

# CITY OF WHEAT RIDGE OPEN SPACE MANAGEMENT PLAN



*Denver Blue Formation in Clear Creek adjacent to Anderson Park, City of Wheat Ridge.*

*Prepared by*

**City of Wheat Ridge  
Parks and Recreation Department**

*with*

**ERO Resources Corporation**

**October 2002**

CITY OF WHEAT RIDGE  
Parks and Recreation Department

OPEN SPACE MANAGEMENT PLAN

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- Recommended for Adoption by the Wheat Ridge Parks and Recreation Commission on September 18, 2002.

*Mary-Margaret Coates*

Mary-Margaret Coates, Chairperson

- Adopted by the Wheat Ridge City Council on October 14, 2002.

*Gretchen Cerveny, Mayor*

Gretchen Cerveny, Mayor

*Wanda Sang*

Attest: Wanda Sang, City Clerk

# Acknowledgments

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The City of Wheat Ridge Open Space Management Plan is the product of a collaborative process between the Wheat Ridge Parks and Recreation Commission, City of Wheat Ridge Staff, and Wheat Ridge residents. The individuals listed below contributed substantially by sharing their time, skills, knowledge and thoughtful participation throughout the planning process. In addition, numerous residents offered comments and participated in public meetings over the years. At its foundation, the Open Space Management Plan emphasizes the protection of natural resources within the City's open space.

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- Appendix B: Historic Resources
- Appendix C: Visitor use Surveys
- Appendix D: Monitoring Plan
- Appendix E: Action Items by Resource Category

# Executive Summary

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The *City of Wheat Ridge Open Space Management Plan* (“Plan”) is a translation of the City of Wheat Ridge’s vision of its open space areas, of current information, and of management actions into something that works on the ground. The Plan, based on the best available information, provides a comprehensive assessment of existing conditions and is a framework for the protection of natural, scenic, and passive recreational resources for the Wheat Ridge Greenbelt, Lewis Meadows, and future open space acquisitions.

Goals in the *Background* section provide the philosophical basis on which the Plan is based. These broad goals are further defined in the accompanying resource sections, which contain goals and objectives that will help guide future decisions. For every objective, there are several recommended actions that will help fulfill the goals and objectives. Some of the goals, objectives, and recommended actions formalize existing ad hoc management practices within the Wheat Ridge’s open space areas. Others suggest a substantive change in long-term direction and will require more specific site plans and design work to implement.

One of the challenges inherent in crafting and adopting a management plan is that circumstances and opportunities shift and change quickly. The population and demographics of the Front Range are changing rapidly and new financial tools for land management are available. Therefore, this Plan is intended to be a dynamic tool for a dynamic situation. The Plan is to be used as a guide to action in the immediate future, as well as over the long term. As with any working document, it should be updated and revised regularly and as needed.

Concurrent with the implementation of the Plan is the understanding that additional staff dedicated to on-the-ground management will be necessary. An important first step is to build internal financial and staffing capacity to act proactively toward protecting the City of Wheat Ridge’s natural heritage, and to respond creatively to unexpected opportunities. Added capacity will also increase the likelihood that the other ambitious goals of this Plan will be realized with a spirit of stewardship, conservation, and conscientious use of Wheat Ridge’s open space areas.

# 1.0 Background

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## 1.1 Purpose of the Plan

The purpose of the City of Wheat Ridge Open Space Management Plan (Plan) is to establish a framework for setting priorities and provide specific management direction for natural, scenic and recreational resources within the Wheat Ridge Greenbelt, Lewis Meadows, and future open space acquisitions. Implementation of the Plan will assist the Wheat Ridge Parks and Recreation Department in its efforts to preserve and enhance these areas for present and future generations. This Plan supplements numerous studies that have been completed through 2001 on Wheat Ridge open space. Relevant information from these municipal and county plans and environmental reports has been reviewed and incorporated into this Plan.

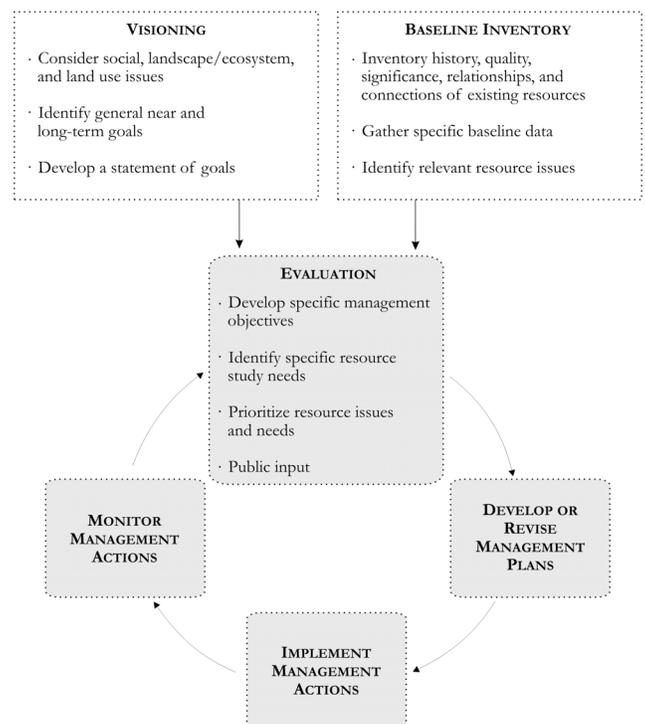


Preserving and enhancing natural and scenic resources is one of the primary goals of this Plan.

## 1.2 How to Use the Plan

The Plan is a working document, which should change and evolve with the Wheat Ridge Greenbelt, Lewis Meadows, and future open space areas over time. Future open space planning efforts should build on the recommendations set forth in this Plan. As the Wheat Ridge Parks and Recreation Department implements management action and monitoring recommendations outlined in the Plan, and as objectives and goals change, this document should be updated to reflect those changes. This will further ensure that the document provides a foundation for long-term adaptive management of open space resources. Adaptive management is an incremental approach to managing open space that emphasizes monitoring, evaluation, and feedback. Knowledge of a resource, gained by monitoring management actions, is evaluated and incorporated into future management actions, decisions, and planning.

The Adaptive Management Process





The 300-acre Greenbelt is the core of the City's open space.

### 1.3 Description of Open Space

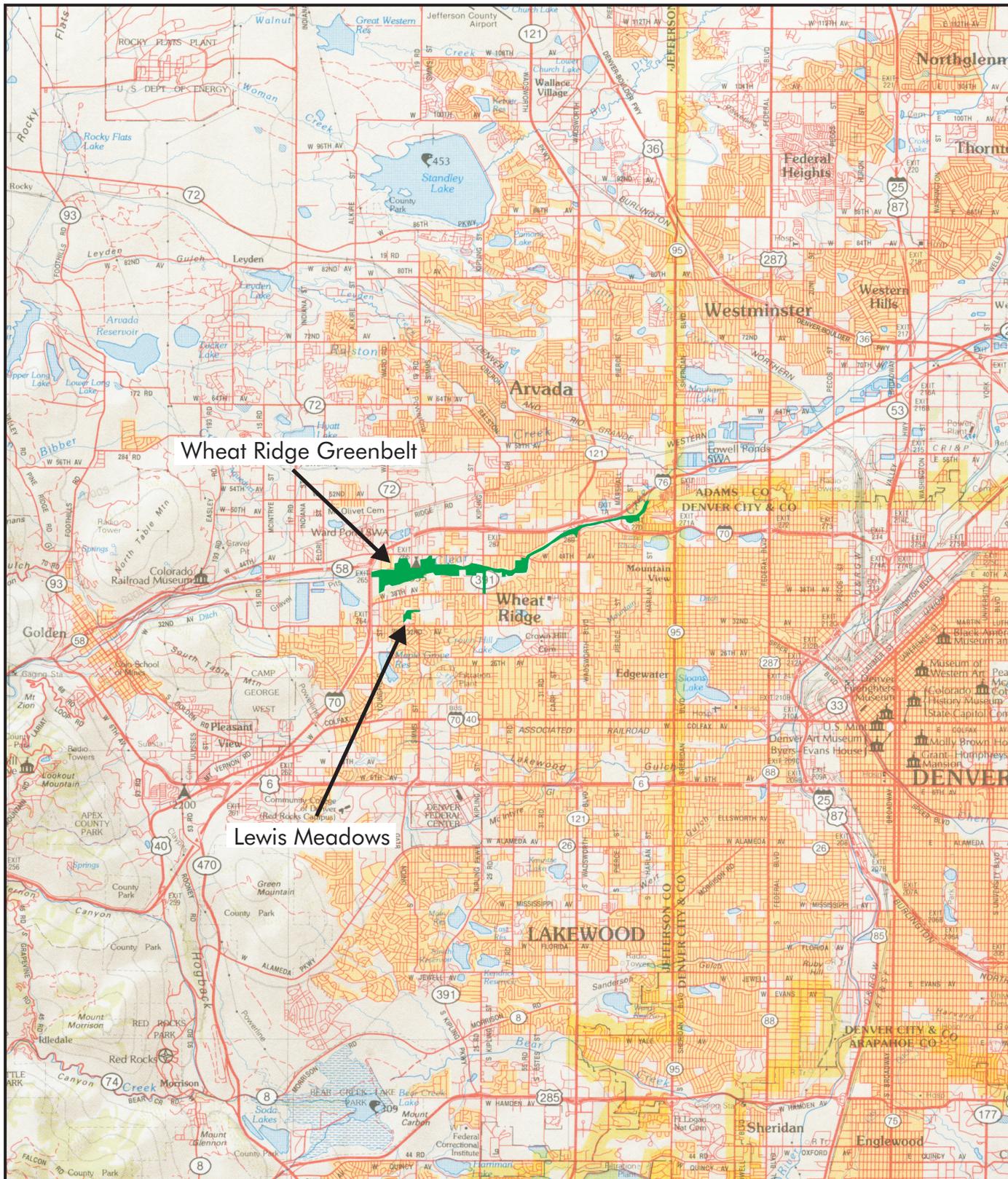
Located near the mouth of Clear Creek in the foothills west of Denver, Colorado, the City of Wheat Ridge owns about 300 acres of open space, the majority of which is located along the Clear Creek Corridor within the Wheat Ridge Greenbelt (Figure 1). Wheat Ridge's additional open space area is Lewis Meadows, which is situated along Lena Gulch, which flows into Clear Creek within the Wheat Ridge Greenbelt. Management and oversight of open space properties fall under the Wheat Ridge Parks and Recreation Department.

#### 1.3.1 Wheat Ridge Greenbelt

The Wheat Ridge Greenbelt is the larger of Wheat Ridge's two open space properties, stretching five miles along Clear Creek and consisting of about 300 acres. The Greenbelt is bounded on the west by Youngfield Street, on the east by Harlan Street, and on the north and south by various private properties (Figure 2). The Greenbelt is located within the 100-year floodplain of Clear Creek, where the elevation varies from 5,450 to 5,280 feet. The Greenbelt is generally flat with a very gradual slope from southwest to northeast and is completely surrounded by development, which closely abuts its borders. There is no buffer zone, making it difficult to maintain some of the preferred resource conservation practices. It is accessible by seven different trailheads along its five-mile stretch, along with many additional neighborhood access points.

While the Wheat Ridge Greenbelt historically has been hayed, cropped, and grazed, much of it has remained free from residential, commercial, and non-mining industrial development. Today, the Wheat Ridge Greenbelt provides habitat for a wide array of native wildlife and vegetative species, including the federally threatened Ute ladies'-tresses orchid, a globally imperiled species.

Since the City of Wheat Ridge's incorporation in August 1969, the Wheat Ridge Parks and Recreation Department has managed all the land along the Wheat Ridge Greenbelt for recreation purposes. The Wheat Ridge portion of the Clear Creek Trail has become a valuable open space amenity for Wheat Ridge residents, providing opportunities for hiking, bicycling, and nature viewing.



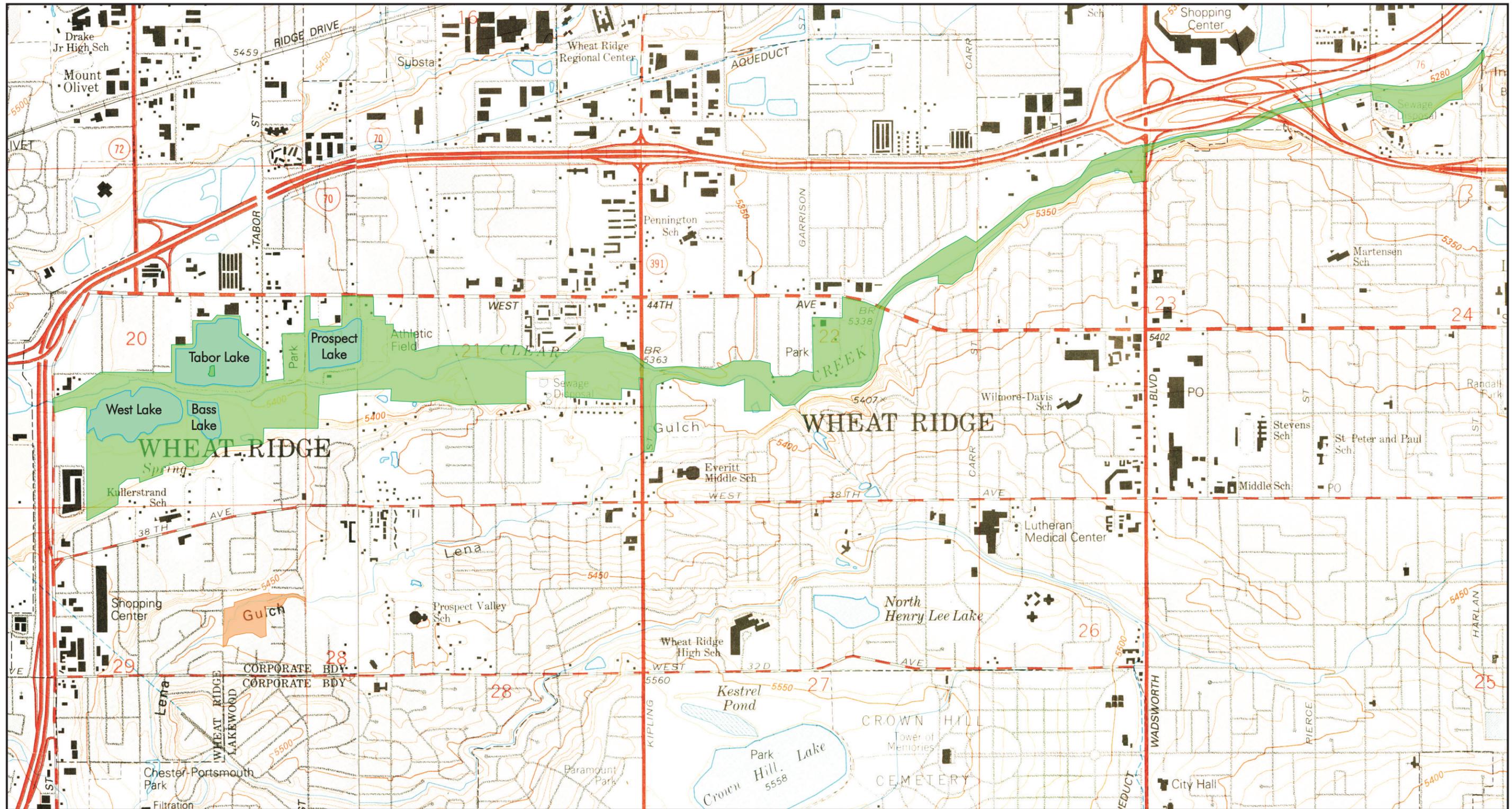
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Figure 1  
 Regional Setting



1 Inch = 2 Miles

Prepared for: City of Wheat Ridge  
 File: 1930Figure1.cdr



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- Greenbelt
  - Lewis Meadows
- Boundaries Approximate*

**Figure 2**  
 City of Wheat Ridge Open Space

Prepared for: City of Wheat Ridge  
 File: 1930Figure1.cdr  
 July 2002

1 inch = 1,500 Feet

### 1.3.2 Lewis Meadows

The ten-acre Lewis Meadows is located southwest of the Wheat Ridge Greenbelt just off of 34th Avenue and is surrounded entirely by private residential homes. Lewis Meadows is situated within the 100-year floodplain of Lena Gulch.

Lewis Meadows became designated open space in 1972 when residents from Jefferson County approved a one-half cent sales tax to raise money for open space purchases. Lewis Meadows features stands of mixed cottonwood, mixed shrub, and mesic grasses and is a popular area for dog walking. Lewis Meadows serves as a floodplain park, receiving overflows of Lena Gulch, which runs through the middle of the site.



Lewis Meadows is situated within the floodplain of Lena Gulch.

## 1.4 Vision

The vision for the Wheat Ridge Open Space Management Plan was developed following community workshops and discussions with the Wheat Ridge Parks and Recreation Commission and Wheat Ridge City Council:

*“Wheat Ridge Open Spaces are wondrous, wild, renewing habitats – filled with an array of plant and animal communities. Open Space unites this web – the natural places of Wheat Ridge – where time flows like the river that runs through it. We are invited to be considerate guests, appreciative of all that we see – gentle in our touch.”*

## 1.5 Mission

The open space system of Wheat Ridge should be protected and preserved for the enjoyment of present and future generations. These open spaces provide opportunity for contact with nature and enhance the quality of life for humans and plants and animals alike. Management of these areas should emphasize the conservation and restoration of the natural ecosystem.

## 1.6 Goals

Preliminary goals for Wheat Ridge open space provide a philosophical foundation on which to base the Plan. They also help to transform the vision and mission into reality. The resource management sections beginning on page 2-1 present additional

## 1.0 Background

resource-specific goals, objectives and management actions for resources such as vegetation, wetlands and riparian areas, water resources, and wildlife. The following goals were developed in concert with City staff.

### 1.6.1 Natural Resources

- Protect and/or restore open space and sensitive areas
- Maintain and improve wildlife habitat and diversity
- Monitor and map the health of the environment over time
- Control and eradicate where possible non-native and invasive species
- Protect the scenic and natural landscape
- Improve water quality in lakes and streams
- Protect and preserve land through acquisition, conservation easements, donations, and other means
- Prevent possible uncontrolled fires through fuel loading management

### 1.6.2 Community and Partnerships

- Build and maintain positive community relations through citizen involvement in open space management
- Use open space to help preserve the quality of life for present and future generations
- Provide valuable guidance for the City of Wheat Ridge staff and elected officials on current and future open space management issues
- Promote partnerships with other government agencies
- Maintain and cultivate a good neighbor policy with adjacent landowners

### 1.6.3 Education

- Promote an appreciation and understanding of natural resources through interpretive programs, materials and displays
- Create a safe, enjoyable open space in which to visit, learn and relax
- Create an identity for the City's open space through signage and informational brochures and maps
- Promote proper use of all City open space through environmental education and the marketing of the purpose and function of open space within the community

#### 1.6.4 Recreation

- Provide safe, close-to-home, low impact recreational opportunities in a natural setting with connections to nature
- Recognize that the trails within open space are an essential component of a Metro-wide trails system
- Provide and maintain a balance between wildlife habitat protection and passive recreational opportunities
- Enhance and maintain a trail system and other related infrastructure amenities
- Provide a uniform standard for signs and amenities such as restroom, fencing, gates, parking lots, and trailheads

### 1.7 Conservation Values

Conservation values are the site features, including natural, cultural, and scenic resources, that make an open space area unique. The Wheat Ridge Greenbelt and Lewis Meadows possess both natural resource and scenic conservation values.

#### 1.7.1 Natural Value

The Wheat Ridge Greenbelt provides an important wildlife corridor and habitat for a wide range of vegetative and wildlife species. In terms of vegetation, remnant examples of naturally occurring riparian communities include the plains cottonwood/chokecherry riparian woodland type and the plains cottonwood/western snowberry riparian woodland type. In addition to these important riparian communities, the Colorado Natural Heritage Program (CNHP) includes the Wheat Ridge Greenbelt in its Prospect Park Potential Conservation Area, a planning designation. The Colorado Natural Heritage Program delineates *Potential Conservation Areas* that focus on capturing the ecological processes that are necessary to support the continued existence of a particular element occurrence of natural heritage significance. The Prospect Park Potential Conservation Area supports the globally rare Ute ladies'-tresses orchid. This Potential Conservation Area also may contain the only known occurrence worldwide of a newly discovered species of earthstar, a type of fungus (CNHP 2000). In addition to important vegetation communities and vegetative species, the Wheat Ridge Greenbelt and Lewis Meadows provide important habitat for a number of wildlife



West and Bass Lakes fall within the Potential Conservation Area delineated by the Colorado Natural Heritage Program.

## 1.0 Background

species such as great blue heron, red-tailed hawk, red fox, grassland songbirds, and various migratory waterfowl.

### 1.7.2 Scenic Value

Visitors to the Wheat Ridge Greenbelt and Lewis Meadows open space areas are afforded views of mature cottonwood galleries, inundated wetlands, a diverse array of birds and other wildlife, and naturally functioning riparian ecosystems. Some of the westernmost portions of the Greenbelt also provide excellent views of the Colorado Front Range, North Table Mountain, and the Dakota Hogback.

## 1.8 Management Issues

Management issues are specific occurrences or situations, such as adjacent land practices, visitor use, or noxious weed infestations that can compromise the conservation values of the open space. Some of the significant management issues identified by the Wheat Ridge Parks and Recreation Department are highlighted below:



Trampling of vegetation along Clear Creek has led to streambank erosion that negatively affects water quality.

1. Domestic pet and wildlife conflicts
2. Fire potential from an accumulation of undergrowth
3. Illegal dumping
4. Increased visitor use
5. Law enforcement
6. Noxious weeds
7. Off-leash pets and pet waste
8. Off-trail use/establishment of social trails
9. Water quality and quantity
10. Wildlife management

### 1.8.1 Plan Guidance

Several municipal and county plans and environmental reports provide planning direction related to Wheat Ridge open space. These plans and reports include the *2000 City of Wheat Ridge Comprehensive Plan*, the *Jefferson County Open Space Master Plan*, the *Environmental Analysis and Evaluation of Trail Corridors of the Wheat Ridge Greenbelt*, and

the *Wheat Ridge Open Space Areas Biological Inventory*. A brief description of each of these documents and relevant policies and goals are provided below.

### **2000 City of Wheat Ridge Comprehensive Plan**

The *2000 City of Wheat Ridge Comprehensive Plan* provides planning direction for future growth and development for the City of Wheat Ridge. The plan also provides detailed policy recommendations related to six plan components include: Future Land Use; Community Character, Community Amenities and Services; Transportation; Sustainable Economic Development; and Environs and Regional Cooperation. Policies relevant to Wheat Ridge open space are described below:

#### Future Land Use Policies

- Work with state and national organizations to provide economically sound mechanisms to protect farmlands and improve land stewardship; look to Colorado Open Lands, the American Farmland Trust, and the Mountain Plains Office of the National Trust for Historic Preservation for initial assistance
- Develop a system of incentives to include easements and land dedication as a means of preserving agricultural land
- Protect unique or distinctive natural features and systems, critical wildlife habitats, and unique or critical environmental resources from adverse impacts through sound conservation practices
- Utilize flood plains, areas easily subject to fire, areas with unstable soils, wildlife areas, wetlands, and steep slopes as open space
- Promote the preservation of open space by private landowners through mechanisms such as acquisition, conservation easements, land trusts, and life estates by accessing programs and funding from non-profit organizations
- Explain Wheat Ridge's environment and natural amenities through a creative public and private sign program. Consider placing interpretive heritage signs in public spaces and placards that identify plant and tree species along community trails and in commercial areas

## 1.0 Background

### Community Character Policies

- Continue to beautify the City using methods such as development of greenways and requiring the addition of and continual maintenance of landscaping on any existing development
- Preserve Wheat Ridge's agricultural and cultural legacy through the use of open space preservation tools such as conservation easements
- Preserve and enhance the Clear Creek Greenbelt

### Community Amenities

- Develop educational opportunities such as interpretive displays and programs that explain and assist the community in the appreciation of the City's natural and historic resources
- Designate, preserve and require restoration of important ecosystems such as riparian ecosystems, wildlife habitat and wildlife migration corridors
- Work with the Denver Regional Council of Governments regarding adding the Clear Creek corridor to its regional inventory of sensitive environmental areas used in local and regional planning efforts

### ***Jefferson County Open Space Master Plan***

The *1998 Jefferson County Open Space Master Plan* establishes goals and recommendations needed to ensure the continued success of the Jefferson County Open Space Program. This document takes a countywide approach to protecting open lands by linking the efforts of the Open Space Program with the land use tools available to the Jefferson County Planning and Zoning Department.

### Open Land Goals

- Preserve open lands throughout the county as the primary priority of the Jefferson County Open Space Program.
- Preserve open lands for their broader contributions to the community, including maintenance of water quality and preservation of wildlife habitat, historic sites, agricultural character, visual beauty, psychological benefits and recreational benefits
- Acquire open space to separate urban growth areas and enhance individual community identity

- Explore and implement the use of alternative land preservation methods in partnership with landowners, developers, private agencies and other appropriate groups
- Preserve the prime open land in advance of development in high-growth areas
- Preserve the more significant remaining working ranches throughout the county as reserves of local cultural history and open land
- Utilize public and private partnerships to a greater extent to leverage limited dollars and resources more effectively

#### Trail Goals

- Link open space and trails to the greatest extent possible

#### Natural Resource Goals

- Protect, preserve, and restore natural ecosystems
- Develop integrated resource management plans for existing and newly-acquired lands
- Manage natural resources for sustainable utilization and biodiversity
- Inventory existing lands to determine baseline habitat conditions and monitor changes in the natural resources of the parks
- Preserve rare and locally unusual plants and their habitat

#### Education Goals

- Utilize open lands for the interpretation of natural resources and to provide outdoor educational opportunities
- Protect and interpret historically important cultural resources and facilities on open space lands
- Educate all users on environmental impacts and methods for land preservation

### ***Environmental Analysis and Evaluation of Trail Corridors of the Wheat Ridge Greenbelt***

The 1995 *Environmental Analysis and Evaluation of Trail Corridors of the Wheat Ridge Greenbelt*, prepared by MDG & Associates, Inc., evaluates the recreational and trail amenities provided along the Greenbelt. The Environmental Analysis and Evaluation provides a detailed account of existing conditions along the Greenbelt. The document also lists recommendations for preserving and enhancing

## 1.0 Background

environmental components of the Greenbelt and maintaining and improving recreational trails.

### ***Wheat Ridge Open Space Areas Biological Inventory 2000***

The *Wheat Ridge Open Space Areas Biological Inventory 2000* assesses the natural heritage values and map vegetation types, selected weed species, rare plants, and selected animal species throughout the Wheat Ridge Greenbelt and Lewis Meadows. As part of the inventory, the Colorado Natural Heritage Program identified locations with natural heritage significance, plant community assemblages, selected weeds and animals, and offer suggestions for managing the biological resources of Wheat Ridge open space.

## 2.0 Ecological Landscape

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The City of Wheat Ridge's open space once consisted of several ecological community types, ranging from the riparian corridor along Clear Creek to the grasslands and shrublands of the upland areas. Each of these community types is supported by the interactions between the individual species and processes that sustain them. While much of the City's open space has been disturbed by agricultural and grazing practices dating back to the late 1800s, gravel mining along Clear Creek, and urban development more recently, the area can be restored to include a unique mosaic of native vegetation. Although the existing communities within the City's open space reflect these historical uses, including other surrounding land use practices, remnants of natural plant communities are present. In general, disturbance of intact, functional communities should be avoided and restoration of the disturbed communities within the City's open space should be considered. Ecological preservation issues and opportunities at the community level within the City's open space include:

- Restoring degraded plant communities
- Maintaining restored communities and associated ecological processes
- Maintaining habitat for populations of targeted plant and animal species

The Greenbelt portion of the City's open space can potentially preserve a small ecosystem fragment, which is an important concept to understand when approaching resource management decisions. Adjacent land use will affect the ecological balance and subsequent management actions within the Greenbelt directly or indirectly. Poor management of the surrounding landscape, including Lewis Meadows, would compromise the ecological value of the Greenbelt, reducing it even further to an island of protection rather than a component of a greater ecological whole. An ecosystem approach to natural resource management (i.e., an integrated system) attempts to manage and maintain fundamental ecological processes as well as



The riparian corridor along Clear Creek is representative of one of the ecological community types in the City's open space.

## 2.0 Ecological Landscape

individual species and features. It identifies factors that might interfere with the natural processes or threaten the balance of elements, with the goal of maintaining natural abundance, diversity, and the ecological integrity of plants and animals.

## 3.0 Vegetation

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The biological inventory prepared by the Colorado Natural Heritage Program provides an excellent description of the vegetation communities, noxious weeds, and rare plants throughout the City of Wheat Ridge Greenbelt and Lewis Meadows (CNHP 2000). This section of the Plan builds largely on the *Results* section of the Colorado Natural Heritage Program biological inventory and the *Existing Plant Communities* section of the MDG report.

### Vegetation Goal

*Preserve and maintain native plant communities, protect rare species and communities, and restore native vegetation in suitable areas.*

### 3.1 Vegetation Overview

The City of Wheat Ridge Greenbelt is an urban riparian corridor with Clear Creek as its centerpiece. In an arid setting, this riparian area naturally attracts a multitude of animal species, many of which are dependant on wetlands for all or part of their life cycles. Riparian habitats such as those within the Greenbelt are some of the most productive biological systems in the West.

Some of the major influences affecting plant community character and condition are natural disturbances, soil types, topography, hydrology, wildlife interactions, invasion by non-native plant species, land use, and land management. Although the Greenbelt may appear to be in a “natural” state, indicators of disturbance include: historical gravel mining, channelization of Clear Creek, historical livestock grazing, noxious weed infestations, and heavy recreational use. The vegetation communities that make up the Greenbelt and Lewis Meadows are, to some extent, a product of these past and current disturbances. The Colorado Natural Heritage Program mapped vegetation communities within the City of Wheat Ridge open space. The four general vegetation community assemblages mapped are described below. Comprehensive descriptions of each community assemblage and plant species list are contained in the *Wheat Ridge Open Space Areas Biological Inventory* (CNHP 2000).

#### 3.1.1 Grass and Forb Dominated

A cover of grass and forb species dominates this vegetation community. Some individual trees and shrubs may be present, but

## 3.0 Vegetation

they are a minor component of the total cover. Several areas of this community type in Wheat Ridge's open space have been previously disturbed and planted with introduced pasture grasses.

### 3.1.2 Shrub Dominated

A cover of shrubby species dominates this type of community assemblage. Grass and forbs may be present beneath the shrub canopy. Individual trees may also be present but do not account for a significant portion of the total cover.

### 3.1.3 Tree Dominated

Tree species dominate the cover in this vegetation community type. An understory of woody shrubs and a herbaceous ground cover are often present beneath the canopy. Native and non-native cottonwood species dominate the floodplain areas near Clear Creek. Also present in the canopy along the floodplain are other non-native trees such as Russian olive. In upland areas, other species replace the cottonwoods. Cottonwood-dominated areas may consist of large, widely spaced older cottonwoods with a grassy understory (gallery forest), or may be dominated by dense stands of smaller and younger trees with no significant understory vegetation (riparian forest). Typically the riparian forest areas are dominated by non-native willow species.

### 3.1.4 Other Areas

Other land cover types consist of all areas of the Greenbelt that have no vegetation cover. These areas include open water, bare ground, and infrastructure and are included (CNHP 2000) to identify areas where management for vegetation would not be useful or applicable.

## 3.2 Management Direction

Priorities for native vegetation management in the City of Wheat Ridge's open space are to preserve biological diversity at a variety of scales and to improve the condition of native plant communities. Allowing and encouraging the function of natural processes and simulated natural processes, integrated weed management, and other restoration activities can accomplish these priorities. The

coordination of land stewardship with surrounding landowners and public land management agencies is an important component of the program.

### 3.3 Noxious Weeds

Noxious weeds threaten native plant communities and species diversity by displacing desirable native species. Alien plants that are highly invasive usually do not have natural pathogens and predators to keep their populations under control. Some non-natives, such as diffuse knapweed (*Acosta diffusa*), contain allelopathic chemicals that can suppress the growth of other species and allow diffuse knapweed to grow in single-species stands (Watson and Renney 1974).

Noxious weeds and undesirable plant species mapped in the City of Wheat Ridge open space appear in Table 1. Six of these species are among the top ten priority weeds for Colorado. All of the species in Table 1, with the exception of poison ivy (*Toxicodendron rydbergii*), pose a significant threat to native communities and potential restoration efforts.



Yellow toadflax, an ornamental introduced to the U.S. in the mid-1800s, threatens native plant communities along the Greenbelt.

**Table 1. Noxious and undesirable plants.**

Scientific Name	Common Name
<i>Acosta diffusa</i>	Diffuse knapweed <sup>1,2</sup>
<i>Cirsium arvensis</i>	Canada thistle <sup>1,2</sup>
<i>Carduus nutans</i>	Musk thistle <sup>1,2</sup>
<i>Cirsium vulgare</i>	Bull thistle
<i>Clematis orientalis</i>	Chinese clematis
<i>Conium maculatum</i>	Poison hemlock
<i>Dipsacus fullonum</i>	Common teasel <sup>1</sup>
<i>Dipsacus laciniatus</i>	Cutleaf teasel
<i>Eleagnus angustifolia</i>	Russian olive
<i>Euphorbia esula</i>	Leafy spurge <sup>1,2</sup>
<i>Linaria genistifolia</i> ssp. <i>dalmatica</i>	Dalmatian toadflax <sup>2</sup>
<i>Linaria vulgaris</i>	Yellow toadflax <sup>2</sup>
<i>Lytbrum salicaria</i>	Purple loosestrife <sup>1</sup>
<i>Onopordum acanthium</i>	Scotch thistle <sup>1</sup>
<i>Rhamnus cathartica</i>	Buckthorn
<i>Tamarix ramosissima</i>	Tamarisk
<i>Toxicodendron rydbergii</i>	Poison ivy <sup>3</sup>

<sup>1</sup>Appears on the Jefferson County Noxious Weed List.

<sup>2</sup>Recognized as one of the top ten prioritized weed species for Colorado.

<sup>3</sup>Native species, but controlled in selected areas by the City of Wheat Ridge.



Russian olive, pervasive in the Greenbelt and in Lewis Meadows, was added to the State Noxious Weed List in 2001.

### 3.4 Integrated Weed Management

The authority and responsibility to formulate and implement a Noxious Weed Management Plan comes from Colorado Revised Statutes 35-5.5-101 et. seq., and the Colorado Weed Management Act (Act). The Act identifies both statewide and countywide noxious weeds and obligates all Colorado counties to use Integrated Weed Management (IWM) techniques to control them (Table 2). When used together, these techniques are the least harmful and most beneficial methods for weed control.

**Table 2. Integrated weed management techniques.**

Technique	Definition
Mechanical	Physical removal by mowing, mulching, tilling, prescribed burning, grazing or hand pulling.
Cultural	Enhancement of the native plant community using fertility management or re-vegetation.
Biological	Releasing a weed's native natural enemies using insects, grazing animals or disease.
Chemical	Destroying weeds using herbicides that do not adversely affect the desired plant community.

The City of Wheat Ridge accomplishes noxious weed control on its open space through the Parks and Recreation Departments, which use an integrated pest management approach to weed control. Integrated pest management is a decision-making process that selects, integrates, and implements control methods to prevent or manage noxious weeds (Table 2). It focuses on long-term prevention or suppression of undesirable species while reducing the impact that control techniques may have on the environment, human health, and non-target plants and animals.

The spread of noxious weeds has often been termed a biological wildfire. As with wildfire, the most important part of a noxious weed management program is early detection and prevention. Areas such as road shoulders, trailheads, and picnic areas, should be surveyed annually to find new infestations. Infestations should be removed before they become well established. The City also should note noxious weeds along open space boundaries and on adjacent

property and notify the appropriate landowners or managers about problem plants.

Prevention will have the most significant long-term benefit for the Wheat Ridge open space and surrounding areas. Vigorous and consistent prevention reduces the opportunities for dispersal of noxious weeds, which, in turn, minimizes the need for future control actions. Prevention is proactive rather than reactive, and is the most cost-effective management action considered in this section. Restoring and maintaining healthy plant communities and reducing human impacts and use patterns also can prevent noxious weed invasion.

Weed management is potentially the most serious management issue the City faces in its open space. Noxious weed management should be integrated into every aspect of land management. In conjunction with this Plan, the City is developing a weed management plan for its open space.

### **3.5 Revegetation**

The major purposes of revegetation are: to control sediment erosion and transport, enhance habitat, and provide viable habitats for species that are in decline. Vegetation is critical in stabilizing soil materials. The roots of vegetative material bind soil on hillsides and the leaves intercept rainfall, thereby cushioning the raindrop impact on the soil and reducing the amount of water available for overland flow. Establishing an appropriate vegetative community in a disturbed area creates habitat for species that may not have been present prior to restoration, either because exotic and/or opportunistic species crowded them out or because the physical conditions of the site were different enough from the natural conditions to preclude successful habitation.

Before revegetation efforts are initiated in Wheat Ridge's open space, it is important to insure that the physical characteristics of the landscape (e.g., slope, aspect, soil texture, organic material content, and depth of water table) are appropriate for the site location and will serve as a suitable planting medium for the desired vegetative community. It is worth putting money and effort into site

## 3.0 Vegetation

preparation as it will pay off in revegetation success. The *Native Plant Revegetation Guide for Colorado* (CNA 1998) deals with the complexity of re-establishing native plants. This guide addresses soil preparation (including amendments such as fertilizer, mulch, and lime), seed mix choices, transplanting, seeding, monitoring, and maintenance.

Both the soils and hydrology of a site must be understood to ensure successful growth of native plants. The soil information provided below and hydrology information provided in Section 5.0, *Water Resources*, is provided to help understand site conditions and develop appropriate sustainable landscapes.

### 3.5.1 Geology

Understanding the geological and soil makeup of Wheat Ridge open space will be an important factor in directing revegetation efforts. Most of the City of Wheat Ridge open space lies within the Post Piney Creek and Piney Creek Alluvium geologic formation. This geologic area is composed of gravel, sand, silt and clay of modern stream floodplains and slightly older low terraces above the stream level. Lewis Meadows lies within the Broadway Alluvium formation, which is composed of slightly older gravel, sand, silt, and clay forming alluvial terrace deposits.

Erosion and deposition are the major factors influencing the character of the Wheat Ridge Greenbelt. Clear Creek is responsible for eroding the existing floodplain and for the deposition of large amounts of alluvial material. The abundance of this material throughout the Clear Creek corridor has made it a popular area for sand and gravel mining. The waters flowing from the southern bluff support numerous wetlands and the soils in the floodplain support a lush growth of vegetation.

### 3.5.2 Soils

Soil in the Greenbelt and Lewis Meadows is formed by the action of soil-forming processes on parent rock or alluvium that was accumulated through erosion and deposition. Because the Greenbelt lies alongside Clear Creek and Lewis Meadows alongside Lena Gulch, most of the soils within Wheat Ridge's open space areas have

moderate to high probabilities of periodic flooding or a high water table.

Soils are a determining factor in selecting and planting vegetation and constructing trails, and they are the medium that will be manipulated for planting, storing and transmitting water, and supporting diverse plant communities. Good soil conditions exist when water, air, plant roots, and microorganisms are able to move freely through and within the root zone of the soil. Because soil characteristics vary across any landscape, it is important to know the soil characteristics of the property. Prior to revegetation of upland areas, a thorough soil analysis should be conducted.

Specific soils mapped by the U.S. Soil Conservation Service include Alda loam, Alda-Niwot Complex, Torrifulvents, and Ustic Torriorthents. A detailed description of each is provided below.

**Alda Loam**, 0 to 2 percent slopes. This is a deep, somewhat poorly drained soil on alluvial valley floors, low terraces, and floodplains. Permeability of Alda soil is moderate and available water capacity is low. Water erosion and soil blowing are slight hazards. A seasonal water table is at a depth of 24 to 36 inches in spring and summer. This soil is occasionally flooded for brief periods in spring and summer.

**Alda-Niwot Complex**, 0 to 2 percent slopes. The areas of this complex are on alluvial valley floors abandoned meander belts, and low terraces. The Alda soil is deep and somewhat poorly drained. Permeability is moderate and available water capacity is low. Water and wind erosion are slight hazards where soil is exposed to these elements. A seasonal high water table is at a depth of 24 to 36 inches in spring and summer. The Niwot soil is deep and somewhat poorly drained. Permeability is moderate and available water capacity is low. A seasonal high water table is at a depth of 6 to 18 inches in spring and summer. This complex is subject to occasional brief periods of flooding in spring and summer.

**Torrifluvents**, 0 to 3 percent slopes. Torrifluvents are the most dominant soil type in the Wheat Ridge Greenbelt. These soils are gravelly, deep, excessively drained, and underlie most of the flat

### 3.0 Vegetation

floodplain areas within the Greenbelt. They are easily eroded and depleted, and have poor water holding capabilities. Runoff is slow, and water erosion is a severe hazard. These soils are subject to occasional brief periods of flooding in spring and summer.

**Ustic Rorriothents**, 15 to 50 percent slopes. Ustic Rorriothents are loamy soils that are found on active slopes adjacent to Clear Creek. These are shallow to deep, well-drained soils on eroded, active hill slopes adjacent to drainages. Permeability of these soils is moderate to slow, and the available water capacity is low to high. These soils underlie the ridge south of the Clear Creek along the eastern portion of the Greenbelt. Runoff is rapid and water erosion is a severe hazard.

## **Goal**

Preserve and maintain native plant communities, protect rare species and communities, and restore native vegetation in suitable areas.

## **Management Objectives and Action Recommendations**

Objective 1: Control noxious weeds within the Greenbelt and Lewis Meadows.

Action: Develop and implement the weed management plan.

Action: Implement cultural weed management techniques by re-establishing all disturbed vegetation through seeding or planting of native materials.

Objective 2: Plan trails and trail use to minimize the risk of weed introduction and spread.

Action: Do not place new trails in areas with severe existing weed infestations.

Action: Avoid creating a trail corridor that travels from a weed-infested area into an area with little or no weed infestation.

Action: Keep trails out of wet areas and away from wetlands on the property.

Action: Encourage trail users to remain on the designated trail system within open space areas.

Action: Close and rehabilitate social trails.

Objective 3: Implement trail construction and maintenance with weed strategy in mind.

Action: Use weed-free materials in trail construction and maintenance.

Action: To wash away seeds, clean all equipment used in trail construction and maintenance before it is used on a new project.

Action: Minimize ground disturbance and soil compaction resulting from construction and maintenance

### 3.0 Vegetation

activities by limiting heavy equipment trips and turn-around sites.

Action: Reclaim disturbed areas immediately to reduce the chance of weed infestation.

Action: Reduce the spread of noxious weeds along trails during mowing operations by considering issues such as the timing of seed maturation (e.g., mow prior to seed maturation), and the subsequent potential for machinery to act as a vector for the spread of noxious weeds.

Action: Include routine inspection for noxious weeds and the removal thereof through cleaning during the maintenance of City equipment.

Action: Require the above actions of contractors and other City of Wheat Ridge departments within open space areas.

Objective 4: Educate staff, landowners, and visitors about noxious weed control.

Action: Formalize outreach program to assist homeowners with appropriate landscaping, which avoids invasive species.

Action: Encourage the use of weed-free forage or pelletized feed for horses before and during open space visits.

Action: Educate the public about aggressive ornamental plants and native plant alternatives.

Objective 5: Implement noxious weed management with a regional perspective.

Action: Continue to apply for a grant through the Colorado Noxious Weed Management Fund for control efforts along the Greenbelt. Consider application with the Jefferson County Open Space and cross-boundary implementation.

Action: Explore additional funding options through agencies such as the Colorado Division of Wildlife (CDOW)

and the Natural Resources Conservation Service (NRCS) for weed management.

*Action:* Explore the possibility of crafting and adopting an ordinance at the municipal level regarding noxious weeds and their control.

*Action:* Continue cooperative efforts with the Colorado Division of Wildlife to identify, control, and record infestations of purple loosestrife.

### **Monitoring**

*Action:* Photos and mapping of known infestations should be updated every three years and used annually in field reviews to track the success of control efforts.

*Action:* Recreational trails and trail margins should be surveyed annually for weed infestations.

## 4.0 Wetland and Riparian Areas

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Wetlands are often thought of as marshy or swampy areas while riparian areas are the narrow, thickly vegetated strips along streams and the edges of ponded water, typified by plants and trees that require higher amounts of soil moisture than exists in surrounding uplands. Riparian areas are a type of wetland, which is generally defined by the presence of hydric soils, hydrophytic (“water-loving”) plants, and semi-annual inundation by surface water. In addition to serving as habitat for many species of plants and wildlife, wetland and riparian areas filter runoff and protect the water quality of reservoirs and creeks.

Many plant species exist in riparian areas that would otherwise not be able to survive. A healthy riparian area contains sedges, willows and other water-loving plants, and is typified by undercut stream banks with overhanging vegetation, large structures formed by rock or woody debris, and a well-defined, meandering stream channel. The aquatic life of a healthy riparian area is often as rich as the terrestrial life. As productive as they may be, riparian areas make up only a small part of the total land area (less than 3 percent) in Colorado, yet they house 40 percent of all the known plant species in the State and provide habitat for nearly 80 percent of the wildlife species that live in and migrate through Colorado (Kittel et al. 1999).

Wetland and riparian areas occur throughout the City of Wheat Ridge open space and include cattail marshes, willow-dominated shrublands, and cottonwood-dominated assemblages. These wetland and riparian areas provide refuge for the federally threatened Ute ladies’-tresses orchid and include vegetation communities that are rare or imperiled on a statewide or global scale as ranked by the Colorado Natural Heritage Program (CNHP 2000). The Plains Cottonwood/Western Snowberry Riparian Woodland community is ranked G2G3S2 or “globally/state imperiled,” and the Plains Cottonwood/Chokecherry Riparian Woodland community is ranked G1QS1Q or “globally/state critically imperiled.”

### **Wetland and Riparian Areas Goal**

*Preserve significant wetland and riparian areas, maintain their ecological functions, and restore or enhance suitable wetland and riparian areas.*

## 4.0 Wetland and Riparian Areas

In recognition of the multitude of ecological functions and human values provided by wetlands, government agencies have established wetland protection programs. The cornerstone of this protection is Section 404 of the Clean Water Act, which establishes a program to regulate the discharge of dredged and fill material into waters of the United States, including wetlands. Activities in waters of the United States that are regulated under this program include fills for development, water resource projects (such as dams and levees), infrastructure development (such as highways and trails), and conversion of wetlands to uplands for farming, forestry, or residential development. However, regulatory programs alone are not sufficient to protect wetland and riparian areas.

Management of wetland and riparian areas should focus on protecting undeveloped areas, preventing further degradation and, where possible, restoring natural systems to a functional condition. Future trails should avoid significant wetlands, and passive recreational use should be compatible with wetland and riparian corridor preservation. The critical factor in assessing wetland and riparian areas is their condition. Currently, wetland and riparian areas within the City's open space are disturbed primarily by recreation activity and associated social trails along the Clear Creek corridor. Opportunities to restore or enhance degraded wetland and riparian areas within the City's open space exist and should be explored.

### 4.1 Lena Gulch

Lena Gulch flows through the middle of Lewis Meadows, which receives overflows from the gulch during high water periods. The area adjacent to the gulch is dominated by a mix of native and non-native cottonwood species in the overstory with or without an understory of mixed shrubs.



A mix of native and non-native tree species dominates Lena Gulch.

### 4.2 Clear Creek

The headwaters of Clear Creek are located along the Continental Divide about 45 miles west of the Wheat Ridge Greenbelt. Water quality is degraded by mine drainage in portions of the watershed. Sport fishing for salmonids occurs in upper reaches of the drainage. The riparian corridor along Clear Creek was altered by construction of Interstate 70 through the mountains and by channelization and

gravel mining in the Denver metropolitan area. Several small storage reservoirs and hydroelectric facilities were constructed in the Clear Creek basin. Clear Creek has a bedrock and boulder channel for most of its course through the mountains. On entering the plains, Clear Creek remains a single thread channel. Its substrate grades from cobble to gravel to sand as gradient decreases. Ute ladies'-tresses orchid occurs in two small populations along Clear Creek as it leaves the mountains.

### **4.3 Irrigation Ditches**

Irrigation was essential to growing fruits and vegetables in Colorado's dry climate. Among the first irrigation water rights are those on the Lee and Baugh Ditch, which now irrigates Prospect Park. Other early ditches include Slater, Brown and Baugh, and Oulette and Wadsworth. Each of these ditches flows out of the north side of Clear Creek in or near Wheat Ridge. On the south side of Clear Creek, running through the present conservation area is the Risdon Ditch. As a consequence of the irrigation is the development of shrubs and trees along some reaches of the ditches. This vegetation associated with the irrigation ditches provides a measure of habitat, cover, and connectivity (e.g., movement corridors) for wildlife in an urban environment.

## 4.0 Wetland and Riparian Areas

### **Goal**

Preserve significant wetland and riparian areas, maintain their ecological functions, and restore or enhance suitable wetland and riparian areas.

### **Management Objectives and Action Recommendations**

Objective 1: Preserve and protect existing wetland and riparian areas on the City of Wheat Ridge open space.

Action: Avoid disturbances to the existing wetland and riparian areas on the City's open space.

Action: Conduct wetland surveys and delineations when disturbance is anticipated.

Action: Determine whether wetlands on the City's open space are jurisdictional or isolated as determined by the U.S. Army Corps of Engineers under the Clean Water Act.

Action: Obtain applicable federal and state permits prior to disturbance.

Action: Consider effects on existing wetlands and the riparian area of all management actions and physical improvements.

Action: Avoid trail development and undesignated trail use through significant wetlands and riparian corridors.

Action: Where wetland crossings through identified wetlands are unavoidable, use elevated boardwalks or other appropriate means to minimize effects on hydrology, vegetation, and wildlife habitat.

Action: Establish fencing priorities to protect other wetland and riparian areas susceptible to visitor use disturbance.

Action: Reclaim social trails along Clear Creek in the vicinity of Anderson Park to minimize degradation of natural resources.

Action: Provide a hard-surface access to the Denver Blue Formation near Anderson Park and revegetate adjoining stream bank areas.

*Action:* Track floodplain management issues as they affect open space interests regarding wetland and riparian resource values.

Objective 2: Foster partnerships with adjacent landowners, private companies, and public agencies to protect sensitive riparian and wetland resources.

*Action:* Work with ditch companies to implement wetland Best Management Practices to minimize adverse natural resource impacts.

*Action:* Work cooperatively with adjacent property owners to prevent non-compatible land use (such as inefficient use of fertilizer or pesticides) activities adjacent to Clear Creek and Lena Gulch.

*Action:* Work closely with Urban Drainage and Flood Control by submitting projects through City's Public Works Department.

Objective 3: Protect riparian resources along drainage ditches.

*Action:* Research historical ownership and uses of ditches within Wheat Ridge open space.

*Action:* Determine maintenance responsibility for various irrigation ditches including Lee and Baugh, Lane, Brown and Baugh, and Oulette ditches.

Objective 4: Restore or enhance suitable wetland and riparian areas along the Greenbelt and Lewis Meadows where opportunities exist.

*Action:* Assess Clear Creek for degraded areas owing to past and current recreational uses using a visual inspection of the corridor.

*Action:* Explore the use of prescribed burns to maintain or enhance wetland and riparian plant community diversity.

## 4.0 Wetland and Riparian Areas

*Action:* Continue the use of Integrated Pest Management practices to control weeds and non-native vegetation in wetlands and riparian areas.

*Action:* Develop a formal planting and maintenance program to establish native riparian trees and facilitate efficient removal of hazard trees from Clear Creek.

*Action:* Maintain trees that are not deemed a hazard to remain as aquatic and wildlife habitat.

*Action:* Consult with a hydrologist, engineer, and water lawyer to evaluate the feasibility of re-establishing natural or seminatural hydrology to parts of the floodplain.

*Action:* Consult with a hydrologist, engineer, water lawyer to evaluate the feasibility of establishing greater hydrologic connectivity between Clear Creek and the lakes in the Greenbelt.

*Action:* Inventory streams and wetlands to identify degraded areas that may have restoration potential.

*Action:* Evaluate, design and implement riparian restoration and management programs. Activities should include, but are not limited to, fencing riparian corridors, removing Russian olive and other non-native species, and planting native species such as coyote willows and cottonwood trees.

*Action:* Use the Colorado Natural Heritage Program's natural communities descriptions to provide guidelines for the desired result of wetland and riparian restoration projects

Objective 5: Mitigate impacts to wetlands and riparian areas using appropriate management tools.

*Action:* In conjunction with visitor use and trail plans, consider management tools such as fencing, signage, interpretation, revegetation or trail closure to mitigate negative impacts from visitor use.

*Action:* Continue to pursue information concerning control methods for invasive aquatic species.

*Action:* Conduct outreach activities to educate anglers about Eurasian watermilfoil and the vectors for the spreading of this noxious weed.

Objective 6: Foster and support programs that emphasize the natural resource significance of wetlands and riparian areas.

*Action:* Prioritize environmental education and outreach to increase public awareness of wetland functions and values.

*Action:* Conduct a thorough investigation of wildlife use of wetlands in order to improve the understanding of the species of concern and the value of wetlands as wildlife habitat.

*Action:* Support research to gain a more thorough understanding of the ecological functions of wetlands on the City's open space, and the activities that affect them.

*Action:* Encourage research on the impact of management prescriptions on wetland productivity and diversity.

### **Monitoring**

*Action:* Use vegetation surveys, periodic visual assessments, and photographs to document changes to and effects on wetlands and riparian areas.

*Action:* Monitor land use upstream of the City's open space for sources of increased siltation, planting of invasive species, new or modified road crossings, and culvert installations.

*Action:* Monitor the occurrence and spread of weeds in wetlands and riparian areas.

*Action:* Monitor wetlands known to support or that may support breeding amphibian populations.

*Action:* Establish protocols for the long-term monitoring of wetland and riparian functions, values, vegetation, and

## 4.0 Wetland and Riparian Areas

wildlife (e.g., Montana Method for monitoring wetlands and habitat-based modeling for vegetation).

*Action:* Monitor regulatory compliance that affects wetland and riparian values and function on the City's open space.

## 5.0 Water Resources

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### 5.1 Clear Creek and Adjacent Lakes

Clear Creek is the centerpiece of the Wheat Ridge Greenbelt. Originating in western Clear Creek and Gilpin Counties, Clear Creek travels east through Idaho Springs, Jefferson County, and the City of Golden before entering the Wheat Ridge Greenbelt. The Greenbelt is near the base of Clear Creek's alluvial outwash from the mountains, where the stream historically began a more meandering course through a broad floodplain. Today, Clear Creek is highly channelized and largely isolated from its original floodplain.

Fed by cold water from high alpine lakes and streams, Clear Creek provides habitat for limited populations of brown and rainbow trout. However, because Clear Creek serves as a conduit for surface water flows and stormwater drainage, overall water quality has been reduced from its natural condition.

Bass Lake, Tabor Lake, West Lake, and Prospect Lake are also found within the Greenbelt. Remnants of earlier gravel mining operations, today these lakes provide habitat for wildlife and numerous freshwater fish species, and the Colorado Division of Wildlife periodically stocks them with warm water sport fish such as largemouth bass, bluegill, and bullhead.

### 5.2 Precipitation

Knowledge of the amount of water available to plants will be critical in any future efforts to restore native vegetation in the Wheat Ridge Greenbelt. The amount of water combined with soil texture and organic material ultimately determines moisture availability. Sources of water are rainfall, surface water runoff from adjacent lands, and the water table.

Average rainfall in the vicinity of Wheat Ridge open space is about 16.46 inches per year; January is the driest month and May the wettest. Table 3 provides a summary of monthly mean precipitation based on weather data from the Lakewood weather station from 1962 to 1999.

#### Water Resources Goal

*Protect the quality and quantity of water resources within the City of Wheat Ridge open space.*

**Table 3. Monthly average precipitation from 1962 to 1999.**

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0.45	0.47	1.32	1.92	2.53	2.24	1.84	1.62	1.39	1.02	1.03	0.53

*Source:* CSU 2002. Precipitation in inches from Lakewood Station.

### 5.3 Surface Water Runoff

Surface water runoff during storm events feeds into numerous drainages and irrigation ditches that lead into Clear Creek. One such drainage is Lena Gulch, which flows through Lewis Meadows before entering Clear Creek. Drainages and irrigation ditches serve as natural conduits for surface water flow and storm water runoff, and often they carry oils, fertilizers, herbicides, and pesticides that are potentially detrimental to Clear Creek water quality.



Nutrient loading has led to some algal blooms in the Greenbelt's Lake.

### 5.4 Ground Water

The depth to ground water, or the water table, influences soil moisture. In the Wheat Ridge Greenbelt, ground water typically flows toward Clear Creek, and depth to ground water is ten feet or less. Ground water near Lewis Meadows, which is at a slightly higher elevation than the Wheat Ridge Greenbelt, may be 20 feet or less.

**Goal**

Protect the quality and quantity of water resources within the City of Wheat Ridge open space.

**Management Action Recommendations**

Objective 1: Restore and maintain natural stream processes and flow regimes.

Action: Work with other managing agencies and organizations to maintain a natural streamside.

Action: Avoid mowing within 15 feet of stream banks and drainages to encourage the establishment of shoreline vegetation and stabilization of stream banks.

Action: Restrict access to degraded stream bank areas and restore these areas with native vegetation to prevent shoreline erosion.

Action: Maintain and inspect drainage areas including culverts on a bi-weekly basis to ensure proper water flow.

Action: Work with Urban Drainage and Flood Control District and the City of Wheat Ridge Public Works Department to maintain stormwater grates and prevent flow blockage.

Action: Work to restore Clear Creek as a natural cold-water system by maintaining appropriate water temperatures and minimal flows.

Action: Consider the purchase of additional water rights as they become available.

Objective 2: Preserve and enhance water quality of lakes and streams.

Action: Continue involvement in the Clear Creek Watershed Forum.

Action: Educate the community about the harmful effects of water runoff into open space areas. The goal is to prevent excess nutrients and pollutants from residential lawn maintenance, swimming pool draining, and stormwater runoff.

## 5.0 Water Resources

*Action:* Actively enforce penalties and other standard enforcement procedures on activities that reduce water quality.

*Action:* Encourage stream restoration in degraded shoreline areas to enhance water quality and natural stream function.

*Action:* Work with other agencies and industry partners to reduce toxic and thermal water discharge and non-point source pollution in Clear Creek to prevent fish kills and improve overall water quality.

Objective 3: Encourage development practices that minimize increases in runoff volume and pollutants as compared with predevelopment conditions.

*Action:* Create incentives for developers to incorporate runoff control practices into new projects.

*Action:* Work with other local government officials to remove potential barriers to implementing runoff controls.

Objective 4: Adopt “water quality friendly” stream stabilization practices.

*Action:* Encourage natural stream restoration by maintaining shallow, stable base-flow channels with wide, vegetated floodplains to mimic natural streams.

*Action:* Promote design criteria for stream stabilization projects that focus on water quality enhancement, considering width-to-depth ratios and design roughness values and velocities for a range of flow conditions.

*Action:* Develop and implement a stabilization plan for mainstream Clear Creek that mitigates the impacts of increased runoff and preserves and enhances the corridor’s inherent ability to improve water quality.

**Monitoring**

Action: Work with the Colorado Division of Wildlife to monitor water quality and oxygen level standards to detect changes in water quality in Clear Creek as well as Bass, Tabor, West, and Prospect Lakes.

Action: Monitor levels of aquatic vegetation in Bass, Tabor, West, and Prospect Lakes each summer to detect signs of nutrient loading.

Action: Monitor Bass, Tabor, West, and Prospect Lakes for the presence Eurasian watermilfoil.

Action: Annually inspect shoreline for degraded areas that may erode.

## 6.0 Wildlife

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Riparian habitats such as those found along Clear Creek are productive biological systems. In an arid setting such as the Front Range, riparian areas naturally attract a multitude of animal species, including many that are dependent upon wetlands for all or part of their life cycles. Riparian areas, even naturally patchy ones, can form corridors that link many different habitat types and wildlife populations along the drainage gradient they occupy. This connectivity is illustrated by the fact that even mountain lions and black bears have been observed in the City of Wheat Ridge along the Greenbelt (CNHP 2000; Fisher 2002). Although affected by habitat fragmentation and urbanization, the reach of Clear Creek and associated habitats within the Greenbelt support a diverse array of wildlife. At the same time, it is important to note that management actions, such as restoration and domestic animal control, taken at the community level will support and may even increase the overall variety and number of wildlife species within the Greenbelt.

The vegetation communities within the Greenbelt mapped and described extensively by CNHP (2000) and described by MDG (1995) provide forage and cover for a number of migratory and breeding birds such as yellow warbler (*Dendroica petechia*), white-breasted nuthatch (*Sitta carolinensis*), wood duck (*Aix sponsa*), northern shoveler (*Anas acuta*), American kestrel (*Falco sparverius*), and screech owl (*Otus kennicottii*). Sperger (1996) observed 44 species of birds, of which 15 were confirmed breeding within the Greenbelt. Birds, by far, represent the bulk of the wildlife diversity within the Greenbelt (MDG 1995; CNHP 2000). Small mammals such as deer mouse (*Peromyscus maniculatus*), eastern cottontail rabbit (*Sylvilagus floridanus*), and prairie vole (*Microtus ochrogaster*) should be abundant within the riparian corridor as well as drier upland areas. However, live trapping for the purpose of a population census suggests that native small mammal populations and overall small mammal species richness in the Greenbelt are very low (CNHP 2000). One explanation for the paucity of native small mammals is competitive exclusion by non-natives such as the house mouse (*Mus musculus*) and Norway rat

### Wildlife Goal

*Preserve wildlife and wildlife habitat through proper land stewardship that incorporates strategies to enhance habitat and minimize the land use impacts on wildlife.*



Overall species richness of small mammals along the Greenway is low.

## 6.0 Wildlife

(*Rattus norvegicus*), although trapping results of non-natives are also low. The abundance of human “commensal” species and domestic and feral cats in the Greenbelt are likely the direct cause of the low numbers of native and non-native small mammals and ground-nesting songbirds (Paget 2002).

### 6.1 Human Commensal Species



Feeding red foxes can inadvertently attract other large predators, such as coyote and bear.

As the urban area along the Front Range has grown, wildlife habitat and many wildlife species have been displaced. Some species such as striped skunk (*Mephitis mephitis*), spotted skunk (*Spilogale putorius*), raccoon (*Procyon lotor*), and red fox (*Vulpes vulpes*) have adapted well and actually thrive in and near urban areas. These species are often referred to as human “commensal” species or those species that derive some benefit directly from humans and human-altered habitats. Red foxes are particularly abundant and easily observed throughout the Greenbelt. Greenbelt visitors and residents in the surrounding area are known to feed red foxes (MDG 1995; CNHP 2000; Cole 2002), which probably accounts for their unusually high numbers within the Greenbelt. The density of red foxes is several times higher than the typical densities in other similar habitats. Clearly, the red fox presents a major threat as a predator of native small mammals and ground-nesting songbirds in the Greenbelt.

Intentional or inadvertent feeding of commensal species is often the major cause of wildlife conflicts. Feeding red foxes also can inadvertently attract other large predators, such as coyote. Because of its adaptability, the coyote is presently one of the few mammals whose range is increasing despite increasing human impacts on its habitat. Since 1997, coyote have become more frequent visitors along the Greenbelt (Fisher 2002). Over time, coyote or other predators, such as bears and mountain lions, become less wary and more emboldened. They are more apt to attack pets and people, and when that happens, the bears or mountain lions usually are destroyed to ensure public safety.

In Colorado, feeding or attracting big game wildlife is illegal. The prohibition applies to deer, elk, antelope, mountain goats, bighorn sheep, mountain lions, and bears. An additional regulation that fines property owners for failure to remove bear attractants became

effective on May 1, 2002 (DNR 2002). Some municipalities, such as the City of Fort Collins, have enacted additional limitations on feeding wild animals (see Fort Collins Municipal Code § 4-73) in an effort to reduce potential human-wildlife conflict as described above.

## 6.2 Domestic and Feral Cats

Domestic and feral cats also pose a significant threat to wildlife in the Greenbelt. According to the American Bird Conservancy (2001), there are an estimated 66 million pet cats and 40 to 60 million free-roaming cats in the United States. Studies of the feeding habits of domestic, free-roaming cats show that approximately 60 to 70 percent of the wildlife killed by cats are small mammals, 20 to 30 percent are birds, and up to 10 percent are amphibians, reptiles, and insects (American Bird Conservancy 2001). Where documented, their effect on wildlife populations in suburban and rural areas directly by predation and indirectly by competition for food appears enormous. In the United Kingdom, Churcher and Lawton (1987) estimated that Britain's five million house cats take an annual toll of some 70 million animals and birds. A study in Wisconsin provides some indication of the extent of cats' impact in the United States. In a four-year study of cat predation in Wisconsin, coupled with data from other studies, Coleman and Temple (1996) estimated 39 million bird kills per year in Wisconsin. Many of the species killed are ground-nesting grassland birds, such as killdeers and sparrows, or birds that often feed on the ground, such as robins.

Free-ranging cats also may transmit diseases to wild animals. Domestic cats have spread feline leukemia virus to mountain lions and may recently have infected the endangered Florida panther with feline distemper. Unvaccinated domestic cats can also transmit rabies and toxoplasmosis to people.

## 6.3 Beaver

By the early 1900s, beavers (*Castor canadensis*) in North America were almost exterminated due to trapping and draining of lands for agriculture. Estimates of the current population are as low as a few percent of those present prior to European settlement. Nonetheless, as beavers reclaim some former territory, such as the riparian area within the Greenbelt, conflicts with humans arise. Because they

## 6.0 Wildlife



Beaver create favorable habitat for a variety of wildlife species including fish, birds, amphibians, reptiles, and mammals.

breed only once a year and require streamside habitats, and because two-year-olds leave home each spring to find their own territories, beavers rarely overpopulate. They are limited to a small fraction (often just a few percent) of the landscape area that is close to waterways. Given the species' benefits in creating vital wetlands, and because removal is rarely a lasting solution, working with beavers yields the best management results.

Beavers can be among the most beneficial of the City's wildlife. They create favorable habitat for a variety of wildlife species including fish, birds, amphibians, reptiles, and mammals. This variety of wildlife is, in turn, valued for recreational, scientific, educational and aesthetic purposes along the Greenbelt. Beaver activity also may be helpful in retaining storm water runoff and improving water quality by trapping sediment, nutrients, and pollutants. However, beaver activity could potentially cause flooding of roads, trails, and wooded areas along the Greenbelt. Beavers also consume trees and shrubs, with impacts often occurring suddenly and dramatically. The benefits and detriments associated with beaver activity may coexist at a single location. Because of the varying degrees of tolerance among residents in Wheat Ridge to beaver activity, there is potential for disagreements on how best to resolve beaver conflicts.

In its role as a steward of Wheat Ridge's natural resources, the Parks and Recreation Department practices acceptance of, and tolerance for, beaver activity as part of the City's natural environment and works to foster this attitude among the public through education. The Department recognizes beavers as a natural and desirable component of the environment because of their contribution to the quality and diversity of natural habitat. The Department also recognizes that conflicts between beaver and humans may arise when beaver activity impacts public health and safety, private property, or public infrastructure. However, one function of Wheat Ridge's open space is to provide habitat for wildlife. In most cases, damage to trees on City-owned lands is accepted as part of having beavers. Not only may damage to trees be acceptable, but also in some cases the damage may be desirable. Beaver in essence can be used as a management tool to remove undesirable trees and shrubs. By placing steel wire around desirable native trees such as plains cottonwood

and peach-leaf willow, beaver may remove unprotected, non-native species such as Russian olive, crack willow, common buckthorn, and tamarisk. This management action, integrated with additional weed control measures, could facilitate species turnover to a more natural community composition along the floodplain.

#### 6.4 Outreach

In addition to maintaining species present in the Greenbelt and utilizing restoration efforts as a means of enhancing wildlife habitat, the City of Wheat Ridge should address known threats to wildlife species in the area as a form of outreach. The City should consider outreach activities with landowners that address this potential conflict, as well as restrictions on feeding wildlife in the City and domestic pets within the Greenbelt and on adjacent properties. Outreach activities should be educational in nature and could include recommendations such as keeping domestic pets inside or in a fenced area, and declawing cats. Education and outreach activities are an important component of wildlife management. Refer also to *Environmental Education and Outreach* (Section 8.0).



Education activities are an important component of wildlife management.

**Goal**

Preserve wildlife and wildlife habitat through proper land stewardship that incorporates strategies to enhance habitat and minimize the land use impacts on wildlife.

**Management Objectives and Action Recommendations**

Objective 1: Inventory wildlife populations that use the Greenbelt and Lewis Meadows and monitor changes in their frequency, distribution, and behavior.

*Action:* Coordinate wildlife surveys and studies with other agencies to share information and efforts (Jefferson County Open Space).

*Action:* Conduct surveys for mammals, fish, birds, reptiles, amphibians, and invertebrates, in coordination with system-wide survey efforts (e.g., Audubon Christmas Bird Count).

*Action:* Initiate an annual butterfly census in July, create a sighting checklist, and encourage public participation.

*Action:* Encourage and conduct research that targets inventories of vertebrate and invertebrate wildlife species and assess impacts (e.g., recreation, urban development, domestic animals) on wildlife populations and habitat.

*Action:* Coordinate efforts with local agencies and volunteer groups to make sure that wildlife sightings and information are shared on an annual or biannual basis.

*Action:* Maintain a wildlife database as a usable repository for information and for analyses and make results available to the public and land managers.

Objective 2: Protect and enhance important wildlife habitat and the movement corridor along Clear Creek.

*Action:* Identify habitat enhancement needs and opportunities.

- Action:* Continue habitat enhancement programs such as restoring native plant communities, improving wetlands, or enhancing cottonwood regeneration.
- Action:* Maintain standing dead (snags) and down cottonwood trees that do not present a public safety hazard.
- Action:* Enhance natural habitat or create artificial habitat on a species-specific basis to encourage species of concern (e.g., barn owls, bank swallows, cavity-nesting birds).
- Action:* Coordinate habitat enhancement projects with neighboring landowners who may be interested in or affected by the project.
- Action:* Consult with the Colorado Division of Wildlife during the planning of any significant wildlife habitat enhancement projects.

Objective 3: Integrate wildlife population and habitat protection and enhancement activities into other resource management objectives and actions.

- Action:* Protect wildlife from short-term activities such as utilities construction or maintenance through cooperation with the appropriate agencies.
- Action:* Use seasonal closures to protect sensitive wildlife species where appropriate (e.g., voluntary temporary closure of raptor or heron nesting areas).
- Action:* Work on a long-term fuel management plan with specific resource objectives (see *Vegetation* section).
- Action:* Identify weed management priorities annually that benefit wildlife habitat.
- Action:* Identify and provide natural and/or artificial habitat on a species-specific basis for wildlife species to assist with Integrated Pest Management (e.g., bat roosts to assist in controlling mosquitoes).

## 6.0 Wildlife

Action: In beaver activity areas, leave undesirable trees and shrubs unprotected to allow them to be culled by beaver.

Objective 4: Evaluate beaver activity to establish accurate monitoring and evaluate effectiveness of management techniques.

Action: Periodically assess the impact to public health and safety, private property, public infrastructure, and public parks and facilities.

Action: Based on impact assessment, determine the type of management action to take based on proven wildlife management techniques, appropriate animal welfare concerns, and applicable laws and regulations.

Objective 5: Integrate wildlife population and habitat protection and enhancement activities into a program to eliminate wildlife feeding.

Action: Implement an aggressive outreach program for Wheat Ridge citizens regarding living with wildlife in the City and along the Greenbelt.

Action: Partner with the appropriate agencies (e.g., Colorado Division of Wildlife, Colorado Department of Health, Colorado State University Cooperative Extension) to conduct a biannual outreach program aimed at discouraging wildlife feeding.

Action: Cooperate and work with the Animal Welfare and Control Commission to draft a City ordinance prohibiting the feeding of wildlife.

### **Monitoring**

Action: Conduct routine surveys to document wildlife populations and occurrences.

Action: Monitor changes in the condition of important habitat areas and their use by wildlife.

## 7.0 Threatened, Endangered, and Rare Species

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Federally threatened and endangered species are protected under the Endangered Species Act of 1973 as amended (16 U.S.C. 1531 et seq.). Significant adverse effects to a federally listed species or its habitat require consultation with the U.S. Fish and Wildlife Service under Section 7 or 10 of the Endangered Species Act. The Ute ladies'-tresses orchid (*Spiranthes diluvialis*) is the only known species in the Greenbelt protected by the Endangered Species Act.

### 7.1 Ute Ladies'-Tresses Orchid

The Ute ladies'-tresses orchid is a rare, perennial species endemic to the western United States in Colorado, Wyoming, Utah, Montana, Idaho, Washington, and, historically, in eastern Nevada. The U.S. Fish and Wildlife Service listed the orchid as threatened in 1992. The plant is thought to be rare because it occurs in low-elevation riparian and wet meadow habitats that have been largely degraded and eliminated by water use, flood control, agricultural practices, and urban development over the last 150 years. The *Draft Recovery Plan* (USFWS 1995) provides a detailed habitat model for the orchid.

One occurrence, composed of about 18 suboccurrences, of the orchid is found along the Greenbelt from West Lake to Anderson Park. The orchid is part of a larger riparian/floodplain community complex. The balancing of the needs of rare species against community protection and management and recreational use along the Greenbelt is complex. Conflicting needs of sensitive resources create difficult management decisions. For example, mechanical weed management (e.g., mowing) can occur in mid-summer, ideally after ground-nesting birds have fledged and before orchid flowering stalks are tall enough to be cut. However, the ideal window of time for mowing is often very short and sometimes does not present itself. Favorable weather and the availability equipment may also be complicating factors when timing mowing. The overall program goal is to sustain this sensitive, complex system over the long term. There

#### Threatened, Endangered, and Rare Species Goal

*Ensure the viability of known populations of threatened, endangered, and rare species.*



Ute ladies'-tresses orchid is protected under the Endangered Species Act.

## 7.0 Threatened, Endangered, and Rare Species

is a critical need for detailed management planning and continual, integrated management in order to accomplish the goal.

Monitoring Ute ladies'-tresses orchid is also a challenging but important task necessary for conservation planning of the species. Due to the natural annual variability of Ute ladies'-tresses orchid populations and the potential for mis-timed surveys, plant counts alone may be inadequate for determining long-term population trends. Moreover, plant counts tell managers nothing about the condition or viability of orchid habitat. There is significant subjectivity in simply describing habitat conditions; the annual notations by different observers do not provide a good reference point from which to measure habitat changes. Therefore, a systematic and objective method of habitat monitoring is needed.

In rare plant conservation, the term monitoring refers to some level of site-specific population monitoring (e.g., Synge 1981, Palmer 1987, Cropper 1993, Given 1994). While population monitoring is often viewed as expensive and data-intensive, useful and direct information on the status of populations can be obtained from various intensities of data collection with a corresponding range of effort. Population-level monitoring is well documented and accepted in the literature of rare plant conservation (e.g., Menges 1986, Palmer 1987, Schemske et al. 1994).

In summary, the continued viability of Ute ladies'-tresses orchid along the Greenbelt hinges on the integration of water management, vegetation management, recreation management, and a sound monitoring program.

### **7.2 Rare Species**

A species of earthstar (*Mycenastrum* sp.), as yet to be described, was documented in the Wheat Ridge Greenbelt during the Colorado Natural Heritage Program survey (CNHP 2000). Earthstars belong to a group of fungi called Gasteromycetes, or "stomach fungi." Their fruiting bodies are a stomach-shaped sac filled with dry spores. They are related to puffballs. Puffballs are round or pear-shaped fruiting bodies that contain spores. They sit directly on the ground or on rotten wood. They range from golf ball size to as large as a

## 7.0 Threatened, Endangered, and Rare Species

watermelon. The earthstar or type of puffball fungus recently documented in the Wheat Ridge Greenbelt is thus far known worldwide only from this location.

## 7.0 Threatened, Endangered, and Rare Species

### **Goal**

Ensure the viability of known populations of threatened, endangered, and rare species.

### **Management Objectives and Action Recommendations**

Objective 1: Maintain current information on federally and state listed and rare species and their status.

*Action:* Contact the U.S. Fish and Wildlife Service, Ecological Services, Colorado Field Office annually and obtain the list of federally listed and candidate species and their status in Colorado.

*Action:* Contact the Colorado Division of Wildlife annually and obtain or download from the Division's website the Colorado species that are endangered, threatened, and of special concern.

*Action:* Continue to work with the Colorado Natural Heritage Program to further identify the species of earthstar identified in the Wheat Ridge Greenbelt.

*Action:* Work with the Colorado Natural Heritage Program to identify appropriate stewardship actions in order to maintain the species of earthstar in the Wheat Ridge Greenbelt.

Objective 2: Maintain occurrences of Ute ladies'-tresses orchid and enhance habitat where they occur.

*Action:* Maintain current, compatible open space uses within Ute ladies'-tresses orchid occupied habitat.

*Action:* Develop a conservation plan for the occurrence of Ute ladies'-tresses orchid.

*Action:* Aggressively control Canada thistle, Russian olive, leafy spurge, teasel, and knapweed in areas with known Ute ladies'-tresses orchid plants.

*Action:* Implement a noxious weed management plan as an overall means of habitat enhancement.

*Action:* Consider the construction of angler facilities on Bass Lake away from Ute ladies'-tresses orchid habitat.

Action: Restore natural or seminatural hydrology to portions of the floodplain along Clear Creek.

Objective 3: Develop a systematic, easily repeatable method for objectively measuring changes and threats to the habitat of Ute ladies'-tresses orchid in the Greenbelt.

Action: Establish permanent monitoring transects for the occurrence of Ute ladies'-tresses orchid in the Greenbelt.

Action: Establish permanent photo points along transects and within each suboccurrence of Ute ladies'-tresses orchid.

Action: Conduct monitoring of Ute ladies' -tresses orchid annually.

Action: Consider training long-term volunteers or contracting with private consultants to conduct annual monitoring.

Action: Educate staff and contractors involved with maintenance, weed control, and enforcement activities about Ute ladies' -tresses orchid (i.e., identification, location, and legal issues). Education should include steps to take in the events of an individual despoiling the site or population.

### **Monitoring**

Action: Refer to Objective 3 above addressing the monitoring of the Ute ladies' -tresses orchid.

## 8.0 Environmental Education and Outreach

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Ensuring that the Wheat Ridge Greenbelt and Lewis Meadows are maintained and preserved in perpetuity will require that visitors, adjacent landowners, contractors, and other city departments appreciate and understand the value in protecting open space. Environmental education and outreach activities are often the most effective means of stimulating understanding and appreciation of open space. Education and outreach are also useful means of providing information and orientation, ensuring resource protection, and promoting visitor safety.

### 8.1 Program Focus

Environmental education and outreach efforts in Wheat Ridge open space primarily focus on providing educational and interpretive signage at various trail access points. For example, several locations along the Wheat Ridge Greenbelt provide informational kiosks that include maps of trails, guidelines for trail users, as well as valuable information on wildlife resources. While the Parks and Recreation Department staff performs some environmental education during the spring and summer, these efforts are limited by staff time and funding.

In the future, the Wheat Ridge Parks and Recreation Department hopes to expand education and outreach efforts to include a broader range of interpretive opportunities. These could include non-personal interpretation through the use of kiosks and brochures and personal interpretation on-site or through public outreach programs. Parks and Recreation Department staff would initiate these efforts, and other voluntary interpretive and maintenance staff would provide additional assistance. The Parks and Recreation Department also hopes one day to acquire sufficient funding to develop a formal visitor center dedicated to educating the public about Wheat Ridge's open space resources and to promoting their long-term preservation.

#### Environmental Education and Outreach Goal

*Provide multifaceted interpretive and environmental education opportunities throughout Wheat Ridge open space.*



A visitor center dedicated to environmental education would significantly enhance the Parks and Recreation Department's outreach.

## 8.0 Environmental Education and Outreach

### **Goal**

Provide multifaceted interpretive and environmental education opportunities throughout Wheat Ridge open space.

### **Management Objectives and Action Recommendations**

Objective 1: Prioritize interpretive and environmental education outreach efforts in Wheat Ridge open space and implement a long-range vision that will address funding and management alternatives.

Action: Ensure that the boundaries of the Wheat Ridge Greenbelt and Lewis Meadows are surveyed and clearly delineated. This effort should facilitate both outreach and enforcement activities.

Action: Review and formalize any agreements with adjacent landowners as one aspect of a comprehensive outreach program.

Action: Develop a comprehensive interpretive and environmental education plan.

Objective 2: Provide information concerning the wildlife and vegetation, natural history, and the cultural history of the area.

Action: Provide public field trips that inform visitors on general wildlife facts, native plant communities, noxious weeds of the area, cultural history of the Clear Creek corridor, and other related material.

Action: Provide volunteer opportunities for research, inventory, management, and education, as appropriate.

Action: Prioritize environmental education and outreach to increase public awareness of wetland functions and values.

Action: Continue to utilize information boards and brochure boxes. Brochures might include a check-off list and self-guided nature hike.

*Action:* Evaluate appropriate sites for a “watchable wildlife” station. (The Colorado Division of Wildlife offers grant funding for such purposes).

Objective 3: Disseminate information on Parks and Recreation Department goals, objectives, and planning efforts within Wheat Ridge open space.

*Action:* Distribute information on noxious weeds, their effects, spread, and control.

*Action:* Use staff and volunteers in the field to educate and inform the public on open space regulations.

*Action:* Provide information on any restoration efforts for native plant and animal communities.

*Action:* Provide educational opportunities to not only the general public, but also Animal- Parks- Code Enforcement to ensure everyone within the City is of the same understanding of correct uses.

*Action:* Establish clear guidelines for open space areas so that all City of Wheat Ridge Departments address uniformly the following: animal releases within open space, designated swimming areas for dogs, and enforcement of the City’s leash law.

*Action:* Ensure appropriate notification from other departments and agencies prior to training activities such as cold-water rescue in Clear Creek.

*Action:* Review and update as needed intergovernmental agreements as they relate to Wheat Ridge’s open space.

*Action:* Review utility easements within open space areas and ensure that maintenance provisions do not compromise management goals and objectives.

Objective 4: Establish a visitor center specifically devoted to educating visitors about Wheat Ridge open space resources and promoting preservation of these areas.

*Action:* Seek out opportunities for both private and public financing for visitor center facilities.

## 8.0 Environmental Education and Outreach

*Action:* Identify an appropriate location for the visitor center. (One possibility is the Berbert House at Prospect Park).

*Action:* Promote educational programs at the visitor center that bolster support for the Greenbelt and encourage protective actions.

Objective 5: Use signs as a medium to convey general information as well as important interpretive and environmental education themes (see also *Visitor Use, Recreation, Trails, and Signage*, Section 9.0).

*Action:* Place educational signs along trails and at trailheads that interpret significant natural resources such as unique plants and animals, wetlands, and native vegetation communities.

*Action:* Develop educational signs to help visitors understand visitor and wildlife interactions and impacts from off-trail use.

*Action:* Complete and maintain a sign inventory that documents location, type, material, and condition.

*Action:* Work with the Wheat Ridge Police Department in both planning for and inventorying needed signs.

*Action:* Place street identifiers on overpasses and other areas to aid in emergency response and general open space orientation.

*Action:* Work with the Wheat Ridge Police Department to develop or identify an overall emergency response and location system for expedient pinpointing of areas and uniform communications.

Objective 6: Conduct projects and activities that provide opportunities for people to establish a relationship with the Parks and Recreation Department staff and a connection to the land.

- Action:* Identify neighbors, adjacent landowners, and community groups with whom Wheat Ridge open space should develop relationships.
- Action:* Establish community volunteer programs related to open space preservation and enhancement. Nearby schools, service clubs, environmental organizations, and scouting groups may serve as valuable sources of volunteers.
- Action:* Conduct educational activities that target volunteers while they are working on behalf of Wheat Ridge's open space.
- Action:* Encourage staff and volunteers to conduct outreach activities that target specific management goals.
- Action:* Use educational materials and public outreach to work with landowners to minimize negative effects to flora from private landscaping.
- Action:* Work on livable alternatives within the community for ongoing problems with disposal of leaf, garden, yard, and branch debris in the Greenbelt.

### **Monitoring**

- Action:* Communicate annually with other agencies (such as the Colorado Division of Wildlife) to coordinate education and outreach opportunities of mutual interest.
- Action:* Explore the use of informal visitor surveys to quantify visitor familiarity with and effectiveness of environmental education and interpretive outreach efforts prior to and after visitation. Information gathered should center on awareness of natural systems and the role of Wheat Ridge's open space within the landscape.

## 9.0 Visitor Use, Recreation, Trails, and Signage

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The Wheat Ridge Greenbelt and Lewis Meadows provide popular open space amenities not only for residents of Wheat Ridge but also for Arvada, Golden, and Denver residents as well. The City of Wheat Ridge Parks and Recreation Department manages about five miles of developed trails in the area (Figure 3). These trails are easily accessed by trailheads situated at seven separate locations along the Clear Creek corridor as well as a number of informal access points. Common recreation opportunities in these areas are generally passive and include walking, fishing, nature viewing, picnicking, bicycle riding, and horseback riding. The Wheat Ridge Greenbelt Trail, which travels along Clear Creek, is the foremost recreation attraction.

### Visitor Use, Recreation, Trails, and Signage Goal

*Manage and preserve open space for passive recreational use, its aesthetic or passive recreational value, and its contribution to the quality of life in the community.*

### 9.1 Visitor Use Trends

Although there are no visitor use statistics for the entire Greenbelt, recent studies by Jefferson County Open Space report that about 50,000 to 54,000 visitors currently access the Greenbelt at the Youngfield Trailhead. As the Front Range population and the popularity of outdoor recreation activities continue to increase, Wheat Ridge open space is likely to receive even more visitors.

Concerns arising from increasing visitor use include the establishment of informal social trails, off-leash pets and pet waste, and the collection of flora and fauna. A complete description of these visitor use impacts is provided below.

### 9.2 Visitor Impacts

#### 9.2.1 Off-Trail Use

Social trails are the product of off-trail use as well as the widespread use of numerous informal access points. Although the Wheat Ridge Greenbelt Trail is a well-defined and well-maintained recreational trail, many visitors follow scattered informal social trails. Many of these social trails weave along the shoreline of Clear Creek where they provide access to shoreline areas. In some locations, trail



Social trails can lead to trail braiding and create significant impacts to vegetation resources.

## 9.0 Visitor Use, Recreation, Trails, and Signage

braiding or social trails have led to the destruction of sensitive riparian vegetation and erosion close to the stream bank. Trail braiding also results in vegetation trampling, erosion, and disturbed areas that increase the potential for introduction of weeds.

Parks and Recreation staff has had some degree of success using large natural barriers such as logs and rocks to dissuade visitors from using such trails; however, more action is needed to protect sensitive areas.

### 9.2.2 Off-Leash Pets and Pet Waste

Although domestic animals are not permitted off designated trails in protected habitat areas, pet owners often neglect to follow regulations. As a result, off-leash pets frequently disturb or harm wildlife, other pets, and people.

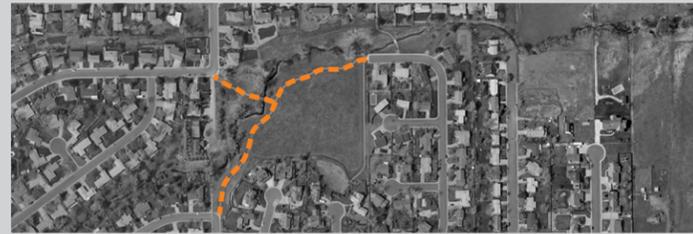
Another concern of visitors to the Wheat Ridge portion of the Clear Creek Trail is the foul odor associated with the prevalence of pet waste. Despite regulations in the Wheat Ridge City Code requiring pet owners to clean up after dogs, and signage notifying trail users of this practice, many pet owners continue to disregard the law.

### 9.2.3 Collection of Flora and Fauna

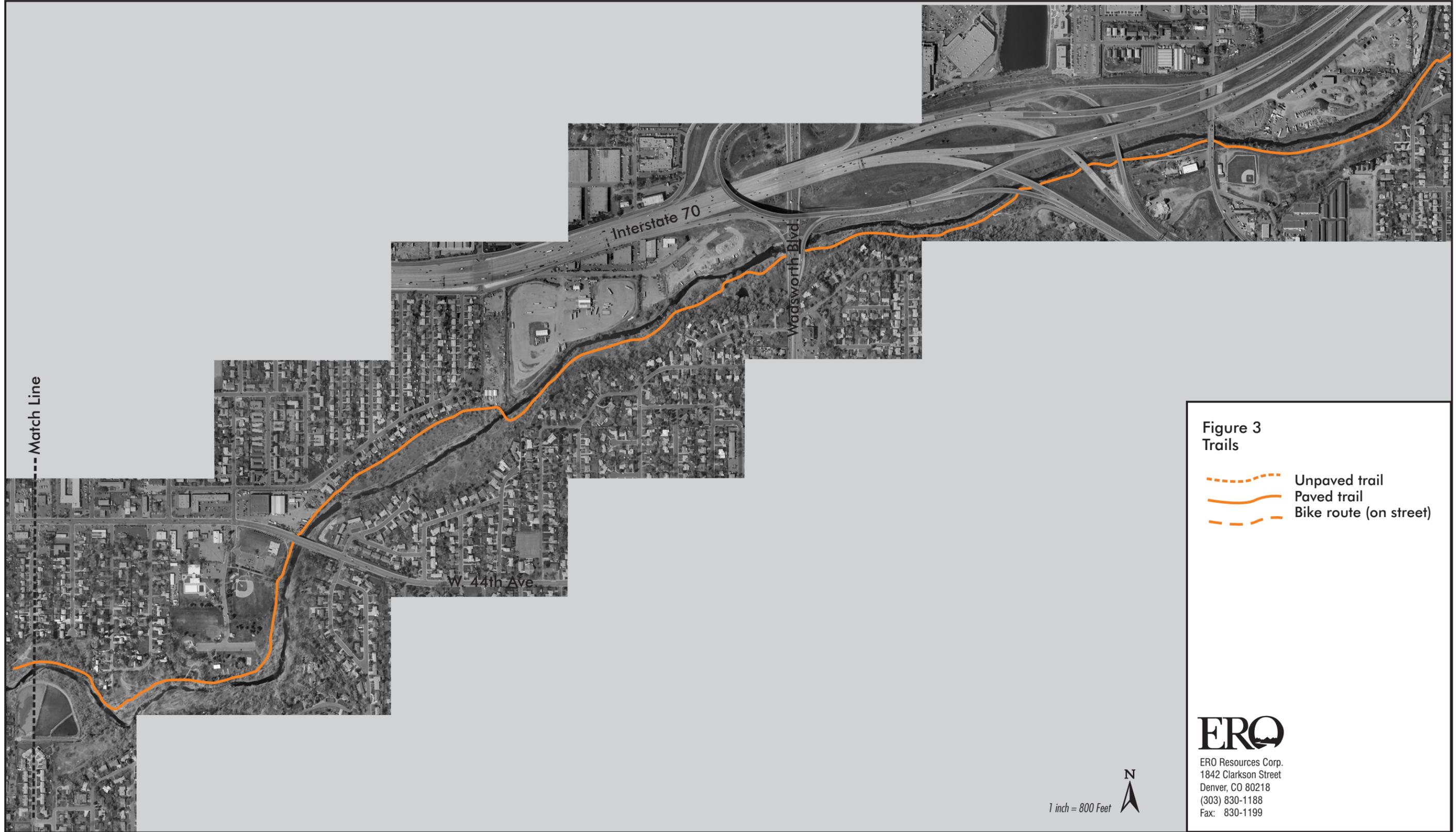
Collection of flora and fauna is a common consumptive activity in the Wheat Ridge Greenbelt. Some of it is legal such as licensed fishing. Some of it is illegal, such as the removal of plants of any kind outside of the realm of noxious weed control and scientific research. If left unmanaged, this practice could harm sensitive plants and animals and, in some instances potentially pose a threat to humans (e.g., through the collection of poison hemlock). For these reasons, the Wheat Ridge Parks and Recreation Department recognizes the importance of preventing the unnecessary removal of sensitive flora and fauna from Wheat Ridge open space.

### 9.2.4 Transients

Transients present health and safety concerns for humans and wildlife in and around Wheat Ridge open space. Refuse, excrement, trampling, social trails, and fire pits are a few of the many problems associated with transients who live within open space areas.



Match Line - - -



**Figure 3**  
Trails

-  Unpaved trail
-  Paved trail
-  Bike route (on street)



ERO Resources Corp.  
1842 Clarkson Street  
Denver, CO 80218  
(303) 830-1188  
Fax: 830-1199

1 inch = 800 Feet 

Dealing with transients has been time-consuming for Parks and Recreation staff and poses uncertain safety risks as well. Parks and Recreation staff will continue to work with the Wheat Ridge Police Department to deter unauthorized use of the Greenbelt and find alternatives for transients within the community.

### **9.3 Trail Guidelines**

Trails are routes on the land, ranging from meandering single-track pathways to paved surfaces designed for multi-use passive recreation. Trails in the City of Wheat Ridge's open space should be designed and constructed to protect native plants and animals and to minimize impacts on the natural landscape. Trail standards and recommendations are outlined in detail in the *Environmental Analysis and Evaluation of Trail Corridors of the Wheat Ridge Greenbelt* (MDG 1995). The Parks and Recreation Department will continue to use the standards and implement the recommendations in the 1995 MDG study. General guidelines for trails, trailheads, and trail bridges are presented below.

#### **9.3.1 Trails**

Trail 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 walking, running, fishing, bicycling, and horseback riding where designated. Heavily used trails may be surfaced with soft-surface materials or concrete, 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, the Parks and Recreation Department will protect fragile or sensitive areas with a variety of improvements such as barriers, fences, or boardwalks that will not disturb natural processes. Future trail proposals for open space areas in the City of Wheat Ridge will include consideration of the long-term viability and health of natural landscape as well as the visitor experience. When environmental impacts are unacceptable, the Parks and Recreation Department may relocate, temporarily or permanently close, remove, or not construct trails.

## 9.0 Visitor Use, Recreation, Trails, and Signage

### 9.3.2 Trailheads

New trailheads and trail access points in open space areas will be integrated into the City of Wheat Ridge trail system in a manner that preserves the natural environment, protects natural resources, and provides for passive recreational and 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.

### 9.3.3 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.

## 9.4 Signs

Currently, the Wheat Ridge Parks and Recreation Department provides trailhead signage at each of its seven trailheads located on the Wheat Ridge Greenbelt. Posted at each of these trailheads are varying depictions of rules, orientation maps, and other useful public information. Such signage often plays an integral role in educating visitors about responsible use of open space resources, and should continue to be an important component in managing visitor use, recreation, and trails. Below is a brief description of some of the various categories of signage and basic guidelines that should be used when placing signage within Wheat Ridge open space. It is recommended that all signs are constructed in a “context-sensitive” manner.

**Identity Signs.** These are “welcome” signs announcing the location of or arrival at a particular spot. In terms of image, these signs should be bold, simple, strong, and able to stand on their own

## 9.0 Visitor Use, Recreation, Trails, and Signage

without the addition of walls and landscaping. Possible materials could be timber, stones or self-weathering steel.

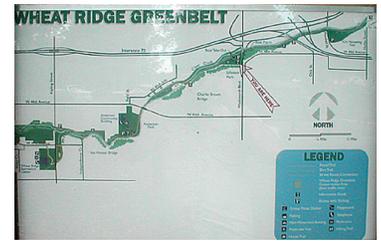
**Orientation/Regulatory Signs.** Orientation signs are generally concentrated at major user entry points such as trailheads and often include detailed maps, lists of appropriate and inappropriate uses in open space, as well as other background information. These signs should be related in material and font to the identity signs.

**Temporary Regulatory Signs.** Temporary signs are used for revegetating areas, special events, and other temporary needs (“Riparian Restoration in Progress – Do Not Disturb”). These signs should be related in material and font to the regulatory signs.

**Mile Post Signs.** These signs provide mile markers for visitors traveling on the Wheat Ridge Greenbelt Trail. These signs should be placed along the shoulder of the trail, composed of natural materials that blend with the landscape, and just large enough to be noticeable to trail users.

**Primary Interpretive Signs.** Primary interpretive signs convey the interpretive theme of the major interpretive sites. Care should be taken to develop interpretive materials that are compatible with other signs.

**Secondary Interpretive Signs.** Secondary interpretive signs convey a more detailed level of interpretive information (i.e., plant names along an interpretive trail) and are often smaller versions of primary interpretive signs.



Orientation signage should be concentrated near trailheads.

## 9.0 Visitor Use, Recreation, Trails, and Signage

### **Goal**

Manage and preserve open space for passive recreational use, its aesthetic or passive recreational value, and its contribution to the quality of life in the community.

### **Management Objectives and Action Recommendations**

Objective 1: Continue to provide for a variety of appropriate quality passive recreation activities and visitor services.

*Action:* Conduct a comprehensive visitor use study to quantify and plan for various recreational uses, and determine appropriate levels of visitor services.

*Action:* Mark trails clearly with signage that identifies permitted recreation activities.

*Action:* Establish and provide appropriate levels of service for facilities such as trailheads and dog excrement pick-up stations.

*Action:* Foster an awareness of trail etiquette with open space users regarding right-of-way (i.e., between pedestrians, bicycle riders, and horseback riders) and travel (i.e., encourage all users to stay to the right side of the trail).

Objective 2: Minimize recreation effects on natural, cultural, and scenic resources.

*Action:* Encourage appropriate trail etiquette through the establishment of applicable trailhead signs, trail maps, and educational brochures. Place information brochures at each access point.

*Action:* Encourage on-trail use and permit off-trail use only in designated areas by directing visitors away from sensitive resource areas.

*Action:* Close and reclaim undesignated trails and access points where necessary.

*Action:* Provide well-defined and drained trail surfaces to prevent trail braiding.

*Action:* Provide a limited number of set-aside and well-marked areas where visitors can access the stream shore.

*Action:* Consider the effects on natural, cultural, and scenic resources when trails or other visitor facilities are constructed.

*Action:* Determine if there is sufficient need warranting a City Ordinance that prohibits the collection of flora and fauna in Wheat Ridge open space.

Objective 3: Provide trails, access points, and passive recreational facilities that accommodate appropriate uses and that connect with adjacent trail systems.

*Action:* Evaluate potential options for controlling trail access where use is dispersed and not well defined (e.g., Near Newgate Townhomes at 44<sup>th</sup> and Moore).

*Action:* Collaborate with appropriate public and private agencies on future trail planning.

*Action:* Refer to the *Environmental Analysis and Evaluation of Trail Corridors of the Wheat Ridge Greenbelt* (MDG 1995) for trail design standards.

Objective 4: Discourage vandalism and other undesirable activities in Wheat Ridge open space.

*Action:* Arrange for the City of Wheat Ridge Police Department to patrol Wheat Ridge open space regularly, centering efforts on the easternmost portion of the Wheat Ridge Greenbelt.

*Action:* Construct signs out of materials that are resistant to vandalism or can be replaced easily. Reserve signs should be purchased as necessary as a contingency for future needs.

*Action:* Consider creating a neighborhood watch group or volunteer group that will report illegal or potentially harmful activities in Wheat Ridge open space.

## 9.0 Visitor Use, Recreation, Trails, and Signage

Objective 5: Provide safe passive recreational experiences.

Action: Designate appropriate passive recreational activities on trails to minimize interactions between various trail users.

Action: Improve and maintain existing trails to accommodate appropriate uses.

Action: To improve visitor safety, request striping where any trail connections cross roadways.

Objective 6: Discourage use of Wheat Ridge open space by transients.

Action: Coordinate efforts with the Wheat Ridge Police Department to patrol areas where transients are known to reside.

Objective 7: Continue to use signage as a tool for managing visitor use and educating visitors about responsible use of open space resources.

Action: Place orientation and regulatory signage along trails and at trailheads; signage could include maps that highlight streets, lakes, and other features that help visitors know where they are.

Action: Limit signage within the Conservation Area to include interpretive and educational signage.

Action: Place mile markers along the Wheat Ridge Greenbelt trail to assist visitors with orientation.

Action: Use context-sensitive design standards that blend with the natural landscape.

Action: Use consistent signage standards throughout the Wheat Ridge Greenbelt and Lewis Meadows.

### **Monitoring**

Action: Monitor service levels and visitor use patterns at points of access to Wheat Ridge open space to identify changing needs. Quantifying changes in

visitor use can be carried out through annual visitor surveys.

Action: Monitor visitor use and evaluate recreational impacts on wildlife, vegetation, and wetlands.

Action: Monitor use of the Greenbelt by large visitor groups, perhaps by requiring a no-charge permit.

Action: Establish regular inventory, monitoring, and maintenance of trails, access points, passive recreational facilities, and high-use areas to ensure safety hazards and maintenance needs are identified and corrected in a timely manner. Priority for monitoring will be given to areas with heavy visitor use and areas with potential safety hazards.

Action: Monitor Parks and Recreation Department goals, objectives, and planning efforts as they relate to impacts on visitor use.

## 10.0 Resource Management Zones

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In attempting to balance resource protection with visitor use, the Wheat Ridge Parks and Recreation Department established management zones (Figure 4) that describe the emphasis of use within the City's open space. The zones distinguish between areas more suitable for resource protection or restoration and areas more suitable for visitor use. Significant factors influencing the management zones are as follows:

- The protection of valuable wildlife habitat and the migration corridor along Clear Creek.
- The protection of the federally threatened Ute ladies'-tresses orchid.
- Delineation of the Potential Conservation Area by the Colorado Natural Heritage Program.
- The potential of restoring both upland and riparian areas within the open space.
- The present location of structures and infrastructure along the Greenbelt.
- The general locations of current major recreational uses within the current landscape.

With these factors in mind, the management zones for the City of Wheat Ridge open space are as follows:

**People Intensive Zone.** The People Intensive Zone is delineated with the objective of concentrating visitor services including parking, restrooms, and picnic facilities in one area. The zone generally incorporates developed park facilities north of Clear Creek. Management. Activities in the zone should concentrate on outreach and especially on mitigating conflicts between various open space user groups.

**Active Natural Zone.** The Active Natural Zone encompasses the asphalt recreation trail, riparian areas on the north side of Clear Creek, lakes and the lake margins within the Greenbelt. Outreach and education should not be confined to this zone, but rather concentrated in the immediate area. Residents of adjacent

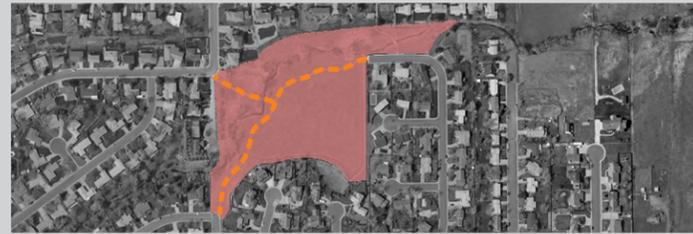
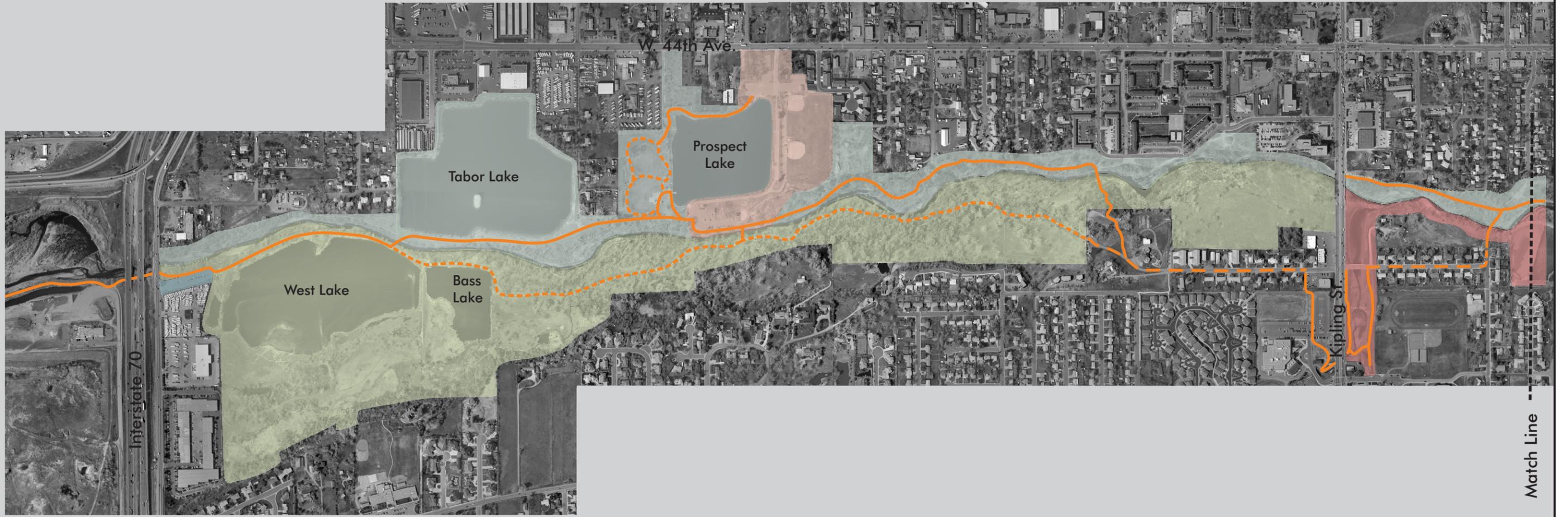
## 10.0 Resource Management Zones

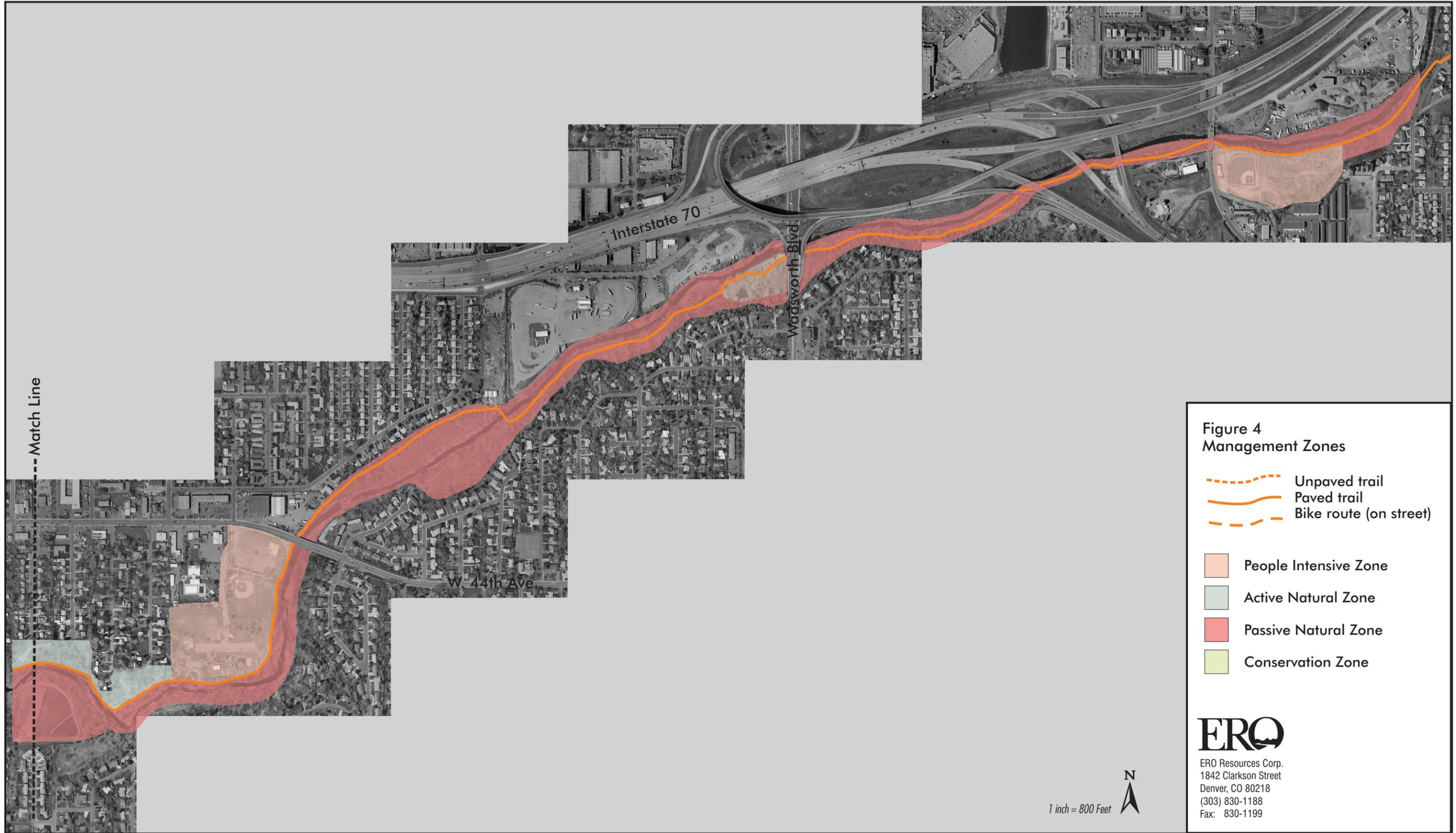
developments should be contacted regarding management issues that directly affect the City's open space (e.g., social trails, dumping, horseshoe pits, BMX trails, graffiti, domestic pets, and noxious weed management).

**Passive Natural Zone.** The Passive Natural Zone includes Lewis Meadows and areas along the Greenbelt restricted to passive recreational activities. These areas have moderate potential for restoration and a high potential for community outreach. A particular effort should be made to contact residents adjacent to Lewis Meadows in order to establish an "adopt-an-open space" program. Participants in the program would assist with trash and debris removal, noxious weed control, and restoration efforts.

**Conservation Zone.** The Conservation Zone encompasses the area on the south side of Clear Creek from Youngfield Street to a point about 1.5 miles east. This zone has the highest value for flora and fauna when viewed at both the community and landscape level. Recreational uses should be restricted to designated trails. All trailheads should include education and regulation information. Efforts should be made to close and revegetate all social trails in the zone. Noxious weed management in the zone should concentrate on threats to the Ute ladies'-tresses orchid (e.g., Canada thistle control and Russian olive removal).

Noxious weed management is a high priority in both the Passive Natural and Conservation Zones. The potential riparian and upland community restoration, coupled with a comprehensive education program, is high and should be pursued in both zones.





**Figure 4**  
Management Zones

-  Unpaved trail
-  Paved trail
-  Bike route (on street)
  
-  People Intensive Zone
-  Active Natural Zone
-  Passive Natural Zone
-  Conservation Zone

**ERO**  
 ERO Resources Corp.  
 1842 Clarkson Street  
 Denver, CO 80218  
 (303) 830-1188  
 Fax: 830-1199

1 inch = 800 Feet 

# **11.0 Management and Maintenance**

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## **11.1 Staffing and Operations**

The Wheat Ridge Parks and Recreation Department manages the natural resources throughout the City's open space system by maintaining, restoring, and preserving native ecosystems. The staff is committed to working cooperatively with other agencies, research institutions, citizen interest groups and others in the management of natural resources to achieve the goals outlined in this Plan.

The Parks and Recreation Department currently has two full time positions devoted solely to the management and maintenance of the City's open space. Tasks include environmental education and natural resource monitoring along with care and repair of open space facilities. A seasonal position of 15 weeks, 40 hours per week, was added in 2001. The Forestry/Horticultural section provides some additional staff time for noxious weed control, pruning, and tree management concerns, and it shares responsibilities at the Habitat Garden located in the southwest corner of Prospect Park. Volunteer/community service workers are used on a limited basis in various capacities and serve to augment paid staff.

## **11.2 Guiding Open Space Management Principles**

**Ecosystem Management.** The Parks and Recreation Department follows an ecosystem approach to natural resource management. This approach attempts to manage and maintain fundamental ecological processes as well as individual species and features. It identifies factors that might interfere with the natural processes or threaten the balance of elements, with the goal of maintaining natural abundance, diversity, and the ecological integrity of plants and animals.

**Balancing Restoration with Human Use and Public Safety.** The Parks and Recreation Department strives to balance the need for restoration with the need for human use and public safety.

**Natural Resource Inventories and Surveys.** Natural resource inventories and surveys, including inventories of plants, animals, and

## 11.0 Management and Maintenance

soil testing are to be completed and updated based on field studies and management needs.

**Cooperation and Collaboration.** By working in cooperation with other agencies and citizens, the Parks and Recreation Department attempts to minimize the effect of outside influences such as noise, light, water pollution trends or flows, toxic substances, threats to scenic views or exotic species, pesticides, and fire hazards.

**Migratory Animal Management.** The Parks and Recreation Department seeks to ensure the preservation of habitat critical to migratory species. Related actions shall include:

- Upgrade water quality where possible.
- Cooperation in population monitoring and data gathering for the U.S. Fish and Wildlife Service and Colorado Division of Wildlife.
- Where possible preservation of wildlife corridors within the City's boundaries.

### 11.3 Maintenance Procedures for Open Space

The following procedures are general guidelines established for the maintenance of open space areas. It is the intent of the Parks and Recreation Department to limit maintenance activities in order to preserve the natural state of these areas.

Some maintenance activities such as trail maintenance are best conducted during the off-season (i.e., October – February); however, other timing considerations also may need to be considered. For example, there may be timing restrictions such as work that must be conducted during daylight hours, or sensitive breeding or nesting requirements during a particular season.

#### 11.3.1 Mowing and Trimming

- Maintain the width of a tractor's mowing flail deck of about six feet at the property or fence line of adjoining areas where there is adequate equipment access.
- In general, a two-foot mowed strip should be maintained along paved trails depending upon terrain and equipment access.
- Mow vegetation as needed. Generally, mowing should begin in May and continue through October. Trimming should be

limited to trailheads, benches, other seating facilities, kiosks, bike racks, restrooms and signs.

- Use line-of-sight parameters to assess trimming requirements for trailhead egress and within the trail system itself.

### 11.3.2 Trail Maintenance

- Remove snow and ice from asphalt and concrete trails. The trailheads at Youngfield, Prospect, Kipling and Anderson Park should also receive snow and ice removal.
- Sweep or clear trails as needed with respect to flooding, rain, or snowstorms, as part of mowing operation, or for the purpose of debris removal.
- No snow removal shall occur on soft surface trails or on the trailheads that are not presently paved including trailheads at 41<sup>st</sup> and Miller and Johnson Park. Surface grade these trailheads and others as needed.
- Maintain infrastructure at trailheads including signs, kiosks, and fences gates.

### 11.3.3 Drainage Area Maintenance

- Maintain and inspect drainage areas including culverts on a bi-weekly basis to ensure proper water flow.

### 11.3.4 Trash/Debris Control/Graffiti and Vandalism

- Clean up litter as needed in remote areas.
- Empty trash receptacles twice weekly, unless additional needs arise. The public is encouraged to either pick up litter they discover or report their findings to staff in order for it to be removed promptly. Adopt-A-Trail Programs should continue to be utilized. Litter and debris of a hazardous nature should be removed promptly (i.e., glass or trail obstructions) to prevent injury.
- Report waste of a hazardous nature requiring expert assistance or specialized equipment to the proper local state or federal authorities.
- Report and repair damage due to graffiti or vandalism immediately.
- Remove and dispose of materials used in play fort construction.

### 11.3.5 Restroom Facilities

- Maintain the Clivis compost toilet at the Youngfield trailhead.

## **12.0 Park Rules and Regulations**

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The City of Wheat Ridge Parks and Recreation Department has adopted the following rules and regulations for open space areas such as the Wheat Ridge Greenbelt and Lewis Meadows. These rules and regulations supplement the Park Rules highlighted within Chapter 17, Article II of the Wheat Ridge Municipal Code.

### **12.1 Fishing Regulations**

Prospect Park has four lakes, all of which originated from former gravel mining activity. The lakes on the south side of Clear Creek are Bass Lake and West Lake, and in these two lakes anglers must use flies and lures only. In the two lakes on the north side of Clear Creek, Tabor Lake and Prospect Lake, anglers may use bait. All bass that are 15 inches and under must be returned to the water unharmed. Ice fishing is not allowed. A valid Colorado fishing license is required for people 16 and older to take fish. Children under 16 do not need a license, but may take only half the legal limit.

### **12.2 Hunting and Trapping**

Hunting and trapping are not allowed in any open space, park, or recreation area within the City of Wheat Ridge. Weapons are not allowed in any open space, park, or recreation area. In cooperation with the appropriate agencies, the City may participate in wildlife management activities targeted towards population or disease control.

### **12.3 Animal or Plant Collection**

Animal collection is not permitted in Wheat Ridge open space, unless for scientific collection only. Any animal or plant collection requires permission in writing from the Parks and Recreation Director.

### **12.4 Wildlife Watching**

Within the City of Wheat Ridge open space, wildlife watching can be fun and is encouraged, but it is illegal to capture, harass, or disturb wildlife, including any nesting and denning site of wildlife within the City. Feeding of coyotes, fox, geese, and squirrels is strongly discouraged.

**12.5 Boating**

Non-motorized boating is allowed on all lakes with the exception of Bass Lake, on which no boating of any type is allowed. The Colorado Boating Statutes and Regulations govern boating activity. Enforcement of Colorado's boat and water safety laws rests with the Colorado State Parks boat patrol and rangers, county sheriffs, and other law enforcement officers.

Kayaking is permitted on Clear Creek. Tubing or the use of single-air-chamber devices to float the creek is prohibited. “Tubers” and “floaters” will be removed from the water.

All boaters (including kayakers) must wear a personal flotation device (PFD).

**12.6 Domestic Animals**

Domestic animals are not allowed to leave designated trails in protected habitat areas. Residents are encouraged to not allow other pets such as cats to run at large.

**12.7 Cropping and Landscaping**

Residents are requested to not seed or plant material within the open space areas. This prohibition includes feeding of wildlife in the Greenbelt or Lewis Meadows with live grains or other seeds. Extension of landscaping from residences into open space areas will not be permitted.

**12.8 Park Hours**

Hours of operation for all facilities within the City of Wheat Ridge open space are from sunrise to sunset.

**12.9 Bicycling**

The Wheat Ridge Greenbelt provides popular riding trails for cycling enthusiasts of all ages and abilities. The trails are multi-use trails, meaning that several different types of users may be on the trail at the same time. Cyclists are encouraged to yield to joggers, walkers, and horses along the trail as well as other cyclists.

The posted speed limit for bicyclists is 15 miles per hour. To keep the trails safe and enjoyable for everyone, bicyclists are encouraged to

follow the posted speed limit and pay special attention at curves for other park users walking dogs or walking with small children.

### **12.10 Horseback Riding**

Horseback riding is permitted on the City of Wheat Ridge open space areas, however, horses must be under physical control at all times. Horses must be on a lead and may not be tied and left unattended. Equestrians are strongly encouraged to stay on designated trails. All trail users must yield to equestrians.

### **12.11 Prohibited Uses for Open Space Areas**

1. No motorized vehicles will be allowed on trails with the exception vehicles for maintenance use. This prohibition includes gas-powered skateboards, motorcycles, snowmobiles, ATVs, and four-wheel drive vehicles.
2. Plants, animals or other natural features are not to be disturbed, removed, or destroyed unless authorized by staff. Facilities such as picnic tables, fences, gates, and signs are to be protected from vandalism and abuse.
3. Disposing, burying, and burning trash in open space is prohibited. Trash includes yard waste such as grass clippings and gardening and pruning remnants. Actively gardening or cultivating or mowing areas of open space are prohibited.
4. Discharging of firearms, BB pellet guns, bow and arrows, sling shot weapons, and golfing is prohibited.
5. Burial of pets in the City of Wheat Ridge open space is prohibited. Such burials negatively affect soil and plant communities.

## 13.0 References

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## 14.0 Glossary

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**active recreation** — uses generally meaning the ballfields, recreation centers, swimming pools centers and the like, which are typically associated with urban parks.

**algal bloom** — excessive and rapid growth of algae and other aquatic plants when they are stimulated to grow too quickly by pollution.

**alluvial** — relating to the deposits made by flowing water; washed away from one place and deposited in another; as, alluvial soil, mud, accumulations, deposits.

**anaerobic** — an environment in which molecular oxygen is virtually absent.

**adaptive management** — an incremental approach to managing open space that emphasizes monitoring, evaluation, and feedback. Knowledge of a resource, gained by monitoring management actions, is evaluated and incorporated into future management actions and decisions. This feedback loop facilitates effective management that remains connected to the changing resources of the open space.

**biological diversity or biodiversity** — the variety of life in all its forms, levels, and combinations. Includes ecosystem diversity, species diversity, and genetic diversity

**buffer zone** — an area of land that serves as a transition from a natural open space or park to a more developed area. It may include a landscape buffer (see below), or an area of water.

**channelization** — forcing a stretch of river into a man-made course. It may entail removing bends from a meandering river to make it more navigable. On a smaller scale it may entail “ditching” or straightening of a stream in order to divert water away from an agricultural field. Regardless of the intent, the overall impact of channelization is likely to be negative. Channelization of streams and rivers typically results in increased downstream sedimentation and increasingly severe downstream flooding.

**community, plant or animal** — an assemblage of populations living in the same area at the same time.

**control method** — various practices that serve to constrain, limit, or eliminate the growth or activity of a plant or animal species. Methods may be chemical, biological, or cultural (such as mowing).

**cropping** — the unauthorized use of open space for the cultivation of crops.

**design roughness value** — used to represent flow resistance for hydraulic computations of flow in open channels.

**ecological** — of or pertaining to the interrelationships between plants, animals, man, and their environment.

**ecosystem** — the dynamic complex of plant, animal, fungal, and microorganism communities and their associated non-living environment interacting as an ecological unit.

**edge** — the boundary of two or more ecosystems or habitat patches. Edge effects are associated with these boundaries. These effects include changes in species composition, gradients of moisture, sunlight, soil and air temperature, and wind speed. Many edge effects have negative consequences on interior species, such as increased predation and brood parasitism.

**exotic species** — species that occur in a given place, area, or region as the result of direct or indirect, deliberate, or accidental introduction of the species by humans, and for which introduction has permitted the species to cross a natural barrier to dispersal; a plant or animal species that did not occur in the this region or in the state prior to human settlement; not native; not indigenous.

**feline distemper** — (*Feline panleukopenia*) is a viral disease affecting domestic cats and all other felids (e.g., mountain lions), as well as raccoons.

**feline leukemia virus** — is a virus that is specific to cats only. It is considered to be the most common cause of serious illness and death in domestic cats.

**floodplain** — the area bordering a river and subject to flooding.

**flow regime** — the day-to-day and seasonal variation in water levels, or increases and decreases in rates of flow as water moves downstream.

**forb** — a broad-leaved herb other than a grass, especially one growing in a field, prairie, or meadow.

**fuel** — is comprised of living and dead vegetation that can be ignited. It is often classified as dead or alive and as natural fuels or activity fuels (resulting from human actions, usually from logging operations).

**fuel load** — the amount of potentially combustible material found in an area. It is usually expressed as tons per acre.

**fuel management** — the treatment of live and dead vegetation to prevent large-scale, high-intensity wildland fires and to maintain healthy ecosystems.

**gradient** — the rate of regular or graded ascent or descent in a river or stream; grade. A graded change in the magnitude of some physical quantity or dimension.

**gravelly** — consisting of, full of, or covered with rock fragments or pebbles.

**habitat** — the place where an animal lives and is able to find the proper arrangement of food, water, shelter, and space. The place where a plant lives and is able to meet its basic requirements for growth.

**human commensal species** — species or those species that derive some benefit directly from humans and human-altered habitats.

**hydric** — a soil that formed under conditions of saturation, flooding or ponding long enough during the growing season to develop anaerobic conditions in their upper part. The concept of hydric soils includes soils developed under sufficiently wet conditions to support the growth and regeneration of hydrophytic vegetation.

**hydrologic connectivity** — the movement of matter, energy, and/or organisms within water and between elements of the hydrologic cycle.

**hydrophytic** — plant life growing in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content.

**interpretation** — an educational activity in which meanings and relationships are revealed, and which create an understanding, appreciation, respect, and concern for the natural world through storytelling, hands-on experiences, and personal discoveries.

**inundation** — the rising of a body of water (e.g., a river) and its overflowing onto normally dry land.

**inventory** — an evaluative process whereby the presence, absence, abundance, frequency, and/or densities of selected elements (e.g., plants, wildlife, and geologic features) within a particular area are determined. The presence or abundance of some species (not easily inventoried) may be inferred from the presence or abundance of other elements.

**jurisdictional wetlands** — those wetlands that are regulated by the U.S. Army Corps of Engineers under Section 404 of the Clean Water Act.

**kiosk** — a stall set up in a public place where one can obtain information, e.g. tourist information.

**meander** — a bend in a river. Meanders normally occur in the middle and lower courses where the water is moving more slowly.

**meander belt** — where several meanders occur one after the other.

**mitigation** — the practice and process by which the loss of some natural feature, population, community, or ecosystem is made less severe by its replacement. Mitigation can occur through restoration, creation, enhancement, exchange, or preservation.

**Montana Method** — an evaluation method that provides a landscape context to the U.S. Fish and Wildlife Service classification

system. It is a rapid functional assessment process designed primarily to address wetland resources.

**native species** — a plant or animal species that occurs, or used to occur, in the region or in the state prior to human settlement; a species that has not been introduced from somewhere else by humans; indigenous; not exotic.

**natural open space** — a physical and biological area, which either retains or has re-established its natural character, although it need not be completely undisturbed. The area is typified by native vegetation and associated biological and geological features, or it may provide habitat for rare or endangered species, or it may include other natural features of scientific, educational, historical, or cultural value. These values are present in the undeveloped state.

**noxious weed** — legally, a noxious weed is any plant designated by a federal, state or county government as injurious to public health, agriculture, recreation, wildlife or property.

**passive recreation** — non-consumptive uses such as wildlife viewing, walking, biking, horseback riding, and kayaking.

**permeability** — the rate of flow of a liquid or gas through a porous material.

**pollutant loading** — the amount of stress placed upon an ecosystem by pollutants, physical or chemical, released into it by man-made or natural means.

**population** — a group of individuals of a particular species living in the same area at the same time.

**rabies** — a disease caused by a virus that is in the saliva of infected animals and is usually transmitted by bites from infected animals. All warm-blooded animals can get rabies, and some may serve as natural reservoirs of the virus.

**riparian** — relating to, living in, or located on the bank of a natural watercourse (like a river) or sometimes of a lake; adjacent to water.

**salmonid** — of, belonging to, or characteristic of the family Salmonidae, which includes the salmon, trout, and whitefish.

**social trail** — trails created by users that wander from formal, established trails.

**species richness** — the number of species in a region.

**substrate** — a surface on which an organism grows or is attached.

**toxoplasmosis** — is an infection caused by a single-celled parasite named *Toxoplasma gondii*. The parasite is found throughout the world and infects most species of warm-blooded animals.

**trail braiding** — process whereby informal social trails intertwine and become an established network of multiple trails.

**water capacity** — the volume of water that should be available to plants if the soil, inclusive of rock fragments, were at field capacity.

**water table** — the level below which the ground is completely saturated with water. Also called water level. The upper limit of the portion of the ground wholly saturated with water. The water table may be within a few inches of the surface or many feet below it.

**watershed** — the region draining into a river, river system, or other body of water.

**weed species** — a species that is growing or living where it is not wanted. In a management context, an exotic or invasive species that commonly requires concerted effort (labor and resources) to remove it from its current location, if it can be removed at all.

**wetland** — land where saturation with water is the dominant factor determining the nature of soil development and the types of plant and animal communities living in the soil and on its surface. For regulatory purposes under the Clean Water Act, the term wetlands means “those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas.”

**Appendix A**  
**Key Provisions of the City of Wheat Ridge Municipal**  
**Code Pertinent to Open Space Management**

# Key Provisions of the City of Wheat Ridge Municipal Code Pertinent to Open Space Management

The following sections are key provisions from the City of Wheat Ridge's Municipal Code that pertain particularly to open space management. Municipal codes pertaining to open space aspects of development (e.g., dedication requirements) are not included.

## **Sec. 2-29. Duties of Director of Parks and Recreation**

The Director of Parks and Recreation works under the immediate supervision of the city manager to perform the following functions:

1. Administration of all aspects of the park system and recreation programs.
2. Proposing and maintaining a long-range city park and recreation/**open space** plan working in cooperation with other city departments.
3. Providing advice and guidance at city council, arborist board and park and recreation commission meetings, when required, in matters relating to the department.
4. Preparing plans and related documents and information for the acquisition and construction of parks and recreation facilities.
5. Maintaining all city parks and grounds as assigned to the department in an aesthetic and functional manner.
6. Providing an adequate recreation program to service all residents of the city.
7. Collecting reasonable charges or making requirements for reasonable refundable deposits, for expendable crafts materials or recreation equipment, for electric power and other utilities used by special groups for the use and/or reservation of specific park areas of recreation facilities in accordance with schedules and policies approved and adopted by the city council.
8. Recommending on the acceptance of donations of land, property, equipment, cash and labor for park and recreation purposes; keeping a full account and record of all such donations.
9. Recommending agreements with school, county, state, other governmental jurisdictions and private parties for the development and use of properties for park and recreation.
10. In cooperation with the police department and in accordance with city council policies, enforcing rules and regulations on use and conduct in the parks and recreation facilities, including the scheduling and reservation of special facilities.

11. Recommending contracts concerning the operation of concessions, recreation facilities and programs that the department finds are in the best interests of the city.
12. Preparing grant applications and supporting data as directed and administering county, state and federal grants-in-aid for the development of park and recreation facilities.
13. Assisting and advising on various city beautification programs.
14. Preparing and justifying the annual parks and recreation budget and administering all funds appropriated for the department.

### **Sec. 2-60. Planning Commission**

(a) The planning commission shall develop and prepare a master plan for the physical, economic and social development and continuance of the city. The planning commission shall hold a public hearing on the plan and make its recommendations to the city council. The city council shall adopt and approve the master plan after holding public hearings and shall authorize the city clerk to have the master plan recorded at the county. The master plan shall be called the “Comprehensive Plan for the City of Wheat Ridge” and shall be hereafter in this article referred to as “the comprehensive plan.” It shall include, but not be limited to, the following: established character, goals and objectives; population; land use; economic base; public facilities; parks and **open space**; transportation; prevention of pollution; and resource conservation.

### **Sec. 17-1. Definitions**

The following words, terms and phrases, when used in this chapter, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

*Pedestrian pathways, bicycle pathways and equestrian pathways:* Any hard-surface or natural surface pathway that is publicly maintained and that has been designated for use by bicycles, pedestrians, horses or any combination thereof by a traffic-control device or other signage or by regulation and that is separated from the roadway by **open space** or other barrier.

### **Sec 17-40. Vandalism**

It is unlawful to remove, destroy, damage or deface any park or **open space** property or any structure or any vegetation therein.

### **Sec. 17-42. Commercial Activity**

It shall be unlawful to conduct any commercial activity or sell or offer for sale any service, product or activity for which a fee is charged on any park or **open space** lands, except where such activity is authorized in writing by the director. (Ord. No. 1991-871, § 1, 9-4-91)

### **Sec. 26-504. Residential Site Design Requirements**

(4) Provide an adequate system of pedestrian and bicycle pathways and walkways in conformance with the adopted parks and recreation plan as well as the Jefferson County **Open Space** Plan.

### **Sec. 26-801. Authorization; Findings, Objectives**

(4) To protect the hydraulic characteristics and storage capacity of the Flood Regulatory District and small watercourses, including the gulches, sloughs and artificial water channels, used for conveying floodwaters so as to promote retention of sufficient floodway area to convey flood flows which can reasonably be expected to occur by:

- (a) Regulating filling, dumping, dredging and alteration of channels by deepening, widening or relocating, so as to maintain natural storage capacity and slow flow characteristics.
- (b) Prohibiting unnecessary encroachments.
- (c) Encouraging uses such as agriculture, **open space**, recreation, greenbelt, riding trails and parking.
- (d) Preventing or regulating the construction of flood barriers which will unnaturally divert floodwaters or which may increase flood hazards in other areas.
- (e) Restricting or prohibiting uses which are dangerous to health, safety and property due to water or erosion hazards or which result in damaging increases in erosion or in flood heights or velocities.
- (f) Requiring that uses vulnerable to floods, including facilities, which serve such uses, be protected against flood damage at the time of initial construction.

**Appendix B**  
**Historic Resources**

# **“Where We Are Coming From”**

**provided by**

**Bob Olson, City of Wheat Ridge Historical Society**

## **Clear Creek Greenbelt History**

The Wheat Ridge Greenbelt is a five-mile long segment on either side of Clear Creek from a point just west of Youngfield Street and extending to the eastern boundary at Harlan Street on the east. Portions of the Greenbelt are owned privately and there is an Intergovernmental Agreement with the City of Arvada to manage the section that falls within that municipality.

Clear Creek has its origins in western Clear Creek and Gilpin Counties and travels through the foothills through Idaho Springs, into Jefferson County, and on to Golden. It exits from the foothills at Golden and passes through two mesas known popularly today as North and South Table Mountains. From that point on to the confluence with the South Platte River, Clear Creek flows through the flat plains region of Jefferson and Adams Counties.

There is a long, high bluff along the south bank of Clear Creek for most of the plains portion of the journey. It is from this bluff — or ridge — from which Wheat Ridge derives part of its name.

## **Native American History**

Clear Creek served as part of the natural trail system used by the various nomadic or semi-nomadic bands of Native Americans who occupied Colorado during the approximately 500 years prior to European or American discovery. The tribes occupying this area would have changed, and an effort to identify a specific tribe needs further study. Generally, by 1800 the Ute Indians were predominant in the mountain region of Colorado, the Cheyenne and Arapaho Indians in the plains, and the Kiowa, Comanche and Apache were also known to have at least traveled through Colorado. The high points along Clear Creek, especially the Table Mesas and Lookout Mountain near Golden and Inspiration Point near Sheridan Boulevard, were used as lookout posts. Native Americans would have used Clear Creek and adjacent lands for hunting, fishing, and gathering of plants for utilitarian and consumptive uses.

Native American occupation was predominant from at least the 1400s until the early 1800s but there is no evidence of a large population in the foothills and plains regions known now as Wheat Ridge. The nature of migration and the ebb and flow of dominant and submissive tribes so evident in the 1700s and early 1800s was likely a feature of their earlier history as well. Native American occupation came to a rapid end with the American settlement of 1859 and there was only the briefest period of co-habitation of the region.

### **American and European Discovery and Settlement**

John C. Fremont undertook numerous exploration trips in the 1840s including Clear Creek valley. By then, Colorado had become part of the fur trading empires of the United States and French Canada. Several fur traders set up camp in Colorado. One trapper and trader was named Vasquez. The original name for Clear Creek was the Vasquez Fork of the South Platte. The name Vasquez applied to the creek until the 1860s. It was also the name of the political precinct that includes Wheat Ridge all the way up to the 1950s. It is obvious from both geography and location that Vasquez Fork was used for beaver trapping as well as hunting to sustain the traders and the supply bases established along the South Platte River in what is now Weld County.

### **Gold Discovery**

Americans first discovered gold in Colorado in 1850 at a point along Ralston Creek in Arvada just west of its confluence with Clear Creek. In 1858, a small group of prospectors came to the plains area immediately east of the foothills and spent several months panning for gold in the various waterways emanating from the foothills, including Turkey, Bear, Clear, Ralston, Boulder, Thompson, and other creeks. There was enough success to allow for several winter settlements in 1858-59. Then news of the gold found its way back to Missouri and points east that winter so that a gold rush was formed in March and April 1859, which grew by June to substantial proportions.

By mid-1859, the prospectors had abandoned the streams along the plains for the most part and had moved their operations into the foothills at Idaho Springs, Mountain (Central) City, Black Hawk, Fairplay, and the foothills above Boulder.

### **Early Farming Operations**

Immediately following the arrival of the gold seekers were the farmers needed to sustain the remote settlements, which were 300 miles from Santa Fe and nearly 1,000 miles from Missouri. Among the early settlers in the Clear Creek Valley were James Baugh, William, Lee, Abram Slater, J.B.C. Boyd, John Wolff, and others. First settlement was immediately adjacent to Clear Creek, a source of water for irrigation and domestic uses.

Although the first farm in the Denver area was near Golden, the Clear Creek Valley soon became the breadbasket of Colorado. Many of the earliest farms were settled here. Development of farms started in the early years and continued for nearly a century. Farmers were learning as they planted how to adapt to the arid climate of this region.

Irrigation was essential to growing fruits and vegetables in the Colorado dry climate. Among the first irrigation water rights are those on the Lee and Baugh Ditch, which now irrigate Prospect Park. Other early ditches include Slater, Brown and Baugh, and Oulette and Wadsworth. Each of these ditches flows out of the north side of Clear Creek in or near Wheat Ridge. On the south side of Clear Creek, running through the present conservation area is the Risdon Ditch.

Since the earliest farms were created before there was a survey of the land, the first titles are for 160 acres and described using trees, rocks, and other landmarks. West of Wheat Ridge, the land was divided using the mining camp of Arapahoe Bar as the original boundary line. Then each subsequent farm was described using the previous farm's limit as a boundary line.

Later, when Edward Berthoud and others surveyed the Clear Creek Valley, land was conveyed in conformity with this previous survey. The federal survey of the Clear Creek Valley appears to have taken place in 1861.

Interestingly, the conveyance of farms used the mining district "claim clubs" rules, which included the provision that no one miner (or farmer) was allowed to have more than one-fourth mile frontage on a waterway. Federal land patents would be limited to 160 acres. So most of the farms along Clear Creek were one-fourth mile wide and a mile long.

Two very early crossing points for travelers were Cort's Crossing near present-day Marshall Street, and Boyd's Bridge—a present-day West 44<sup>th</sup> Avenue bridge at approximately the northeast corner of Anderson Park. Both were in operation by 1859. Begun as fords or crossing points, early bridges were soon constructed to allow for passage of wagons. Over the years a succession of modern bridges has been built at additional established crossing points.

### **Later Farming Operations**

The pioneer gold era was short but intense. Gold and silver mining continued for a century in portions of Colorado. The plains portion of Clear Creek was placer mined for only a few years. But this valley became an intensely farmed community providing a growing Denver with a local source of fruits and vegetables. The large 160-acre farms began to disappear around 1890 and by 1910 had been replaced all along Clear Creek with five- and ten-acre "market garden tracts" also know as "truck farms."

Published reports show that the larger farms grew both grain products like wheat, oats, and barley as well as gardening crops such as fruits, berries, and a wide variety of vegetables. The first wheat-growing region in Colorado was in Wheat Ridge. The first trainload of wheat shipped "back to the states" was grown in Wheat Ridge by James Richards.

The market gardeners used and expanded upon the network of irrigation ditches established in the 1860s. Several large irrigation systems were developed. North of Clear Creek and the various ditches became know as "the Slough." South of Clear Creek, in addition to several smaller ditches, there were the Rocky Mountain Ditch and the Agricultural Ditch. Both these ditches take water from the south side of Clear Creek

farther west of the present day Greenbelt, near South Table Mountain. Although there was some farming done immediately adjacent to Clear Creek, the system of ditches made farming a great distance from the creek possible. In addition, at least some parts of the Greenbelt were used for farming and gardening.

One of the consequences of farming and irrigation was the rows of trees that appeared along the reaches of ditches and around each "farmstead." Early photographs locate houses by their trees, made viable through irrigated waters delivered through irrigation ditches. Many of the trees in the conservation area south of Clear Creek between Miller and about Tabor are along the Risdon Ditch. The same is true with newly developed parks on the north side of Clear Creek and east Prospect Park along the Oulette Ditch. In all, more than 50 ditch priorities were decreed along Clear Creek prior to Colorado becoming a state. Most of those ditches branch and at least half depart Clear Creek in or near the Wheat Ridge Greenbelt.

### **Later Mining and Gravel Operations**

Although the sections of Clear Creek running through the Greenbelt was used primarily for irrigation and agriculture purposes, there are some later mining operations, especially during the great depression of the 1930s. Beginning about the 1920s, perhaps earlier in some instances, gravel and sand were mined at several points north and south of Clear Creek.

Most of today's lakes in the vicinity of Clear Creek were at one time gravel pits and are now used for water storage including Tabor, West, Bass, and Prospect Lakes. One early gravel operator was H.N. Lee, a descendent of William Lee, who began farming near West 38<sup>th</sup> Avenue and Ward Road in about 1861.

The operations began as small pits dug to extract both sand and gravel on his land, but eventually they were expanded, deepened and dug in such a manner as to maximize the amount of sand and gravel extracted. There are other extensive gravel mining operations both east and west of the Wheat Ridge segment of the Clear Creek Greenbelt.

### **Sanitation Facilities**

Clear Creek has been on the receiving end of residential, commercial, industrial, and mining effluents since earliest settlement. Native Americans pitched their tents far enough away from the stream so that human waste generally did not get into the creek. Runoff from early agricultural operations was channeled through a series of tile drains built from Wheat Ridge north to the creek. Some of these were cut off by the construction of Interstate 70.

Mining waste made the name Clear Creek a misnomer from the very beginning, even before settlement erosion from the mountains made Vasquez Creek anything but clear, especially during spring runoffs. Not only were mine tailings allowed into the river, but

also mill effluents including mercury, lead, and other harmful chemicals were dumped in large amounts into Clear Creek.

Some of the earliest environmental lawsuits in Colorado courts were the farmers of Wheat Ridge suing to prevent these contaminants from reach their farm fields. It is well documented that many farms had leaching fields where irrigation water was brought first, to trap contaminants and sediments, before it was used to water the crops.

Industrial waste from heavy industry at Golden has also been added to the water. This has included Coors Brewery located in Golden since 1873, and affiliated Coors Porcelain, Golden Smelting Works, Trenton Dressing and Smelting, the Colorado School of Mines Experimental Mine, several brick yards and clay pits, and Colorado Central Railroad as well as the City of Golden municipal sewage.

Eventually, four sewage disposal plants were built adjacent to Clear Creek to handle the contaminants. The Northwest Lakewood Sanitation District was formed in the 1950s and built a plant at 4101 Miller Street. This plant was enlarged and improved numerous times and is the only one of the four still in operation.

Wheat Ridge Sanitation District was formed in the late 1940s and built its plant at 4900 Marshall Street, where Kurt Manwaring baseball field is now located.

The City of Arvada disposal plant was located at 5555 W. 56<sup>th</sup> Avenue at Depew Street with separators and settling tanks, which flowed into Ralston Creek just before it reaches Clear Creek.

Clear Creek Sanitation District had offices in Arvada and is believed to have had a facility somewhere along Clear Creek (exact location is not known).

In addition, Fruitdale Sanitation District, Belaire Sanitation District, and the Ridge Home's private sewage systems were all in existence but did not operate primary or secondary treatment plants. For many years, the sewage line from the two towns of Mountain View and Lakeside extended directly up Benton Street, through the amusement park and down 48<sup>th</sup> Avenue into Clear Creek.

Today along the Clear Creek Trail there are numerous buried sewage lines, pumps, and other facilities, all part of the inter-connected Metropolitan Denver Sewage Disposal District system, which has grown up over the years. The Sewage District main plant is at East 64<sup>th</sup> and York Street and uses the Clear Creek corridor to provide a means of conveyance via buried sewage pipes. No longer does sewage flow directly into Clear Creek through the reaches of Wheat Ridge, but the creek is still the recipient of many forms of both point and non-point pollution.

### **Parks and Recreation Uses**

Because of the limited amount of residential, commercial, and non-mining industrial development immediately adjacent to Clear Creek, the City of Wheat Ridge was able to begin development of the entire five-mile long Greenbelt for recreational purposes as soon as it was incorporated in 1969. Prior to 1969, the Clear Creek Greenbelt was within three separate parks and recreation districts. Between McIntyre and Kipling Streets the Prospect Recreation District had jurisdiction. It has a small park at West 44<sup>th</sup> Avenue and Robb Street where the tennis courts, Prospect Lake, and picnic pavilion now are located in Prospect Park.

Between Kipling Street and Wadsworth Boulevard was the Wheat Ridge Recreation District. Beginning in about 1955, it was responsible for developing the first formal recreation opportunities along Clear Creek at Johnson Park just west of Wadsworth. The parkland adjacent to Wadsworth had been donated by retired district judge Samuel W. Johnson; first to an area service club, then to the Wheat Ridge Recreation District.

Park superintendent Edgar Johnson (no relation) laid out a park featuring both the natural elements along Clear Creek and some more active recreation elements adjacent to the parking area. The log cabin now in Historic Park was moved from Johnson Park to this site in 1957. More land was purchased west of the original park, extending it to near Brentwood Street.

Another park acquired by Wheat Ridge Recreation District was Wheat Ridge Park, now named Albert E. Anderson Park in honor of the city's first mayor, at West 44<sup>th</sup> Avenue and Field Street. Acquired in about 1959, this park was set back from West 44<sup>th</sup> Avenue with commercial development all along the south side of West 44<sup>th</sup> Avenue between the 44<sup>th</sup> Avenue Bridge and Garrison Street. Field Street projected south in to the park to provide access.

The Wheat Ridge Recreation District had its offices and maintenance facilities along Garrison Street. The Wheat Ridge parks maintenance and forestry divisions still utilize these buildings. Wheat Ridge Park had minimal development prior to about 1964, but some creek-side recreational amenities and parking were provided at the south end of the park.

From Wadsworth to Sheridan Boulevard, Clear Creek was in the North Jeffco Recreation District. Little of parks and recreation nature was accomplished along Clear Creek by this district. It should, however, be noted that there was one private park in this area.

The Swedish-American community had a fraternal organization known as Vasa Lodge. The Denver area Vasa Lodge used the area where the Disabled American Veterans building is now located at Marshall Street as a place for entertainment, band concerts,

dancing, and other recreation opportunities between about 1910 and 1946, when the site was sold to the George Klumker chapter of the D.A.V.

A small segment of the creek and trail are now in the City and County of Denver. Denver annexed a small portion of land where Inspiration Point is located, immediately west of Sheridan Boulevard, in 1948 and added the area to the north up to West 52<sup>nd</sup> Avenue at about Ingalls Street some time during the 1950s. Denver provides the corridor link between the Wheat Ridge Greenbelt on the west and the Jefferson County and Adams County Greenbelt on the east.

After August 1969, all land within the City of Wheat Ridge limits became part of the Wheat Ridge Recreation Department. This included Prospect (Wheat Ridge, Field, Anderson) and Johnson Parks. Almost immediately after incorporation, plans were undertaken to connect the three parks with a walking path. By 1972, this had been accomplished, along with some of the early soil conservation efforts along the bluff and adjacent to the creek shoreline.

The trail became popular immediately and opened up a much-needed open space amenity for residents of Wheat Ridge who used the path for hiking, bicycling, and nature watching. Asphalt was used to construct a path along the full length of the Greenbelt.

In 1972, residents of Jefferson County approved a one-half cent sales tax to raise money for open space purchases. Money from this fund was used to acquire right-of-way along Clear Creek as well as other active and passive parks including Crown Hill Open Space (a joint venture of Jefferson County, Lakewood, and Wheat Ridge), Lewis Meadows and Fruitdale. Voters altered the plan in 1987 to allow funds to be used for development of parks and recreation facilities.

In 1974, the opportunity to expand Prospect Park was taken. Adolph Coors Company had purchased land along Clear Creek to provide water storage capacity for its brewery at Golden. A plan was approved for gravel mining the existing Prospect Park ballfield, then expanding the park to the east.

The Julius Berbert family owned the land involved in the four-way transaction. Their family house now provides office space for the City of Wheat Ridge's park naturalist, hired in 1995 to help manage the City's open space and to educate park users about these natural resources.

Coors also entered into a long-term lease with Wheat Ridge for the area south of Clear Creek between Miller Street and a point east of Youngfield Street. This also included some land on the north side of Clear Creek, the land immediately surrounding Tabor Lake. Coors retained water storage rights while Wheat Ridge Parks and Recreation

Department is allowed to use the surrounding land for passive open space. In December 2000, the City of Wheat Ridge purchased this leased land out right from the Coors Brewing Company.

At the other end of the City, construction of Interstate 70 and 76 (originally designated 80-South) provided land and funding to extend the Greenbelt Trail east from Johnson Park. The Wheat Ridge Parks and Recreation Department worked cooperatively with the Colorado Department of Transportation and private landowners on the south side of Clear Creek in order to provide a corridor for the trail. Until eight acres were purchased for the Kurt Manwaring field complex east of Marshall Street, there were no parks along this section of the Greenbelt.

East of Wadsworth, the trail is maintained by Wheat Ridge Parks and Recreation Department, but passes successively through Arvada, Wheat Ridge, Denver and unincorporated Jefferson County before crossing Sheridan Boulevard into Adams County. The trail follows the south side of Clear Creek the entire length except between Harlan Street and West 52<sup>nd</sup> Avenue where development has come too close to the creek to provide access.

**Appendix C**  
**Visitor Use Surveys**

**City of Wheat Ridge Parks and Recreation Department  
Open Space Observational Visitation Survey**

Date: \_\_\_\_\_

Day of week: \_\_\_\_\_

Surveyor: \_\_\_\_\_

Time: \_\_\_\_\_

Weather: \_\_\_\_\_

Special Considerations (e.g., special events and scheduled programs):

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Parking**

- ◆ How many vehicles are in the parking lot? \_\_\_\_\_
- ◆ Which parking lot? \_\_\_\_\_
- ◆ If not in the parking lot, where are the people parked and how many are there?

\_\_\_\_\_  
\_\_\_\_\_

◆ Colorado license plate county ID (3 letters) or state, if out-of-state:


## City of Wheat Ridge Parks and Recreation Department Open Space Observational Visitation Survey

◆ Where are people located on the site? (indicate locations on the attached map)

◆ How many people are at the site? \_\_\_\_\_

◆ As specifically as possible, what is each person or group doing?

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Additional Comments:

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**City of Wheat Ridge Parks and Recreation Department  
Open Space Intercept Visitation Survey**

Date: \_\_\_\_\_

Day of week: \_\_\_\_\_

Surveyor: \_\_\_\_\_

Time: \_\_\_\_\_

Weather: \_\_\_\_\_

Special Considerations (e.g., special events and scheduled programs):

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Survey Procedure:**

- ◆ Select individual or party. Approach party if possible.
- ◆ Tell them the survey will take only 3 minutes of their time.
- ◆ Provide a brief overview of what the City is doing. Give them a one-page fact sheet.
- ◆ Tell them how the information will be used for future open space management.

**City of Wheat Ridge Parks and Recreation Department  
Open Space Intercept Visitation Survey**

- ◆ Group Size: \_\_\_\_\_
  - ◆ Approximate Ages: \_\_\_\_\_
  - ◆ Apparent Activities: \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

How would you describe your overall visitor satisfaction with the open space?

\_\_\_\_\_

\_\_\_\_\_

Where are you from?

\_\_\_\_\_

\_\_\_\_\_

Why do you visit this open space property?

\_\_\_\_\_

\_\_\_\_\_

Do you come here often? [specify frequency]

\_\_\_\_\_

\_\_\_\_\_

How did you find out about the City of Wheat Ridge's Open Space?

\_\_\_\_\_

\_\_\_\_\_

What do you like about it?

\_\_\_\_\_

\_\_\_\_\_

What do you not like about it?

\_\_\_\_\_

\_\_\_\_\_

What aspects of the open space could be improved?

\_\_\_\_\_

\_\_\_\_\_

Do you have any suggestions or comments?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

# **Appendix D**

## **Monitoring Plan**

## Monitoring Plan

Resource monitoring is performed to determine how well management objectives and goals are being met. Monitoring becomes a key element in order to measure success and provides a feedback mechanism for decision making that keeps the Plan active and adaptive. Monitoring provides information on what changes are occurring within the City of Wheat Ridge's open space. Some resources may be adversely affected resulting in a change in management. Other resources may improve as a result of management activities. Monitoring (e.g., visitor use patterns, user conflicts, and the creation of social trails) should also influence access and recreation management. Techniques for monitoring the overall landscape include photo monitoring, vegetation and landscape mapping, and wildlife and field surveys.

A photo journal of the changing conditions over time is an inexpensive and easy way of monitoring. The process of photo monitoring includes regularly taking photographs from the same locations on the property to detect changes over time. The Parks and Recreation Department should establish permanent photo points and create an initial photo monitoring sequence. Comprehensive photo monitoring should begin in Spring 2003, especially to track progress in weed control, revegetation, and new social trail creation, as well as reclamation. Specific monitoring actions are included within sections 3 through 9 of the Plan.

The monitoring of specific resources should be performed on a periodic basis. Some monitoring actions are ongoing and occur through standard patrol activities. Others need to be scheduled several times a year (trail inspections), annually (facility inspection), or every three years (detailed weed mapping). Other monitoring may be triggered by particular events (floods) or management actions (large-scale herbicide applications). The following table is a summary of resource monitoring actions included in the Plan. Several of the recommended monitoring actions include elements that specify how to monitor, including frequency. A general monitoring report should be completed annually.

## Summary of Resource Monitoring Actions and General Monitoring Schedule

Vegetation Monitoring	Notes	Date
Photos and mapping of known infestations should be updated every three years infestations and used annually in field reviews to track the success of control efforts.		
Recreational trails and trail margins should be surveyed annually for weed infestations.		
Wetland and Riparian Areas Monitoring	Notes	Date
Use vegetation surveys, periodic visual assessments, and photographs to document changes to and effects on wetlands and riparian areas.		
Monitor land use upstream of the City's open space for sources of increased siltation, planting of invasive species, new or modified road crossings, and culvert installations.		
Monitor the occurrence and spread of weeds in wetlands and riparian areas.		
Monitor wetlands known to support or that may support breeding amphibian populations.		
Establish protocols for the long-term monitoring of wetland and riparian functions, values, vegetation, and wildlife (e.g., Montana Method for monitoring wetlands and habitat-based modeling for vegetation).		

<b>Water Resources Monitoring</b>	<b>Notes</b>	<b>Date</b>
Work with the Colorado Division of Wildlife to monitor water quality and oxygen level standards to detect changes in water quality in Clear Creek as well as Bass, Tabor, West, and Prospect Lakes.		
Monitor levels of aquatic vegetation in Bass, Tabor, West, and Prospect Lakes each summer to detect signs of nutrient loading.		
Monitor Bass, Tabor, West, and Prospect Lakes for the presence Eurasian watermilfoil.		
Annually inspect shoreline for degraded areas that may erode.		
<b>Wildlife Monitoring</b>	<b>Notes</b>	<b>Date</b>
Conduct routine surveys to document wildlife populations and occurrences.		
Monitor changes in the condition of important habitat areas and their use by wildlife.		
<b>Threatened, Endangered, and Rare Species Monitoring</b>	<b>Notes</b>	<b>Date</b>
Establish permanent monitoring transects for the occurrence of Ute ladies'-tresses orchid in the Greenbelt.		
Establish permanent photo points along transects and within each suboccurrence of Ute ladies'-tresses orchid.		
Conduct monitoring of Ute ladies' -tresses orchid annually.		

<b>Environmental Education and Outreach Monitoring</b>	<b>Notes</b>	<b>Date</b>
Communicate annually with other agencies (such as the Colorado Division of Wildlife) to coordinate education and outreach opportunities of mutual interest.		
Explore the use of informal visitor surveys to quantify visitor familiarity with and effectiveness of environmental education and interpretive outreach efforts prior to and after visitation. Information gathered should center on awareness of natural systems and the role of Wheat Ridge's open space within the landscape.		
<b>Visitor Use, Recreation, Trails, and Signage</b>	<b>Notes</b>	<b>Date</b>
Monitor service levels and visitor use patterns at points of access to Wheat Ridge open space to identify changing needs. Quantifying changes in visitor use can be carried out through annual visitor surveys.		
Monitor visitor use and evaluate recreational impacts on wildlife, vegetation, and wetlands.		
Monitor use of the Greenbelt by large visitor groups, perhaps by requiring a no-charge permit.		
Establish regular inventory, monitoring, and maintenance of trails, access points, passive recreational facilities, and high-use areas to ensure safety hazards and maintenance needs are identified and corrected in a timely manner. Priority for monitoring will be given to areas with heavy visitor use and areas with potential safety hazards.		
Monitor Parks and Recreation Department goals, objectives, and planning efforts as they relate to impacts on visitor use.		

**Appendix E**  
**Action Items By Resource Category**

## Action Items By Resource Category

### Vegetation Goal

Preserve and maintain native plant communities, protect rare species and communities, and restore native vegetation in suitable areas.

Objective 1: Control noxious weeds within the Greenbelt and Lewis Meadows.

Management Action	Notes	Date
Develop and implement the weed management plan.		
Implement cultural weed management techniques by re-establishing all disturbed vegetation through seeding or planting of native materials.		

Objective 2: Plan trails and trail use to minimize the risk of weed introduction and spread.

Management Action	Notes	Date
Do not place new trails in areas with severe existing weed infestations.		
Avoid creating a trail corridor that travels from a weed-infested area into an area with little or no weed infestation.		
Keep trails out of wet areas and away from wetlands on the property.		
Encourage trail users to remain on the designated trail system within open space areas.		
Close and rehabilitate social trails.		

Objective 3: Implement trail construction and maintenance with weed strategy in mind.

Management Action	Notes	Date
Use weed-free materials in trail construction and maintenance.		
To wash away seeds, clean all equipment used in trail construction and maintenance before it is used on a new project.		
Minimize ground disturbance and soil compaction resulting from construction and maintenance activities by limiting heavy equipment trips and turn-around sites.		
Reclaim disturbed areas immediately to reduce the chance of weed infestation.		
Reduce the spread of noxious weeds along trails during mowing operations by considering issues such as the timing of seed maturation (e.g., mow prior to seed maturation), and the subsequent potential for machinery to act as a vector for the spread of noxious weeds.		
Include routine inspection for noxious weeds and the removal thereof through cleaning during the maintenance of City equipment.		
Require the above actions of contractors and other City of Wheat Ridge departments within open space areas.		

Objective 4: Educate staff, landowners, and visitors about noxious weed control.

<b>Management Action</b>	<b>Notes</b>	<b>Date</b>
Formalize outreach program to assist homeowners with appropriate landscaping, which avoids invasive species.		
Encourage the use of weed-free forage or pelletized feed for horses before and during open space visits.		
Educate the public about aggressive ornamental plants and native plant alternatives.		

Objective 5: Implement noxious weed management with a regional perspective.

Management Action	Notes	Date
Continue to apply for a grant through the Colorado Noxious Weed Management Fund for control efforts along the Greenbelt. Consider application with Jefferson County Open Space and cross-boundary implementation.		
Explore additional funding options through agencies such as the Colorado Division of Wildlife (CDOW) and the Natural Resources Conservation Service (NRCS) for weed management.		
Explore the possibility of crafting and adopting an ordinance at the municipal level regarding noxious weeds and their control.		
Continue cooperative efforts with the Colorado Division of Wildlife to identify, control, and record infestations of purple loosestrife.		

### Wetland and Riparian Areas Goal

Preserve significant wetland and riparian areas, maintain their ecological functions, and restore or enhance suitable wetland and riparian areas.

Objective 1: Preserve and protect existing wetland and riparian areas on the City of Wheat Ridge open space.

Management Action	Notes	Date
Avoid disturbances to the existing wetland and riparian areas on the City's open space.		
Determine whether wetlands on the City's open space are jurisdictional or isolated as determined by the U.S. Army Corps of Engineers under the Clean Water Act.		
Obtain applicable federal and state permits prior to disturbance.		
Consider effects on existing wetlands and the riparian area of all management actions and physical improvements.		
Conduct wetland surveys and delineations when disturbance is anticipated.		
Avoid trail development and undesignated trail use through significant wetlands and riparian corridors.		
Where wetland crossings through identified wetlands are unavoidable, use elevated boardwalks or other appropriate means to minimize effects on hydrology, vegetation, and wildlife habitat.		

Management Action	Notes	Date
Establish fencing priorities to protect other wetland and riparian areas susceptible to visitor use disturbance.		
Reclaim social trails along Clear Creek in the vicinity of Anderson Park to minimize degradation of natural resources.		
Provide a hard-surface access to the Denver Blue Formation near Anderson Park and revegetate adjoining stream bank areas.		
Track floodplain management issues as they affect open space interests regarding wetland and riparian resource values.		

Objective 2: Foster partnerships with adjacent landowners, private companies, and public agencies to protect sensitive riparian and wetland resources.

Management Action	Notes	Date
Work with ditch companies to implement wetland Best Management Practices to minimize adverse natural resource impacts.		
Work cooperatively with adjacent property owners to prevent non-compatible land use (such as inefficient use of fertilizer or pesticides) activities adjacent to Clear Creek and Lena Gulch.		
Work closely with Urban Drainage and Flood Control by submitting projects through City's Public Works Department.		

Objective 3: Protect riparian resources along drainage ditches.

Management Action	Notes	Date
Research historical ownership and uses of ditches within Wheat Ridge open space.		
Determine maintenance responsibility for various irrigation ditches including Lee and Baugh, Lane, Brown and Baugh, and Oulette ditches.		

Objective 4: Restore or enhance suitable wetland and riparian areas along the Greenbelt and Lewis Meadows where opportunities exist.

Management Action	Notes	Date
Assess Clear Creek for degraded areas due to past and current recreational uses using a visual inspection of the corridor.		
Explore the use of prescribed burns to maintain or enhance wetland and riparian plant community diversity.		
Continue the use of Integrated Pest Management practices to control weeds and non-native vegetation in wetlands and riparian areas.		
Develop a formal planting and maintenance program to establish native riparian trees and facilitate efficient removal of hazard trees from Clear Creek.		
Maintain trees that are not deemed a hazard to remain as aquatic and wildlife habitat.		
Consult with a fluvial hydrologist/engineer to evaluate the feasibility of reestablishing natural or seminatural hydrology to parts of the floodplain.		
Consult with a hydrologist, engineer, and water lawyer to evaluate the feasibility of re-establishing natural or seminatural hydrology to parts of the floodplain.		

Management Action	Notes	Date
Consult with a hydrologist, engineer, water lawyer to evaluate the feasibility of establishing greater hydrologic connectivity between Clear Creek and the lakes in the Greenbelt.		
Inventory streams and wetlands to identify degraded areas that may have restoration potential.		
Evaluate, design and implement riparian restoration and management programs. Activities should include, but are not limited to, fencing riparian corridors, removing Russian olive and other non-native species, and planting native species such as coyote willows and cottonwood trees.		
Use the Colorado Natural Heritage Program's natural communities descriptions to provide guidelines for the desired result of wetland and riparian restoration projects		

Objective 5: Mitigate impacts to wetlands and riparian areas using appropriate management tools.

Management Action	Notes	Date
<p>In conjunction with visitor use and trail plans, consider management tools such as fencing, signage, interpretation, revegetation or trail closure to mitigate negative impacts from visitor use.</p>		
<p>Continue to pursue information concerning control methods for invasive aquatic species.</p>		
<p>Conduct outreach activities to educate anglers about Eurasian watermilfoil and the vectors for the spreading of this noxious weed.</p>		

Objective 6: Foster and support programs that emphasize the natural resource significance of wetlands and riparian areas.

Management Action	Notes	Date
Prioritize environmental education and outreach to increase public awareness of wetland functions and values.		
Conduct a thorough investigation of wildlife use of wetlands in order to improve the understanding of the species of concern and the value of wetlands as wildlife habitat.		
Support research to gain a more thorough understanding of the ecological functions of wetlands on the City's open space, and the activities that affect them.		
Encourage research on the impact of management prescriptions on wetland productivity and diversity.		

## Water Resources Goal

Protect the quality and quantity of water resources within the City of Wheat Ridge Open Space.

Objective 1: Restore and maintain natural stream processes and flow regimes

Management Action	Notes	Date
Work with other managing agencies and organizations to maintain a natural streamside.		
Avoid mowing within 15 feet of stream banks and drainages to encourage the establishment of shoreline vegetation and stabilization of stream banks.		
Restrict access to degraded stream bank areas and restore these areas with native vegetation to prevent shoreline erosion.		
Maintain and inspect drainage areas including culverts on a bi-weekly basis to ensure proper water flow.		
Work with Urban Drainage and Flood Control District and the City of Wheat Ridge Public Works Department to maintain stormwater grates and prevent flow blockage.		
Work to restore Clear Creek as a natural cold-water system by maintaining appropriate water temperatures and minimal flows.		
Consider the purchase of additional water rights as they become available.		

Objective 2: Preserve and enhance water quality of lakes and streams.

Management Action	Notes	Date
Continue involvement in the Clear Creek Watershed Forum.		
Educate the community about the harmful effects of water runoff into open space areas. The goal is to prevent excess nutrients and pollutants from residential lawn maintenance, swimming pool draining, and stormwater runoff.		
Actively enforce penalties and other standard enforcement procedures on activities that reduce water quality.		
Encourage stream restoration in degraded shoreline areas to enhance water quality and natural stream function.		
Work with other agencies and industry partners to reduce toxic and thermal water discharge and non-point source pollution in Clear Creek to prevent fish kills and improve overall water quality.		

Objective 3: Encourage development practices that minimize increases in runoff volume and pollutants as compared with predevelopment conditions.

Management Action	Notes	Date
Create incentives for developers to incorporate runoff control practices into new projects.		
Work with other local government officials to remove potential barriers to implementing runoff controls.		

Objective 4: Adopt “water quality friendly” stream stabilization practices.

Management Action	Notes	Date
Encourage natural stream restoration by maintaining shallow, stable base-flow channels with wide, vegetated floodplains to mimic natural streams.		
Promote design criteria for stream stabilization projects that focus on water quality enhancement, considering width-to-depth ratios and design roughness values and velocities for a range of flow conditions.		
Develop and implement a stabilization plan for mainstream Clear Creek that mitigates the impacts of increased runoff and preserves and enhances the corridor’s inherent ability to improve water quality.		

## Wildlife Goal

Preserve wildlife and wildlife habitat through proper land stewardship that incorporates strategies to enhance habitat and minimize the land use impacts on wildlife.

Objective 1: Inventory wildlife populations that use the Greenbelt and Lewis Meadows and monitor changes in their frequency, distribution, and behavior.

Management Action	Notes	Date
Coordinate wildlife surveys and studies with other agencies to share information and efforts (Jefferson County Open Space).		
Conduct surveys for mammals, fish, birds, reptiles, amphibians, and invertebrates, in coordination with system-wide survey efforts (e.g., Audubon Christmas Bird Count).		
Initiate an annual butterfly census in July, create a sighting checklist, and encourage public participation.		
Encourage and conduct research that targets inventories of vertebrate and invertebrate wildlife species and assess impacts (e.g., recreation, urban development, domestic animals) on wildlife populations and habitat.		
Coordinate efforts with local agencies and volunteer groups to make sure that wildlife sightings and information are shared on an annual or biannual basis.		

Management Action	Notes	Date
Maintain a wildlife database as a usable repository for information and for analyses and make results available to the public and land managers.		

Objective 2: Protect and enhance important wildlife habitat and the movement corridor along Clear Creek.

Management Action	Notes	Date
Identify habitat enhancement needs and opportunities.		
Continue habitat enhancement programs such as restoring native plant communities, improving wetlands, or enhancing cottonwood regeneration.		
Maintain standing dead (snags) and down cottonwood trees that do not present a public safety hazard.		
Enhance natural habitat or create artificial habitat on a species-specific basis to encourage species of concern (e.g., barn owls, bank swallows, cavity-nesting birds).		
Coordinate habitat enhancement projects with neighboring landowners who may be interested in or affected by the project.		

Management Action	Notes	Date
Consult with the Colorado Division of Wildlife during the planning of any significant wildlife habitat enhancement projects.		

Objective 3: Integrate wildlife population and habitat protection and enhancement activities into other resource management objectives and actions.

Management Action	Notes	Date
Protect wildlife from short-term activities such as utilities construction or maintenance through cooperation with the appropriate agencies.		
Use seasonal closures to protect sensitive wildlife species where appropriate (e.g., voluntary temporary closure of raptor or heron nesting areas).		
Work on a long-term fuel management plan with specific resource objectives (see <i>Vegetation</i> section).		
Identify weed management priorities annually that benefit wildlife habitat.		
Identify and provide natural and/or artificial habitat on a species-specific basis for wildlife species to assist with Integrated Pest Management (e.g., bat roosts to assist in controlling mosquitoes).		

Management Action	Notes	Date
In beaver activity areas, leave undesirable trees and shrubs unprotected to allow them to be culled by beaver.		

Objective 4: Evaluate beaver activity to establish accurate monitoring and evaluate effectiveness of management techniques.

Management Action	Notes	Date
Periodically assess the impact to public health and safety, private property, public infrastructure, and public parks and facilities.		
Based on impact assessment, determine the type of management action to take based on proven wildlife management techniques, appropriate animal welfare concerns, and applicable laws and regulations.		

Objective 5: Integrate wildlife population and habitat protection and enhancement activities into a program to eliminate wildlife feeding.

Management Action	Notes	Date
Implement an aggressive outreach program for Wheat Ridge citizens regarding living with wildlife in the City and along the Greenbelt.		
Partner with the appropriate agencies (e.g., Colorado Division of Wildlife, Colorado Department of Health, Colorado State University Cooperative Extension) to conduct a biannual outreach program aimed at discouraging wildlife feeding.		
Cooperate and work with the Animal Welfare and Control Commission to draft a City ordinance prohibiting the feeding of wildlife.		

### Threatened and Endangered Species Goal

Ensure the viability of known populations of threatened and endangered species.

Objective 1: Maintain current information on federally and state listed and rare species and their status.

Management Action	Notes	Date
Contact the U.S. Fish and Wildlife Service, Ecological Services, Colorado Field Office annually and obtain the list of federally listed and candidate species and their status in Colorado.		
Contact the Colorado Division of Wildlife annually and obtain or download from the Division's website the Colorado species that are endangered, threatened, and of special concern.		
Continue to work with the Colorado Natural Heritage Program to further identify the species of earthstar identified in the Wheat Ridge Greenbelt.		
Work with the Colorado Natural Heritage Program to identify appropriate stewardship actions in order to maintain the species of earthstar in the Wheat Ridge Greenbelt.		

Objective 2: Maintain occurrences of Ute ladies'-tresses orchid and enhance habitat where they occur.

Management Action	Notes	Date
Maintain current, compatible open space uses within Ute ladies'-tresses orchid occupied habitat.		
Develop a conservation plan for the occurrence of Ute ladies'-tresses orchid.		
Aggressively control Canada thistle, Russian olive, leafy spurge, teasel, and knapweed in areas with known Ute ladies'-tresses orchid plants.		
Implement a noxious weed management plan as an overall means of habitat enhancement.		
Consider the construction of angler facilities on Bass Lake away from Ute ladies'-tresses orchid habitat.		
Restore natural or seminatural hydrology to portions of the floodplain along Clear Creek.		

Objective 3: Develop a systematic, easily repeatable method for objectively measuring changes and threats to the habitat of Ute ladies'-tresses orchid in the Greenbelt.

Management Action	Notes	Date
Establish permanent monitoring transects for the occurrence of Ute ladies'-tresses orchid in the Greenbelt.		
Establish permanent photo points along transects and within each suboccurrence of Ute ladies'-tresses orchid.		
Conduct monitoring of Ute ladies' -tresses orchid annually.		
Consider training long-term volunteers or contracting with private consultants to conduct annual monitoring.		
Educate staff and contractors involved with maintenance, weed control, and enforcement activities about Ute ladies' -tresses orchid (i.e., identification, location, and legal issues). Education should include steps to take in the events of an individual despoiling the site or population.		

## Environmental Outreach and Education Goal

Provide multifaceted interpretive and environmental education opportunities throughout Wheat Ridge open space.

Objective 1: Prioritize interpretive and environmental education outreach efforts in Wheat Ridge open space and implement a long-range vision that will address funding and management alternatives.

Management Action	Notes	Date
Ensure that the boundaries of the Wheat Ridge Greenbelt and Lewis Meadows are surveyed and clearly delineated. This effort should facilitate both outreach and enforcement activities.		
Review and formalize any agreements with adjacent landowners as one aspect of a comprehensive outreach program.		
Develop a comprehensive interpretive and environmental education plan.		

Objective 2: Provide information concerning the wildlife and vegetation, natural history, and the cultural history of the area.

Management Action	Notes	Date
Provide public field trips that inform visitors on general wildlife facts, native plant communities, noxious weeds of the area, cultural history of the Clear Creek corridor, and other related material.		
Provide volunteer opportunities for research, inventory, management, and education, as appropriate.		
Prioritize environmental education and outreach to increase public awareness of wetland functions and values.		
Continue to utilize information boards and brochure boxes. Brochures might include a check-off list and self-guided nature hike.		
Evaluate appropriate sites for a “watchable wildlife” station. (The Colorado Division of Wildlife offers grant funding for such purposes).		

Objective 3: Disseminate information on Parks and Recreation Department goals, objectives, and planning efforts within Wheat Ridge open space.

Management Action	Notes	Date
Distribute information on noxious weeds, their effects, spread, and control.		
Use staff and volunteers in the field to educate and inform the public on open space regulations.		
Provide information on any restoration efforts for native plant and animal communities.		
Provide educational opportunities to not only the general public, but also Animal- Parks- Code Enforcement to ensure everyone within the City is of the same understanding of correct uses.		
Establish clear guidelines for open space areas so that all City of Wheat Ridge Departments address uniformly the following: animal releases within open space, designated swimming areas for dogs, and enforcement of the City's leash law.		
Ensure appropriate notification from other departments and agencies prior to training activities such as cold-water rescue in Clear Creek.		

Management Action	Notes	Date
Review and update as needed intergovernmental agreements as they relate to Wheat Ridge's open space.		
Review utility easements within open space areas and ensure that maintenance provisions do not compromise management goals and objectives.		

Objective 4: Establish a visitor center specifically devoted to educating visitors about Wheat Ridge open space resources and promoting preservation of these areas.

Management Action	Notes	Date
Seek out opportunities for both private and public financing for visitor center facilities.		
Identify an appropriate location for the visitor center. (One possibility is the Berbert House at Prospect Park).		
Promote educational programs at the visitor center that bolster support for the Greenbelt and encourage protective actions.		

Objective 5: Use signs as a medium to convey general information as well as important interpretive and environmental education themes (see also *Visitor Use, Recreation, Trails, and Signage* section).

Management Action	Notes	Date
Place educational signs along trails and at trailheads that interpret significant natural resources such as unique plants and animals, wetlands, and native vegetation communities.		
Develop educational signs to help visitors understand visitor and wildlife interactions and impacts from off-trail use.		
Complete and maintain a sign inventory that documents location, type, material, and condition.		
Work with the Wheat Ridge Police Department in both planning for and inventorying needed signs.		
Place street identifiers on overpasses and other areas to aid in emergency response and general open space orientation.		
Work with the Wheat Ridge Police Department to develop or identify an overall emergency response and location system for expedient pinpointing of areas and uniform communications.		

Objective 6: Conduct projects and activities that provide opportunities for people to establish a relationship with the Parks and Recreation Department staff and a connection to the land.

Management Action	Notes	Date
Identify neighbors, adjacent landowners, and community groups with whom Wheat Ridge open space should develop relationships.		
Establish community volunteer programs related to open space preservation and enhancement. Nearby schools, service clubs, environmental organizations, and scouting groups may serve as valuable sources of volunteers.		
Conduct educational activities that target volunteers while they are working on behalf of Wheat Ridge's open space.		
Encourage staff and volunteers to conduct outreach activities that target specific management goals.		
Use educational materials and public outreach to work with landowners to minimize negative effects to flora from private landscaping.		
Work on livable alternatives within the community for ongoing problems with disposal of leaf, garden, yard, and branch debris in the Greenbelt.		

### Visitor Use, Recreation, and Trails Goal

Manage and preserve open space for passive recreational use, its aesthetic or passive recreational value, and its contribution to the quality of life in the community.

Objective 1: Continue to provide for a variety of appropriate quality passive recreation activities and visitor services.

Management Action	Notes	Date
Conduct a comprehensive visitor use study to quantify and plan for various recreational uses, and determine appropriate levels of visitor services.		
Mark trails clearly with signage that identifies permitted recreation activities.		
Establish and provide appropriate levels of service for facilities such as trailheads and dog excrement pick-up stations.		
Foster an awareness of trail etiquette with open space users regarding right-of-way (i.e., between pedestrians, bicycle riders, and horseback riders) and travel (i.e., encourage all users to stay to the right side of the trail).		

Objective 2: Minimize recreation effects on natural, cultural, and scenic resources.

Management Action	Notes	Date
Encourage appropriate trail etiquette through the establishment of applicable trailhead signs, trail maps, and educational brochures. Place information brochures at each access point.		
Encourage on-trail use and permit off-trail use only in designated areas by directing visitors away from sensitive resource areas.		
Close and reclaim undesignated trails and access points where necessary.		
Provide well-defined and drained trail surfaces to prevent trail braiding.		
Provide a limited number of set-aside and well-marked areas where visitors can access the stream shore.		
Consider the effects on natural, cultural, and scenic resources when trails or other visitor facilities are constructed.		
Determine if there is sufficient need warranting a City Ordinance that prohibits the collection of flora and fauna in Wheat Ridge open space.		

Objective 3: Provide trails, access points, and passive recreational facilities that accommodate appropriate uses and that connect with adjacent trail systems.

Management Action	Notes	Date
Evaluate potential options for controlling trail access where use is dispersed and not well defined (e.g., Near Newgate Townhomes at 44th and Moore).		
Collaborate with appropriate public and private agencies on future trail planning.		
Refer to the <i>Environmental Analysis and Evaluation of Trail Corridors of the Wheat Ridge Greenbelt</i> (MDG 1995) for trail design standards.		

Objective 4: Discourage vandalism and other undesirable activities in Wheat Ridge open space.

Management Action	Notes	Date
<p>Arrange for the City of Wheat Ridge Police Department to patrol Wheat Ridge open space regularly, centering efforts on the easternmost portion of the Wheat Ridge Greenbelt.</p>		
<p>Construct signs out of materials that are resistant to vandalism or can be replaced easily. Reserve signs should be purchased as necessary as a contingency for future needs.</p>		
<p>Consider creating a neighborhood watch group or volunteer group that will report illegal or potentially harmful activities in Wheat Ridge open space.</p>		

Objective 5: Provide safe passive recreational experiences.

Management Action	Notes	Date
Designate appropriate passive recreational activities on trails to minimize interactions between various trail users.		
Improve and maintain existing trails to accommodate appropriate uses.		
To improve visitor safety, request striping where any trail connections cross roadways.		

Objective 6: Discourage use of Wheat Ridge open space by transients.

Management Action	Notes	Date
Coordinate efforts with the Wheat Ridge Police Department to patrol areas where transients are known to reside.		

Objective 7: Continue to use signage as a tool for managing visitor use and educating visitors about responsible use of open space resources.

Management Action	Notes	Date
Place orientation and regulatory signage along trails and at trailheads; signage could include maps that highlight streets, lakes, and other features that help visitors know where they are.		
Limit signage within the Conservation Area to include interpretive and educational signage.		
Place mile markers along the Wheat Ridge Greenbelt trail to assist visitors with orientation.		
Use context-sensitive design standards that blend with the natural landscape.		
Use consistent signage standards throughout the Wheat Ridge Greenbelt and Lewis Meadows.		