricultural purposes of Open Space lands. Some native species may also be considered pests under certain circumstances. Management of pest species may be required to protect resources or ecosystems or to produce a viable crop. Practices permitted on Open Space land shall be consistent with an Integrated Pest Management (IPM) Plan and City-wide IPM policies. When management of indigenous species is required to meet Open Space management goals, such activities will include a management plan and public review. (See Chapter IV, Natural Resource Management, Section C. 10., Integrated Pest Management.)

7. **Water Management**

a. **Water Quality.** Practices that protect surface and subsurface water quality will be integrated into agricultural plans and activities. Examples may include, but are not limited to, fencing riparian and wetland areas to protect them from inappropriate grazing, design or improvement of water delivery systems to enhance water quality protection, and restoration of degraded riparian and wetland habitats.

b. **Irrigation and Watering Systems.** A significant amount of maintenance on the water delivery systems that serve Open Space lands has been deferred. These repair expenses will require a long-term commitment. Alternative funding sources, including participation by other water users, ditch companies, and others, may be required where legally or financially appropriate and feasible. The Open Space staff will work with ditch companies that have written easements and prescriptive uses on Open Space land to encourage maintenance practices that minimize damage to other resources. When the Open Space program is the primary or sole shareholder in a ditch company, the Open Space staff will work to ensure practices that minimize resource damage according to program maintenance policies within constraints imposed by the by-laws of the ditch company. Irrigation rights and water delivery systems in which the Open Space program has rights will be managed according to a water management plan. This plan will incorporate practices to maximize

irrigation efficiency and protect existing water rights. Tailwater run-off will be managed using appropriate water conservation practices.

When the Department owns sufficient water rights for agricultural purposes on Open Space lands, and when sufficient water is available for those purposes, the Open Space program may make such water available to lessees, permittees, or contractors. The lessee, permittee, or contractor will be required to manage the water responsibly and help maintain associated water delivery systems according to the land management agreement.

c. **Watershed Management.** Preservation, protection, and enhancement of watersheds and related landscape and ecosystem functions and components, including sensitive plant and animal species, will be considered in management plans.

8. **Agricultural Crops.** Areas previously used for agricultural crops may be managed for future crops; previously uncropped land may be reseeded or replanted if the change meets the goals of the Open Space program.

a. **Crop Selection.** When possible, the crops selected will be those whose cultivation is consistent with sustainable environmental and agricultural objectives. The need or potential need for management for wildlife, pesticide use, intensity of water consumption, and other resource requirements will be considered when selecting agricultural crops.

b. **Fertilizers.** Approval for fertilizer application will not be granted without a suitable soil fertility analysis. Fertilizers may be applied as appropriate, taking into account environmental responsibilities such as water quality. Guidelines established by agencies such as the USDA Soil Conservation Service may also be considered. Alternative substances, including biosolids (municipal wastewater treatment by-products--sludge) may also be approved for application subject to recommendation by the OSBT. Any fertilizers or applications shall be subject to all applicable federal, state, and local laws.

c. **Harvesting.** Agricultural harvesting may be accomplished by the lessee or permittee under

the terms of the management agreement or by Open Space staff or contractors through grazing, mechanical means, or other appropriate methods.

- 9. Grazing, Range, and Pasture Management.** Livestock grazing will be permitted on Open Space property primarily as a traditional agricultural practice and as a management tool to achieve natural resource management objectives. Grazing shall occur only when authorized by a land management agreement such as a lease, special permit, or retained interest; when it does not interfere with resource management goals; or when it helps achieve other resource management goals such as integrated pest management.

When developing grazing prescriptions, the staff will consider resource management needs based on land and resource characteristics, resident ecosystems and habitats, and economic considerations including the following:

- Actions to be taken to protect riparian areas, wetlands, erodible soils, water quality, threatened or endangered species, and other sensitive resources;
- Provisions for modifications of the prescription in response to environmental and ecological conditions;
- Available inventory of natural and cultural resources potentially affected by livestock use;
- Provisions to monitor for compliance and to determine whether resource management goals are being achieved;
- The management plan for the specific property;
- Specific quantifiable resource conditions to be achieved, including the desired plant community, so that effective monitoring programs can be developed;
- A description of current conditions;
- Proposed grazing activities, including the number and type of livestock, season of use, duration and frequency of grazing, spatial distribution, and grazing systems to be implemented;

- Structural improvements, such as fences and irrigation systems, required for resource protection;
- Annual precipitation available for plant use;
- Fiscal impact on the Open Space program.

- 10. Fencing.** Fences may be used to prevent livestock from using environmentally sensitive areas such as steep slopes, ravines, wetlands or riparian areas; control and direct human use; designate boundaries to prevent resource damage; and promote desired plant communities. Fences may be complete enclosures or short sections. Gates or stiles will be placed subject to management needs.

B. Other Management Considerations

- 1. Special Use Permits.** The Department may issue special use permits for agricultural research or other cooperative efforts to achieve Open Space purposes. All activities will be conducted in accordance with Open Space policies.
- 2. Cooperative Agreements.** The Department may encourage the development of relationships or agreements with other agencies, such as the USDA Soil Conservation Service, Colorado State Forest Service, academic institutions, public or private entities, or qualified individuals to accomplish Open Space goals.
- 3. Public Access.** Open Space agricultural lands may be open for passive recreational uses as defined in the City Charter, except where prohibited for reasons of resource protection or public safety or by contract or agreement. The Department will post notices about any prohibition at all affected areas. Open Space visitors assume a certain degree of risk and responsibility for their own safety when visiting Open Space properties. They are also stewards of the Open Space resources and should ensure that their actions do not disturb agricultural areas. Visitor use may be regulated.
- 4. Community Conflicts.** Some agricultural activities may be objectionable to nearby residents. The Open Space staff will offer opportunities for public education about agricultural practices to foster appreciation for, and community commitment to, sustainable

agriculture. The staff will also work with lessees, permittees, contractors, land managers, affected individuals, and neighborhoods to mitigate undesirable effects of activities where possible. When resource management objectives and/or community concerns conflict, the Department will work to reach an appropriate balance among the Charter purposes.

5. **Cultural Resources.** Agricultural activities may be permitted in areas containing significant cultural resources if the activities will not degrade significant identified resources. Cultural resource surveys will be conducted, as appropriate, before the ground is disturbed in culturally significant areas. (See Chapter VI, Cultural Resource Management)

VI. CULTURAL RESOURCE MANAGEMENT

The OSBT and staff recognize the value of the cultural resources existing on Open Space land. Therefore, the program will seek to recognize and protect significant historic, archeological, and ethnographic values. All identified cultural resources will be evaluated by qualified personnel based on local, state and National Register standards.

The Open Space staff will cooperate with local research institutions, professionals, interested groups, and other agencies to identify, preserve, and foster appreciation of the cultural resources in its custody through appropriate programs of research, treatment, protection, and interpretation.

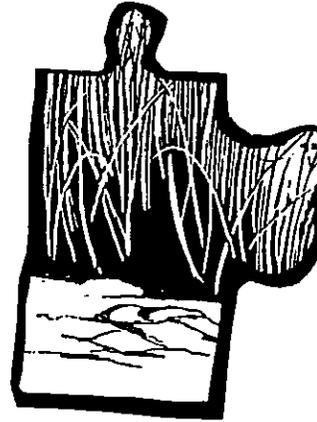
Specific direction and activities required for the identification, evaluation, protection, treatment, and use of cultural resources will be provided in area and resource management plans. Actions planned will be consistent with Open Space purposes and policies. Such actions will also comply with all applicable federal, state, and local laws. Sufficient data shall be gathered and evaluated by qualified cultural resource specialists to assess the probable effects of said actions. In cases involving ethnographic resources, associated ethnic groups may be consulted and their concerns may be taken into account as appropriate. (See City of Boulder Open Space Cultural Resource Guidelines.)

A. Managing Competing Priorities

Achievement of the full scope of the Open Space mission may sometimes conflict with and may outweigh the value of cultural resource preservation. When no reasonable alternatives exist both to preserve the cultural resources and to satisfy the Open Space mission, significant resource data and materials shall be retrieved and all reasonable measures to limit adverse effects of the conflict shall be taken. Such actions shall occur only within the context of adopted City of Boulder, state, and federal laws and regulations.

Cultural resources not identified as having local, state, or national significance may be permitted to deteriorate naturally, unless their removal is necessary for public safety or to eliminate an unacceptable intrusion.

Other agencies, state and local governments, interest groups, and entities specified by law or regulation will be given opportunities to become informed about, and comment on, anticipated Open Space actions affecting significant cultural resources at the earliest practical time.



B. Research

The Department will promote cooperative relationships with recognized educational and scientific institutions and qualified individuals and encourage, support and/or conduct research that does not adversely affect Open Space objectives as mandated by City Charter. All research will conform to current standards of scholarship as well as Open Space policies and guidelines and will be administered by Open Space staff. When conducted, the principal goals of such research will be to:

- Identify and evaluate cultural resources and ensure an adequate information base;
- Develop appropriate technologies and methods for monitoring, treating and protecting cultural resources;
- Ensure accurate treatment and interpretation of cultural resources employing the best current scholarship;
- Develop ethnographically appropriate approaches to preserving the cultural and natural resources of Open Space.

Execution of any research will be preceded by approved documentation of the work to be performed according to Open Space research policies. The documentation will address the relationship of the research to management objectives; the theoretical orientation and methodology of the research; how data will be recorded, ensuring confidentiality when warranted; the dissemination of results; the preservation of physically affected resources, including data recovery; and the cataloging of collections.

Because research involving physical intervention into cultural resources or removal of objects may be a destructive process, research in Open Space will employ nondestructive methods to the maximum extent feasible. Where practical and in accord with the Open Space mission, the features of sites and structures will be left in place.

The Open Space staff will develop and maintain a centralized cultural resource management bibliography of all research reports and planning documents addressing Open Space cultural resources. The data and knowledge acquired through research will be made available, as appropriate, within and outside the Department. However, certain locational data may be withheld from public disclosure to protect sensitive archeological, historic, or ethnographic resources. Such determination will be made by the Director of Open Space in consultation with the City Attorney.

C. Treatment of Cultural Resources

The treatment of particular cultural resources will be decided through the planning process. Such decisions will weigh the significance of the resource, its condition, its interpretive value, its research potential, the availability of data, the natural environment, and the mandates of the City Charter. The appearance and condition of the resource before treatment and changes made during treatment will be appropriately documented. Pending planning decisions, all cultural resources will be protected and preserved in their existing conditions.

1. **Archeological Resources.** Archeological resources shall be left undisturbed unless removal of artifacts or digging in the site is justified by protection, research, interpretive, or development requirements. The Department will cooperate to the extent possible within the Open Space mission to preserve resources in a stable condition to prevent degradation and loss of research values or *in situ* exhibit potential.
2. **Historic Areas, Structures, or Landscapes.** Sites or structures that are deemed of local, state, or national significance will be preserved in their present condition if that condition allows for satisfactory protection, maintenance, use, and interpretation within the financial constraints of the program or if another treatment is warranted but cannot be accomplished until some future time. A historic landscape may be converted to other uses if it cannot adequately serve an appropriate use in its present condition. An obliterated historic landscape will not be restored except to preserve an agricultural use.

A determination may be made that the cost to maintain, restore or rehabilitate a historic structure to a safe condition cannot be justified within the Open Space mandate. Structures may be removed from Open Space if they cannot practically be preserved on their present sites or if the move provides better opportunities for preservation of the structure but will not significantly impact Open Space natural or agricultural resources. Structures posing a public safety hazard may be demolished pursuant to compliance with local, state and federal laws.

Because unused structures are susceptible to neglect and vandalism, which accelerate their deterioration, compatible uses for historic structures will be found where appropriate. Additions may be made to historic structures when appropriate for their continued use. Additions will harmonize with, but be readily distinguishable from, the older work. Building services and utilities such as lightning protection, security equipment, heating and air conditioning, will meet the City requirements for safety and preservation.

Historic agricultural facilities or historic residences that are occupied will be managed so as to preserve their historic content.

3. **Ruins.** The stabilization of ruins shall be preceded by studies to recover any data that would be affected by stabilization work. Ruins and related features on unexcavated archeological sites may be stabilized to the extent necessary to preserve research values or to arrest structural deterioration. Adequate provisions shall be made for data recovery and stabilization before archeological ruins are excavated.
4. **Earthworks.** Appropriate vegetation may be maintained when necessary to prevent erosion of prehistoric and historic earthworks, even when the historic or prehistoric condition might have been bare earth.
5. **Burial Sites and Cemeteries.** Identified historic and prehistoric burial areas, whether or not formally plotted and enclosed as cemeteries, shall be protected. They shall not be disturbed or archaeologically investigated unless threatened with destruction.

However, Open Space may consult with groups reasonably linked by ties of kinship or culture to ethnically identifiable human remains when such remains are encountered on Open Space lands.

The preference of such groups for the treatment or disposition of such remains shall be followed insofar as feasible within the preservation and utilization mandates of Open Space. Decisions shall be based on a full consideration of the alternatives. Reinternment of said remains on Open Space may be permitted within Open Space guidelines.

D. Museum Objects

Field data, objects, specimens, and features of structures retrieved for preservation during cultural resource research and treatment projects, together with associated records and reports, will be managed within an approved repository according to guidelines provided by the Colorado State Historical Society. Any repository selected will provide public access to the collection on a reasonable basis and shall be placed on loan and not be considered a donation. The department will work with established local repositories to catalog, curate, and document items.

The Department may, within applicable laws and regulations, cooperate with other interested groups and institutions to ensure that appropriate preservation and restoration measures are taken to preserve Open Space museum objects. Decisions will be based on evaluations of the significance of the resource and applicable laws and regulations.

The Department may loan objects to and exchange objects with such institutions for approved purposes. Interested persons will be permitted to inspect and study Open Space museum objects and records in accordance with standards for the preservation and use of collections and subject to the policies regarding confidentiality of resource information.

1. **Historic Furnishings.** When historic furnishings of a structure are present at the time of acquisition, they may be moved to an approved site, such as a museum or curatorial facility or other Open Space property for their protection or preservation. The Department may cooperate with efforts to furnish historic structures to interpret history to the public according to the Open Space mission and approved management plans.
2. **Archives and Manuscripts.** Archival and manuscript collections are considered Open Space property and will be managed in ways that preserve them intact for the future while providing current access.

Placement of any historical artifacts or documents owned by Open Space into repositories managed by others will be subject to the procedures and conditions of public access or restrictions to which Open Space may have agreed or is bound by law. The Department will retain copies of records significant to administrative histories when official cultural resource records are transmitted to other locations.

3. **Security and Protective Measures.** Open Space may consider and employ where possible the most effective concepts, techniques, and equipment to protect cultural resources from theft, fire, vandalism, environmental impacts, pests, and other threats, including emergencies and disasters, without compromising their integrity or unduly limiting their appreciation by the public or compromising the Open Space mandate.

In the preservation of historic structures, every attempt will be made to comply with standard building and fire codes. When these cannot be met without significantly impairing a structure's integrity and character, modification of the management and use of the structure, rather than the structure itself, will be considered in order to minimize the potential hazards.

E. Supervision of Volunteers

Volunteers assisting with cultural resource studies and treatments will be directly supervised by qualified cultural resource professionals, and their work will conform to applicable Open Space and historic preservation policies, guidelines and standards.

VII. VOLUNTEER SERVICES MANAGEMENT

Through the Open Space volunteer programs, the public will be encouraged to participate in the accomplishment of the purposes of Open Space as stated in the City Charter. The Department will encourage and create opportunities for the involvement of volunteers at all levels of the Department within appropriate individual and group programs and research activities.

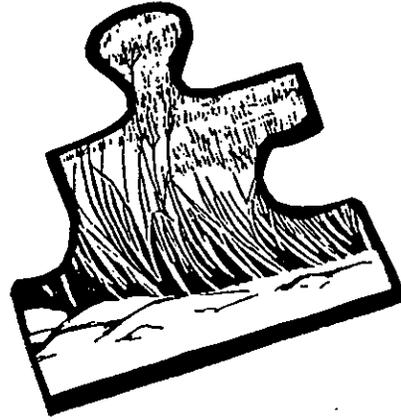
Volunteers are a valuable resource to the Open Space staff and to the public at large. The Department will make a planned and organized effort to provide volunteer work that is meaningful, productive, and satisfying both for volunteers and Open Space staff. In return, volunteers shall agree to perform their duties to the best of their abilities, consistent with the goals and purposes of Open Space. All volunteer efforts will be directly supervised by Open Space staff or by a trained and designated volunteer or consultant under the direction of Open Space staff.

A. Role of Volunteers

A volunteer is anyone who, without compensation or expectation of compensation beyond possible reimbursement for previously approved expenses, performs a task at the direction of, or on behalf of, the Department. A volunteer must be officially accepted and enrolled by the Department before performance of the assigned task. Volunteers will not displace paid employees from their positions. The Department accepts the services of all volunteers with the understanding that such service is at the sole discretion of the Department. Volunteer services can and do affect every aspect of the management program. The Department will use volunteers whenever possible. The Department actively seeks diversity; thus volunteers shall be accepted into Open Space volunteer programs without regard to race, creed, religion, age, sex, sexual orientation, color, national origin, or disability.

B. Volunteer Services Management

The Department will provide management of volunteers and volunteer programs in accordance with a volunteer services management plan. The plan will provide overall guidance and direction to staff and volunteers engaged in volunteer projects and management efforts. The procedures in the plan are intended for internal management guidance only and do not constitute, either implicitly or explicitly, binding contractual or personnel agreements. The Department may change procedures in the plan as needed.



C. Volunteer services include:

- Provision of services to staff and volunteers;
- Strategic planning and development of volunteer programs that address specific Open Space and public needs and ensure efficient use of available human resources;
- Identification and development by staff of appropriate volunteer roles;
- Recruitment and placement of suitable volunteers;
- Supervision and appropriate training of volunteers;
- Effective volunteer utilization;
- Tracking and evaluation of the contributions of volunteers;
- Recognition of volunteer efforts;
- Cooperation with community/ regional/ national efforts to recognize and promote volunteer work;
- Cooperation and coordination with other appropriate agencies on volunteer efforts; and
- Preparation of an annual report to the OSBT and other reports and updates.

VIII. EDUCATION AND INTERPRETATION

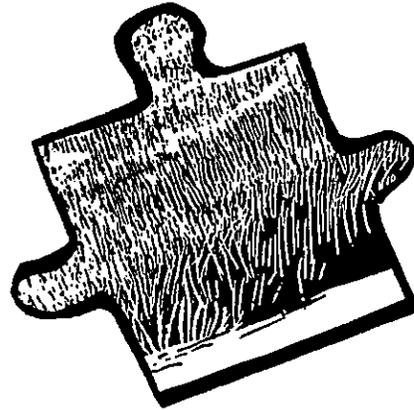
The Department will conduct educational and interpretive programs to:

- Instill an appreciation for the balance of natural processes and native ecosystem communities;
- Foster respect for life in its many forms and recognize the human species as only one component of the natural world;
- Develop a conservation ethic that produces respect for Open Space and for the environment;
- Disseminate information concerning the ecology and natural history of the area;
- Disseminate information concerning the goals, projects, and operations of the Open Space program;
- Disseminate information about the conflicts that arise when humans interact with the natural systems, and about ways of lessening or eliminating the impact of those conflicts; and
- Build support for Open Space.

A. Educational Programs

Open Space staff will work closely with the public, local school districts, City departments, and outside agencies to provide environmental education to students, organizations, and the general public. These programs are often the most effective means of stimulating understanding and appreciation of Open Space, providing information and orientation, helping to ensure resource protection, and promoting visitor safety. Open Space is an integral part of the Boulder Valley. Therefore, the outreach program is important in developing a better understanding of the need to maintain and preserve natural systems.

1. **Environmental Education by Others.** In the development and implementation of environmental education programs, the Open Space staff will consider the contributions of cooperating groups, private individuals, volunteers, and others to supplement Open Space staff and funds. The Open Space staff will direct, monitor, and evaluate Open Space educational programs to ensure quality control and appropriateness.



2. **Location.** Educational programs will be conducted in appropriate sites with care taken to avoid or minimize resource impacts.

B. Interpretive Programs

Interpretation is an educational activity that aims to reveal meanings and relationships by firsthand experience and by illustrative media. The Department strives to deliver high-quality interpretive services. Interpretation will be the shared responsibility of all Open Space staff. Interpretation is a function of the Open Space program that involves the resource, the visitor, the community, and Open Space staff. Interpretation will be used to reach out to the community and decision makers to stimulate discussions about the management and preservation of Open Space within a local and regional context. Interpretive services and facilities may be developed and managed to respond to the needs of both Open Space resources and the public.

In addition to personal contact by Open Space staff, other means of interpretation may include brochures and other publications, exhibits, and audiovisual presentations. These techniques may also augment services provided by the staff.

1. **Interpretation for Special Populations.** The Department will seek to meet the needs of the community by providing literature and programs as appropriate to accommodate special groups including disabled persons, children, young people, senior citizens, and bilingual visitors. Special programs for the education and employment of youth shall be encouraged.

IX. USE OF OPEN SPACE

Open Space will be managed in a way that provides for aesthetic enjoyment, minimizes cumulative impacts to the natural ecosystems and conflicts between users, considers user safety, preserves responsible agricultural use, provides for a quality passive recreation experience, and protects natural areas. The Open Space staff shall develop and implement management plans and take other actions to ensure that uses within Open Space lands are consistent with the Open Space purposes and Long Range Management Policies. Weighing of potential benefits and impacts of proposed management actions will include consideration of the long-term viability and health of natural ecosystems.

A. Management for Passive Recreation Use

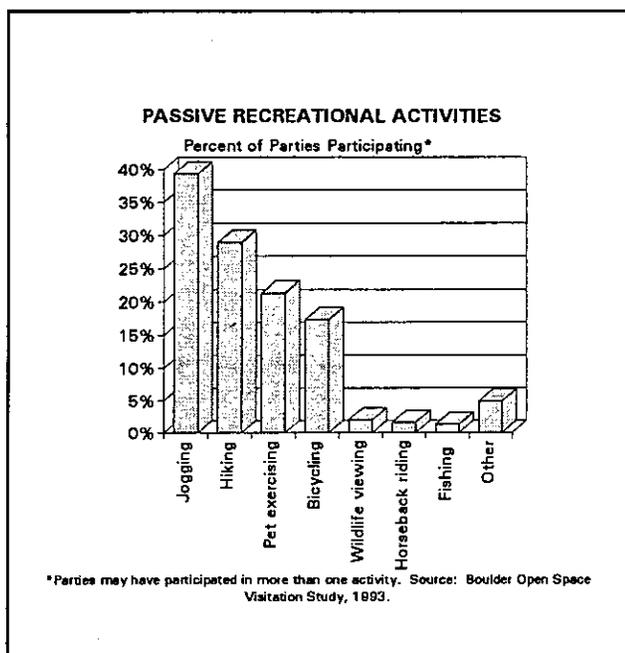
Providing opportunities for passive recreation is one of the uses of Open Space as defined in the City Charter. The passive recreational uses included in the City Charter are hiking, photography, nature studies, and if specifically designated, bicycling, horseback riding, or fishing. These uses may cause damage to Open Space resources due to a high volume of use. Even a low volume of use can result in unacceptable resource damage in sensitive areas, such as riparian areas. When trails are in an easily damaged condition, such as being wet, muddy or icy, unacceptable resource damage may occur. Impacts on wildlife may also result when use activities occur near nest sites or breeding areas. Some activities may cause unacceptable damage to Open Space resources due to the equipment required for that use; such activities shall not be allowed.



Open Space visitors have a responsibility as stewards of Open Space resources to ensure that their actions cause the least possible disturbance to the natural processes. The Open Space staff, through recommendation by the Open Space Board of Trustees and direction of City Council, has the responsibility under the City Charter to preserve both the land itself and its ecological viability. Information will be made available to encourage safe and responsible passive recreational use of Open Space lands and minimize adverse impacts on Open Space resources. The Open Space staff shall monitor use. Based on these guidelines and its best judgment, the staff may recommend the cessation of an activity occurring on Open Space lands. Such recommendations may be specific to the occurrence, type of activity, or the location of the activity. The Open Space Director shall be notified as soon as possible by staff of new uses, or effects of ongoing uses. An analysis of actual and potential damage may be conducted.

When evidence of disturbance exists or when an activity is likely to cause damage, the Open Space Director will recommend appropriate action to the OSBT based on the best information available. The Open Space Department may utilize the full range of tools that are available to manage passive recreation impacts including:

- Education
- Volunteer programs
- Site specific restrictions
- Signage
- Permit systems
- Reservation systems
- Public use limits
- Ordinances or special use regulations
- Trail relocation
- Temporary area closures
- Permanent area closures



- 1. Management.** In developing use plans and regulations, the Open Space staff will use its professional judgment and consider all Open Space properties and their current conditions, all purposes specified in the City Charter, all valuable natural resources and their specific locations, the intensity of uses, and the best scientific information available. These aspects will be balanced within the context of the entire Open Space system. The same use regulations may not apply to all Open Space land. The Open Space Director will recommend policies and regulations for Open Space lands to the OSBT and the City Council that are consistent with the lands' long-term viability and health of natural ecosystems.

Any use or access restrictions on Open Space lands will be based on a determination that such measures are consistent with Open Space purposes or are needed to minimize human use conflicts or impacts or to promote safety. When appropriate, the Open Space Director may recommend use restriction to the OSBT. Public notification will occur in the local daily news publication, or as otherwise required by City policy, and an opportunity for public input will be provided before OSBT action is taken. If appropriate, the OSBT will make recommendations to the City Council.

- 2. Fees.** Fees may be instituted for basic services such as access and parking or for special programs or uses. Such fees for special programs or uses will support Open Space purposes and comply with appropriate Open Space policies and standards. Unless otherwise specified by City Code, all such fees collected shall be deposited in the Open Space Fund.
- 3. Reservation Systems.** The Department may operate a reservation system to serve Open Space visitors, to ensure the protection of resources, to improve operational efficiency, or to ensure access to a facility or program.
- 4. Emergencies.** If a reasonable basis exists to believe that an actual or anticipated use may cause immediate or irreparable harm to a resource, the Open Space Director may place limitations on public use and/or access. This action will be subject to review by the Open Space Board of Trustees at its next available meeting.

B. Accessibility for Disabled Persons.

Policies, procedures, and programs shall be drafted to comply with the federal Americans with Disabilities Act (ADA). In meeting the goal of accessibility, emphasis will be placed on ensuring that disabled persons will be afforded experiences and opportunities commensurate with other visitors to the greatest extent practical.

C. Special Uses

- 1. Permits for Special Use.** A special use of Open Space land is defined as any activity other than passive recreational activities such as those identified in the Open Space section of the City Charter or when a group size exceeds the level prescribed by City ordinance. Special use requires a permit. Special use permits may be granted only if the activity has been judged to be consistent with Open Space purposes, regulations, and safety objectives, will not interfere with normal Open Space operations or visitor use, and will not damage Open Space. Special events that are for the material or financial benefit of participants, that involve commercialization, advertising, or publicity by participants, or for which a separate public admission fee is to be charged shall not be permitted unless the event is directly related to the purposes for which Open Space was established. Competitive, organized sport or benefit events shall not be permitted.

The permit terms will provide for protection of Open Space resources and ensure that activities do not conflict with visitor use or administrative activities. The Department may terminate any current activity that does not meet permitted requirements.

The Department may establish and collect appropriate permit fees for special uses of Open Space land, subject to OSBT and City Council approval. The Department will seek reimbursement from permittees for Department costs incurred in administering the permit, monitoring the activities it authorizes, and repairing any damage caused by the event. A security bond and liability insurance may also be required for certain activities as legally permitted. All fees received shall be credited to the Open Space Fund unless otherwise specified by the City Code.

2. Collecting Natural Items. Collection of cultural, historical, plant, animal, or mineral specimens or artifacts is prohibited. However, the collection of these items may be allowed under a research permit and as authorized by the Open Space Director.

3. Burials and Scattering of Ashes. Burials or reinterments outside established cemeteries on Open Space land shall be prohibited, except as provided in Chapter VI, Cultural Resource and Management, 5.C., Treatment of Cultural Resources, Burial Sites and Cemeteries. The scattering of human ashes from cremation may be permitted by the Director in writing, in accordance with Open Space special use policies.

D. Development of Minerals, Oil and Gas, Coal, and Aggregate

For the purposes of this section, "minerals" includes minerals, coal, sand and gravel, and oil and gas. Mineral development includes exploration, extraction, production, storage, and transportation of minerals. Mineral development may be allowed on Open Space lands only where there are existing valid mining claims, existing permitted mining activities, existing oil and gas leases, or federally-owned minerals.

All mineral development of Open Space lands shall conform with applicable laws, regulations, and Open Space policies and permits. There shall be no use or occupancy of Open Space lands for purposes of mineral development of lands outside of Open Space unless provided for by law.

Lands burdened by mining claims, federal or nonfederal mineral leases, or other mineral interests shall be managed based on their Open Space natural resource values and management objectives; mineral components shall be addressed as appropriate.

Where the mineral development right is owned by Open Space:

- No exploration or development may be conducted without an express recommendation of the OSBT and specific City Council approval;
- Development permits shall include conditions to protect Open Space resources to the greatest extent possible in accordance with the City Charter and shall provide for complete reclamation of the affected area.

Where mineral rights are not owned by Open Space:

- Development shall be discouraged if such development would compromise the Open Space purpose;
- If development is pursued, or is likely to be pursued in the future by the claim owner, the Department will attempt to acquire the rights if financially feasible and in conformance with the objectives and priorities of Open Space;
- If development is pursued and acquisition is not possible, the Department shall require that any development is conducted in accord with existing law and City ordinances in a manner that both protects the Open Space resources to the fullest extent possible and protects and promotes the health, safety, and welfare of the citizens of Boulder.

E. Science and Research

Programs of natural and social science research, such as biological inventories or visitor use studies, will be encouraged to support Open Space staff in carrying out the mission of the Open Space program by providing an accurate scientific basis for planning, protection, and management decisions. Management decisions will be based on the best information available at the time. Long-term ecological research by qualified researchers will be encouraged through a focused, active outreach program.

The emphasis will be on the research necessary to direct future management actions, to accomplish Open Space objectives as stated in the City Charter and other planning documents. The initial research focus will be on the collection of baseline inventory data. Research may be necessary to interpret resources or processes whose function and significance are not known or understood.

1. Relationship to Planning and Management.

Open Space research needs may be recommended in Open Space resource management plans. The goal of research activities will be to:

- Provide a sound basis for policy and guidelines;
- Determine causes of resource management problems;
- Measure and predict impacts of resource uses and related activities;

- Develop effective strategies to avoid or minimize adverse impacts on resources and visitors;
- Develop methods to resolve management conflicts;
- Develop methods to restore damaged resources; and
- Further the understanding of ecosystems and document their components, condition and significance.

2. **Conduct of Research.** The Department will cooperate with qualified researchers in conducting or encouraging research. All research shall conform with Department research guidelines and applicable regulations.

In recognition of the scientific value of Open Space lands as a natural laboratory, investigators will be encouraged to undertake scientific studies when such use is consistent with Open Space policies. Research activities that might disturb resources or human use, that require the waiver of any regulation, or that involve the collection of specimens or disturbance of resources or natural processes, may be allowed only pursuant to the terms and conditions of a research permit. Manipulative or destructive research activities must be approved by the Director. Such approval may be granted if the impacts will be short-lived, Open Space land is the only area where such research can be conducted, the value of the research is greater than the resource impacts, or the research is essential to provide information for resource management.

3. **Publication of Research Data.** The results of all scientific activities conducted on Open Space land will be made available to Open Space staff, the scientific community, and the public, where appropriate, through technical publications and the popular media. Open Space researchers will be encouraged to publish their research findings in refereed journals and the local media, as well as to include such findings in public interpretive programs.
4. **Inventory and Monitoring.** Inventory data describing Open Space resources may be compiled. This information can be used to detect ecological changes that may require intervention or changes in management practices and to provide comparative reference points.

5. **Collections of Specimens and Artifacts.** Unauthorized collection of specimens or artifacts including cultural, historical, plant, animal, or mineral specimens or related materials, is prohibited on Open Space. Specimens or related materials collected in authorized research studies will be deposited in designated public curatorial institutions or in the Open Space collection at the discretion of the Director. Records of collected specimens and their location will be maintained by the Department.

F. **Visitor Safety**

Open Space visitors assume a certain degree of risk and responsibility for their own safety when visiting Open Space properties. The Department recognizes that Open Space lands are a visitor attraction and that potential hazards exist, but the Department has neither the authority nor the ability to control all degrees of risk visitors may choose or are routinely exposed to while using Open Space lands. Nevertheless, the Open Space staff strives to identify recognizable threats to the safety and health of persons and to provide appropriate public notice of such threats. The Open Space staff will work cooperatively with other federal, state and local agencies, organizations and individuals to carry out this responsibility.

1. **Emergency Preparedness and Emergency Operations.** The Department will cooperate with the Office of Emergency Preparedness and other agencies and groups to obtain training in emergency response apparatus, situation assessment, and resource requirement determination, and to develop emergency response procedures.
2. **Search and Rescue.** The County Sheriff's office is responsible for search and rescue activities. To provide for the protection and safety of Open Space visitors, the Department will make reasonable efforts to search for lost persons and to rescue sick, injured, or stranded persons. This responsibility may be fulfilled by Open Space staff, if staff resources and funding permit, or by qualified search-and-rescue organizations or agencies pursuant to the terms of a cooperative agreement. The City of Boulder may charge for such services. Responsibility for coordination of such efforts will be transferred to the Sheriff's office if the magnitude of an incident so warrants. The incident commander will determine when to terminate a search.

3. **Law Enforcement.** The Department will make reasonable efforts to provide for the protection, safety, and security of Open Space visitors, employees, lessees, and property and shall protect the natural and cultural resources entrusted to its care.

G. Management Agreements

The City may enter into management agreements such as contracts, leases, or other agreements to accomplish the Open Space mission.

1. **Agreements.** Contracts, leases, and agreements shall be limited to Open Space purposes consistent with the City Charter and Open Space goals and objectives. Costs associated with the management agreements, including both direct costs and environmental costs, will also be considered. Agreements will be for the shortest time necessary for the proposed use, taking into account factors such as required lessee, permittee, or contractor investments, common practice for the type of contemplated lease, possible future alternatives for the property, City Charter limitations, and fiscal impact on the Open Space Fund. Agreements of three years or longer must be reviewed by the OSET and approved by the City Council. Management agreements will be evaluated at least annually to ensure compliance with their performance criteria.
2. **Contractors.** Lessees, permittees, or contractors shall provide authorized services in ways that are consistent with the goals and objectives of the Department. Lessees, permittees, or contractors shall also be responsible for the maintenance and repair of assigned facilities and lands according to the terms and conditions of their lease agreements, which shall meet all federal, state, and local laws, and Open Space City Charter requirements. The Department may, as appropriate, require lessees, permittees, or contractors to carry insurance coverage as specified by the City. The lessees, permittees, or contractors shall indemnify and hold the City of Boulder harmless from liability for their actions on Open Space land.
3. **Revenues.** All revenues from Open Space management agreements shall be deposited to the Open Space Fund and will be used solely for the benefit of the Open Space program.

X. OPEN SPACE FACILITIES

Open Space developed facilities may include administrative offices, maintenance structures and yards, agricultural buildings and structures, preexisting residential structures, information centers, monitoring stations, emergency, maintenance, and agricultural routes, or passive recreation amenities such as parking areas, comfort stations, picnic areas, regulation boards, trailheads, trails, and bridges. Other appropriate facilities compatible with Open Space purposes defined in the City Charter may be included.

Uses or improvements to the land beyond those stated in the City Charter cannot take place on Open Space land. In addition, Open Space land cannot be sold, leased, traded, or otherwise conveyed unless a set of extremely restrictive provisions is met. These restrictions are listed in the City Charter and further described in Chapter II of this document. Examples of the type of uses not consistent with Open Space include building a gas station, hospital, playing field for active recreation, amphitheater, school, power plant, landfill, commercial development, corporate headquarters, or a shopping center. The Open Space program will manage its facilities consistent with protecting and managing Open Space resources. Ecosystem viability will be considered when decisions are made about providing facilities. The Open Space program will meet appropriate public access and use needs consistent with protecting Open Space resources.

A. Facility Planning

Planning for Open Space facilities will be accomplished so as to satisfy facility needs within the context of the Open Space purposes. Public input will be sought.

The location of Open Space administrative offices will be based on such factors as management effectiveness, impacts to Open Space resources, availability and adequacy of existing facilities on Open Space land, leasable space outside Open Space, and cost. If a new or expanded Open Space facility is determined to be necessary within Open Space boundaries, it will be located to minimize resource disturbance.

Consideration will be given to providing facilities that are consistent with Open Space purposes, compatible with natural processes, functional, energy efficient, and cost-effective. All facilities costs will be considered before construction. These costs include initial construction, refurbishment, or restoration, ongoing maintenance, and operation costs.

The use of existing buildings on Open Space will be considered before new construction is contemplated. Removal or demolition will be considered for structures that are determined to be inappropriately placed in prime resource areas or that require the expenditure of unjustifiable maintenance costs. Use of historic buildings will comply with all applicable laws, regulations, and policies.



Facilities will be integrated into the Open Space environment so as to result in minimum impact. These facilities will be designed and developed to avoid competing with or dominating Open Space features. Effects on views from adjacent roads and neighboring residences will be considered. Construction will conform to the design of existing structures when appropriate. Standard designs and components may be used, and may be adapted during the planning process as appropriate to the specific site and conditions.

Facilities will be located to avoid hazardous areas such as unstable soils, geologic conditions, and wetlands, and will be in compliance with City ordinances. If it is necessary to locate specific facilities, such as ditch headgates or laterals in such areas, the nature of the hazard and appropriate mitigating measures to minimize risks to human life and property will be considered, subject to applicable laws.

1. Open Space Offices and Maintenance

Facilities. Open Space offices and maintenance facilities include buildings for management as well as storage and maintenance of materials and equipment necessary for the maintenance, preservation, and protection of Open Space. Open Space may also include curatorial facilities located to meet Open Space collection requirements of security, fire suppression, and environmental controls.

2. Existing Buildings. The Department may, in the course of its land purchases, acquire existing farmsteads and other buildings or structures such as residential structures, barns, silos, and corrals, which it may preserve and use for the implementation of Open Space program goals. Such uses may include, but not be limited to:

- Maintenance and management of such structures for public Open Space use and education;
- Leasing for uses and occupancies related to Open Space program needs;
- Securing and maintaining the structures for future Open Space needs, including Open Space office and maintenance needs;
- Removal of structures that cannot be made structurally sound or otherwise appropriate for Open Space program needs.

The maintenance, management, and use of such structures shall follow applicable local, state, and federal regulations.

3. Accessibility for Disabled Persons. Policies, procedures, and programs shall be drafted to comply with the Americans with Disabilities Act (ADA). Buildings and sites shall be designed, constructed, or rehabilitated in accordance with ADA. In meeting the goal of accessibility, emphasis will be placed on ensuring that disabled persons will be afforded experiences and opportunities commensurate with other visitors to the greatest extent practical.

B. Construction

1. Construction Sites. Construction sites shall be limited to the smallest feasible area. Ground disturbance shall be carefully controlled to preclude undue damage to vegetation, soils, and archeological resources, and to reduce air, water, and noise pollution. Care will be exercised to ensure that construction equipment and all construction materials imported into Open Space properties are free of exotic or undesirable species.

2. Restoration and Landscaping. The selection of plant material and cultivation practices shall be guided by Open Space natural resources policies and management plans. Irrigation to maintain plantings will generally be avoided except on a temporary basis to establish plant materials or when essential to achieve Open Space agricultural objectives.

Whenever practical, soils and plants affected by construction will be salvaged or stockpiled for use in site restoration. Surplus soils and plants may be used for the restoration of degraded areas within the Open Space system. If additional soil and plants are needed to restore disturbed sites, they may be obtained from other Open Space sites if it is determined that use of such sources will not significantly affect cultural or natural resources or ecological processes. In any case, imported soils should be compatible with existing ones and fulfill the horticultural requirements of plants used for restoration.

Surplus soils may be stored in disturbed areas when such storage will not further deteriorate the area and when a use for the surplus soil is planned in the short term.

New borrow pits will not be created on Open Space land except under the limited circumstances of Open Space management needs. When conducting this limited activity, care will be taken not to create additional risk to users, disturb sensitive plants, or adversely affect scenic areas or vistas.

C. Maintenance

The Department will conduct programs of preventive and rehabilitative maintenance and preservation where appropriate. Short- and long-term Open Space facilities needs, costs and benefits of required maintenance, and other alternatives for satisfying facilities needs will be considered in the development of the facilities management plan.

1. **Utilities.** Provision of utilities to Open Space facilities will be the minimum required to support the implementation of the Open Space purposes. Any required utilities will be as unobtrusive as possible and have the least possible resource impact. When the use of utilities is not appropriate due to costs, resource impact, or low demand, other alternatives including wells, septic systems, pit toilets, and generators may be used. All applicable local, state, and federal health standards will be satisfied.

All activities related to utility installation and maintenance will be conducted so as to have minimum impact on Open Space resources.

2. **Dams and Reservoirs.** Dams and reservoirs will be maintained where necessary to meet Open Space objectives. All dams shall be subject to local, state, and federal regulations.
3. **Structural Fire Protection and Suppression.** Fires in structures will be suppressed to prevent the loss of human life or to prevent damage to real property or cultural or natural resources. Suppression of such fires will be the responsibility of the contracted fire protection district. Open Space staff will provide appropriate support services during structural fire incidents.
4. **Solid Waste Management.** The Department recognizes the problem of solid waste management and will promote the use of biodegradable materials, the reuse and recycling of materials, and other appropriate measures to minimize solid waste and conserve natural resources. While trash receptacles may be

provided at some Open Space locations, visitors are encouraged to remove trash incidental to their use.

All waste management decisions shall comply with federal, state, and local regulations and will be based on proper use of resources, safety, effect on the environment, and economics. Organic solid waste from Open Space may be burned or it may be moved to an appropriate disposal location on Open Space land to allow the organic material to cycle back into the system. Open Space lands will not be used for disposal of wastes generated outside Open Space.

5. Hazardous Materials and Toxic Waste.

Whenever possible, Open Space management activities related to hazardous materials and toxic wastes will be contracted to responsible third parties.

The Open Space staff will ensure that precautions are taken to avoid hazardous material incidents and to help to control or minimize them if they do occur. Prevention will include acquisition of minimum quantities of hazardous materials; selection of the least toxic materials available; implementation of safe use, storage, and disposal practices; recycling spent materials; and development of emergency response programs. Any hazardous or toxic waste the Open Space Department generates, such as solvents, paints, acids, and batteries, shall be disposed of as required by law. Activities pertaining to hazardous and toxic materials, including purchase, storage, transportation, and disposal, shall comply with federal, state, and local laws and regulations.

When the Department identifies existing hazardous waste problems, such as buried toxic dumps and landfills, spills, or contamination of water, soil, or air, appropriate actions will be taken to address the situation and notice will be given to the appropriate regulatory agency. When required, identification of potential hazardous waste problems will be included in the site evaluation/acquisition process. Any existing or potential hazardous waste problems on lands owned or proposed for inclusion in Open Space holdings shall be brought to the attention of the Director as soon as they are identified.

6. **Energy Management.** The Department will conduct its activities, where possible, in a manner that ensures that energy is used in a wise

and economical manner. Open Space resources and values will not be degraded to provide energy for Open Space purposes. The Department will interpret the wise use of energy to the public and will educate and motivate Open Space personnel to conserve energy.

All facilities, vehicles, and other equipment will be managed, operated, and maintained in a manner that minimizes consumption of energy and development of nonrenewable fuels. Renewable sources of energy and new developments in energy-efficiency technology, including recycling of materials and waste, will be used where appropriate and cost-effective; however, energy efficiency will not be achieved at the expense of Open Space resources and values.

D. Open Space Access, Trail Systems and Related Facilities

Visitor facilities may be provided only where consistent with the protection of native ecosystems and the accomplishment of Open Space purposes or goals such as passive recreation, agriculture, or environmental education. Visitor facilities that may jeopardize Open Space goals or purposes shall not be permitted. Access to Open Space is not currently controlled, except for specifically regulated areas. The long and circuitous Open Space boundary causes unique management problems. This characteristic of the system has resulted in many informal access points, in addition to established trailheads. Because of the real potential for the degradation of native ecosystems and natural values, the use of established trailheads and maintained trails shall be strongly encouraged.

- 1. Trails Planning, Construction and Maintenance.** The planning and construction of trails will be guided by Open Space trails planning.
- 2. Cooperative Trail Planning.** The Department will work with appropriate City of Boulder departments, other local, state and federal agencies, citizen groups, and the general public to ensure that the long-term viability of the ecosystem is maintained, to protect significant natural resources on Open Space lands, and to direct appropriate passive recreational use. Interagency trail planning will occur when trails are proposed to cross jurisdictional boundaries. Existing trails that cross jurisdictional boundaries may require cooperative management.
- 3. Open Space Access and Routes.** Private motorized vehicles, except for motorized wheel chairs, shall be limited to parking areas and their access. All other private motorized access is prohibited. An exception to this prohibition shall be lessees, permittees, contractors, Open Space staff, or recipients of special use permits. The purpose of this limited use is for the maintenance and preservation of Open Space. In addition, some parties may have legally retained access rights. No new routes will be developed except as provided by the OSBT.
- 4. Open Space Parking Areas.** Parking areas may be provided for Open Space access in selected designated areas to support allowed passive recreational use. New parking areas, if necessary, shall be located and constructed to minimize damage to natural resources. Parking areas for Open Space use shall be limited to the smallest size appropriate and may be designed to accommodate motorized and non-motorized vehicles, pedestrians, and access to public transportation.
- 5. Trailheads.** New trailheads and trail access points will be integrated into the trail system to preserve the natural environment, to protect Open Space natural resources, to provide for passive recreational uses and to provide environmental education opportunities. Emphasis will be given to placing trailheads and access points so that the use of non-motorized means of travel and public transportation will be encouraged.
- 6. Trails.** Trails are routes on the land, ranging from meandering pathways to destination hiking and passive recreational trails. Trails will be designed and constructed to protect native ecosystems and to minimize impacts on the natural landscape and agricultural lands. The construction of paved surface trails is not consistent with Open Space goals; exceptions may only be made upon recommendation of the OSBT.

Trail and route design will vary to accommodate a range of Open Space needs, including passive recreational uses and visitor experiences and will be appropriate to user patterns and site conditions. Passive recreational uses may include hiking, running, and self-guided interpretive walks, and fishing, horseback riding, and bicycling where designated. Heavily used trails

may be surfaced with soft-surface materials, where appropriate, for resource protection, erosion control, and accessibility to persons with a physical disability. Wetlands and other sensitive natural areas will be avoided when building trails. When necessary, fragile areas may be protected by a variety of improvements such as barriers, fences, or boardwalks that will not disturb natural processes. Trail and route proposals will include consideration of the visitor experience and the long-term viability and health of natural ecosystems. When environmental impacts are unacceptable, trails may be relocated, temporarily or permanently closed, removed, or not constructed.

7. **Trail Bridges.** Trail bridges may be used for crossing streams, ditches, and other places constituting a safety hazard or to protect the natural environment. Assessments of environmental damage, as well as evaluations of less obtrusive alternatives to bridges such as culverts, fords, and trail relocation, will be considered before bridge construction or replacement. Bridges will be kept to the minimum size needed to serve trail users and other maintenance and preservation needs. Bridges will be designed in harmony with the surrounding natural environment.
8. **Signs.** Signs will be designed to educate, inform, or orient visitors as well as encourage appreciation of the local natural resources. Signs will be of the minimum number and size required to serve their intended functions. Signs will be designed and placed to intrude minimally upon the natural or historic setting.
9. **Regulation Boards.** Regulation boards will be built at trailheads or other appropriate locations to provide information on Open Space regulations and uses. They may also include informational and interpretive material.
10. **Informational and Interpretive Materials.** Informational materials may be provided to assist visitors in appreciating Open Space and its preservation. Materials should emphasize the functions of the natural environment, the preservation of the Open Space system, and ways the visitors can understand and appreciate the local natural heritage while minimizing their impacts to the system.

11. **Picnic and Other Day Use Areas.** Picnic areas and other passive recreational day use areas may be provided on a limited basis in places where environmental impacts can be minimized.

12. **Toilet Facilities.** Designated Open Space trailheads may have toilet facilities. Such toilet facilities shall have waste disposal systems that meet public health standards. Levels of use will determine the size, location, and nature of facilities provided. Vault toilets or other alternatives that meet public health standards may be used.

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