

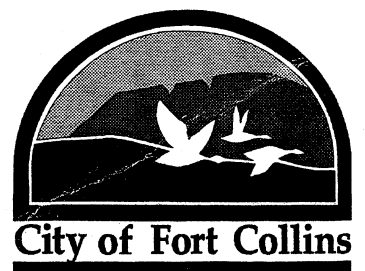


# City of Fort Collins Natural Areas Policy Plan

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**An Element of the  
Comprehensive Plan**

**October 1992**  
Natural Resources Division  
281 North College Avenue  
P.O. Box 580  
Fort Collins, CO 80522  
221-6600



**CITY OF FORT COLLINS  
NATURAL AREAS POLICY PLAN**

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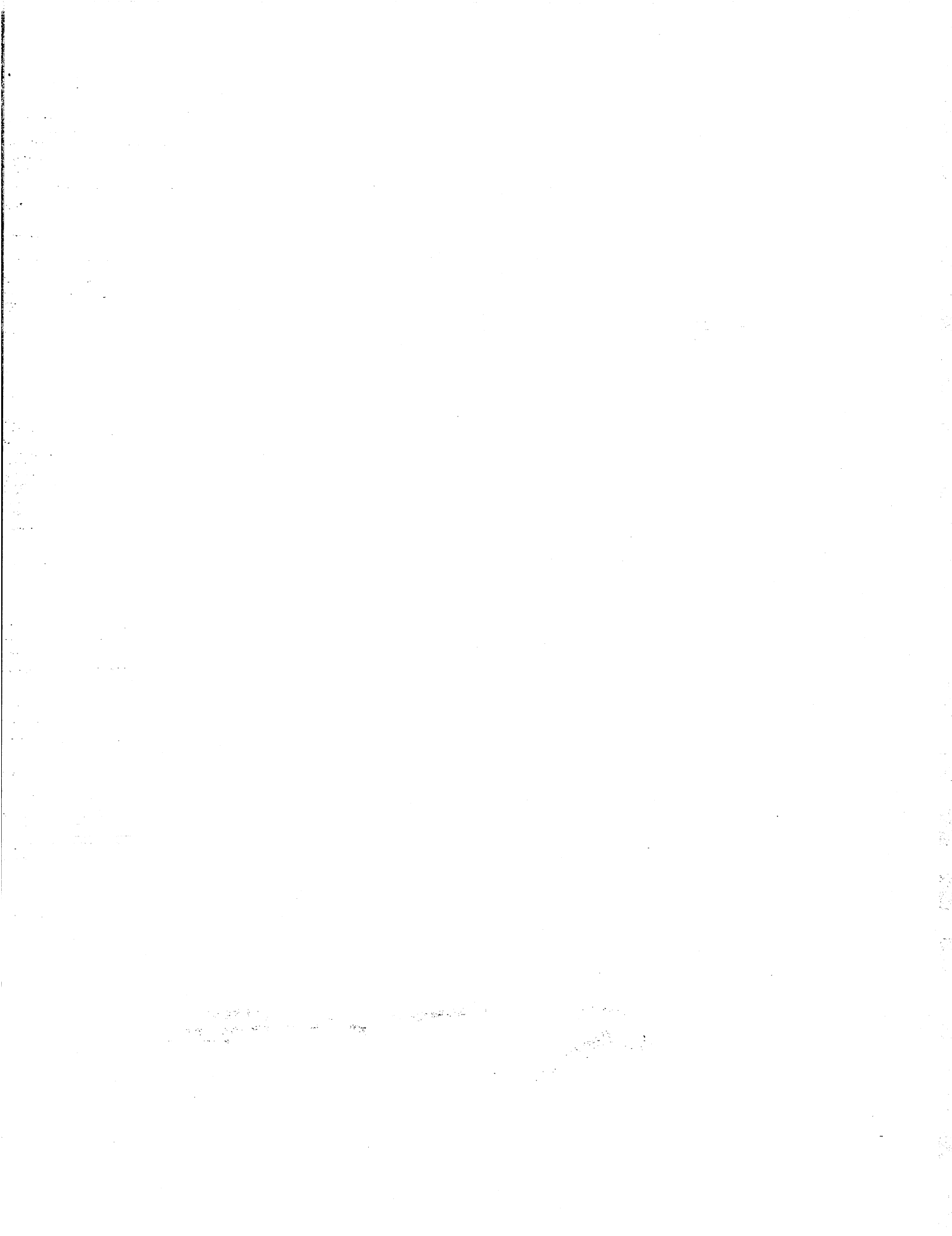
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October 1992



## PREFACE

The preliminary draft Natural Areas Policy Plan (NAPP) was released to City Council and the public in April 1991. During the Council Worksession, Councilmembers expressed their support for the NAPP and requested that an Action Plan be completed before the final draft of the NAPP was submitted for Council approval. They stressed that the Action Plan include a time-frame and expectations, including a 5-year projected budget plan.

From April 1991 through October 1991, Natural Resources Division staff received comments on the preliminary draft NAPP from City Staff, citizen boards and commissions, citizen groups, professionals of other governmental agencies, and concerned local residents. Comments were received during public meetings and presentations, and in response to a mailing to over 500 individuals.

Overall, the NAPP received supportive comments. Numerous reviewers said the NAPP should be implemented, and that it not just be a "paper plan." Many citizens urged the City to fund additional purchase of natural areas, as well as to provide additional monies for maintenance of these areas.

In addition to addressing concerns and questions at various meetings and presentations through the last year, Natural Resources Division staff incorporated these concerns and comments into the final draft of the NAPP, which was released for public review in August 1992. The final draft included a revision of Chapter 5.0--"Policy Plan" and a new chapter, 6.0--"Action Plan," which details proposed implementation strategies.

Public comment and recommendations were also sought on the August 1992 final draft. Another worksession was held with City Council and formal recommendations were obtained from the Natural Resources Advisory Board, the Parks and Recreation Board, the Water Board, the Landmark Preservation Commission, and the Storm Drainage Board. Additional minor revisions were made based on these comments and recommendations.

Public comment will continue to be an integral part of implementing the Natural Areas Policy Plan. Comments or inquiries should be directed to:

City of Fort Collins  
Natural Resources Division  
281 North College  
P.O. Box 580  
Fort Collins, CO 80522  
(Phone: 221-6600)

## ACKNOWLEDGMENTS

The vision of the City of Fort Collins Natural Areas Policy Plan (NAPP) originated several years ago, principally through the foresight of the City Council and the Natural Resources Advisory Board. Eventually, the vision evolved and crystallized into the current document. The NAPP is a unique plan tailored for our City. Natural Resources staff sincerely appreciate the guidance and support of City Council, the entire City staff, and other professionals in the community, throughout the long process of developing the NAPP. We especially thank the citizens of Fort Collins for their past, and continued, interest in the conservation of our City's natural areas.

We gratefully acknowledge the following individuals who assisted the Natural Resources Division by providing recommendations on high priority sites, information on wildlife and plants, or review of the draft NAPP:

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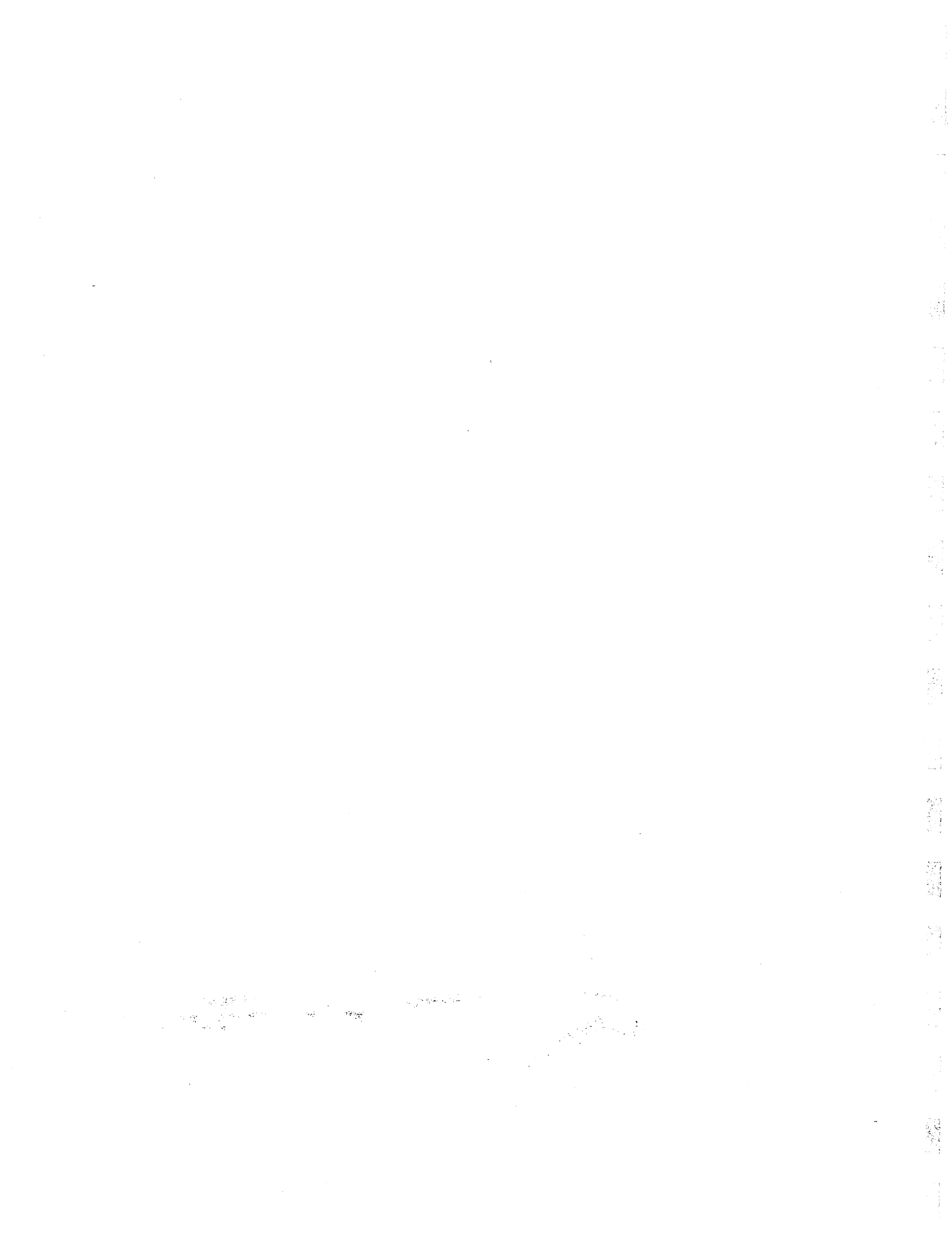
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- TM2: IDENTIFICATION OF NATURAL AREAS (23 PAGES)
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## 1.0 INTRODUCTION

### PURPOSE

Anyone who has walked the trails along the banks of the Poudre River, watched a wedge of Canada geese fly across a fall sunset, seen a great blue heron stalk fish along the edge of a pond, or admired the grasses and wildflowers of the prairie next to the foothills knows something of the richness of the natural areas that occur in Fort Collins. They know, too, that the natural areas that remain intermingled within the developed landscape enhance the quality of urban life. Wetlands, waterways, riparian forests, and other natural areas provide scenic beauty, recreation, water quality protection, opportunities for interpretation and education, and a greater sense of spaciousness within our urban setting. Within Fort Collins, natural areas help meet the complex needs of people. In combination with our homes, schools, and businesses, **natural areas provide important habitats for people.**

Although most residents of Fort Collins probably understand some of the values of local natural areas, many may not appreciate the surprising richness of the natural resources of our community. Wetlands, riparian forests, and native prairies are considered threatened ecosystems by many biologists; prime examples occur within the Fort Collins Urban Growth Area. Bald eagles winter along the Poudre River, near local reservoirs, and within the large grasslands along Fossil Creek. Great horned owls nest along the river, on the Colorado State University campus, at Grandview Cemetery, and downtown. White-tailed and mule deer frequent stream drainages. A tiny rare plant, Bell's twinpod, occurs on the foothills ridge west of town. Two rare butterflies find living space along short stretches of the Poudre River and Fossil Creek. Within the urban setting of Fort Collins, **natural areas provide important habitats for the conservation of plants and animals and their associated ecosystems.**

This document addresses two key needs: **Habitat for Conservation** and **Habitat for People**. The two often conflict. But, both needs can be met, with forethought and planning. The intent of this plan is to set a direction for the future management of natural areas in Fort Collins that will meet the needs of the citizens of the City as well as the needs of the many other creatures with whom we share the land.

Specifically, the objectives of the Natural Areas Policy Plan are as follows:

- To identify and evaluate important natural areas within the Urban Growth Area with regard to their ecological significance, sensitivity to impact, and need for conservation;

- To recognize the interrelationships among natural areas and define areas that function as systems, have common characteristics or needs, and provide common opportunities;
- To recognize natural areas as important resources and to understand the contribution they make to the protection of health, safety, and environmental quality, and to the enhancement of the quality of life for the citizens of Fort Collins;
- To review and revise existing City goals, objectives, and policies to guide future programs for the protection, conservation, enhancement, and management of natural areas within Fort Collins; and
- To recommend alternative strategies and actions to implement the policy recommendations to achieve established goals.

#### **DEFINITION**

Within the context of this plan, natural areas are defined as follows:

"Areas of land or water that contain or support the continued existence of geological, paleontological, ecological, or other natural features that are (1) important to the conservation of natural resources that are classified as endangered or threatened, sensitive to impact from human activity, or otherwise in need of protection; (2) important to the conservation of natural resources that provide environmental protection, recreational, educational, scientific, aesthetic, or economic benefits; or (3) unique or rare examples of our natural heritage."

Chapter 4.0, "Natural Areas of Fort Collins," is devoted to the specific definition and description of the natural areas of Fort Collins and the surrounding Urban Growth Area. Generally, however, natural areas are comprised of a variety of undeveloped areas, which include wetlands, waterways, lakes and ponds, grasslands, shrublands, and forests, as well as developed urban ponds and larger tracts of urban forests. About 16% of the Fort Collins Urban Growth Area was mapped as natural areas in fall of 1990.

#### **PLANNING PROCESS**

Preparation of a Natural Areas Policy Plan was established as a priority by the City Council in its 1990-91 Policy Agenda. Primary

responsibility for developing the plan was assigned to the Natural Resources Division. An 8-step process was defined to guide the preparation of the plan, public discussion and comment on the plan, and adoption of the plan by the Fort Collins Planning and Zoning Board and the City Council. This process is briefly summarized below:

- 1. Issue Definition.** Preliminary work on the Natural Areas Policy Plan was completed between February and August 1990, concurrently with the development of the Framework for the City's comprehensive Environmental Management Plan. Issues to be addressed in the plan were identified through an extensive outreach program to City staff, City boards and commissions, various organized clubs and citizens' groups, and interested citizens. This effort included two worksessions with City Council, meetings with seven different boards and commissions, numerous meetings with affected interests, and two public open houses.

Also as a result of this effort, the overall topic of natural areas management was evaluated against other environmental topics to be addressed as part of the comprehensive Environmental Management Plan. Completion of the Natural Areas Policy Plan was reaffirmed as a high priority in the Action Agenda for the Environmental Management Plan.

- 2. Technical and Policy Research and Compilation.** Between August and December 1990, research was completed to assemble the background information needed to complete the Natural Areas Policy Plan. This included literature review and field research to define natural areas in the Fort Collins Urban Growth Area, compile existing information on each area, and map the location of all known natural areas (Chapter 4.0). Research was also completed to summarize all existing policies related to natural areas (Chapter 2.0) and to identify potential sources of funding for future natural areas programs.
- 3. Preliminary Draft Plan.** During December 1990 through March 1991, staff from the Natural Resources Division prepared a preliminary draft of the Natural Areas Policy Plan. Information from Step 2 was summarized in text and graphics and policy recommendations were developed to address the issues identified in Steps 2 and 3.
- 4. Public Review of Preliminary Draft Plan.** From April through October 1991, the Draft Natural Areas Policy Plan was submitted for public review, discussion, and comment. Presentations were made to the Natural Resources Advisory Board, the Parks and Recreation Board, the Planning and

Zoning Board, the Storm Drainage Board, and the Water Board, and a worksession was held with City Council. Public comments were sought from business groups, environmental groups, and interested citizens in a variety of public open houses, public tours, roundtable discussions, and other settings. A video of the Natural Areas Policy Plan slide-show was produced and presented at various public meetings throughout the summer, and on the City Public Cable Station.

5. **Preparation of Revised Draft.** Following the public review period, public comments on the Preliminary Draft Plan were summarized and the plan was revised as needed to address the identified issues and concerns.
6. **Public Review of Revised Draft.** The revised draft was distributed for public review and comment in August 1992. Formal recommendations regarding the plan were sought from the public and the various City Boards and Commissions.
7. **Final Plan Revisions.** Based on the second round of public and board comments, revisions were completed before submitting the policies proposed in the plan for formal adoption by City Council.
8. **Policy Plan Adoption.** The Planning and Zoning Board adopted the Natural Areas Policy Plan during a formal hearing on September 28, 1992. City Council formally approved the Plan on October 6, 1992.

## **2.0 BACKGROUND ON PAST POLICIES AND PROGRAMS**

Although City Council made completion of the Natural Areas Policy Plan a high priority only recently, natural areas protection is not new within the City of Fort Collins. The many values of natural areas and the need to protect them have been recognized in a variety of City policies, plans, and programs since 1974. Policies and programs recommended in this plan (Chapter 5.0) extend beyond those of the past, but they do so in a way that builds on past experience and makes more specific the actions needed to implement existing policies. The Natural Areas Policy Plan is an evolutionary step in the formulation of public policy regarding the conservation of natural areas within the City.

Because the current plan builds on the past, it is important to understand the policies and programs that have been adopted previously, and that influenced its evolution. The following sections provide a brief chronology of City policies and programs that preceded the development of this plan. Additional detailed information on existing policies and plans related to natural areas is included in NAPP Technical Memorandum 1. All plans adopted by City Council are elements of the City of Fort Collins Comprehensive Plan. Thus, upon adoption, the Natural Areas Policy Plan will become an element of the Comprehensive Plan.

### **OPEN SPACE PLAN (1974)**

Official recognition of the value of the City's natural areas first occurred in 1974 when City Council adopted the Open Space Plan. This plan addressed a wide variety of community needs that can be met through an active open space acquisition and management program. The plan identified priority areas within and adjacent to Fort Collins to be included in the City's Open Space system. The importance of the area for fish and wildlife habitat was among the criteria used to identify priority sites. Specific areas identified as priorities included the Poudre River corridor, portions of Spring Creek and Fossil Creek, and the foothills west of the City.

### **GOALS AND OBJECTIVES (1977)**

In 1977, City Council adopted the "Goals and Objectives" element of the Comprehensive Plan. This statement of general goals and objectives became the fundamental basis for guiding land use planning and future development of the City. The "Goals and Objectives" remain the most important policy basis for continuing land use planning programs, including this Natural Areas Policy Plan.

The "Goals and Objectives" contain numerous statements that are relevant to the identification and conservation of natural areas within and adjacent to Fort Collins. All of the relevant statements are included in NAPP Technical Memorandum 1. Key statements that apply most directly to the conservation of natural areas are summarized below.

**Section: Impacts of Development**

Goal: Insure that future development will be accomplished so as to create the least degradation to the environment.

Objectives:

- Encourage the development of a future land use plan which deals sensitively with the relationships between the man-made environment and natural environments.
- Direct growth away from environmentally unique lands which can be shown to have special values to people--natural resource, scenic, recreational, historical--unless the negative impacts can be effectively mitigated.
- Consider the long-range ecological effects and costs when addressing short-term and long-term problems.
- Insure that the type, design, and location of new development be compatible with environmental considerations.

Goal: Encourage land use planning which will protect new and existing development from flood hazards.

Objective:

- Discourage development within the floodplain areas of Spring Creek, Fossil Creek, Dry Creek, and other drainage ways.

**Section: Open Space Preservation/Acquisition**

Goal: Provide for the present and future citizens of Fort Collins a balanced open space system, including recreational, scenic, and natural areas, trails, parks, and historical sites, commensurate with citizen needs and accessible to all.

Objectives:

- Give high priority to achieving the goals of the Fort Collins Open Space Plan (1974), insuring the completion of the continuous trail system and land acquisition program involving the Poudre River, Spring Creek, and the foothills.
- Investigate expansion of the Open Space Plan to include appropriate new acquisition sites for parks and natural areas, particularly in areas surrounding Fort Collins where future growth is to be expected or directed and in areas where such open space will provide relief from the adverse effects of urban intensities.
- Encourage Poudre River water supply management that will maintain flow in the river through the City to the extent feasible to enhance the aesthetic value of the Poudre Trail System.

Goal: Provide recreational facilities and open space (including parks and green areas) in the previously developed areas of the City adequate to meet the needs of all ages and interest groups.

Objectives:

- Develop small neighborhood parks and green spaces throughout the City to provide both recreation and non-recreational open space.
- Provide a balance between adult and children, public and private, and specialized and generalized needs for recreation and open space areas and facilities.
- Capitalize upon the location of the Poudre River and utilize it as an asset in the development of recreational and open space areas in the older City.

While the statements of the "Goals and Objectives" provide very general direction for natural areas protection, they recognized several key concepts that are still critical in 1992. Among them are the following: (1) that natural areas are of value to the community; (2) that some of the most important natural areas are the foothills, the Poudre River, Spring Creek, Fossil Creek, and other drainages; and (3) that conservation of natural areas can be



integrated with floodplain management and parks, recreation, and open space programs.

#### **LAND USE POLICIES PLAN (1979)**

In 1979, City Council adopted another fundamental element of the City's Comprehensive Plan, the "Land Use Policies Plan." This plan added specific planning direction to previous documents. Like the "Goals and Objectives," the "Land Use Policy Plan" contains many statements that relate to the conservation of natural areas. The most pertinent of those statements are summarized below and additional detail is provided in Technical Memorandum 1.

#### **Section: Chapter II, Part III -- Environmental Protection**

Policy 43: The City shall prepare and utilize an environmental management plan which will include the following measures:

- Conservation of exhaustible resources;
- Identification of environmentally scarce and valuable lands, such as wildlife habitats and lands of agricultural importance;
- Requiring development to mitigate negative impacts on environmentally scarce and valuable lands;
- Promoting the incorporation of environmentally scarce and valuable lands, including lands of agricultural importance into open spaces or historic preserves; and
- Encouraging landscaping of open spaces with appropriate native or drought resistant varieties of vegetation along with attractively developed green areas to provide a balanced and pleasing cityscape.

Policy 56: Within the floodway, as defined by Federal Insurance Administration studies, adopted by the City, the City shall encourage light recreational and open space uses and will allow extractive industrial and agricultural uses.

#### **Section: Chapter II, Part IV -- Locational Policies for Specific Land Uses**

Policy 89: Areas along the Poudre River, Spring Creek, and Fossil Creek should be incorporated into the City's parks and recreational trail system.

Policy 90: Consistent with a fiscal impact analysis and effects on the Capital Improvements Program the City should acquire and utilize the officially designated floodways of the Poudre River, Spring Creek, and Fossil Creek for open space.

Policy 91: The City should protect the scenic and recreational value of the City's lakes, rivers, and streams from encroachment by incompatible uses.

Policy 92: Adequate public access to the City's lakes, rivers, and streams should be maintained.

These policies continued the general themes identified in earlier documents by recognizing the values of local streams and watercourses and by encouraging their protection through floodplain management and open space programs.

#### **FLOODPLAIN MANAGEMENT PROGRAM (1979)**

In 1979, the City of Fort Collins entered the National Flood Insurance Program. This program included the administration of the Federally designated floodplains: Cache la Poudre River, Dry Creek, and Spring Creek. Along the Poudre River and Spring Creek, the City enacted floodway criteria that were more restrictive than the Federal requirements. Federal criteria state that the floodway limit should be established by a 1-foot rise in water surface elevation by encroachments in the fringe area. The City criteria established the floodway limits using one-half foot rise criteria, which results in a wider floodway area. The floodway area has more restrictions on it and only allows encroachments if it can be shown that a rise in water surface elevations does not result from the encroachments. Generally, the floodway areas are centered over the stream channel and include the stream riparian habitat.

#### **DRAINAGE BASIN MASTER PLANS (1980-1988)**

The Stormwater Utility has developed various drainage basin master plans for the City. These master plans recommend regional facilities to safely control stormwater runoff. Those regional facilities that relate to the City's natural areas are the regional detention ponds that temporarily store storm runoff and the various grass-lined open channels that transport the runoff through the City. The fee system for the Stormwater Utility was based on these master plans. The master plans emphasize "soft" or natural facilities as opposed to "hard" or concrete facilities. Specific areas where natural areas have been incorporated into Stormwater facilities are the Timberline Wetland, the North Greenbriar Detention Pond, the Springer Open Space, and the Canal Importation (Underhill) channel.

## **LAND DEVELOPMENT GUIDANCE SYSTEM (1982)**

The primary tool for implementing the policies of the "Goals and Objectives" and "Land Use Policies Plan" is the Land Development Guidance System (LDGS), which was developed in 1982. Described as a "flexible zoning system," the LDGS contains a list of criteria that must be met by proposed developments within Fort Collins. Two criteria in particular have been used as a basis for negotiating measures to protect significant natural areas potentially affected by proposed developments.

Criterion #13. Does the project preserve significant existing vegetation to the extent practical?

Criterion #14. If the site contains an area that serves as a habitat, natural food source, nesting place, wintering, or source of water for wildlife identified by the Colorado Division of Wildlife as significant and in particular need of attention, have special precautions been implemented in the plan to prevent the creation of environmental influences adverse to the preservation of these areas?

The LDGS anticipated that additional criteria might be developed in the future, and specifically identified the need for criteria regarding ecologically sensitive areas.

During the last few years, adverse impacts to wetlands, wildlife habitats, and other natural areas have been at issue with several development proposals. These instances of controversy have pointed to the need to modify the LDGS criteria related to natural areas to clarify which areas are covered, provide additional guidance for integrating natural areas within development proposals, and improve the process for resolving conflicts.

## **LAND USE PLAN FOR THE DOWNTOWN RIVER CORRIDOR (1985)**

The City's Comprehensive Plan includes several "Neighborhood Plans," which address specific land use planning needs and policies in portions of the City. One neighborhood plan, the "Land Use Plan for the Downtown River Corridor," placed particular significance on the natural resource values of the Poudre River and surrounding lands between College Avenue and Highway 14. The Downtown River Corridor Plan recognized the importance of natural areas in determining the unique character of the study area and established the goal of "preserving and enhancing the natural environment to the extent practical."

To support this general goal, the plan identified important natural areas and proposed 18 specific policies regarding the protection and enhancement of natural resource values (included in NAPP Technical Memorandum 1). Several policies introduced significant

new concepts to the evolving approach to natural areas management within Fort Collins. Among them were the following (paraphrased from actual wording):

- The Poudre River provides an important travel corridor for wildlife species that should be maintained to assure conservation of local wildlife populations.
- Natural wetlands are scarce environmental resources and should be protected.
- The City should undertake research studies to document the occurrence, habitat requirements, and conservation needs of plant and animal populations.
- Landscape treatments should maintain the natural pattern of the river's riparian forest.
- Native plants should be emphasized in all new planting areas.
- Natural areas that have been degraded by past human activity should be enhanced to restore their natural values.
- Maintenance procedures in natural areas of public open space should be altered to assure the conservation of resource values. Alternatives should be developed to chemical applications, intensive mowing, and other common practices appropriate to developed parkland.
- The City should develop educational, interpretive, and recreational programs to foster public understanding and enjoyment of natural areas.

While these policies were specifically applied only within the limited study area of the Downtown River Corridor, they have influenced the continued evolution of City programs. Where possible, the concepts developed in the Downtown River Corridor Plan have been applied in other areas of the City.

#### **GUSTAV SWANSON NATURE AREA (1986)**

The Land Use Plan for the Downtown River Corridor prompted the initiation of the Gustav Swanson Nature Area project as a means of implementing several of the plan's policy recommendations. Located on a 10-acre parcel of land owned by the City, the Gustav Swanson Nature Area is being developed to protect a key parcel of riparian habitat, restore a section of degraded habitat using native plant species, and provide a handicapped-accessible site for nature interpretation, education, and passive recreation.

The Gustav Swanson Nature Area project was undertaken as a cooperative venture between the City of Fort Collins (Natural Resources Division and Parks Department), the Poudre River Trust, the Fort Collins Audubon Society, and the Colorado Native Plant Society. The ongoing project has been designed and constructed almost exclusively with volunteer efforts. It has received local recognition from the Fort Collins Commission on the Disabled and national recognition from the Department of Interior's "Take Pride in America Awards."

Although the Swanson Nature Area directly affects only a small portion of the natural areas in Fort Collins, it has had several important effects that go beyond the project's 10-acre site. The project has demonstrated the interest and commitment of citizen groups to natural area protection and enhancement programs. It has provided valuable experience to all parties on the organization and management of volunteer programs. The area continues to serve as a "living research site" for evaluating alternative landscaping and management methods.

#### **POUDRE RIVER FISHERY STUDY (1986)**

A second project undertaken to implement the Downtown River Corridor Plan is the Poudre River Fishery Study. This project began in 1986 as a partnership between the City's Water Department, Trout Unlimited, the Poudre River Trust, and Colorado State University. The object of the study is to develop a plan for enhancing the fisheries and fishing opportunities of the Poudre River in Fort Collins. The project led to several small habitat enhancement projects and, in part, to the acquisition of water rights in the Poudre River to be used for the maintenance of instream flows for recreational purposes. The project is ongoing.

#### **BACKYARD WILDLIFE HABITAT PROGRAM (1986)**

In cooperation with the Fort Collins Junior League, the Natural Resources Division developed a backyard wildlife habitat program during 1986. Designed to increase public understanding of the importance of wildlife habitat, to improve habitat values within the City, and to foster public enjoyment of wildlife, the Backyard Wildlife Habitat Program has been very popular. Thousands of citizens have requested the program materials, which provide basic guidance on ways to enhance the habitat value of small landscape areas. Twenty-two families have submitted individual landscape plans for certification by the Backyard Wildlife Habitat Committee.

#### **URBAN WILDLIFE SANCTUARY DESIGNATION (1987)**

Recognition of the importance of wildlife habitats and other

natural areas in Fort Collins was further enhanced in 1987 when the National Institute for Urban Wildlife named the City as the first municipal Urban Wildlife Sanctuary in the United States. In conjunction with the designation by the Institute, City Council also adopted a resolution that declared the City an urban wildlife sanctuary. Although primarily a symbolic recognition of existing programs, Council action included three significant policy statements that had not previously been articulated. These were as follows:

- That recognition of Fort Collins as an urban wildlife sanctuary is desired to formally identify Fort Collins as a municipality that provides for the needs of urban wildlife and recognizes the value of urban wildlife as a component of quality of life.
- That protection of habitat is an effective way to provide for the needs of urban wildlife in Fort Collins.
- That City Council supports existing and planned policies and programs that provide for the needs of urban wildlife.

#### **WETLAND AND WILDLIFE HABITAT MAPS (1988)**

Another important step toward this Natural Areas Policy Plan was taken in 1988 when the Planning and Zoning Board endorsed the use of two maps of sensitive natural areas as part of the Land Development Guidance System. Developed by the Natural Resources Division, in conjunction with a committee of knowledgeable citizens, the maps were the (1) Wetlands Map of Fort Collins and the Surrounding Urban Growth Area, and (2) Wildlife Habitat Map of Fort Collins and the Surrounding Urban Growth Area. They represented the first effort to identify sensitive natural areas on a City-wide basis.

When they adopted the maps, the Planning and Zoning Board made two important policy statements:

- The board urged staff to "draft such revisions to the Land Development Guidance System, the subdivision provisions of the Code and other Planning and Zoning Code provisions and related documents as are necessary to (1) clarify the requirements and performance criteria contained in said documents, and (2) provide an effective enforcement tool for the protection of important wetlands and wildlife habitats; and advance such revisions for deliberation and adoption."
- The board also stated that until such time as the City Code had been modified as above, "the maps and criteria

explore designating the Poudre River as a National Recreation Area or National Heritage Corridor. After reviewing the results of the 1989 Poudre River National Recreation Area Study, City Council endorsed the concept of seeking National Heritage Corridor status for the Poudre River. Since then, the study area was broadened considerably and Senator Brown introduced a bill to establish a Poudre River National Water Heritage Area during April 1991.

Efforts to designate a Poudre River National Water Heritage Area have had, and will have, important effects on the evolution of natural areas programs for several reasons. First, wildlife habitat and other natural resources of the Poudre River are recognized as important values that contribute to the significance of the river. Second, the efforts have highlighted the regional and national significance of the Poudre River and its many associated values. Third, Federal designation of the National Water Heritage Area would add momentum, expertise, and financial resources to local programs to recognize and maintain the scenic, cultural, recreational, and natural resource values of the river.

#### **EROSION CONTROL CRITERIA (1991)**

Nationwide, the number one pollutant in stormwater is generated from erosion. In 1991, the City adopted Erosion Control Criteria to address this issue. Land disturbing activities resulting from construction activities must comply with the criteria. Various control measures can be used to address the specific needs of a particular site. Examples of acceptable measures include sediment ponds, vegetation buffers, silt fences, straw bales, and gravel filters at storm inlets.

#### **BUDGET PROCESS (1991-1992)**

Another step towards a consolidated natural areas program occurred when City Council adopted the budgets for 1991 and 1992. Based on recommendations from the Natural Resources Advisory Board, Council included \$200,000 in both the 1991 and 1992 budget to be used to acquire important natural areas. Although funding to acquire open space has been part of the City budget for many years, this was the first time that funding was earmarked specifically for the protection of wetlands and other sensitive natural areas. In conjunction with the Natural Areas Policy Plan, staff has developed recommendations for land acquisitions using these funds.

#### **FRAMEWORK FOR ENVIRONMENTAL ACTION (1992)**

During 1990, the City began work on a comprehensive review and revision of its environmental policies. A comprehensive Framework for Environmental Action was completed in January 1992. Completion

of the Natural Areas Policy Plan was identified as a key action element within the Framework. The Framework also addresses other important environmental elements, including air quality, water quality, resource conservation, waste reduction and management, toxic and hazardous materials management, and aesthetics and visual resources.

#### **ONGOING PROGRAMS**

All of the policies, plans, and other actions discussed in the preceding sections have resulted in a variety of City programs that address the need for natural areas conservation within Fort Collins. At present, these include the following activities:

- **Land Acquisition.** Natural areas are being acquired and incorporated into the City's system of parks, trails, and open space, and into the City's stormwater management system. An interdepartmental team is developing strategies to acquire additional lands.
- **Development Review.** Potential effects on natural areas are routinely evaluated during the review process for proposed developments. To the extent feasible, staff works with developers to avoid or mitigate adverse impacts to natural areas.
- **Enhancement Projects.** Several projects are underway to restore natural areas that have been degraded or to enhance areas with resource potential. The Stormwater Utility and Parks Department have worked to restore wetland areas that were damaged by past placement of fill material. The Utility is also planting native trees, shrubs, and grasses to enhance the natural values of channels and detention ponds. Both the Parks and Natural Resources divisions have habitat enhancement projects underway along the Poudre River.
- **Public Education.** The Natural Resources Division continues to offer the Backyard Wildlife Habitat Program and to develop interpretive programs for Gustav Swanson Nature Area. In addition, a variety of public programs and nature walks are offered through the Library's Summer Reading Program and Parks and Recreation Programs. Stormwater Utility has an on-going program of stenciling catch basins with the message "Dump No Waste--Drains to ...[Poudre River or creek name]." This program educates the public that what enters the system at that location will end up in a natural area, an inappropriate place for wastes.



- **Public/Private Partnerships.** The City is working closely with private community organizations on three partnerships. Natural Resources is continuing to work with the Poudre River Trust and other partners to complete the Gustav Swanson Nature Area. Parks is an active partner in Operation Osprey, a program to introduce osprey to Fort Collins. Forestry cooperates with Fort Collins Re-Leaf in tree-planting programs throughout the City.
  
- **Inventory and Research.** Natural Resources recently developed a data base for use in compiling site-specific information about natural areas in Fort Collins. The Division has developed an ongoing program with Colorado State University and the Student Chapter of The Wildlife Society for collecting basic data about the natural areas of the City.

With all these documents and activities directed towards natural areas conservation, one might expect that little else is needed to assure conservation. Much has been done, in fact. However, much could still be done to enhance and further coordinate these efforts. Many of the policies defined in the late 1970's and early 1980's have not been implemented in a comprehensive fashion. Several of the policy documents apply only to portions of the City. Clarification of goals, objectives, and policies is needed in some cases. Policies that will help meet these needs are defined in Chapter 5.0. An Action Plan for future activities and programs is included as Chapter 6.0.

### **3.0 NEED FOR NATURAL AREAS PROTECTION**

As Fort Collins continues to expand, development activities will continue to impact our natural resources. Natural areas protection is needed to conserve valuable natural resources that are important, not only locally, but also regionally, State-wide, and internationally.

Colorado is known nationally for its abundance and variety of plant and animal life. The merging of three major regions within the State--the Great Plains to the east, the Rocky Mountains, and the Great Basin to the west--contributes to this high species diversity. Riparian forests along streams in Colorado support plant and animal communities that are among the most diverse of any ecosystem in the United States.

The urgent need for natural areas protection has been expressed by a number of organizations and agencies at both the State and Federal level. For example, one of the goals set in 1990 by the Governor's Citizen Advisory Committee on Colorado Environment 2000 was to identify, monitor, protect, and enhance the quantity, quality, and functions of existing wetlands and riparian areas in Colorado. The committee urged that local governments use their land use control authority to identify and protect important natural features.

In addition to their conservation value, natural areas fulfill many roles within an urban environment. They provide scenic areas, protect water quality, help treat stormwater runoff, store floodwaters, provide buffer zones between differing land uses, enhance educational opportunities, and improve the urban setting for people. Cities are habitats for people and urban natural areas are important components of the human environment.

#### **CONSERVATION OF SPECIES AND COMMUNITIES**

Worldwide, loss of habitat and species extinction is one of the most serious environmental problems we face today. The need to protect natural areas of Fort Collins reaches far beyond the need to preserve habitat for local or even State wildlife species. Fort Collins is located along a major migratory flyway for waterfowl, shorebirds, birds of prey, and songbirds, and provides valuable habitat for species that may spend most of the year in different states or countries. Most of our songbirds winter on the west coast of northern Mexico, but some migrants make yearly treks between breeding grounds in northern Canada to wintering grounds in southern countries of South America. Many of these long-distance migrants have experienced severe population declines over the last 20 years due not only to deforestation of winter habitat, but also loss of migratory habitat. In the Rocky Mountain Region, these losses have been primarily riparian areas and deciduous wooded

canyons.

Within the United States, a particular concern is the loss and degradation of wetlands and riparian (streamside) habitats. The present Federal Administration has set a goal of "no net loss" of wetlands and has recently formed a Wetland Task Force to determine how to achieve this goal. The U.S. Fish and Wildlife Service estimates that nearly 54% of the original wetlands in the 48 contiguous states have been destroyed or degraded, primarily through conversion to agriculture. About 70% of the riparian habitats in the U.S. have been altered; natural riparian communities now make up less than 2% of the land area in the U.S.

Wetlands and riparian habitats are known for their high wildlife values, particularly in the semi-arid West where water is not abundant. Less than 4% of Colorado's area is water or riparian habitat. Western riparian floodplain systems along major river systems have been the most impacted by man's activities, resulting in changed or lost functions and values. Colorado has lost more wetlands than any other western state besides California.

Fort Collins has nearly 3,800 acres of wetlands and riparian habitat, comprising about 8.7% of the Urban Growth Area. Wetlands, riparian habitats, plus upland sites within our natural areas are known to support about a dozen species of plants and animals that are rare, threatened, or endangered at the State or Federal level, including the nationally endangered bald eagle.

Justification for preserving individual plant and animal species often includes the loss of potential medicines that may be produced from these organisms and the possibility of enhancing domestic strains of grains by hybridization with wild related plants. But the importance of wild species goes far beyond their direct use by humans. As the expressive writer G. John Roush pointed out, "as more species become extinct, the living fabric of our planet is becoming tattered, endangering whole natural systems and putting all of us at risk... Even the local extinction of a species can change an entire ecosystem."

## **HUMAN HEALTH**

The Science Advisory Board of the U.S. Environmental Protection Agency recognized that little distinction can be made between human health risks and ecological risks. Over the long term, ecological degradation either directly or indirectly degrades human health and the economy. The Environmental Protection Agency's list of high-risks to the natural environment and human welfare includes (1) habitat alteration and destruction and (2) species extinction and overall loss of biological diversity.

Human origins lie in the natural world, but over the last several centuries, economic, social, and cultural forces have increasingly

separated us from a daily, direct experience of the natural world and its processes. Most of our daily experience is now of the man-made world. We spend the majority of our time in the office, the automobile, or the home. The time most of us have in direct contact with nature has been minimized. Some medical doctors, psychologists, and anthropologists have stated that this separation and its associated change in lifestyle, has resulted in a deterioration in health for many individuals. These same experts argue for the reintroduction of some elements of our ancestors' lifestyle, such as exercise and diet, into our daily way of life to improve our health.

Conservation of natural areas can provide nearby opportunities for citizens to find relief from the hustle and bustle of daily urban life. Natural areas can be sanctuaries for humans, places in which to reflect and reconnect with the natural environment. Currently in Fort Collins, some of the wooded sites along ditches provide "mini" open space areas for commercial establishments. Park benches placed in these areas provide a pleasant lunch break from the work place. Citizens walk the trail system, birdwatch at ponds and wetlands, and fish in the lakes and river. In many neighborhoods, small areas of woodland or wetland are valued by residents, providing space for relaxation and exploration.

## **RECREATION**

Natural areas can serve as special components of the City's parks and open space system. The Parks and Recreation Department has already acquired a number of prime natural areas as open space, including portions of the Poudre River Corridor, Spring Creek Corridor, the foothills, and local reservoirs.

Lakes within the Urban Growth Area currently provide active and passive recreational opportunities. Some of the lakes receive substantial use by boaters, while other lakes are more popular sites for passive recreation such as bank fishing, birdwatching, or simply short walks to "escape" the urban scene. A recent outdoor recreation survey of 212 metropolitan areas revealed that about 40% of the participants walked to improve their health. According to the U.S. Fish and Wildlife Service, 77% of the U.S. population participates in wildlife-related recreation (e.g., fishing, hunting, birdwatching, wildlife photography). Several states, including Colorado, have established Watchable Wildlife programs to enhance public viewing opportunities for all wildlife.

Natural "play areas" for children also are important. Early play experiences in natural areas lead to increased environmental awareness as adults. The most attractive natural play areas have been found to be 5 minutes from a child's home, and to have water (preferably with frogs and crayfish), trees to climb, and secrecy (e.g., dense bushes and tall grasses). These natural play areas

may be critical to the well-being of the next generation who, residing in urban areas, have fewer and fewer chances to experience and learn from natural environments.

## **STORMWATER MANAGEMENT AND WATER QUALITY**

One of the major problems facing urban communities is to develop an economically and environmentally acceptable approach to manage flooding of urban streams. Wetlands associated with streams provide flood storage, slow flood waters, reduce flood peaks, increase the duration of the flow, and help prevent streambank erosion. Riparian trees and shrubs along streams can reduce flood water velocities, and help protect properties and agricultural lands adjacent to the floodplain. However, certain types of woody vegetation can cause increased flooding of adjacent property where development encroaches too close to the stream channel. Care needs to be taken to ensure that efforts to encourage additional woody vegetation in stormwater facilities do not increase flood hazards.

Some wetlands also recharge groundwater supplies, although not to the same degree as upland habitats. Undeveloped uplands probably contribute more to groundwater supplies than do wetlands because of lower evapotranspiration rates and more permeable soils. Most wetlands appear to function more as groundwater discharge areas.

Increasingly, the value of preserving wider corridors along streams to serve as flood control is being realized in the West. In Fort Collins, the City's Stormwater Utility has incorporated or created wetland areas within their drainage basins. The Utility plants trees and shrubs in many of the detention ponds and enforces floodplain criteria to restrict development activities in the City's designated floodplains.

Examples from other communities include the urban greenway project in Rapid City, South Dakota. After a disastrous flash flood caused \$160 million in damages in 1972, the community instituted a floodplain acquisition program and created a 6-mile long, 1/4-mile wide urban greenway through the center of the city. Flood damaged homes were removed, riparian vegetation planted, and Rapid Creek was reconstructed to provide fish habitat. The area is now the most popular recreational fishing stream in South Dakota.

When stormwater passes through wetlands, cleansing takes place and many pollutants are removed from the water and retained or used by the wetlands. Some ponds within the urban community also serve an important function in stormwater control. Retention basins serve to trap sediment and debris, reducing the amount entering waterways. Pollutants (e.g., pesticides from lawns and gardens, automotive oil and grease) within urban stormwater are filtered through ponds and amounts are reduced before entering natural stream systems. The City's Water and Wastewater Department also is

examining the use of created wetlands to treat wastewater at one of their treatment facilities.

## **EDUCATION**

Natural areas offer a unique and valuable educational resource. All levels of the formal education system can benefit from access to natural areas for the study of nature and environmental protection and for related scientific research. The outdoor classroom opportunity provided by natural areas also is a valuable informal educational resource. Many segments of the community enjoy visiting natural areas and observing the wildlife and plant life that inhabit the area. Through such visits, residents deepen their appreciation and understanding of the natural systems that support and enhance our own lives. Many citizen groups and private citizens participate in enhancing natural areas, including the planting of trees and shrubs in various Stormwater facilities, such as Fairbrooke, Clearview, and various other ponds and channels.

Currently, several natural areas within Fort Collins are being used for outdoor classrooms or interpretive nature centers. Colorado State University's Northern Colorado Environmental Learning Center along the Poudre River provides both these values. The Front Range Community College is currently using a small wetland near their grounds as a wildlife enhancement project for students.

Many of our elementary, middle, and high schools also have small wildlife habitat areas nearby that could be or are used for outdoor classrooms. When outdoor classrooms are located on-site or near schools, schools save money by eliminating transportation costs and students experience nature close to home. Several schools in the Boulder and Denver area have successfully incorporated on-site outdoor classrooms into their science programs. In Fort Collins, Laurel Elementary School has had tremendous success in establishing a backyard wildlife habitat over the last 20 years. This site is one of only about 20 backyard habitats that have met the City of Fort Collins' certified backyard habitat requirements. Bauder Elementary School has also planted shrubs in the Fairbrooke Detention ponds as part of a class project.

The Natural Resources Division frequently receives requests for information about outdoor education opportunities as well as for environmental restoration projects. These requests come from students, scouting groups, and special interest groups. Conservation of natural areas could provide expanded educational opportunities for these groups, which would benefit the entire Fort Collins community. About 60% of respondents in a 1986 survey conducted by the City of Fort Collins Parks and Recreation Division felt that the City should consider developing a nature learning center.

## POTENTIAL ECONOMIC BENEFITS

The preservation and protection of natural areas within the Urban Growth Area has the potential to provide a number of economic benefits to the citizens of Fort Collins. These benefits are not easily quantified, but researchers are continuing to develop techniques to quantify values associated with natural areas. The National Park Service has compiled examples and case studies illustrating where rivers, trails, and greenway corridors have the potential to create jobs, enhance property values, expand local businesses, attract new or relocating businesses, increase local tax revenues, decrease local government expenditures, and promote a local community spirit.

Natural areas have the potential to increase property values where the property is located near or adjacent to open spaces. A study from Boulder, Colorado, in the late 1970's found that, other variables being equal, the average value of property adjacent to a greenbelt was 32% higher than those 3,200 feet away. In eastern states, some developers specialize in creating subdivisions that incorporate natural areas within their design. These subdivisions are very popular and potential residents are eager to pay the higher costs per home necessary to absorb the costs to design and enhance these natural areas.

Although Natural Resources is not aware of any study in Fort Collins that compares the value of lots or homes adjacent to natural areas with those not adjacent to these sites, some of the highest priced lots and homes in the City appear to be located adjacent to open areas or on the shores of reservoirs. Homeowners frequently state that they value the natural characteristics and wildlife that use these open areas or reservoirs and associated habitats.

Natural areas also provide an added attraction to conference and workshop planners when they seek a site for an event. Some of Fort Collins' natural areas are known as particularly good birding areas and the City has been the meeting location for regional conventions held by the Colorado Field Ornithologists, the Colorado Audubon Society, and the Colorado Native Plant Society, and national conventions held by the American Birders Association. Such events contribute to the economy through expenditures at motels, shops, and restaurants.

Passive recreational use of natural areas also can contribute to the local economy. According to the U.S. Fish and Wildlife Service, over 1/4 of the total national wildlife-related recreation expenditures was related to bird watching and wildlife photography. Coloradans spent over \$332 million in 1985 on nonconsumptive wildlife-related activities. The National Park Service predicts that interest in wildlife viewing will continue to increase over the next decade in areas where urbanization, education, and income

levels continue to rise.

The effect of natural areas on the quality of life in Fort Collins also could influence decisions by companies seeking a new plant or office location. Environmental quality, including the presence of open space and natural areas, plays an increasingly important role in siting decisions.

The choice between retaining undeveloped lands as open space or allowing residential development is often debated in terms of public expenditures and the tax base. Expansion of the tax base is not always beneficial in the long term due to increased public service requirements. In many situations, the cost of providing services to residential developments is much higher than the revenues to local governments resulting from the expanded tax base. In the City of Boulder, the 1988 public cost for maintaining open space was only \$75-\$100/acre, less than 3% of the \$2,500-\$3,200/acre cost of maintaining developed areas when the costs for utilities, flood control, transportation, and subsidiary governmental entities were included. James Crain, Director of Boulder Open Space/Real Estate firmly believes that the maintenance of open space areas contributes to other overall economic benefits to the City of Boulder, such as the desire by businesses to locate within the community.

#### **SCIENTIFIC VALUE**

Natural areas of the Urban Growth Area offer numerous opportunities for scientific research. As early as the mid-1940's a unique cottonwood community along the Poudre River just north of Prospect was used as a study site for a Master's project at Colorado State University. U.S. Fish and Wildlife Service riparian ecologists with the National Ecology Research Center in Fort Collins are currently studying natural reproduction of cottonwoods on this same site. A study of wintering bald eagles has recently been conducted at reservoirs in Fort Collins by the Fisheries and Wildlife Biology Department at Colorado State University.

Other opportunities exist for research and pilot projects concerning urban wildlife management, sustainable development, stream restoration and stabilization, wetlands (mitigation, restoration, and management), revegetation, water quality enhancement, natural area design and interpretation, and rare animal or plant communities. Besides benefiting graduate and undergraduate students of Colorado State University, natural areas could serve as research sites for various State and Federal agencies located within Fort Collins, including the Colorado Division of Wildlife, U.S. Fish and Wildlife Service, and the U.S. Forest Service.



## COMMUNITY IMAGE

Many factors interlace to create an image for a city, including the setting, skyline, street pattern and level of congestion, design and landscaping, and the overall quality of life. The overall quality of life is influenced, in part, from the relationship a community has with its environment. Protection of important natural areas has already had an influence on how Fort Collins is perceived by its citizens, other communities, and the world.

Previous local efforts to conserve and create natural areas, including the Backyard Wildlife Habitat Program and the Wetlands and Wildlife Habitat Program, have resulted in Fort Collins' designation as an urban wildlife sanctuary by the National Institute for Urban Wildlife. Fort Collins was the first city in the country to receive this designation. These programs also have led to the recognition of Fort Collins as a leader in conservation at national and international conferences, including a 1990 conference on sustainable communities held at the United Nations. Such recognition is indicative of a current interest in environmentally sound cities.

In addition, the Fort Collins community has shown strong interest in community involvement to enhance natural areas. The Gustav Swanson Nature Area project, a joint project between the City, the Fort Collins Audubon Society, the Poudre River Trust, and the Colorado Native Plant Society is an example of a volunteer project that sets an example of stewardship for the natural resources along the Poudre River. The ongoing program to restore a section of riparian habitat and provide handicapped-accessible interpretive facilities was recognized by the national Take Pride in America Conservation Awards Program. In 1990, Operation Osprey began a 6-year program to introduce osprey to the Poudre River and Fort Collins. This project also involves a partnership between several community groups, the Colorado Division of Wildlife, and the City. Both projects have fostered extensive community involvement and are good models of the pride Fort Collins citizens take in promoting natural areas conservation.

#### 4.0 NATURAL AREAS OF FORT COLLINS

This chapter describes how important natural areas within the Fort Collins Urban Growth Area were identified, and briefly discusses the resource values and management challenges within these areas. Natural areas were grouped into nine resource areas. The resources and conservation needs and opportunities for each resource area are discussed.

##### IDENTIFICATION OF NATURAL AREAS

Natural areas were identified using a number of criteria and sources of information. Importance was placed on individual sites within the Urban Growth Area with one or more of the following characteristics:

- Contain high quality wildlife habitat;
- Currently serve, or potentially serve (if enhanced), as a wildlife corridor between higher quality wildlife habitats;
- Contain significant geologic or archaeological sites;
- Contain rare native plant species or communities; or
- Support rare or important animal species and communities.

Information on which species or communities to include in the above criteria, as well as location of individual sites, was obtained from a number of sources:

- State agencies (Colorado Division of Wildlife, Colorado Geological Survey, Colorado Natural Areas Program, Colorado State Forest Service);
- Federal agencies (U.S. Fish and Wildlife Service);
- Universities and colleges (Colorado State University, University of Colorado, Front Range Community College);
- Conservation organizations (Fort Collins Audubon Society, Colorado Native Plant Society, Rocky Mountain Flycasters/Trout Unlimited, Colorado Bird Observatory, Poudre Canyon Chapter of the Sierra Club, Poudre River Trust);
- Citizen groups (Fort Collins Citizen Planners, Fort Collins Chamber of Commerce Environmental Committee, Larimer County Parks Board);
- Literature (including scientific journals, conference proceedings, government publications);

- Professional/citizen recommendations;
- Wetland and wildlife habitat maps of the Urban Growth Area; and
- Field verification.

During fall 1990, the Natural Resources Division contacted nearly 100 professionals and concerned citizens from agencies and organizations included in the above list. Information on important plant or animal communities and biological communities within the Urban Growth Area was requested, as well as individual priority site recommendations (NAPP Technical Memorandum 2).

Important wildlife habitats and those that serve as a wildlife corridor between other high priority areas were identified by maps of cover types. Wetlands and wildlife habitats, or cover types, within the Urban Growth Area were first mapped during the mid-1980's. This initial mapping was based primarily on aerial photo interpretation. During fall 1990, a field check of all mapped wetlands and wildlife habitat areas (previously designated high or moderate priority) was conducted to update any changes since the mid-1980's and to collect more detailed information (e.g., major plant species) for each site. Previously unmapped sites discovered since the mid-1980's mapping or during the field check also were evaluated, as well as lands between the western boundary of the Urban Growth Area and the first ridgetop east of Horsetooth Reservoir. More detailed methodology is included in NAPP Technical Memorandum 2.

An examination of the Wetlands and Wildlife Habitat Maps revealed some overall geographic patterns for natural areas. Most areas were associated with river and stream corridors, lakes, or the foothills. A smaller proportion of the sites were isolated areas. Thus, eight natural resource areas were defined:

- Poudre River;
- Fossil Creek (and tributaries);
- Spring Creek;
- Cooper Slough;
- Boxelder Creek;
- Dry Creek;
- Lakes and Reservoirs; and
- Foothills.

Natural areas that did not fall within these resource areas are considered isolated areas. However, some sections of the ditches included in the isolated area category do serve as wildlife corridors.

Natural areas on both private lands and City and other public lands were mapped. The City of Fort Collins currently has designated

Open Space Lands (e.g., Riverbend Ponds, PineRidge). All City Open Space Lands were mapped as natural areas because of their high wildlife values.

## OVERVIEW OF RESOURCE VALUES

### Ecological Setting

Located on the boundary between the Rocky Mountains and the Great Plains, Fort Collins has a semi-arid climate with an average precipitation of less than 15 inches. Prior to settlement, the Fort Collins area looked quite different than it looks today. The land was characterized by shortgrass prairies with scattered trees and shrubs along watercourses, and extensive dry shrubs to the west in the foothills zone.

By the early 1900's major upstream water diversions and construction of reservoirs had narrowed the Cache la Poudre River and provided more constant water flow without the high flood peaks that previously had prevented development of cottonwood forests along the river, except those along some of the wider bends or oxbows. With flows more stabilized, conditions were favored for establishment of multi-layered woody plant communities dominated by cottonwoods. As Fort Collins grew, other new habitats were created. Urban forests were planted in residential areas and parks. Abandoned gravel mining created ponds and small lakes. Large lakes and reservoirs were built to store irrigation waters. Waterways were constructed to transport stormwater and irrigation water. Diversion of water for municipal and agricultural uses created wetlands of different types, and in different locations, than previously occurred in Fort Collins. Historically, the majority of wetlands probably occurred along floodplains.

As a result, a greater variety of habitats are present today in Fort Collins than in presettlement time. This greater diversity has most likely resulted in an increased diversity of wildlife. In addition, the development of a riparian forest along the Platte River through the Great Plains has provided a corridor for the movement of forest birds and other species across grasslands that have historically served as an ecological barrier to dispersal. Almost 90% of the contemporary bird species of northeastern Colorado were not present at the turn of the century.

Today, Fort Collins has a wide diversity of wildlife habitats (Table 1), which include native biological communities as well as those formed or altered by human activity. Preservation and enhancement of both types of habitats are important to assure the conservation of our natural areas for the benefit of wildlife and the citizens of Fort Collins.

Table 1. Acreage of major habitat types present within resource areas and isolated natural areas of the Fort Collins Urban Growth Area, as mapped in fall of 1990. (See NAPP Technical Memorandum 2 for descriptions of each habitat type.)

Habitat Type	Acres
<b>Aquatic (lakes, ponds, streams, ditches)</b>	
Lake or reservoir	1,390
Unreclaimed Gravel Pit Lakes	259
Pond with Native/Naturalized Vegetation	121
Urban Ponds	29
Lower Perennial Riverine	124
Intermittent Riverine	130
Ditches with Associated Habitat Value	126
<b>Subtotal</b>	<b>2,179</b>
<b>Emergent Wetland</b>	
Cattail/Bulrush Marsh	288
Wet Meadow	381
<b>Subtotal</b>	<b>669</b>
<b>Woody Riparian (adjacent to aquatic habitat)</b>	
Native Riparian Shrubland	83
Native Riparian Cottonwood Forest	465
Mixed Native/Naturalized Riparian Forest	289
Undesirable Riparian Shrubland	110
<b>Subtotal</b>	<b>947</b>
<b>Upland</b>	
Grassland	3,042
Mixed Grassland/Non-weedy Forbs	161
Weedy Forbland	132
Plains Shrubland	52
Foothills Shrubland	600
Undeveloped Plains Forest	29
Undeveloped Plains Tree Savanna	36
Undeveloped Foothills Forest	140
Developed Deciduous Urban Forest	105
Developed Coniferous Urban Forest	85
<b>Subtotal</b>	<b>4,382</b>
<b>Grand Total</b>	<b>8,176</b>

## Major Habitat Types

The refined cover classification consists of 23 habitat types (Table 1), which adequately describe the major cover types that occur in important natural areas within the Fort Collins Urban Growth Area. Even within the same habitat type, a wide array of factors influence the wildlife value of the site (e.g., juxtaposition with other habitat types, surrounding land uses, human disturbance, plant species diversity, water regime). However, some generalities can be made concerning the relative wildlife value of each habitat type within the Urban Growth Area.

### Aquatic Habitats

Aquatic habitats within Fort Collins consist of lakes, ponds, the Poudre River, creeks, and ditches. Nearly all wildlife species are dependent on aquatic habitat to a certain degree. Some animals are completely dependent on these habitats for food, protection from weather or predators, resting areas, and reproductive sites. Other animals may use aquatic areas throughout their lives, but reside primarily in upland habitats. Compared to upland sites, diversity of wildlife is generally higher within aquatic habitats or sites immediately adjacent to these areas. In addition to their wildlife value, aquatic habitats provide flood protection and water quality improvement.

Lakes and reservoirs. These large bodies of water within the Urban Growth Area provide important habitat for a variety of waterfowl and waterbirds during spring, late summer, and fall, and for bald eagles during winter. Most lakes are stocked with warmwater fishes such as bluegill, bass, and crappie; coolwater fishes such as yellow perch; or coldwater fishes such as rainbow trout. These fishes providing recreational fishing opportunities and a food source to fish-eating birds such as herons and osprey. Although the wildlife value of gravel pit lakes generally is lower than lakes and ponds with associated native or naturalized vegetation, some of the gravel pit lakes within the Urban Growth Area receive high use by migratory and wintering waterfowl.

Ponds with native or naturalized vegetation. Due to emergent vegetation, mature trees, and undisturbed herbaceous vegetation surrounding these ponds, waterbird diversity can be extremely high, particularly if several ponds are located together. During the breeding season most waterfowl and waterbirds disperse from larger lakes to smaller ponds where aquatic plants and invertebrates are generally more abundant in the shallow-water open areas. Some of the ponds within Fort Collins have been stocked with warmwater fish such as bluegill or bass.

Urban ponds. Typically "ornamental" with a perimeter of mowed lawn, these ponds provide much lower wildlife values than ponds

with native or naturalized vegetation. Canada geese and mallards may frequent the urban pond, but other waterbirds generally are not common due to the small size of the pond and lack of cover. However, urban ponds do provide an important source of water for songbirds and other terrestrial birds.

Lower Perennial Stream. In the Urban Growth Area, the Cache la Poudre River is a lower perennial stream. Where the Poudre River is not channelized, the low gradient, slow water provides areas of well-developed woody riparian habitat, which is important for a variety of wildlife species and provides a key animal movement corridor within the City. Although the fisheries value of the Poudre is not high, the river does support some trout fishing. The common shiner, a Colorado Species of Concern, likely occurs within the Urban Growth Area. Fish-eating birds such as herons and kingfishers are frequently observed along the Poudre. The river also is heavily used by migrant, breeding, and wintering waterfowl, shorebirds, and other waterbirds. Aquatic insects of the river attract a number of bird species.

Intermittent riverine. Along intermittent streams, which under natural conditions are periodically dry, the floodplain and riparian zone is not well developed. However, riparian vegetation has developed along sections of Spring Creek due to stabilized flows. Spring Creek supports a variety of smaller fishes, including the Johnny darter, a Colorado Species of Concern. Fossil Creek provides relatively high quality habitat for aquatic invertebrates, but provides less habitat for fishes due to areas that are periodically dry. Cooper Slough, which runs through agricultural areas in northeast Fort Collins, appears to have a fairly rich association of wetland vegetation and may provide high quality amphibian habitat. Although bird diversity is not as high along intermittent streams, compared to the Poudre, waterfowl, shorebirds, herons, other waterbirds, and insect-eating terrestrial birds will frequent stream drainages.

Ditches with native/naturalized vegetation. Fort Collins has numerous ditches that function to direct both stormwater and irrigation water above ground through the City. Some of these ditches function as intermittent streams and have relatively thick growths of woody riparian vegetation, which contain a variety of native and naturalized plants. Mallards, with their broods of ducklings, are often observed in the ditches when water is flowing. Even when water is not flowing within the ditch, low areas frequently contain shallow standing water that provides drinking and bathing sites for songbirds.

#### Emergent Wetland Habitats

Emergent wetlands consist of cattail or bulrush marshes, which frequently have open water areas, as well as wet meadows, which

typically have few open water areas except during spring. In addition to valuable wildlife habitat, emergent wetlands provide flood protection and water quality improvement. Throughout the United States, wetlands have been destroyed or degraded at tremendously high rates.

Cattail/bulrush marsh. The wildlife value of a cattail or bulrush marsh is highly dependent on marsh size and water depth. A marsh with 50:50 interspersed of emergent plants and open water has been shown to attract a greater abundance and diversity of waterbirds than marshes with greater proportions of either open water or emergents. The abundant aquatic invertebrates and plant cover of marshes produce ideal habitat for migratory and breeding waterfowl. Large, deepwater marshes within the Urban Growth Area provide critical breeding habitat for numerous other waterbirds, including yellow-headed blackbirds, American bitterns, and rails. A wide cattail or bulrush marsh zone along a lake, pond, or stream increases the value of these aquatic habitats for birds, mammals, reptiles, and amphibians by providing cover and nest sites, as well providing sites for higher invertebrate production.

Wet meadows. Although generally of lower wildlife value due to their low plant structural diversity and lack of open water, wet meadows provide extremely valuable habitat for birds when flooded for even a few weeks during key migratory periods. Food (invertebrates and seeds) is generally abundant in flooded areas, so these areas typically receive heavy use by a variety of ducks and shorebirds.

### Woody Riparian Habitats

Woody riparian habitats are forests and shrublands that occur along streams, lakes, ponds, and ditches. Along with wetlands, these habitats have been severely altered in the United States. Riparian habitats in the West are known for their high wildlife values, as well as their value to provide flood protection and to improve water quality. Historically, the largest and most extensive riparian forests in the Urban Growth Area were found along the Poudre River. This is still true today; however, man-made aquatic habitats such as ditches, lakes, and ponds also provide conditions for establishment of riparian vegetation.

Riparian forest. Riparian cottonwood forests of the Urban Growth Area are dominated by the native plains cottonwood and native willows, but also may contain a number of introduced tree species. The closed canopy of tall, mature cottonwoods and willows provides habitat for a shade-tolerant understory of younger or smaller trees, shrubs, vines, and forbs (e.g., wildflowers). This habitat is one of the most diverse in terms of wildlife species within Fort Collins. Woody riparian habitat provides numerous values and functions to biological systems and wildlife, including food chain



support and increased aquatic invertebrate production; overhead cover for fishes; food, cover, nesting sites, perches, and migratory corridors for birds; food and cover for mammals; migratory corridors for deer and other larger mammals; and cover and breeding habitat for amphibians and reptiles. Even along ditches, numerous songbirds and other smaller terrestrial birds forage and nest within adjacent cottonwood or mixed riparian forests. Raptors such as great-horned owls and red-tailed hawks are known to frequent some ditches that are in the midst of the urban environment.

Riparian shrublands. Native shrubs are usually found on sites among cottonwoods and other riparian trees. However, there are some smaller areas devoid of trees and dominated primarily by smaller willows. These shrublands provide important nest sites for common yellowthroats and other songbirds. Shrublands dominated by Russian olive or saltcedar are classified as undesirable riparian shrublands.

Particularly in the West, extensive thickets of Russian olive or saltcedar will exclude establishment of native trees and shrubs such as cottonwood and willow. Saltcedar provides little wildlife value, but Russian olive produces abundant seeds known to attract a variety of songbirds. However, a number of western riparian ecologists advocate banning the selling and planting of both Russian olive and saltcedar in the West due to their invasive nature that threatens native riparian communities. The City of Fort Collins no longer plants Russian olive or saltcedar on City-owned lands and has begun to implement a program to devise control strategies for both species.

### Upland Habitats

Upland habitats consist of grasses, shrubs, and trees that are not associated with wetland or aquatic habitats. Although less emphasis has been placed on protection of these upland habitats along the Front Range, compared to wetlands, they provide extremely important habitat, particularly for many native plants and animals.

Grasslands/forblands. Within the Urban Growth Area, grasslands serve as open space between developed areas and other wildlife habitats, as well as provide food sources for many species of mammals, songbirds, and raptors. Flowering forbs among the grasses are particularly beneficial for increased insect diversity. With the exception of the foothills, few areas containing larger pockets of native grasses remain in the Urban Growth Area. Most of the larger grassland areas have been developed or are highly degraded due to past and present use for pasture or croplands. Some areas of native grasses exist toward the south end of Fort Collins and are of particular concern due to the presence of large prairie dog colonies. Most of these larger prairie dog colonies are adjacent

to undeveloped creek drainages. The prairie dog colony provides important prey for bald eagles, ferruginous hawks, and other large wintering raptors, as well as badgers, coyotes, and foxes. In addition the burrows provide habitat for burrowing owls, snakes, and a variety of insects. Other small mammal prey base is likely high in both the prairie habitat and grass-sedge habitat bordering drainages. Trees or power lines at these grassland sites serve as valuable perches for raptors.

Weedy forbland. Rather extensive areas of weedy forbland are present along the Poudre River in areas degraded by past sugar refining activities. Weedy forblands have few grasses and are dominated by typical "weedy" forbs (e.g., Russian thistle, kochia). The Colorado Weed Management Association considers these species undesirable due to their invasive habitat that diminishes crop, pasture, and nonagricultural lands. Some of these plants also are irritating and poisonous to livestock, or may threaten human health (i.e., weed allergies). While providing habitat for seed-eating songbirds, rabbits, and a few other species, the relative wildlife habitat quality of this habitat is low. These areas do, however, provide open space between developed areas and the valuable riparian corridor. They also offer potential sites for enhancement projects, particularly as restoration sites for prairie grasslands.

Shrublands. Two types of upland shrublands can be found within the Urban Growth Area--the plains shrubland and the foothills shrubland. Few native plains shrublands, dominated by rabbitbrush, are left in Fort Collins, but foothills shrublands are still quite extensive. These areas provide valuable food, cover, and nest sites for upland songbirds, small mammals, and mule deer.

Undeveloped forests. Mule deer are abundant throughout the foothills forest zone, which provides important protection from predators, disturbance, and bad weather. Undeveloped plains forest, not associated with aquatic habitat, is unique and rare within the Urban Growth Area. One such site is a deep ravine connected to Fossil Creek, which supports a diverse assemblage of native grasses, shrubs, and trees. The site serves as a deer movement corridor and various raptors and other birds have been observed using this site.

Developed urban forest. Most of the forest habitat outside of the foothills is considered urban forest, which has been primarily planted. Tree species include cottonwood, green ash, elm, maple, white poplar, and other ornamentals. Sites generally contain few shrubs or understory, and the grass is often mowed. Although this habitat does not support a high diversity of wildlife, songbirds and raptors commonly use urban forests for nest and perch sites. Older, large native cottonwood trees are particularly valuable to maintain for birds that nest in tree cavities or feed on insects among living and dead branches.

The designation of urban forests as natural areas within the Urban Growth Area is limited to individual residential sites on larger lots, urbanized parks, and farm homesteads with stands of trees greater than 1/4 acre. Not all of these potential sites were mapped in the mid-1980's and the purpose of mapping some of these sites was mainly to note more extensive urban forests where care must be taken to replace larger trees should the property be developed for other uses or be subdivided. Much of the older area of Fort Collins contains developed urban forest habitat among the homes, commercial buildings, and streets. These "backyard" habitats can be enhanced to support a diverse community of resident and migratory songbirds. Feeding birds is a popular hobby in the City and backyard plantings can enhance the variety of birds that come to individual feeders.

### **Plants of Special Concern**

Along Colorado's Front Range, rare plants and native plant communities are threatened not only by urban development and agricultural practices, but also by the spread of exotic plant species. Three plant species of special concern, due to their rare occurrence in the United States or Colorado, can be found within the Fort Collins Urban Growth Area:

- Bell's twinpod (Colorado Species of Concern; candidate for National Threatened Species), occurs mainly on the eastern ridge of the foothills, including a site within PineRidge Open Space;
- Showy prairie gentian (Colorado Species of Concern), known from only one site in Fort Collins, at the Flatiron Open Space along the Poudre River; and
- American currant (Colorado Species of Concern), known to occur at only one site along the Poudre River, at the Springer Open Space.

Several other species listed as rare plants by the Colorado Natural Areas Program occur along the Front Range or on the plains in adjacent counties and also may be present in the Urban Growth Area. The Colorado butterfly weed (Colorado Species of Concern and candidate for national endangered species list) has not been seen near Fort Collins in recent years, but has been found recently in southern Wyoming. This species grows in wet meadows along streams and possibly could be still present within the Fort Collins Urban Growth Area.

Although information is lacking on individual plant species occurrence and distribution within the Urban Growth Area, the following types of plant communities have been identified as being of special concern due to their rare occurrence and the possibility

that these sites may contain rare plant species:

- Remnant native riparian plant communities;
- Natural wetlands with outstanding diversity of native plants;
- Remnants of native prairie plant communities;
- Native foothill plant communities.

Currently, rare plant species and communities are known to occur primarily along the Poudre River and the foothills (Figure 1). NAPP Technical Memorandum 2 contains a more detailed discussion of the status of known rare plants and important native plant communities within the Urban Growth Area.

### **Animals of Special Concern**

Although data are limited on the occurrence and patterns of habitat use by individual animal species within the Urban Growth Area, some areas of special value have been identified. These include areas and habitats that support animals listed as endangered, threatened, or species of concern by the Colorado Division of Wildlife (Figure 2), as well as key wildlife concentration or breeding areas identified by the Division and other wildlife professionals in the community (Figures 3-5). Professional wildlife biologists and citizens have also identified a number of other animal species, such as the jack rabbit, that are declining locally due to loss of habitat.

Significant species and habitat identified by the Colorado Division of Wildlife include:

- Bald eagle (National and Colorado Endangered Species; winters in the Urban Growth Area at large prairie dog colonies along Fossil Creek, along the foothills and Poudre River, and at several large reservoirs);
- Ferruginous Hawk (Colorado Species of Concern, candidate for National Threatened Species; winters in the Urban Growth Area at large prairie dog colonies along Fossil Creek);
- Burrowing owl (experiencing a rapid population decline in Colorado and potential candidate for Colorado Species of Concern; known to occur in several large prairie dog colonies of the Urban Growth Area in the last 5 years, but few sightings within the last few years);
- American white pelican (Colorado Species of Concern; uses several lakes in Fort Collins during nonbreeding season);

- River otter (Colorado Endangered Species; last sighted in 1983 along Poudre River at northwest Urban Growth Area boundary);
- Common shiner (Colorado Species of Concern; known to occur in the Poudre River and may be present in creeks);
- Johnny darter (Colorado Species of Concern; known to occur in Poudre River and Spring Creek, and may be present in other creeks);
- Smokey-eyed brown butterfly (Colorado Species of Concern; adults and caterpillars found along Poudre River at McMurry Nature Area); and
- Two-spotted skipper (Colorado Species of Concern; adults and caterpillars found along Fossil Creek).

Important use areas or concentration sites for other species or groups of species identified by the Colorado Division of Wildlife and local professionals. These include the following:

- Concentration areas for raptors (large prairie dog colonies, large lakes, the foothills, and the Poudre River Corridor);
- Key sites for migrant songbirds (Spring Creek Outlet, north end of Dixon Reservoir, northshore Warren Lake cottonwood stand, Poudre River Corridor, and Grandview Cemetery);
- Great blue heron rookery (located along Poudre River, south of Northern Colorado Environmental Learning Center);
- Key duck production areas (Poudre River and adjacent ponds, some of the larger lakes);
- Duck winter concentration areas (Poudre River south of Mulberry and some of the larger lakes);
- Mule deer winter concentration area (foothills);
- Key areas for rare migrant or resident butterflies (foothills, Spring Creek Outlet, Springer Open Space along the Poudre); and
- Areas of high terrestrial or aquatic insect diversity (Fossil Creek, Spring Creek Outlet, and along the Poudre at McMurry Nature Area, Lee Martinez Park, and Northern Colorado Environmental Learning Center).

NAPP Technical Memorandum 2 lists additional information on the occurrence of animal species and their habitat requirements.

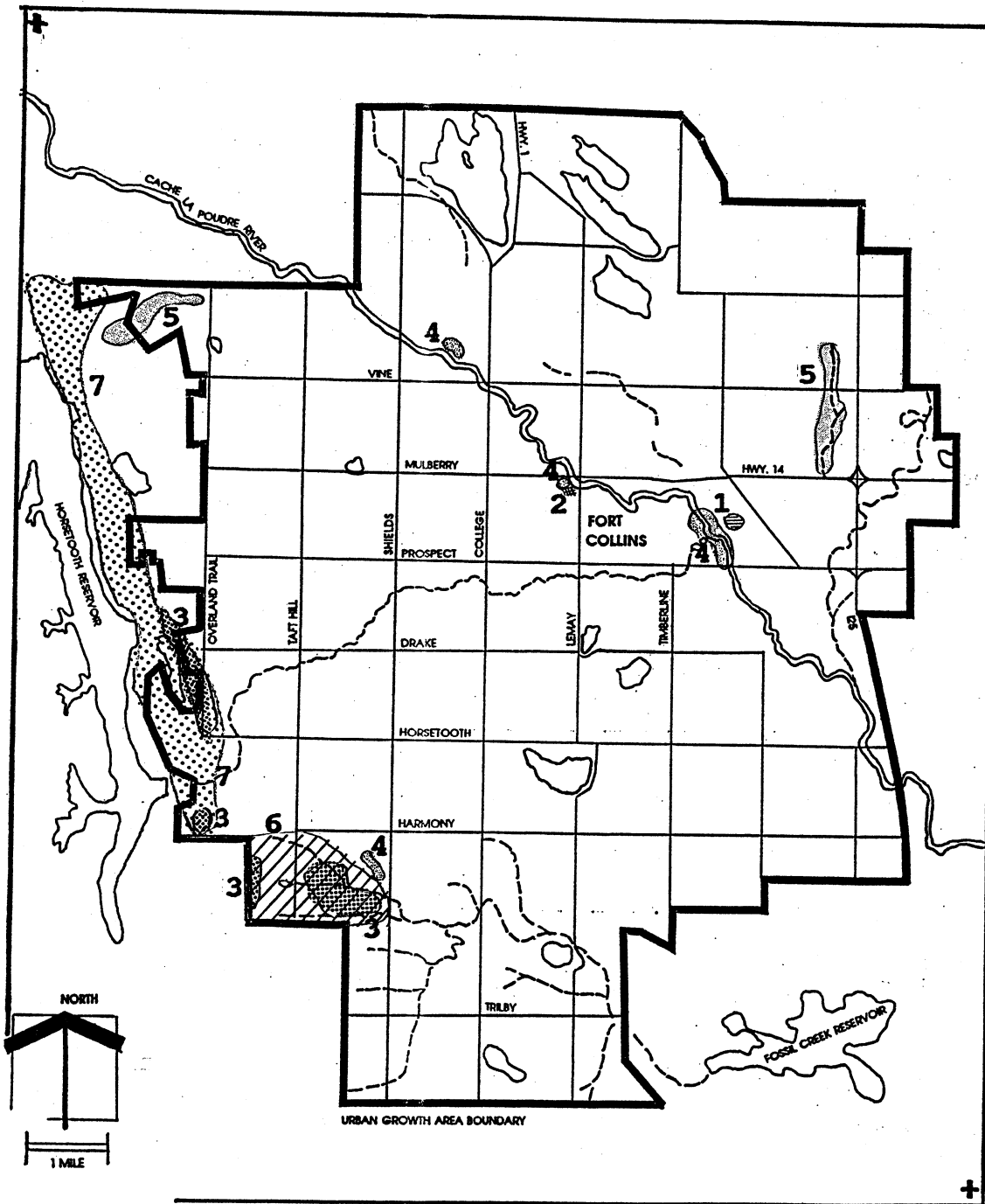


Figure 1. Rare plant sites and areas containing more abundant populations of native plants: (1) prairie gentian; (2) American currant; (3) Bell's twinpod; (4) native woody riparian plant communities; (5) native wetland plant communities; (6) native prairie plant communities; and (7) native foothill plant communities.

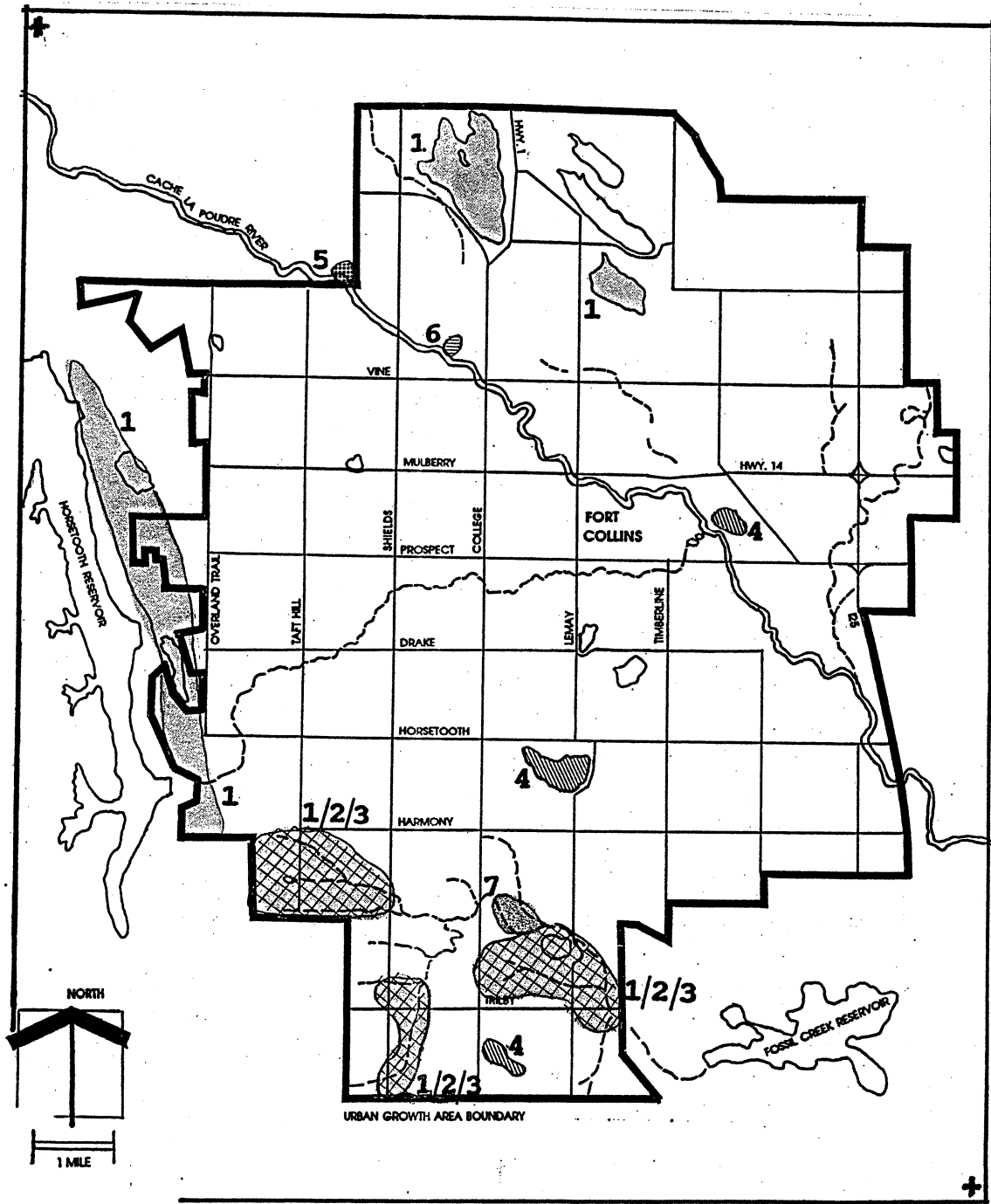


Figure 2. Key areas for endangered, threatened, and rare animals: (1) bald eagle; (2) ferruginous hawk; (3) burrowing owl; (4) American white pelican; (5) river otter (suitable range includes all of Poudre); (6) smokey-eyed brown butterfly; and (7) two-spotted skipper.

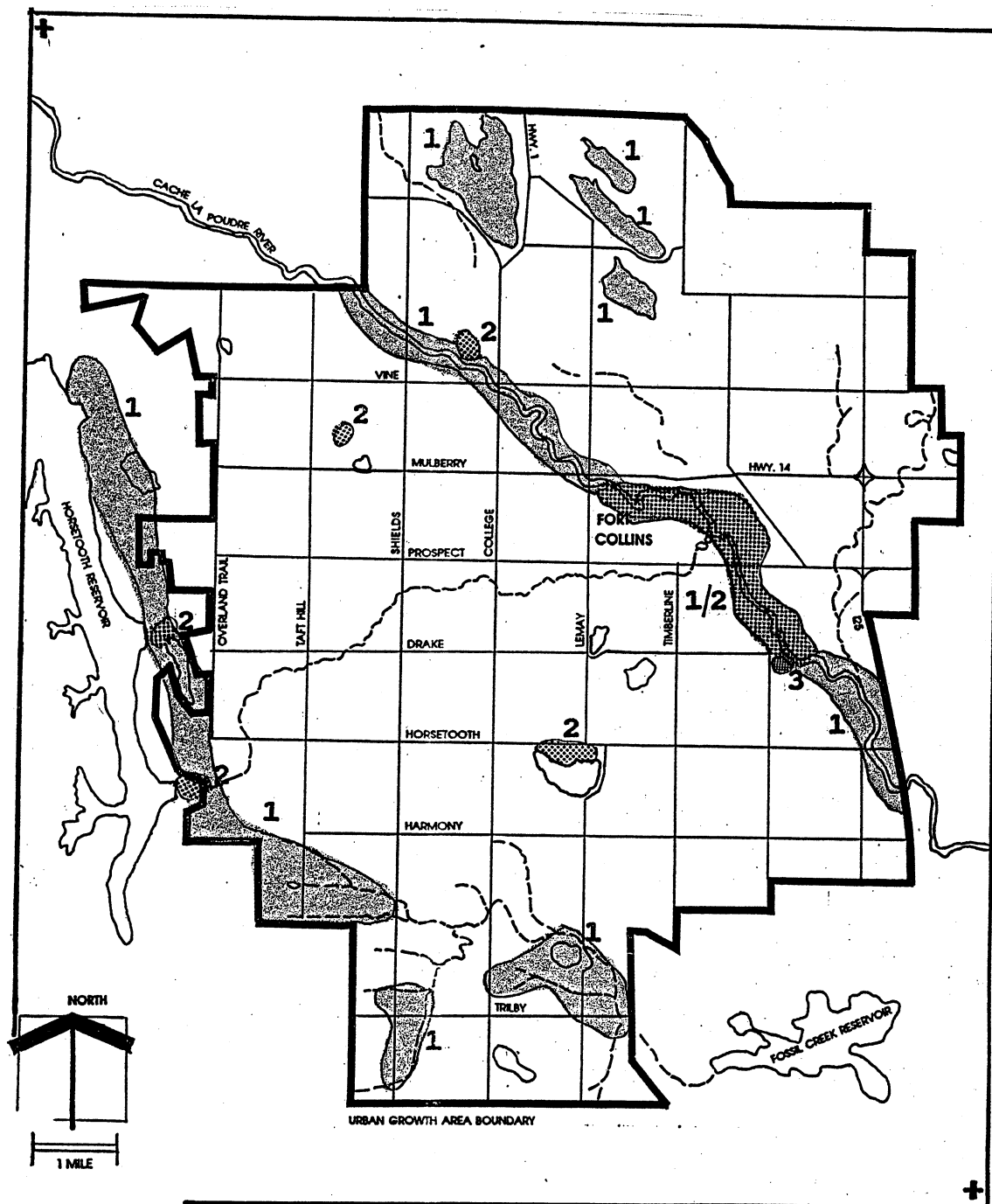


Figure 3. Key areas for (1) raptors; (2) migrant songbirds; and (3) nesting great blue herons.



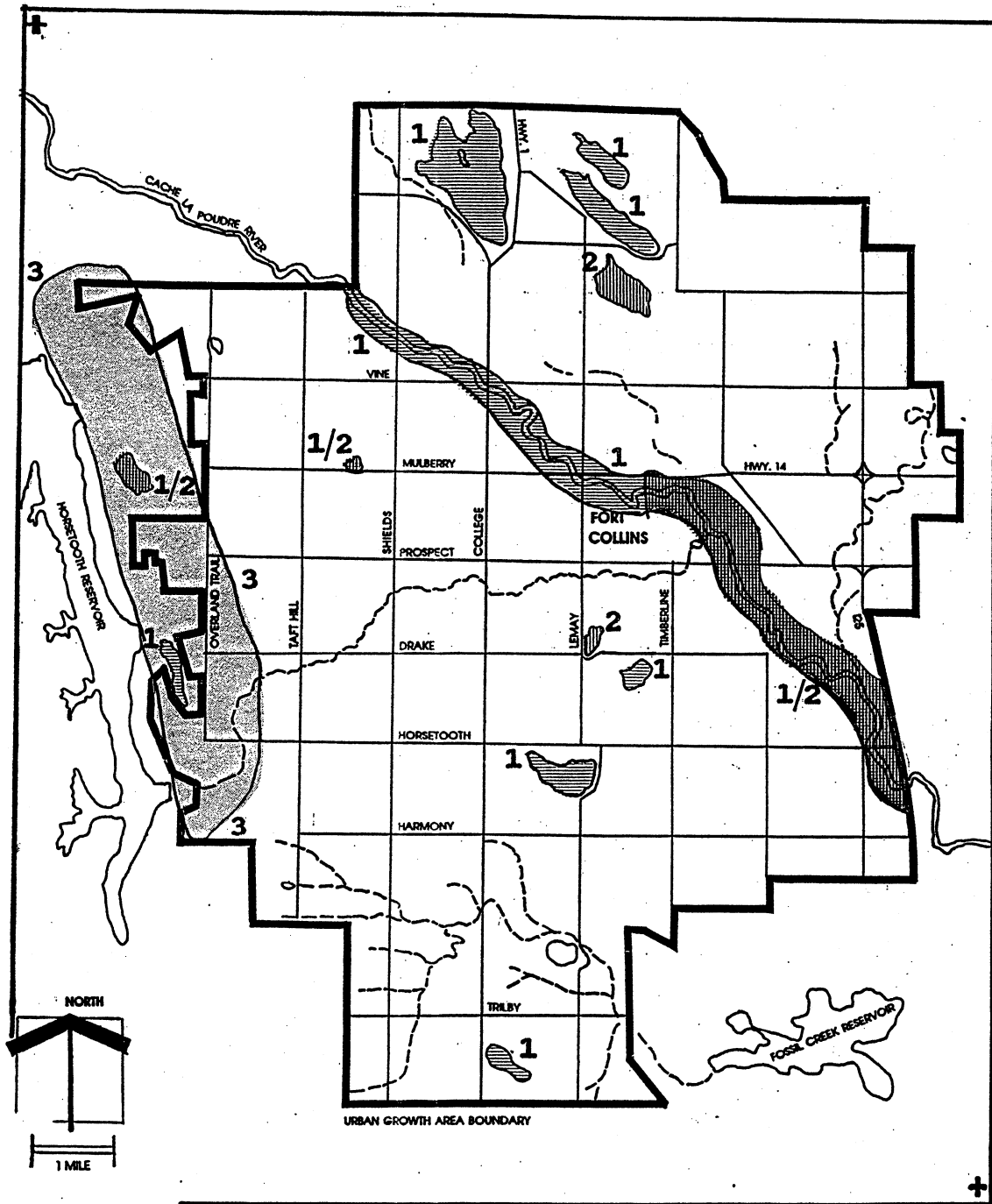


Figure 4. Key areas for (1) duck production; (2) duck winter concentration; and (3) mule deer winter concentration.

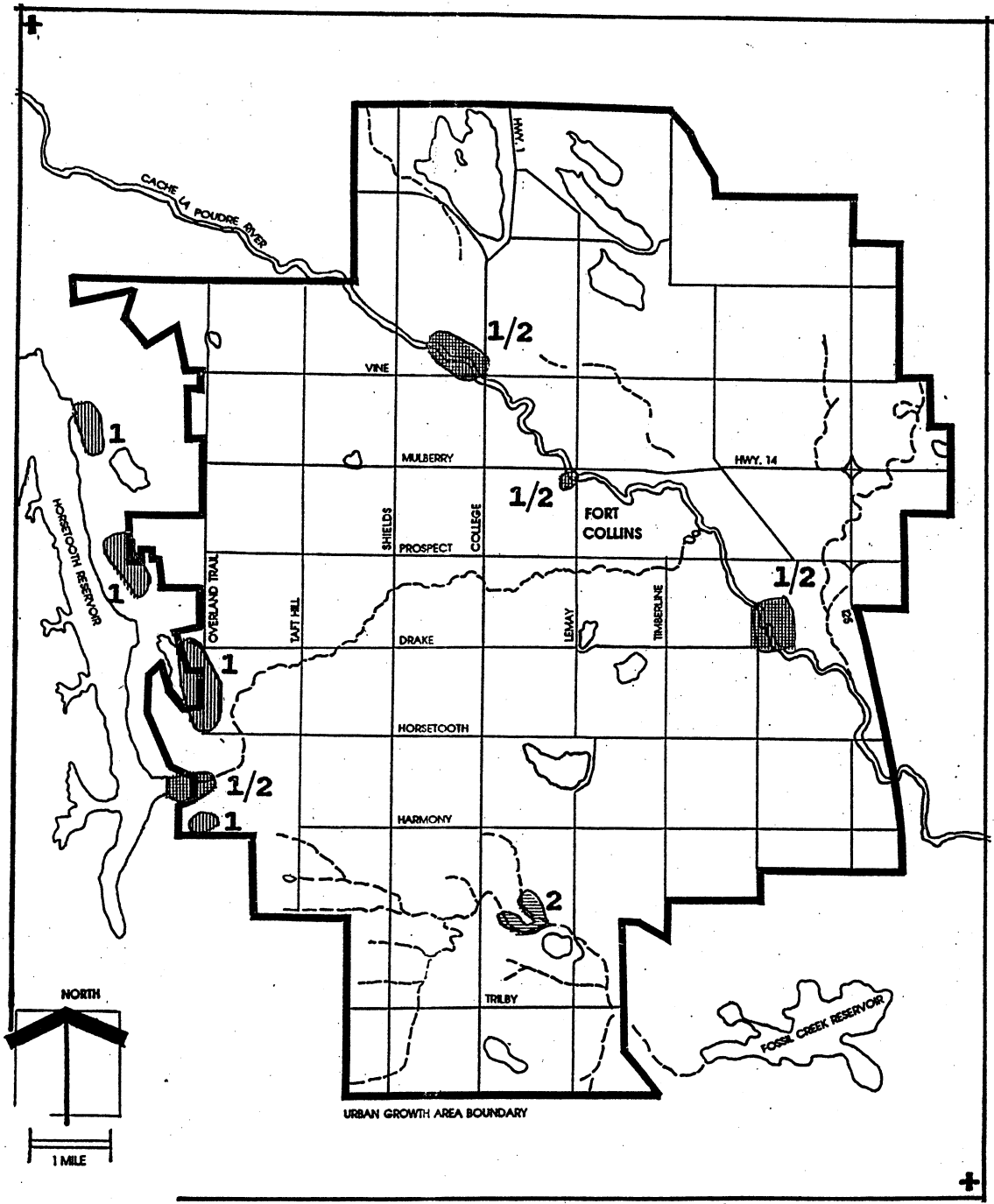


Figure 5. Key areas for high diversity of (1) terrestrial insects (including butterflies) and (2) aquatic insects.

## **Geologic Site of Special Concern**

Only one geologic site of interest has been identified in the Urban Growth Area. The site is along Fossil Creek just west of College Avenue. The site was classified as a "naturally significant area" by the U.S. Geological Survey. Some of the earliest collections of fossil mollusks of the Upper Cretaceous Pierre Shale were taken here in the 19th century. Fossils occur chiefly in calcareous concretions in the Larimer Sandstone Member of the Pierre Shale.

## **POUDRE RIVER RESOURCE AREA**

### **Natural Features**

The Poudre River Resource Area consists of a corridor that stretches from the western boundary of the Urban Growth Area, about 1/2 mile west of the intersection of Shields Street and Willox Lane, to I-25 about 1/2 mile north of Harmony Road (Figure 6). The corridor is a rich tapestry of cover types, which provides a large linear area of diverse wildlife habitat. The Poudre River Resource Area provides an important corridor for animal movement, as well as key habitat for a variety of animals (Table 2), including waterfowl, waterbirds, songbirds, cavity-nesting birds, raptors, deer, small mammals, fishes, and butterflies and other insects. The Riverbend/Flatiron/Milne Open Spaces (east of the Poudre River between Prospect and Mulberry) receive heavy use by birds from early spring through late fall, providing an important migratory stopover area, which, unlike many of the agricultural areas, does not receive heavy pesticide/herbicide treatment.

Several sites along the Poudre River contain outstanding examples of native riparian plant populations: the floodplain between Seven Lakes area and Riverbend Ponds/Flatiron Open Spaces, McMurry Nature Area, and the Springer Open Space (between Lemay and Mulberry) (Figure 1). The Springer Open Space contains one of only two known sites in Colorado of the rare American currant, a listed Colorado Plant Species of Concern. Another Colorado Plant Species of Concern, the showy prairie gentian, is found at the Flatiron Open Space.

### **Existing Public Facilities**

For many years, the Poudre River Corridor has been the focus of trail and open space planning and acquisition efforts. The City Parks and Recreation Department and the County have purchased a number of Parks and Open Space areas along the corridor (Table 3), and have established a popular bike trail along most of the corridor length. Existing parks and nature areas include the North Shields Park, McMurry Ponds and Nature Area, Lee Martinez Park, Gustav Swanson Nature Area, Riverbend Ponds/Flatiron/Milne Open Space, Prospect Ponds Open Space, Northern Colorado Environmental

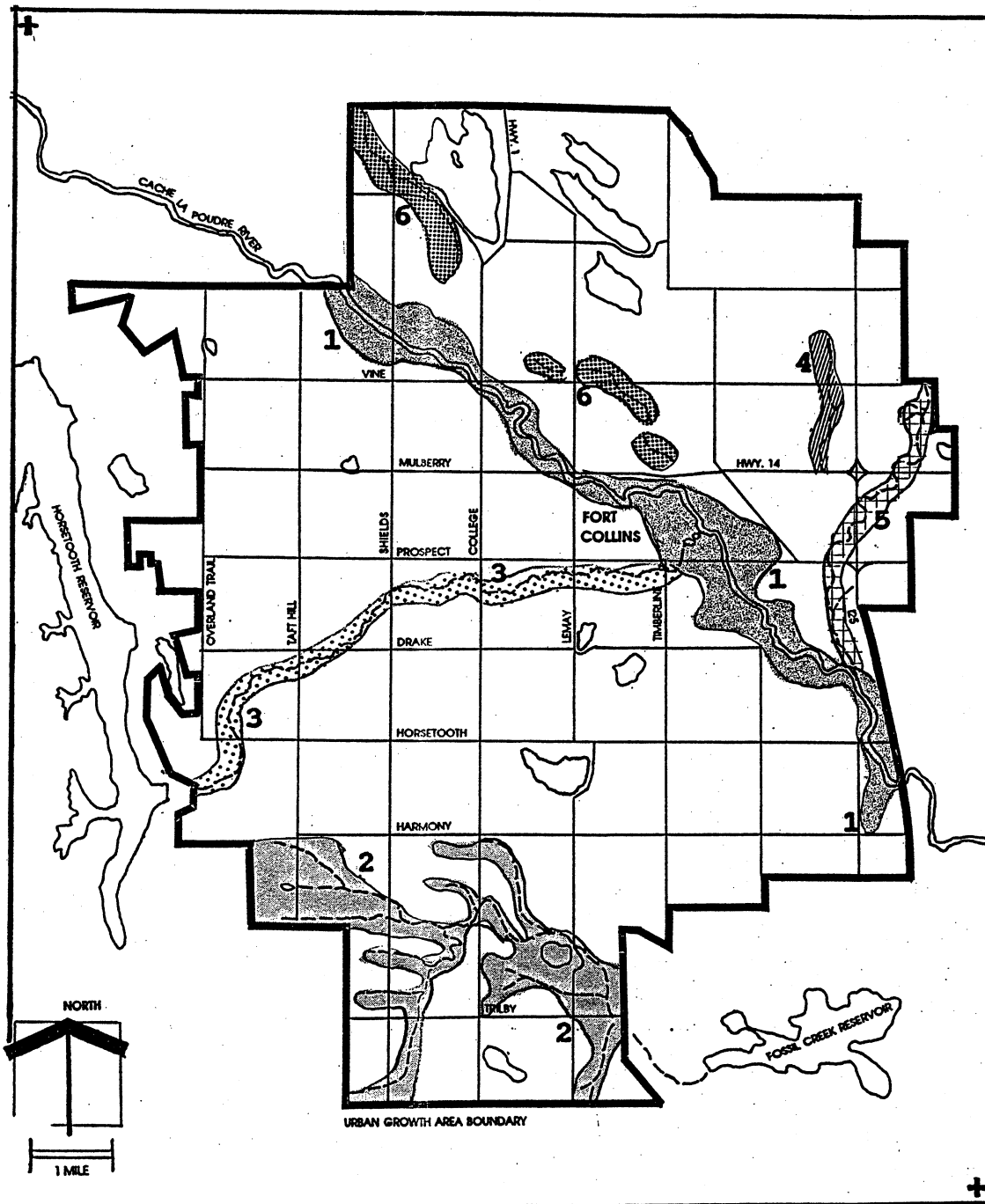


Figure 6. River and creek resource areas: (1) Poudre River; (2) Fossil Creek; (3) Spring Creek; (4) Cooper Slough; (5) Boxelder Creek; (6) Dry Creek.

Learning Center, and the Strauss Farmhouse Site. Even greater attention is being directed to the Poudre River at present, as the U.S. Congress is considering legislation to establish a Poudre River National Water Heritage Area, which would include the river corridor in Fort Collins. Passage of this legislation would add further to the efforts to maintain open areas along the river for natural resource, educational, recreational, and interpretive purposes.

### Challenges and Opportunities

The Poudre River Corridor still retains much of its natural character in many locations; however, a number of impacts have affected, or may in the future impact, the overall ecological quality of the corridor (Table 2). These impacts present challenges to the maintenance of high quality habitat. At the same time, opportunities exist for enhancing and restoring degraded habitats, as well as for increasing recreational and educational use. For example, the Environmental Mitigation Statement for the proposed Timberline Road Extension, extending Timberline from Prospect to Lincoln Avenue, lists several measures to mitigate the impact of road construction and provide passive recreational use of the area, including provision of parking facilities, reduction of traffic noise impacts, improvement of fish habitat, provision of pedestrian access, and revegetation to replace bird and wildlife habitat.

Two sites contain nesting or roosting colonial waterbirds and need to be protected. Great blue herons nest within a riparian site along the Poudre River south of the Northern Colorado Environmental Learning Center. Protection of this site is imperative because herons do not readily use a new nest site once the nest trees are destroyed. Both great blue herons and double-crested cormorants use a single tree within a gravel pond south of the Strauss Farmhouse site for roosting.

Perhaps the most important challenge in the Poudre River Resource Area is the long-term maintenance of the riparian forest community. The river's natural flow patterns have been greatly altered by diversions for irrigation and upstream reservoirs since the early 1900's. These changing flow patterns have altered the biological systems associated with the river channel and the associated riparian corridor. Establishment of native riparian forests is dependent on periodic high flood events that create sand and gravel bars. Seedlings will not grow within the low-light conditions of established stands. As the cottonwood stands along the Poudre age, they will not be replaced without these flood events, or without efforts to plant sapling cottonwoods.

Table 2. Major features, impacts, and needs of natural resource areas and isolated areas.

Features	Resource or Isolated Areas <sup>a</sup>									
	PR	FC	SC	CS	BC	DC	LK	FH	IS	
<b>Major Habitats</b>										
Large lakes	-	-	-	-	-	-	X	-	-	
Gravel pit lakes	X	-	-	-	-	-	-	-	-	
Naturalized ponds	X	X	-	-	-	-	-	-	X	
Urban ponds	-	-	-	-	-	-	-	-	X	
River and floodplain	X	-	-	-	-	-	-	-	-	
Creek	-	X	X	X	X	X	-	-	-	
Ditches	-	-	-	-	-	-	-	-	X	
Cattail/bulrush marshes	X	X	X	X	-	-	X	-	X	
Wet meadows	X	X	-	X	-	-	-	-	X	
Riparian forests/shrublands	X	-	X	-	-	-	X	-	X	
Undesirable riparian shrubs	X	X	X	-	X	X	X	-	X	
Grasslands/forblands	X	X	-	-	-	-	-	X	X	
Weedy forbland	X	-	-	-	-	-	-	-	-	
Upland shrubland	X	-	-	-	-	-	-	X	X	
Upland forests/savannas	X	X	-	-	-	-	-	X	-	
Urban forests	-	-	-	-	-	-	-	-	X	
<b>Important Plants and Wildlife</b>										
Rare plant communities	X	X	-	X	-	-	-	X	X	
Rare plant species	X	-	-	-	-	-	-	X	-	
Animal movement corridor	X	X	X	-	X	X	-	X	-	
Winter/migrant waterfowl	X	-	X	-	-	-	X	-	-	
Waterfowl production	X	-	X	-	-	-	-	-	X	
Diverse wetland birds	X	-	-	-	-	-	-	-	-	
Heron rookery	X	-	-	-	-	-	-	-	-	
Cormorant/heron roost area	X	-	-	-	-	-	-	-	-	
Diverse terrestrial birds	X	-	X	-	-	-	-	-	X	
Cavity-nesting birds	X	-	-	-	-	-	-	-	X	
Migrant songbirds	X	-	X	-	-	-	X	-	-	
Raptors	X	X	-	-	-	-	-	X	-	
Bald eagle	X	X	-	-	-	-	X	X	-	
River otter	X	-	-	-	-	-	-	-	-	
Prairie dog colonies	-	X	-	-	-	-	-	X	X	
Small mammals	X	X	-	-	-	-	-	X	-	
Deer	X	X	X	-	-	-	-	X	X	
Sport fishes	X	-	-	-	-	-	X	-	X	
Fishes of Special Concern	X	-	X	-	-	-	-	-	-	
Rare butterfly species	X	X	-	-	-	-	-	X	-	
Migrant butterflies	X	-	-	-	-	-	-	X	-	
Diverse insect communities	X	X	X	-	-	-	-	-	-	

(continued)

Table 2 concluded.

Features	Resource or Isolated Areas <sup>a</sup>								
	PR	FC	SC	CS	BC	DC	LK	FH	IS
<b><u>Recreational/Other Features</u></b>									
Bike/hiking trails	X	-	X	-	-	-	-	X	-
Developed parks	X	-	X	-	-	-	X	X	-
Interpretive nature areas	X	-	-	-	-	-	-	-	-
Fishing access	X	-	X	-	-	-	X	-	X
Boating, canoeing, rafting	X	-	-	-	-	-	X	-	-
Outdoor classrooms	X	-	-	-	-	-	-	-	X
Scenic view	X	X	-	-	-	-	X	X	-
Unique topography	-	X	-	-	-	-	-	X	-
Rock outcrops	-	X	-	-	-	-	-	X	-
Floodplain management	X	X	X	X	X	X	-	-	X
<b><u>Major Impacts</u></b>									
Altered flows	X	X	X	-	X	X	-	-	-
Encroaching development	X	X	X	-	-	-	X	X	X
Road construction	X	-	-	-	-	-	-	-	-
Bank stabilization	X	-	X	-	-	-	-	-	-
Gravel mining	X	-	-	-	-	-	-	-	-
Past sugar refinery	X	-	-	-	-	X	-	-	-
Invasive weeds	X	-	-	-	-	-	-	-	-
Undesirable shrubs	X	X	-	-	-	-	X	-	-
Grazing	X	X	X	X	X	X	-	-	X
Inconsistent landscaping	-	-	X	-	-	-	X	-	X
Agricultural runoff	X	-	-	X	X	X	X	-	X
Sedimentation	X	X	X	-	X	-	X	-	X
<b><u>Major Needs</u></b>									
Protection of heron rookery	X	-	-	-	-	-	-	-	-
Hydrologic study	X	X	-	X	-	-	-	-	-
Bank erosion studies	X	X	-	-	-	-	X	-	-
Grassland restoration	X	X	-	-	-	-	-	-	-
Eradication of exotic shrubs	X	X	X	-	-	-	X	-	-
Interpretive areas	X	X	-	X	-	-	X	X	-
Setbacks and buffer zones	X	X	X	X	X	X	X	X	X
Plant studies	X	X	-	X	X	X	X	X	X
Fisheries enhancement	X	-	X	-	-	-	X	-	-
Insect population studies	X	X	-	X	X	X	X	-	-
Re-establishment of channel	-	-	-	X	-	X	-	-	-
Wetland restoration	X	-	-	-	X	-	-	-	X
Water level enhancement	X	-	-	-	-	-	X	-	X
Ditch enhancement	X	-	-	-	-	-	-	-	X
Address wildlife conflicts	X	X	X	-	-	-	-	-	X

<sup>a</sup>PR = Poudre River; FC = Fossil Cr.; SC = Spring Cr.; CS = Cooper Slough; BC = Boxelder Cr.; DC = Dry Cr.; LK = Lakes and Reservoirs; FH = Foothills; IS = Isolated Areas.

Table 3. Approximate acreage of public lands within resource areas and isolated natural areas of the Fort Collins Urban Growth Area and adjacent Foothills. Only public lands used for open space, parks, and other undeveloped areas that will remain as open lands are included (i.e., not current or potential public building sites).

**Total No. Acres in Each Resource Area<sup>a</sup> (% of All Natural Areas)**

<b>Landowner and Land Category</b>	<b>PR</b>	<b>FC</b>	<b>SC</b>	<b>CS</b>	<b>BC</b>	<b>DC</b>	<b>LK</b>	<b>FH</b>	<b>IS</b>	<b>Total</b>
<b>City</b>										
Open spaces	305	0	32	0	6	0	0	645	0	988 (12%)
Parks	61	54	47	0	0	0	64	0	23	249 (3%)
Detention ponds	0	0	1	0	0	0	0	0	51	52 (1%)
Golfcourses	0	10	0	0	0	0	0	0	7	17 (<1%)
Cemeteries	0	0	0	0	0	0	0	0	43	43 (<1%)
Water treatment	2	0	0	0	24	0	0	10	1	37 (<1%)
<b>County</b>										
Parks	32	0	0	0	0	0	0	0	0	32 (<1%)
<b>State</b>										
Rest area	32	0	0	0	0	0	0	0	0	32 (<1%)
CSU open lands	0	0	0	0	0	0	49	125	4	178 (2%)
CSU nature area	163	0	0	0	0	0	0	0	0	163 (2%)
<b>Federal</b>										
Open lands	0	0	0	0	0	0	52	539	0	591 (7%)
<b>Total Public Land (%)</b>	<b>595 (35%)</b>	<b>64 (5%)</b>	<b>80 (37%)</b>	<b>0 (0%)</b>	<b>30 (36%)</b>	<b>0 (0%)</b>	<b>165 (11%)</b>	<b>1,319 (62%)</b>	<b>129 (13%)</b>	<b>2,382 (29%)</b>

<sup>a</sup>PR = Poudre River; FC = Fossil Creek; SC = Spring Creek; CS = Cooper Slough; BC = Boxelder Creek; DC = Dry Creek; LK = Lakes and Reservoirs; FH = Foothills; IS = Isolated Areas.



Some sections of the river have been influenced by commercial and industrial development (e.g., between College and Mulberry, the north side of the corridor along Highway 14), gravel mining operations on both the eastern and western boundaries of the City, and past sugar refinery activities between Mulberry and Prospect. Encroachment of development into the 100-year floodplain and concerns with channel migration have led to increased efforts to stabilize the channel into its current location, in essence channelizing the system. Rock and concrete riprap used for bank stabilization can be unsightly and provides little in the way of habitat value.

Gravel mining occurs extensively along the Poudre River. This industry provides both opportunities and challenges. The City has worked with gravel companies to obtain areas for open space after mining. Abandoned gravel mining operations have added to the diversity of habitats by the addition of open water ponds and small lakes. Colorado now requires augmentation of river flows; thus, companies may not be able to afford to leave ponds and wetlands for habitat. Acquisition of additional water rights may be needed to maintain open water areas as gravel mines are closed and reclaimed.

Spread of some exotic weeds and shrubs along the Poudre River is of concern due to their invasive habits that outcompete native vegetation. Invasive weeds such as leafy spurge are present all along the Poudre and threaten natural flowering plants of the riparian forest. Of particular concern are several locations (i.e., McMurry Nature Area and Springer Open Space) that support rare butterflies, which depend on a variety of flowering plants. Some of the riparian shrublands within the Poudre River Corridor are dominated by Russian olive and saltcedar. In the West, both of these introduced species are highly invasive of native riparian communities and will exclude establishment of native species such as cottonwood and willow.

Special care must be taken in eradicating spurge, Russian olive, and saltcedar from sites known to contain rare plant species or communities. A population of a rare plant, the prairie gentian, occurs within one of the wet meadows now dominated by Russian olives at Flatiron Open Space. The prairie gentian wet meadow also receives heavy use by hikers, horseback riders, and bicyclists. Recently, Parks and Recreation constructed a raised boardwalk through the area, which will help protect the site from this impact.

The impact of beaver within the Poudre River Corridor is mixed. At most locations, beaver merely harvest younger cottonwoods and willows, which respond the next year by branching, resulting in a more shrub-like, multi-stemmed growth form. However, at some locations, beavers have damaged larger cottonwoods and the public has notified the City of their concern that the beaver will remove all the cottonwoods. A further study of the exact damage and a

management plan for beavers are needed along the Poudre River and some of the other smaller streams.

A study of the river's hydrology through the Urban Growth Area is needed for several reasons, including the effects on wetlands, maintenance of cottonwood stands, fishery enhancement, bank stabilization alternatives, impact of gravel mining, and development of a fishery. Alternative methods for establishing cottonwood forests are needed to ensure the continuation of the cottonwood forests. Both the habitat value and the aesthetics of several reaches could be improved by bank clean-up projects that would incorporate native vegetation into the bank stabilization design. Enhanced stream flows could improve the fishery and provide recreational fishing and canoeing opportunities.

Many opportunities exist to enhance the wildlife value of gravel pit lakes during the mining process or once mining is complete. Such enhancement could include gently sloping the banks to enhance development of vegetational zones along the perimeter, replacing top soil around the perimeter's edge, and planting of wetland or riparian vegetation.

Weedy forblands, which occur where soils have been degraded by beet lime used in past sugar refinery activities, also offer tremendous potential sites for enhancement, particularly as restoration sites for prairie grasslands. This potential for habitat enhancement should be given strong consideration when making decisions about allowing development along the Poudre River. The complex of wildlife communities within the Poudre Corridor do rely on these weedy forblands for spatial buffering and food sources.

While the Poudre River contains some excellent wildlife habitat, enhancement of these areas would increase wildlife values. Maintenance of dead snags in old cottonwoods should be given prime consideration when managing riparian habitat for raptors and small terrestrial birds.

Many opportunities for unique research sites occur along the Poudre River due to the presence of rare animal and plants communities. Current studies include investigations by the U.S. Fish and Wildlife Service on conditions for natural reproduction of woody riparian plants. Plant surveys are needed to identify additional sites containing rare plant populations.

While several parks and open spaces already are established along the Poudre River, the entire corridor could be established as a linear open space of national significance, while retaining much of the natural character. Interpretive features could focus on man's use of water, changes in natural habitats, or successional patterns following mining. Interpretive features could include special areas built for viewing aquatic wildlife such as trout or beaver.

## FOSSIL CREEK RESOURCE AREA

### Natural Features

The Fossil Creek Resource Area (Figure 6) includes lands surrounding Fossil Creek and its tributaries (e.g., Mail Creek). In contrast to the forested areas of the Poudre River, the Fossil Creek Resource Area is characterized by a wide, grassy floodplain, which has carved a broad swale between the foothills and Fossil Creek Reservoir. Most of the surrounding land consists of grasslands, planted to introduced pastureland or altered by intensive grazing. Portions of the area are characterized by scenic views, distinctive topography, and rock outcrops, which contain significant fossil formations.

Many of the grasslands that surround Fossil Creek and its tributaries support large colonies of prairie dogs. These colonies provide important prey for bald eagles, ferruginous hawks, and other large wintering raptors, as well as badgers and coyotes. Burrows provide habitat for numerous wildlife species, including rabbits, snakes, and burrowing owls. The small mammal prey base also is likely high in both the prairie habitat and grass-sedge habitat bordering drainages. Several large, exceptional sites support high concentrations of bald eagles and ferruginous hawks during the winter. Bald eagles appear to use the entire Fossil Creek drainage as a corridor for movement between Horsetooth Reservoir and Fossil Creek Reservoir.

The large western complex includes the 320-acre Seven Springs Ranch site, located at the base of the first hogback to the foothills and west of Taft Hill Road, as well as over 400 acres of additional prairie dog habitat to the east of Taft Hill Road. Seven Springs Ranch contains an extensive wet meadow, pond, and clump of mature cottonwoods, which provide a valuable perch site for the eagles. The entire western complex is heavily used by a variety of large wintering raptors.

A large eastern complex of prairie dog colonies exists from the Humane Society Wetlands (east of College), extending beyond the Urban Growth Area to Timberline, south of Trilby Road. This eastern complex is particularly important for ferruginous hawks.

Historically, most of the Fossil Creek area was open grassland with few trees. However, an exception to this pattern occurs along a deep ravine that joins the Burns Tributary near the Ridge Subdivision. The ravine is a sheltered location that supports a diverse assemblage of native grasses, shrubs, and trees. The site serves as a deer movement corridor and nesting area for raptors and various small birds.

The sport fisheries value of Fossil Creek and its tributaries is low. However, sections of the shallow creek support high

concentrations of minnows and chubs. Other sections provide relatively high quality habitat for aquatic insects and egg-laying habitat for a rare butterfly, the two-spotted skipper.

Native prairie plant communities of the Urban Growth Area have been severely impacted by urbanization, agricultural practices, and the spread of exotic species; however, several sites containing native prairie plants have been identified along the Fossil Creek drainage. Rare native plants may be present and a detailed plant survey of several sites is warranted, including the unique ravine near the Ridge Subdivision and the Seven Springs Ranch site.

### **Existing Public Facilities**

Public facilities include the undeveloped Fossil Creek Community Park, which includes Portner Reservoir, and the SouthRidge Golf Course, which includes a small reach of Fossil Creek.

### **Challenges and Opportunities**

Most of the future growth in Fort Collins is occurring in the southern part of the City. As such, the primary challenge in the Fossil Creek Natural Resource Area and is to maintain important natural resources as development occurs. There is opportunity to work cooperatively with landowners to plan future growth to protect key areas. A consistent, system-wide approach to design and open space acquisition would greatly aid the future maintenance of natural areas in the Fossil Creek Resource Area. This would include guidelines for setbacks and buffer zones, as well as landscaping recommendations.

There also is concern in some areas about the effect that existing land uses may be having on several populations of rare insects. Along Fossil Creek and Mail Creek northwest of Portner Reservoir, woody riparian vegetation (including Russian olive) has invaded the natural stream corridor and threatens the unique insect populations by shading the stream. While woody riparian habitat increases the diversity of certain groups of animals, care must be taken to prevent the growth of these plants in areas that threaten native animal populations. Methods of managing this vegetation to protect the unique areas known to harbor rare insect communities need to be evaluated.

Some areas of the Fossil Creek Resource Area exhibit severe bank erosion and channel entrenchment caused by various factors, including overgrazing and changing land uses in the basin. In sections where bank stabilization is necessary, due to adjacent land use, maintenance of habitat and aesthetic quality of the area should be given high priority. Plantings to prevent erosion of creek beds should emphasize native prairie grasses and wetland herbaceous plants to enhance rare insect communities. Heavy plantings of woody vegetation could negatively impact these

communities, as well as cause stormwater flow problems.

Several grasslands along Fossil Creek that contain large prairie dog colonies are on sites being considered for development. Acquisition by the City may be one of the best means of preserving these areas. The Seven Springs Ranch, adjacent to the foothills at the headwaters of Fossil Creek, is one of the most scenic of these areas. The mixture of wetlands, ponds, trees, and grasslands provides ideal habitat for wintering raptors, including bald eagles, as well as a number of other prairie wildlife species. A viewing area located along Taft Hill Road would greatly enhance the area's current use as a raptor viewing area.

Planting of isolated clumps of cottonwood trees should be considered when enhancing these grasslands for raptors; however, care must be taken to not produce a riparian corridor along the creek because of its value to provide more pristine, open habitat, vital for maintenance of wildlife currently using the area, including winter raptors and rare insects.

Maintenance of the prairie dog ecosystem is vital to providing optimal winter raptor use. However, conflicts between people and prairie dogs have occurred on the edges of these natural areas, principally with prairie dogs moving into lawns and landscaped areas. The challenges of managing prairie dogs will include determining current conflicts and educating residents on ways to alleviate potential problems.

## **SPRING CREEK RESOURCE AREA**

### **Natural Features**

The Spring Creek Resource Area extends from Spring Creek Dam at Horsetooth Reservoir to its confluence with the Poudre River just north of Prospect Street (Figure 6). Historically an intermittent stream, Spring Creek now has year-round flow due to runoff from adjacent development and its use for stormwater management. Habitats along Spring Creek are not very diverse compared to the Poudre River and Fossil Creek (Table 2), but the creek does have some fairly well-developed riparian areas. Few marsh and wet meadow areas are located along the creek.

Spring Creek flows through a heavily urbanized section of Fort Collins and, as a result, every stretch of Spring Creek is somewhat different. While the natural character of the creek still exists in some areas, such as between Taft Hill Road and the Foothills, most areas along the creek have been altered by urban development. Ponds have been created within the creek at several locations. Adjacent vegetation ranges from mowed bluegrass lawns to riparian habitat composed of a mixture of native and exotic trees and shrubs.

The Spring Canyon Creek Outlet Area at the base of the foothills provides diverse habitat for migrant songbirds and insects. Urban waterfowl and small terrestrial birds can be found throughout the corridor. The fishery of Spring Creek is considered of low sport value, but creek chubs and other small fish in the stream provide food sources for herons. The Johnny darter, a Colorado Species of Concern, has been collected from Spring Creek just west of College Avenue.

### Existing Public Facilities

About a third of the Spring Creek Resource Area is in public ownership (Table 3). The Spring Creek Bike Trail, City parks (i.e., Rolland Moore, Spring Creek, Creekside, Edora), and Open Spaces (i.e., Fisher, Ross, and Spring Creek) along Spring Creek contribute to the high human use of this corridor. While the parks were developed primarily for more active use (e.g., tennis courts, playgrounds), the open spaces provide more natural landscapes and are used for passive recreation, such as walking and birdwatching. In Creekside Park, native grasses were seeded into the area north of the bike path, while the more active area, south of the path, was seeded with a more traditional park turf (fescue-bluegrass mix).

### Challenges and Opportunities

The Spring Creek Corridor has been influenced more by the effects of urbanization than any other stream corridor in the Urban Growth Area. Various landscaping treatments have been used along Spring Creek. Landscape approaches with fairly pronounced setbacks and more natural grassland or woody riparian vegetation tend to support higher diversity of wildlife species. Where grasses are mowed to the edge of the creek, the lack of cover limits use by songbirds, waterfowl, muskrats, and other urban wildlife species. The use of riprap to channelize the narrow stream tends to diminish wildlife and fisheries values. More use of vegetative channel stabilization would increase wildlife use, as well as enhance the aesthetics of the corridor.

Establishment of setbacks and buffer zones, as well as planting riparian grasses and woody plants within these zones, would enhance wildlife cover and could increase subsequent use of the corridor, as well as decrease water temperatures. Enhancement of the corridor with woody plants has to be carefully planned. Woody plants, particularly extensive areas of shrubs within the channel, will increase water surface elevations and could potentially damage private and public property. Care must be taken in the design of any habitat enhancement project to ensure that flood hazards are not increased. A pilot riparian zone enhancement project in one of the three parks that contain a portion of the channel could increase wildlife use and serve as a model for park wildlife enhancement.

## **COOPER SLOUGH RESOURCE AREA**

### **Natural Features**

The Cooper Slough Resource Area extends from about 1/2 mile north of Vine Drive, south to Mulberry Street (Highway 14) (Figure 6). The resource area once continued south to Boxelder Creek and the Poudre River. However, the surface water has been diverted from its pre-existing channel, east to Boxelder Creek through a combination of underground pipes and existing irrigation ditches. The former channel is still visible as a dry swale, which continues south along the previous alignment. Based on soil patterns and topography, it appears that Cooper Slough may have once continued to the north, and joined with a deeply incised channel that is now part of the Larimer County No. 8 Ditch.

Portions of the Cooper Slough contain a complex of open water, wetlands (in the form of cattails, wet meadows, and wetland shrubs), and grasslands, with little tree cover (Table 2). These areas support a rich association of wetland vegetation. A resident white-tailed deer population occurs in the vicinity of the Slough and Vine Drive. Ducks also remain through much of the year because of the relatively warm water. The slough could possibly support some of the rarer native wetland prairie plants and provide high quality amphibian habitat. However, no detailed surveys have been conducted in this area to document the composition of plant or animal communities. Currently, the slough is in private land ownership. The Colorado Division of Wildlife has expressed strong interest in cooperative arrangements with landowners and the City for wildlife habitat protection of a portion of the Slough.

### **Existing Facilities**

No public facilities occur along Cooper Slough.

### **Challenges and Opportunities**

Currently, development pressure does not appear high for this area; however, maintenance and enhancement of the natural values of the area should be given strong consideration when adjacent areas are evaluated for development, flood storage, and stormwater management activities. As with Spring Creek and Fossil Creek, buffer zones and landscaping guidelines need to be defined for the Cooper Slough Area, while maintaining the natural characteristics and wildlife values of the Slough. Establishment of woody riparian vegetation should only be considered if native plant and animal communities will not be negatively impacted by these plant communities, and if increased flood levels from the addition of woody plants will not negatively impact adjacent private properties.

Some sites along Cooper Slough appear to be impacted by grazing and possibly agricultural runoff. Soil compaction and wetland plant

damage from cattle, as well as runoff from agricultural fields, is evident at several locations containing a diverse assemblage of wetland and aquatic plants.

The opportunity exists to re-establish the pre-existing channel to the north in such a way as to provide for natural area values and stormwater management needs. Similar opportunities also may exist to establish the southern channel.

Preliminary site evaluations indicate that Cooper Slough appears to have high wetland plant diversity and may contain unique or rare wetland plants. Further surveys are needed to determine plant and animal species composition.

## **BOXELDER CREEK RESOURCE AREA**

### **Natural Features**

Boxelder Creek enters the Urban Growth Area from the northeast, flows south through the City of Fort Collins Resource Recovery Farm, and joins the Poudre River between the Northern Colorado Environmental Learning Center and Interstate 25 (Figure 6). The upper reaches of the stream are characterized by an incised channel, mostly with associated grasslands, and some isolated pockets of tree cover and small cattail marshes. There is some invasion of Russian olive, an undesirable tree species.

The lower section of the stream, about the last 1/4-mile, before it enters the Poudre River, contains a very rich association of plants within the native cottonwood-dominated floodplain, including a fairly extensive bulrush marsh. Red-tailed hawks, great-horned owls, plus a variety of cavity-nesting birds and other songbirds are known to nest within the area. A herd of 10 white-tailed deer frequent the area. The wide floodplain area is able to support beaver with no known conflict with adjacent property owners.

### **Existing Public Facilities**

Public facilities within the Boxelder Creek Resource Area include the City of Fort Collins Resource Recovery Farm, which is not open for public access, and a small acreage of the northern part of the Archery Range Open Space along the Poudre River. Both these facilities include a portion of the rich lower section of the creek.

### **Challenges and Opportunities**

Currently, Boxelder Creek is surrounded mostly by farmlands and pasturelands. In the future, development will probably occur along this stream corridor, just as along the other corridors in Fort Collins. The opportunity exists to enhance the woody riparian



habitat along Boxelder Creek, but should only be pursued if development of a woody riparian corridor would not impact native plant and animal communities or increase flood levels to the point of negatively impacting adjacent private properties.

Colorado State University Fisheries and Wildlife students conducted a survey of the lower section during fall 1991 and they strongly recommended that this site not be used for recreation due to the unique characteristics of this isolated habitat. Very little is known about the wildlife values of most of the Boxelder Creek Resource Area and thorough site evaluations are necessary before specific guidelines for enhancement or recreational use are established.

## **DRY CREEK RESOURCE AREA**

### **Natural Features**

The Dry Creek Resource Area extends from the northern Urban Growth Area boundary south to Willox Lane between Shields and College where the stream is piped underground. Dry Creek flows at the surface to the east of College Avenue north of Vine Drive and proceeds south-easterly to the Fort Collins Airpark. The stream is piped underground to the Poudre River just south of East Mulberry (Figure 6). As with Boxelder Creek, little is known about the wildlife or plants present within the resource area, which mainly consists of the creek and associated bank vegetation (Table 2). Few extensive marshes or wet meadows are present along the creek and woody riparian areas are not well-developed in most areas. Most of Dry Creek is surrounded by farmlands and pasturelands. Russian olive is invading on some sites.

Based primarily on reports from residents along the creek, the Colorado Division of Wildlife feels that Dry Creek does provide good wildlife habitat, particularly as a movement corridor by deer and other mammals. In fall of 1990, a cow elk and calf were even seen in the area.

### **Existing Public Facilities**

No public facilities are located along Dry Creek.

### **Challenges and Opportunities**

As with Boxelder Creek, development pressure adjacent to this stream corridor will most likely increase in the future. Because the resource area has been identified as providing a movement corridor for large mammals, maintenance of a wide buffer zone along the creek should be considered. Design guidelines need to consider the natural values of this stream before appropriate measures are

established to protect and enhance these areas when development occurs in close proximity.

## **LAKES AND RESERVOIRS RESOURCE AREA**

### **Natural Features**

The Lakes and Reservoirs Resource Area consists of scattered irrigation reservoirs within the Urban Growth Area and foothills east of Horsetooth Reservoir (Figure 7). Although separate from one another, many of the issues and policy needs are similar for each of the 14 lakes included in this resource area: Terry Lake, Richard Lake, Long Pond Reservoir, Lindenmeier Lake, Parkwood Lake, Lake Sherwood, Baker Lake, Warren Lake, City Park Lake, College Lake, Dixon Reservoir, Lee Lake, Portner Reservoir, and Robert Benson Lake. The reservoirs range in size from 9 acres to 450 acres.

Although somewhat similar in habitat value, the lakes do vary from one another. For example, Long Pond Reservoir, Terry Lake, and Richard Lake are characterized by shorelines with extensive woody riparian vegetation and emergent wetlands. Parkwood Lake has little shoreline vegetation or other adjacent potential wildlife habitat. Wildlife values generally increase as these man-made lakes approach the appearance and plant species composition of native habitats.

Most of the lakes are characterized by a seasonal fluctuation in water level, which is related to their use as sources of irrigation water. The effects of these fluctuations on the aquatic habitat are not fully known. The fluctuations may actually enhance some habitat values, for example by creating mudflats, which are used as feeding sites for shorebirds.

Fish species composition in these man-made lakes is dominated by introduced species such as bass, catfish, sunfish, and rainbow trout that are stocked to provide local sport fishing opportunities, and carp, a nuisance fish.

A variety of waterfowl and waterbirds use lakes and reservoirs within the Urban Growth Area. Even some of the lakes that have a perimeter of only sparse woody riparian or wetland vegetation receive use during spring and fall by migratory ducks. During summer after the nesting period, waterfowl also frequent larger lakes when the birds are molting flight feathers and are more vulnerable to terrestrial predators. Some of the lakes receive substantial use by boaters. Lakes also are popular sites for more passive recreation such as fishing, birdwatching, or simply short walks to "escape" the urban scene.

### Existing Public Facilities

City Park Lake and Dixon Reservoir are open to public recreational use. City Park Lake, due to its location, receives high use by families as a picnic and waterfowl feeding area. The lake also has a paddleboat rental facility and outdoor swimming pool. Both lakes are frequently used for bank fishing and birdwatching. Portner Reservoir is owned by the City, and will eventually be part of a designated park or open space area, but currently is undeveloped. The reservoir dries out periodically so it does not provide fishing opportunities, but the site provides unique birdwatching opportunities throughout the year, including bald eagles, ferruginous hawks, and other winter raptors that prey on the prairie dogs of the adjacent grasslands.

### Challenges and Opportunities

Lakes are not threatened themselves, but what occurs adjacent to them can affect habitat value and use by fish and wildlife. Currently, individual lot owners and developers use a multitude of approaches to stabilize banks, from rock riprap, to broken concrete, to bluegrass, to native plantings. The more natural approaches provide the best cover and subsequent wildlife use. Russian olive and saltcedar are invading the shorelines of some of the lakes. Fluctuations in lake water levels during particular times of the year are conducive to the establishment of these undesirable exotic plants over native cottonwoods and willows.

Consistent guidelines for shoreline protection and enhancement need to be developed and need to incorporate management or maintenance agreements with irrigation companies. A habitat buffer zone should be established along undeveloped shorelines. Consistent shoreline treatment through the creation of wildlife habitat buffer zones also would lead to more aesthetically pleasing shoreline areas. Such an approach could also reduce problems created by Canada geese that forage on lawns.

Reservoir shorelines continue to be the most valued lot locations in the community for development. Protection of important natural areas associated with the reservoirs will assure that the investments of adjacent homeowners are protected as well.

Opportunities exist for enhancing the fisheries of area lakes and reservoirs, particularly those in City ownership. Shoreline habitat enhancements for City-owned lakes could help to improve the fisheries, as well as enhance aesthetics and provide for habitat diversity to support native wildlife species.

One of the biggest challenges with the large reservoirs, as well as the ditches carrying irrigation water through the Urban Growth Area, is that the water in these systems is controlled by private

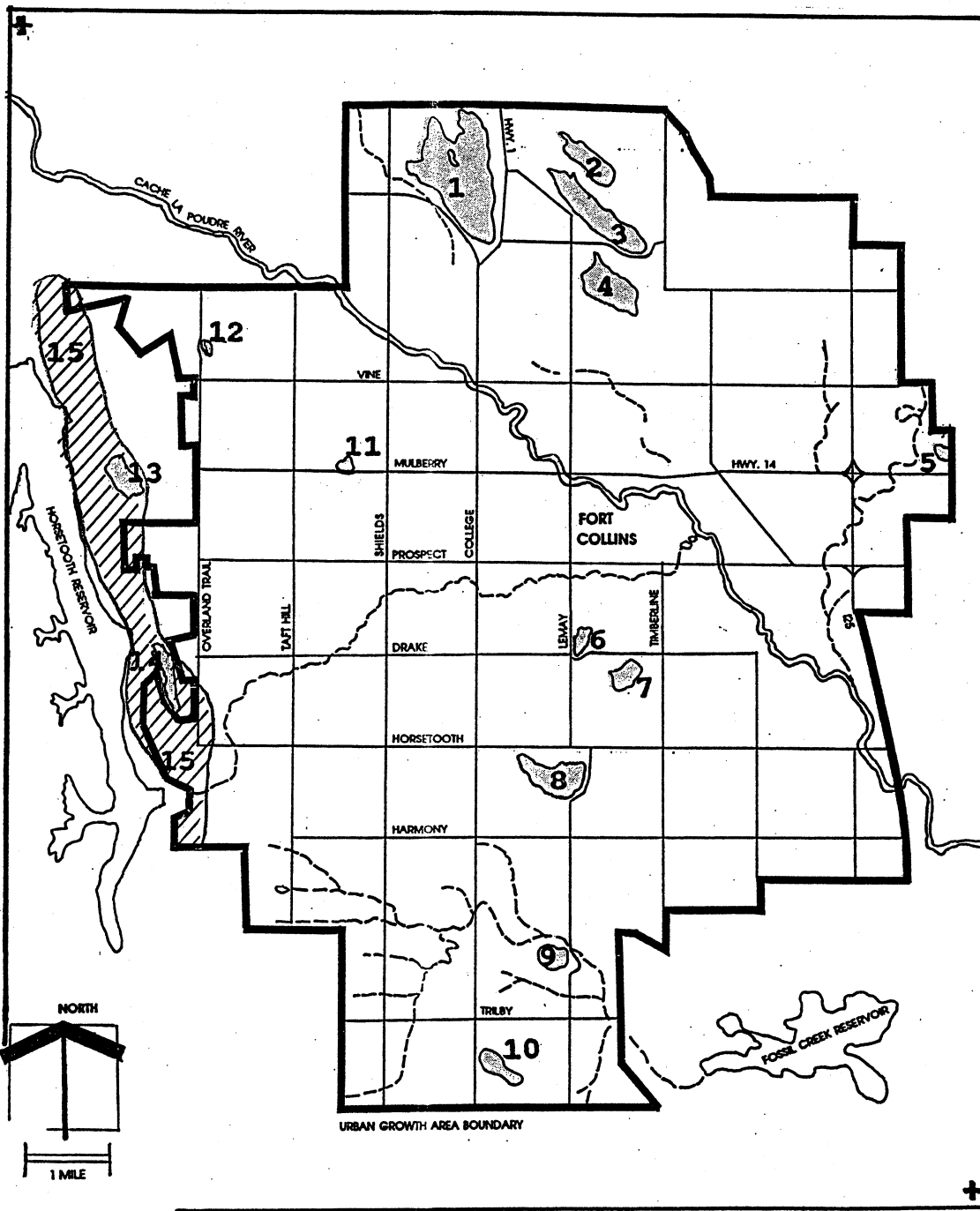


Figure 7. Lakes and Foothills resource areas: (1) Terry Lake; (2) Richard Lake; (3) Long Pond Reservoir; (4) Lindenmeier Lake; (5) Baker Lake; (6) Parkwood Lake; (7) Lake Sherwood; (8) Warren Lake; (9) Portner Reservoir; (10) Robert Benson Lake; (11) Lake Sheldon (City Park Lake); (12) Lee Lake; (13) College Lake; (14) Dixon Reservoir; (15) Foothills.

ditch companies. The ditch companies need to control water levels and flow to meet their irrigation water demands. Cooperative efforts have been established between these private companies and various City departments and will be an on-going part of implementing the Natural Areas Plan.

## **FOOTHILLS RESOURCE AREA**

### **Natural Features**

The Foothills Resource Area includes hogbacks east of Horsetooth Reservoir and adjacent grasslands between County Road 36 and County Road 50 (Figure 7). Cover types include grasslands, shrublands, and Ponderosa pine forest (Table 2). Foothills shrubs, dominated by native plants, are extensive along the foothills. A rare plant, Bell's twinpod, is known to occur on the first foothills ridge west of Overland Trail and southeast of Dixon Reservoir.

The area provides a winter concentration area for mule deer. The undeveloped forested habitat provides important protection from predators, disturbance, and bad weather. The foothills also provide habitat for birds of prey. Red-tailed hawks and great-horned owls nest at several sites along the foothills.

### **Existing Public Facilities**

Almost two-thirds of the Foothills Resource Area is in public ownership (Table 3). Existing public facilities include Pineridge, Maxwell, and Campeau Open Space Lands. Hiking the primitive trail along these areas is a popular recreational activity.

### **Challenges and Opportunities**

Although relatively undeveloped at the present time, further residential development of the foothills could pose several concerns, including impacts to deer winter habitat, raptor use of the area, and shrubland bird communities. In addition, human conflicts with wildlife such as deer, mountain lion, and bears could increase with residential development; conflicts are presently occurring in other Front Range communities. Design and landscaping standards are needed for new developments to assure the protection of wildlife habitat values and reduce the chance of future human conflicts with wildlife.

A field survey is needed to more fully determine the plant species composition and locations of additional sites of the rare Bell's twinpod population, as well as other native plant communities.

The opportunity exists to continue the Parks and Recreation approach of acquiring land along the foothills between the Cache la Poudre River, and the southern Urban Growth Area Boundary to

protect scenic views and habitat values, as well as provide for continuation of the foothills trail.

## **ISOLATED AREAS**

### **Natural Features**

Isolated natural areas are scattered throughout the Urban Growth Area (Figure 8). They are isolated patches of habitat, and are sometimes remnants of pre-existing stream corridors or drainageways. The habitat types represented by these areas are varied, and include riparian forest, upland forest, wet meadows, emergent wetlands, shrublands, ponds, irrigation ditches, urban forests, and some limited grasslands (Table 2). Size of the areas ranges from 1/4 acre to 130 acres.

Many of these isolated areas are man-made (e.g., ditches with naturalized riparian vegetation, naturalized gravel pit ponds, stormwater detention ponds, urban forests). Wildlife values generally increase as these man-made habitats approach the appearance and plant species composition of native habitats. The Stormwater Utility has incorporated some of these isolated areas into its drainage facilities and have used native vegetation to landscape some of their detention ponds and drainage channels.

Several of the larger wet meadows are used as horse pastures and as a result are weedy and severely trampled. While highly degraded in their present state, these areas are remnants of natural wetlands. Plant composition of most of these areas is unknown, however a rare prairie wetland plant community has been identified on the western section of a nearly 1-mile long wetland to the west of Overland Trail, off Michaud Lane.

### **Existing Public Facilities**

A number of community, neighborhood, and mini-parks have isolated natural areas, including Overland Park, Avery Park, Troutman Park, Golden Meadows, and Warren Park. Natural areas also have been incorporated into Stormwater Utility facilities include the North Greenbrier, Underhill, and Timberline Wetland areas. The City-owned Grandview Cemetery is known for its abundance of migratory and winter songbirds.

### **Challenges and Opportunities**

Maintenance and enhancement of present wildlife values are of concern for man-made aquatic habitats, such as ditches and ponds. Many of these areas were created for other purposes, such as stormwater management, but naturalization of these areas has produced, in some cases, some very important wildlife habitat, particularly for wetland and terrestrial birds. Threats to the

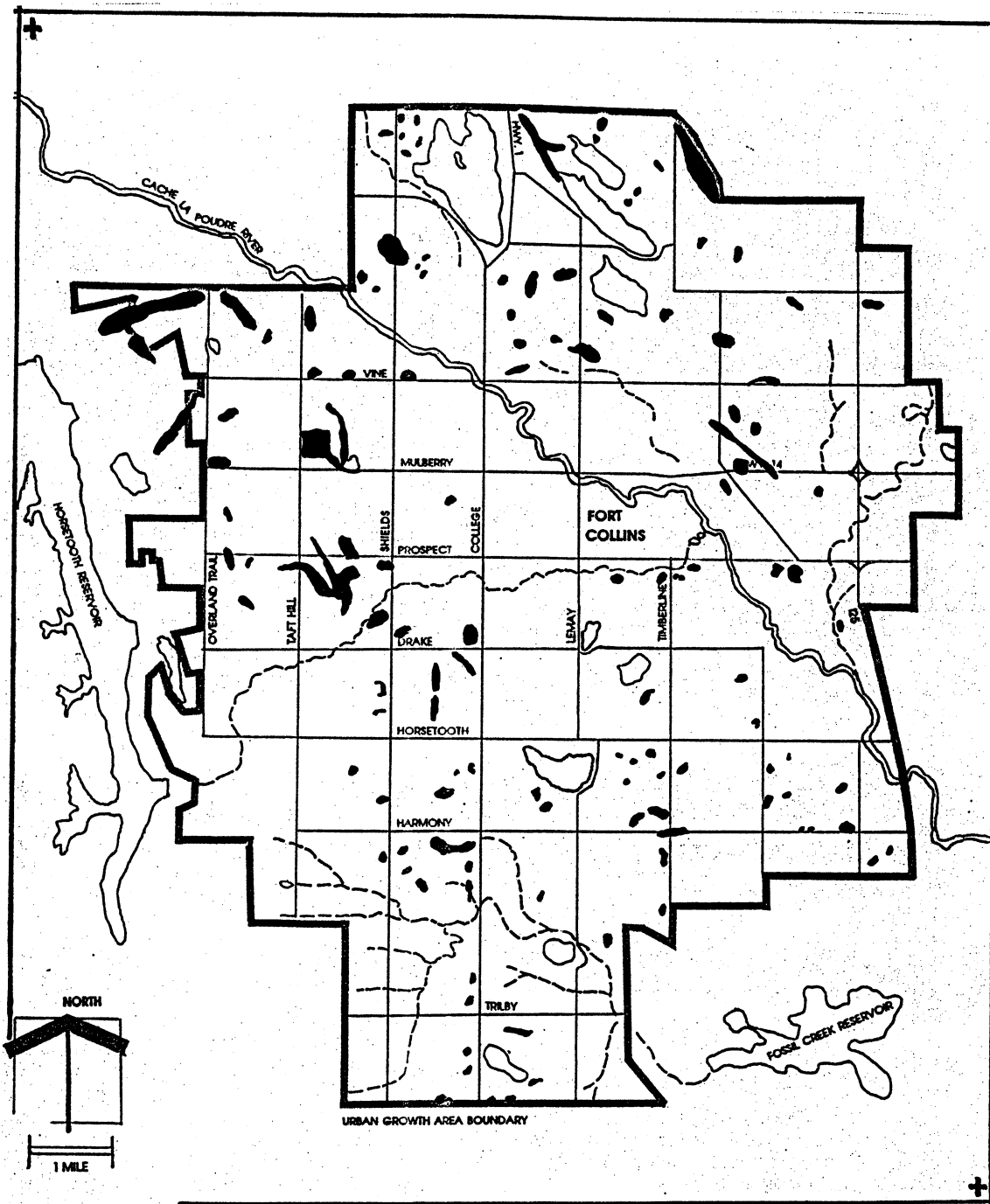


Figure 8. Isolated areas (not all sites drawn to scale; sites can be as small as 1/4 acre).

habitat include clearing woody riparian vegetation within the channel to reduce the potential for flow blockage during storm events, which only applies to channels where the vegetation was not incorporated in the original channel design and increased water surface level are the result of the vegetation. To account for this increased vegetation, wider channel sections are required.

While currently providing limited wildlife value, ditches without adjacent woody riparian habitat have high enhancement potential. By modifying the channels to create more natural appearance and promoting the growth of riparian vegetation, these ditches can offer important value to both wildlife and surrounding residences within the highly urbanized environment.

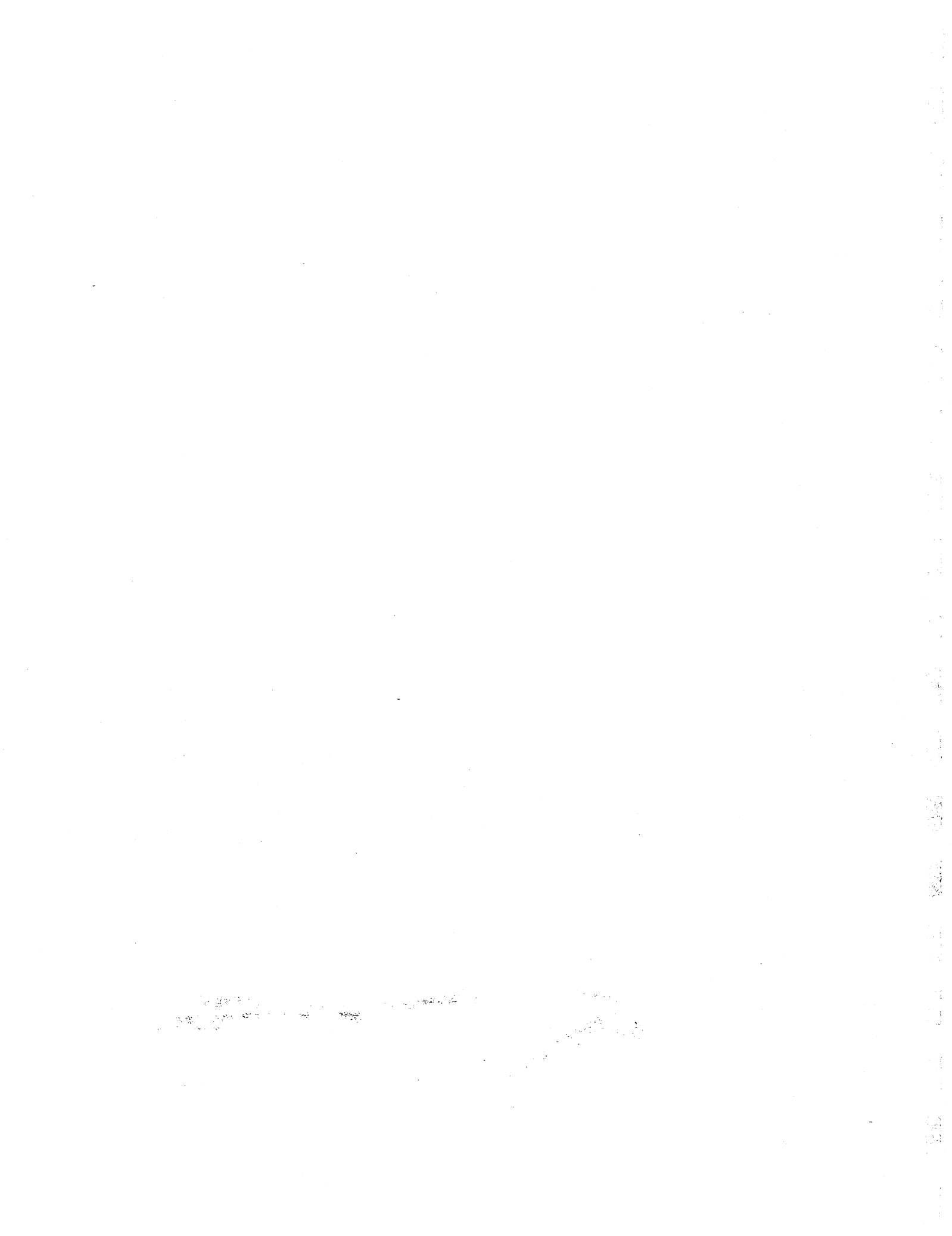
Some urban ponds, such as those in parks, private residences, and office complexes, could be enhanced by providing a wide buffer zone of cover plantings around the perimeter. Other ponds, such as those in the middle of a golf course, serve a specific purpose in their present condition and little opportunity exists for enhancing these sites.

Many citizens within Fort Collins express particular concern about removal of urban forests for roadways and housing development. Care should be taken to preserve these urban forests should the property be developed for other uses or be subdivided.

The opportunity exists to integrate a number of isolated natural areas into stormwater management plans, or into neighborhood park sites as they are acquired in the future. Such an approach could lead to the maintenance of "pocket" natural areas throughout the community. Further benefits could be derived from establishing and enhancing small isolated sites near schools. The "outdoor" classroom technique has already been used successfully at several schools within Fort Collins, including Laurel Elementary and Front Range Community College.

Enhancement of stormwater basins and other isolated areas for natural areas could include planting of native grasses and wildflowers, as well as native trees and shrubs. To allow native grasses and wildflowers to reseed and to provide wildlife cover, these areas should not be mowed as often as bluegrass turf areas. Conflicts could occur with adjacent landowners who prefer the more manicured-look of the grass areas. Working with these landowners to address their concerns and to educate them on the natural areas values of the site will play an important role in maintenance of stormwater basins as isolated natural areas.





## 5.0 POLICY PLAN

This chapter looks to the future of natural areas in Fort Collins. Its intent is to (1) summarize pertinent facts about the conservation of local natural areas through a statement of **Findings**, (2) establish a community vision for natural areas in a statement of **Goals and Objectives**, and (3) direct future City programs to achieve that vision with specific **Policies**.

The Goals, Objectives and Policies require adoption by the Planning and Zoning Board and approval by City Council. Once adopted, these statements form the foundation of the City's position and approach to natural areas. The Goals, Objectives, and Policies provide the official direction of the City of Fort Collins regarding natural areas and will be used to guide the development of master plans, work plans, City programs, budget recommendations and other implementation strategies.

### FINDINGS

The following findings regarding local natural areas are based on an inventory of natural areas, a review of existing policies and programs, research into the value of natural areas, and the comments of citizens and organizations.

1. Fort Collins and the surrounding Urban Growth Area contain remarkably diverse natural areas that (1) provide habitat for the conservation of plants, animals, and their associated ecosystems, (2) aid in the management of stormwater, (3) help clean the water, and (4) provide sites for scientific research, education, art, and recreation, among other values.
2. The citizens of Fort Collins care about local natural areas and expect their City government to take appropriate action to protect and preserve sensitive natural sites and systems.
3. There are many opportunities and challenges that demand a multi-faceted approach to the protection and preservation of natural areas in Fort Collins.
4. Fort Collins has begun to protect, acquire, and manage land and water resource areas to protect or enhance their natural values.
5. As a home rule city, Fort Collins has the ability to regulate activities in natural areas. The City has used this authority in the past in the areas of land use, pollution prevention, and nuisance control.
6. Land use planning and regulation are currently being used as tools to protect natural areas in Fort Collins. The Zoning

regulations and the Land Development Guidance System offer established mechanisms for reviewing the effects of development on natural areas. Current criteria and standards do not fully address the known values of local natural areas. The City has not established guidelines for site planning or design to more fully integrate natural resource areas and planned developments, or established criteria to resolve conflicts between proposed developments and natural areas.

7. Several local natural areas support populations of plants and animals that are classified as endangered, threatened, or of special concern at the State or Federal level.
8. Natural areas offer outstanding opportunities for environmental education, nature interpretation, and outdoor recreation.
9. Management and maintenance programs have an important effect on both public and private natural areas. Human use, construction of facilities, landscaping, weed control, and ongoing maintenance activity may all impact the resource values of natural areas.
10. Although few local natural areas are pristine, many of these areas support a high diversity of native plants and animals. Some natural areas have more severe problems with accumulated trash or debris, soil erosion, and undesirable vegetation, and could be enhanced to increase natural resource values.
11. Several species of exotic plants have invaded local natural areas and threaten to outcompete native plant communities and reduce wildlife habitat values.
12. Natural areas can be sources of conflict if there are negative interactions between people and wildlife, or if areas are perceived as unattractive or neglected. Acceptable solutions can be devised by involving citizens in the development of management plans, addressing potential conflicts in site design, and combining public education, habitat management, and wildlife population control.
13. In some areas, additional information is needed to assess the status and values of local natural areas, and to evaluate the results of programs to protect or enhance their values.
14. Protection and preservation of natural areas is consistent with and complements other City priorities.
15. While there is opportunity to integrate natural areas conservation into existing City programs, meeting these new needs will require a broader definition of program goals, more integrated planning, and additional resources.

16. Protection and preservation of local natural areas complements the activities of a variety of other governmental entities, including, Larimer County, Poudre R-1 School District, Colorado Division of Wildlife, Colorado State University, Colorado Department of Parks and Outdoor Recreation, U.S. Fish and Wildlife Service, U.S. Forest Service, Environmental Protection Agency, and others.
17. Citizens, landowners, and private organizations want to be actively involved in decisions and programs that shape the future of Fort Collins natural areas. They become involved in natural areas protection in a variety of ways: by protecting natural areas on private lands; by donating land, water, time, or expertise; and by participating in public decisionmaking. The interest and involvement of the community is a necessary resource for the protection of natural areas.

## **GOALS AND OBJECTIVES**

Based on the findings above, the following Goals and Objectives are recommended to capture a community vision for natural areas in Fort Collins.

### **Goal**

Preserve and protect natural areas within Fort Collins and the Urban Growth Area to provide habitat essential to the conservation of plants, animals, and their associated ecosystems and to enrich the lives of citizens by providing opportunities for education, scientific research, nature interpretation, art, fishing, wildlife observation, hiking, and other activities.

### **Objectives**

1. Establish a system of publicly-owned natural areas to protect the integrity of critical conservation sites, protect corridors between natural areas, preserve outstanding examples of Fort Collins' diverse natural heritage, and provide a broad range of opportunities for educational, interpretive, and recreational programs to meet community needs.
2. Integrate natural areas into the developed landscape by directing development away from sensitive areas and using innovative planning, design, and management practices.
3. Provide diverse educational, interpretive, and recreational programs to promote understanding and enjoyment of natural areas by the Fort Collins community.

4. Develop effective partnerships between the City, other governmental organizations, and the private sector for the protection and preservation of natural areas.
5. Develop and maintain a data inventory on local natural areas to aid the City and the public in decisions about these areas, and management of publicly-owned lands.

## **POLICIES**

The following policy statements will guide actions by the City of Fort Collins to achieve the recommended goals and objectives for natural areas. Once adopted by the Planning and Zoning Board and approved by City Council, the policy statements are official statements of intent that set a future course of action for the City. As such, the policies give direction for land use decisions, and for the development of master plans, work plans, City programs, budget recommendations, and other implementation strategies. Due to budget limitations, City Council priorities, and other factors, not all policies will be implemented at the same time.

### **Definition**

Natural areas are defined as areas of land or water that contain or support the continued existence of geological, paleontological, ecological, or other natural features that are (1) important to the conservation of natural resources that are classified as endangered or threatened, sensitive to impact from human activity, or otherwise in need of protection; (2) important to the conservation of natural resources that provide environmental protection, recreational, educational, scientific, aesthetic, or economic benefits; and (3) unique or rare examples of our natural heritage.

### **Public Land Management**

- PL-1 Acquire and manage land and water to preserve, protect, and enhance natural areas.
- PL-2 Coordinate natural areas and other open land programs within the City to maximize public benefit and explore ways of integrating natural areas protection into ongoing City programs.
- PL-3 Manage, maintain, and enhance public natural areas to ensure the ongoing conservation of plants and animals that are in need of protection and their associated ecosystems; control the invasion and spread of undesirable nonnative plants and animals; improve aesthetics; and provide opportunities for public use.

PL-4 Manage conflicts between people and natural areas through site design, public information and education, habitat manipulation, and plant and animal population management techniques.

PL-5 Involve citizens in planning the management of public natural areas.

#### **Private Land Management**

PR-1 Use the City's regulatory powers to (1) direct growth away from sensitive natural features, (2) encourage the integration of natural areas into the developed landscape, and (3) preserve and protect the resources and values of natural areas.

PR-2 Encourage and assist efforts by private landowners and organizations to integrate natural areas into new development and to protect, restore, or enhance privately-owned natural areas.

#### **Recreation, Interpretation, and Education**

RE-1 Provide opportunities for outdoor recreation, formal and informal education, and interpretive programs on local natural features to the community.

#### **Cooperation With Others**

CO-1 Seek the cooperation and assistance of citizens, businesses, community groups, conservation organizations, and governmental agencies in the development and implementation of programs to protect and preserve local natural areas.

#### **Public Information**

PI-1 Collect, maintain, and distribute up-to-date information on the location, values, status, and management needs of local natural areas.

#### **Program Funding**

PF-1 Seek alternative funding sources to implement natural area policies and programs, including private, State, and Federal grants, and donations of money, property, and in-kind services.

#### **Program Evaluation**

PE-1 Report periodically on the status of natural areas in the community.



## 6.0 ACTION PLAN

### INTRODUCTION

This chapter proposes a 5-year Action Plan to implement the Goals, Objectives, and Policies contained in Chapter 5.0. The Action Plan includes both general strategies and specific actions that constitute an initial work program for implementation. In contrast to the Policy Plan, the Action Plan is not adopted by City Council as a long-standing statement of City direction. Rather, the Action Plan is intended to be dynamic to respond to new opportunities or changing circumstances. Additional actions may be taken in addition to, or in lieu of, those contained in the plan. For this reason, the Action Plan will be updated every 2 years.

Protecting habitat for conservation, and habitat for people, requires a multi-faceted approach. The Action Plan includes six major components or Action Elements, each of which represents an important set of tools for attaining the Goals and Objectives of the Natural Areas Policy Plan. The Action Elements include the following:

- Public Land Acquisition
- Public Land Management
- Private Land Management
- Recreation, Education, and Interpretation
- Public Information
- Program Funding

Implementing the Natural Areas Policy Plan will also require a coordinated effort among City departments. Table 4 highlights the departments with key responsibilities for implementing various aspects of the Action Plan.

Overall coordination will be achieved through the River and Open Lands Guidance Team. This Team provides a forum for staff discussion, strategizing, and decision making for City projects related to the Poudre River and other open lands. The Team consists of service area directors from Community Planning and Environmental Services; Cultural, Library, and Recreational Services; Utility Services; and the Deputy City Manager. The ongoing business of the Guidance Team is managed by an interdepartmental City staff support team.

Achieving the Goals and Objectives of the Natural Areas Policy Plan will also require a strong commitment from the Fort Collins Community. Many elements of the Action Plan rely heavily on the active participation of individual volunteers, community organizations, and local businesses.



Table 4. Departmental Roles in Implementing the Natural Areas Policy Plan

Service Area / Department	Open Lands Team	Public Land Acquisition	Public Land Management	Private Land Programs	Recreation, Education, Interpretation	Information Management	Program Funding
<b>Administrative Services</b>							
Finance							X
Right-of-Way	X	X					
<b>Executive, Legislative, and Judicial Services</b>							
City Attorney		X		X			
City Manager	X	X					X
<b>Community Planning and Environmental Services</b>							
Natural Resources	X	X	X	X	X	X	X
Planning	X	X		X	X	X	X
<b>Cultural, Library, and Recreational Services</b>							
Forestry			X	X	X		
Golf			X		X		
Museum					X		
Parks			X		X		
Parks Planning	X	X	X		X		X
Recreation					X		
<b>Utility Services</b>							
Stormwater	X	X	X		X		
Streets			X				
Water & Wastewater	X	X	X		X		

## **PUBLIC LAND ACQUISITION**

### **Overview**

The City of Fort Collins has begun to acquire land and water to protect natural values and provide public amenities. Of the 8,176 acres of land and water included in the inventory of natural areas, approximately 2,382 acres are in public ownership. This includes: 1,237 acres in City open space and parks; 149 acres in other City ownership; 32 acres in County ownership; 373 acres in State ownership; and 591 acres of Federal land. The remaining 5,794 acres are privately owned (refer to Table 3, in Chapter 4.0).

The 1988 Parks and Recreation Master Plan identifies park sites throughout the community and public open space areas along the Poudre River and Fossil Creek, and in the Foothills west of the City. An estimated 973 acres of natural area are included within these plans. In addition, the Stormwater Utility currently plans to acquire 11 acres of natural area over the next 5 years; additional areas may be identified in the Poudre River Master Drainage Plan, which is scheduled for completion in 1994.

While there is considerable overlap between the natural area inventory and current land acquisition plans, it is recommended that the open space master plan be expanded to include additional natural areas. These would include critical conservation sites and corridors, outstanding examples of natural ecosystems, and sites with outstanding potential for public use and enjoyment. Key areas, as shown in Figure 9, include additional areas adjacent to existing and proposed open space along the Poudre River and in the Foothills; large expanses of prairie habitat and key raptor use areas in the Fossil Creek drainage; and several isolated areas with unique natural values.

All inventoried natural areas have been rated according to their relative priority for public acquisition (High, Moderate, Low), based on the relative value of the natural resources of the site, the potential to protect those values through other means, and the need for public access. This evaluation is summarized in NAPP Technical Memorandum 3. Approximately 2,216 acres were identified as high priority sites (644 acres of which are included in existing plans). These areas are recommended as additions to the existing open space plan and given high priority for acquisition. An additional 1,097 acres were identified as moderate priority sites (340 acres of which are included in existing plans). These areas may also be considered as potential additions to the open space plan; however, alternatives to fee acquisition (such as leases, conservation easements, and cooperative planning projects) should be considered on these areas.

In addition to acquiring land, the City may need to acquire water to protect and preserve important natural areas. This is

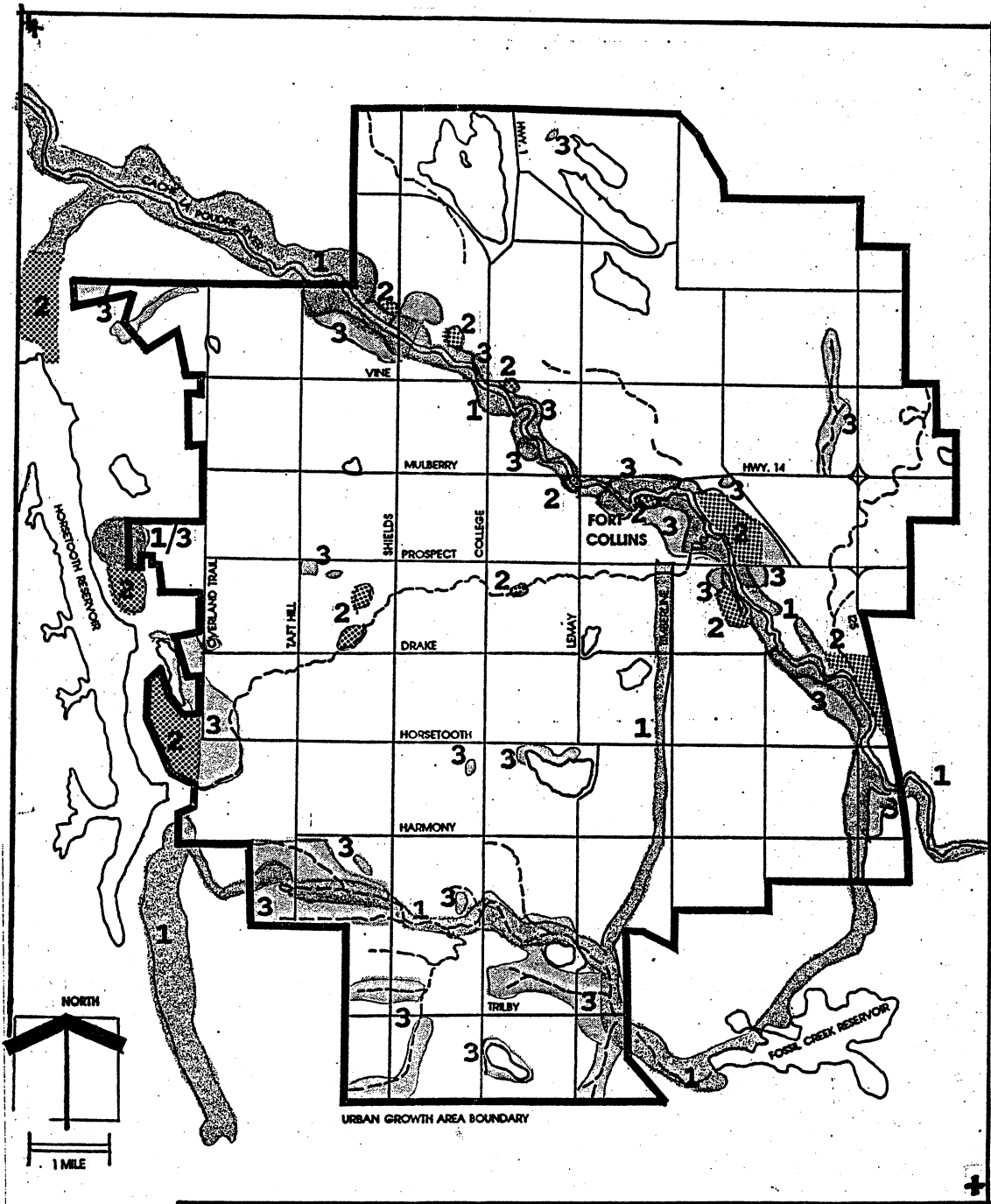


Figure 9. Proposed trail and open space corridors in the 1988 Parks Master Plan (1); existing open space sites (2); and high and moderate priority sites for additional public open space (3).

particularly true along the Poudre River in areas where gravel-mined land would be incorporated into the open space system. State law now requires landowners to augment river flow to offset the evaporative loss of water from ponds and lakes created by gravel mining. Because the total amount of water required for this purpose is currently unknown, the Action Plan includes a study to evaluate alternatives for meeting water augmentation needs. This study would be conducted cooperatively with regional gravel mine owners and operators.

In the past, the City has acquired open space through donation as well as purchase. In the future, the City would continue to purchase land according to budget appropriations, actively seek donations of land and water, and seek the financial assistance of Federal, State, County, and private organizations to meet land acquisition objectives. The action steps listed later under "Program Funding" outline specific steps to be taken to solicit financial support for the City's efforts.

**Policy Basis**

PL-1 Acquire and manage land and water to preserve, protect, and enhance natural areas.

PL-2 Coordinate natural areas and other open land programs within the City to maximize public benefit and explore ways of integrating natural areas protection into ongoing City programs.

CO-1 Seek the cooperation and assistance of citizens, businesses, community groups, conservation organizations, and governmental agencies in the development and implementation of programs to protect and preserve local natural areas.

**Strategies**

STRATEGIES AND WORK PLAN						
Strategy/Action Item (Shaded items are completed).	92	93	94	95	96	Future
Strategy 1: Revise the current open space master plan to include additional natural areas, including critical conservation sites and corridors, outstanding examples of natural ecosystems, and sites with outstanding potential for public use and enjoyment.						
Identify and characterize potential sites for inclusion in the public open space system.	XX		XX		XX	XXX>
Prioritize natural area sites for acquisition.	XX		XX		XX	XXX>
Amend the 1988 Parks and Recreation Master Plan to include the additional natural areas within the City open space system.	XX					XXX>

STRATEGIES AND WORK PLAN							
Strategy/Action Item (Shaded items are completed).	92	93	94	95	96	Future	
<b>Strategy 2: Coordinate the acquisition of natural areas with other City programs to maximize public benefit, including parks and recreation, stormwater management, and historic preservation programs.</b>							
Continue to coordinate interdepartmental planning and land acquisition programs through the River and Open Lands Guidance Team.	XX	XX	XX	XX	XX	XXX>	
Evaluate the potential to incorporate delinquent S.I.D. properties into City-wide open lands programs.	XX						
Overlay individual program priorities to identify City-wide priorities.	XX		XX		XX	XXX>	
<b>Strategy 3: Develop alternative plans for meeting regional evaporative loss augmentation requirements for gravel-mined lands along the Poudre River.</b>							
In cooperation with local gravel owners and operators develop a scope of work for an interdisciplinary study to determine the overall need for evaporative loss augmentation from local gravel operations.				XX			
Complete an interdisciplinary study to identify alternative means of meeting evaporative loss augmentation requirements from gravel mines proposed for future incorporation into City open space.					XX		
<b>Strategy 4: Encourage private landowners to donate priority natural areas to the City of Fort Collins.</b>							
Research alternatives and develop positive incentives to encourage gifts of natural areas to the City.				XX			
Contact individual landowners to discuss plans for priority natural areas and potential donations to the City.			XX	XX	XX	XXX>	
<b>Strategy 5: Acquire areas of land and water and incorporate them into the City's open space system.</b>							
Based on established priorities, negotiate contracts with willing sellers and acquire natural areas.	XX	XX	XX	XX	XX	XXX>	
Acquire water rights as needed to meet evaporative loss augmentation requirements, to enhance instream flows, or to ensure protection of City-owned natural areas.					XX	XX	XXX>

## PUBLIC LAND MANAGEMENT

### Overview

Approximately 8,176 acres are included within the inventory of natural areas in and around Fort Collins. Of these, 1,237 acres are currently in City open space or parks, and an additional 149 acres of natural area are owned by the City for other public purposes. An additional 2,216 acres are recommended as high priority acquisition sites.

These public lands represent a substantial resource base for the conservation of natural values. Management of these lands is an important factor in their future value for conservation purposes, as well as for public use.

The action plan emphasizes management and maintenance of public open space to ensure the conservation of natural resource values, accommodate public use, minimize ongoing costs, and address site-specific needs. An interdepartmental team will be formed to develop and implement management plans for City open lands.

One management concern is the spread of exotic plants and animals that threaten natural systems. Guidelines will be developed and projects implemented to control the invasion and spread of exotic species.

Other concerns include potential conflicts between people and wildlife and conflicting public values regarding maintenance standards for natural areas located close to residential areas. Citizen involvement will be a critical part of programs to develop guidelines and public information programs to address these concerns. Public information programs will explain why management of natural areas differs from management of developed parks.

Although City-owned open spaces have outstanding natural values, many opportunities exist to restore or enhance the resource value and aesthetic quality of natural areas throughout the City. There are also opportunities to create small natural areas, for example at certain stormwater detention areas. A Poudre River Cleanup program was begun in 1991 to complete cleanup, restoration, or enhancement projects each year. This program will be expanded over time to other areas. Active partnerships will be sought with community organizations to take advantage of community enthusiasm to complete cleanup, restoration, and enhancement projects.

### **Policy Basis**

PL-2 Coordinate natural areas and other open land programs within the City to maximize public benefit and explore ways of integrating natural areas protection into ongoing City programs.

PL-3 Manage, maintain, and enhance public natural areas to ensure the ongoing conservation of plants and animals that are in need of protection and their associated ecosystems; control the invasion and spread of undesirable nonnative plants and animals; improve aesthetics; and provide opportunities for public use.

PL-4 Manage conflicts between people and natural areas through site design, public information and education, habitat manipulation, and plant and animal population management techniques.

PL-5 Involve citizens in planning the management of public natural areas.

CO-1 Seek the cooperation and assistance of citizens, businesses, community groups, conservation organizations, and governmental agencies in the development and implementation of programs to protect and preserve local natural areas.

**Strategies**

STRATEGIES AND WORK PLAN						
Strategy/Action Item (Shaded items are completed)	92	93	94	95	96	Future
<b>Strategy 1: Implement management and maintenance programs for natural areas that will conserve natural resource values, accommodate multiple uses, be flexible to meet site needs, and minimize ongoing costs. Key considerations will include public expectations, protection of key habitat components for plant and animal species, recognition of cultural and recreational values, a minimum maintenance approach, use of native plants for landscaping or habitat improvements, and use of Integrated Pest Management practices.</b>						
Form an interdepartmental team to develop management and maintenance plans for City-owned natural areas.	XX					
Develop general management and maintenance guidelines for City-owned natural areas.	XX	XX				
Provide an annual training program for field personnel involved in the management and maintenance of City natural areas.	XX	XX	XX	XX	XX	XXX>
Develop specific management plans for all existing City open space areas.			XX	XX		
Develop specific management plans for new open space acquisitions.				XX	XX	XXX>
Develop management plans for stormwater facilities with important natural values.	XX	XX				
Incorporate information on the special management needs of natural areas and alternative management approaches into public information and education programs.	XX	XX	XX	XX	XX	XXX>
<b>Strategy 2: Control the invasion and spread of undesirable exotic plants and animals that threaten the continued habitat value or biological diversity of local natural areas.</b>						
Compile and maintain a list of undesirable exotic species in Fort Collins.	XX					
Compile and maintain an inventory of natural areas where undesirable exotic species threaten natural habitats.	XX					
Identify and evaluate alternative methods of controlling the invasion and spread of exotic species.	XX	XX				
Discontinue use of undesirable exotic species in landscape improvements on City properties.	XX					
Design and implement pilot control projects to test alternative methods of controlling exotic species.	XX	XX				

**STRATEGIES AND WORK PLAN**

Strategy/Action Item (Shaded items are completed)	92	93	94	95	96	Future
<b>Strategy 2: (Continued)</b>						
Implement exotic species control projects on an annual basis to eliminate undesirable exotic species from City-owned lands over a 10-year period.	XX	XX	XX	XX	XX	XXX>
Incorporate information on the control of exotic species into public information and education programs on local natural areas.		XX	XX	XX	XX	XXX>
<b>Strategy 3: Limit conflict between people and natural areas by working cooperatively with the Colorado Division of Wildlife to develop management programs that combine site design, public information, habitat manipulation, and wildlife management.</b>						
Incorporate methods to minimize conflicts between people and wildlife into a Design and Mitigation Manual for local natural areas.	XX	XX				
Develop specific design criteria to ensure that management or restoration projects will not interfere with stormwater management needs, public safety, and property protection.	XX	XX				
In cooperation with the Colorado Division of Wildlife, Larimer County Health Department, and others, develop guidelines for managing beaver, prairie dogs, and other species that are perceived to create "nuisance" concerns on public lands.	XX	XX				
Incorporate information on living with urban wildlife into public information and education programs on local natural areas.		XX	XX	XX	XX	XXX>
<b>Strategy 4: In partnership with the Poudre River Trust, Colorado Native Plant Society, Fort Collins Audubon Society, Fort Collins Re-Leaf, Trout Unlimited, and other community organizations restore and enhance City-owned natural areas to improve degraded conditions, reestablish native plant and animal communities, improve wildlife habitat values, increase opportunities for public use, or improve aesthetics and natural habitat values.</b>						
Continue and complete restoration and enhancement efforts at the Gustav Swanson Nature Area, in cooperation with the Poudre River Trust, Fort Collins Audubon Society, Colorado Native Plant Society, and Trout Unlimited.	XX	XX	XX			
Continue the Poudre River Cleanup program, in cooperation with the Poudre River Trust, and complete one or more small-scale cleanup or habitat improvement projects each year.	XX	XX	XX	XX	XX	XXX>
Expand the Poudre River Cleanup program, in cooperation with the Poudre River Trust and others, and complete two pilot river bank restoration projects.		XX		XX		
As part of the Poudre River Master Drainageway study, develop conceptual engineering designs and cost estimates for large-scale bank restoration projects along the Poudre River.		XX	XX			
Complete large-scale bank restoration projects along the Poudre River.					XX	XXX>
Plan and implement a habitat restoration and enhancement project at the Bridges open space.		XX	XX	XX		
Plan and implement a restoration and enhancement project at the Flatiron and Riverbend ponds open spaces.			XX	XX	XX	



STRATEGIES AND WORK PLAN						
Strategy/Action Item (Shaded items are completed)	92	93	94	95	96	Future
<b>Strategy 4 (Continued)</b>						
Plan and implement a pilot project to test the feasibility of using created wetlands for wastewater treatment.	XX	XX	XX			
Plan and implement habitat improvements at City Park Nine golf course and enroll the course in the Audubon Cooperative Sanctuary Program.		XX				
Plan and implement a pilot wetland creation project within a stormwater detention site.	XX	XX	XX			
Compile a list of potential enhancement and restoration projects on City-owned natural areas.	XX					
Facilitate the activities of community groups who wish to complete small-scale tree planting or cleanup projects within City-owned natural areas.	XX	XX	XX	XX	XX	XXX>
<b>Strategy 5: Actively involve the community in the stewardship of local natural areas.</b>						
Provide opportunities for public review and comment on proposed management and maintenance procedures for publicly-owned natural areas.	XX	XX	XX	XX	XX	XXX>
Develop an "Adopt a Natural Area" program to encourage public involvement in the stewardship of local natural areas.		XX	XX	XX	XX	XXX>

## PRIVATE LAND MANAGEMENT

### Overview

Of the 8,176 acres of land and water included in the Natural Areas inventory, 5,794 are privately owned. Although additional areas are proposed for acquisition as public open space, many natural areas will remain in private ownership. Consequently, maintenance of natural area values depends to a large extent on the ongoing stewardship of private lands by neighborhood organizations and individual landowners.

Three general strategies are proposed to encourage protection and preservation of natural areas on private lands. One strategy is to modify the City's development regulations to better protect natural areas in developing areas. Although the concept is well established in City policy that natural areas should be considered in development planning and review process, in practice, the existing regulations are either too vague or they do not adequately reflect the known values of local natural areas. This has led in the past to unnecessary conflict. Modifications to the development regulations will be developed to better reflect our greater knowledge of local natural areas, to clarify expectations for integrating natural areas into new development, and to provide a process for resolving conflicts between proposed developments and

natural areas.

The second strategy is to promote cooperative planning by the City and private landowners in important natural areas. This strategy attempts to get ahead of potential development issues by being proactive and working cooperatively with landowners to identify and plan for important natural areas before development plans are proposed.

The third strategy also promotes cooperation between the City and private landowners by providing information on natural values, technical assistance, and public recognition of conservation efforts by private landowners.

**Policy Basis**

PR-1 Use the City's regulatory powers to (1) direct growth away from sensitive natural features, (2) encourage the integration of natural areas into the developed landscape, and (3) preserve and protect the resources and values of natural areas.

PR-2 Encourage and assist efforts by private landowners and organizations to integrate natural areas into new development and to protect, restore, or enhance privately-owned natural areas.

CO-1 Seek the cooperation and assistance of citizens, businesses, community groups, conservation organizations, and governmental agencies in the development and implementation of programs to protect and preserve local natural areas.

**Strategies**

STRATEGIES AND WORK PLAN						
Strategy/Action Item (Shaded items are completed.)	92	93	94	95	96	Future
Strategy 1: Modify the development regulations to clarify City requirements for considering natural area values in new development and to guide the integration of natural areas into the developed landscape. Specify requirements for site assessments, siting and design criteria, mitigation requirements, and procedures for resolving conflict between natural areas and proposed development proposals.						
Develop proposed modifications to the City's development regulations, including the Land Development Guidance System, the Zoning Regulations, and the Subdivision Regulations.	xx	xx				
Develop a Design and Mitigation Manual to provide guidelines for integrating natural areas into the developed landscape.	xx	xx				
Develop a slide show and video to illustrate concepts and techniques for integrating natural areas into developed sites.	xx	xx				

**STRATEGIES AND WORK PLAN**

Strategy/Action Item (Shaded items are completed.)	92	93	94	95	96	Future
<b>Strategy 1 (Continued)</b>						
Continue to provide technical review and comment on natural area values within proposed development applications.	XX	XX	XX	XX	XX	XXX>
<b>Strategy 2: Develop cooperative planning agreements or pilot projects with private landowners and/or developers to encourage private landowners to integrate natural areas into proposed development plans.</b>						
Complete a cooperative planning program to address natural area concerns along the Poudre River between Lemay Avenue and I-25.	XX					
Complete a cooperative planning program to address natural area concerns in the Fossil Creek drainage, west of Shields Street.	XX					
Complete a cooperative planning program to address natural area concerns in the Fossil Creek drainage, between College Avenue and Lemay Avenue.	XX					
Complete a cooperative planning program to address natural area concerns on gravel-mining areas along the Poudre River.		XX	XX			
Complete a cooperative planning program to address natural area concerns in the Harmony Gateway area.		XX	XX			
Complete a cooperative planning program to address natural area concerns for reservoirs and irrigation canals.				XX	XX	XXX>
<b>Strategy 3: Encourage and assist efforts by private landowners to protect, maintain, or enhance natural areas by promoting awareness of resource values on private lands, providing technical assistance, developing incentive programs, or participating in cooperative projects on private lands.</b>						
Encourage private landowners to protect natural areas by contacting them individually, providing information on natural area values, and providing technical assistance, or developing cooperative projects.		XX	XX	XX	XX	XXX>
Develop a model conservation easement for the City of Fort Collins and establish procedures for acquiring and maintaining conservation easements to protect natural areas on private lands.	XX					
Acquire conservation easements from private landowners to ensure protection of key natural areas on private lands.	XX	XX	XX	XX	XX	XXX>
Recognize efforts by homeowners to provide urban natural areas by continuing the Backyard Wildlife Habitat Certification Program.	XX	XX	XX	XX	XX	XXX>
Recognize efforts to protect or enhance natural areas by neighborhood groups, homeowner's associations, school groups, and private individuals by establishing a Neighborhood Natural Area Certification Program.	XX	XX	XX	XX	XX	XXX>
Provide financial incentives to private conservation efforts with a "cost sharing" program for natural area creation, restoration, or enhancement projects.	XX	XX	XX	XX	XX	XXX>

## RECREATION, EDUCATION, AND INTERPRETATION

### Overview

Among the most important values of local natural areas are the opportunities they provide for recreation, for a respite from the urban setting, and for education and interpretation -- habitat for people. In the short term, proposed actions would highlight the opportunities currently available for passive recreation, nature study, and enjoyment of local natural areas. Maps, guides, brochures, and interpretive signs would facilitate use and appreciation of local natural areas by Fort Collins residents and visitors. Organized group activities, classes, and public presentations would also be provided. A cadre of volunteer naturalists would be recruited to give public presentations, lead nature walks, photography outings, and other activities.

Over time, additional public facilities such as trails, fishing piers, or perhaps an expanded Environmental Learning Center could be built. Short-term actions will assess the feasibility and costs of additional public improvements.

Action items are also included to publicly recognize the contributions of the community toward conservation of natural areas. Awards programs and public celebrations are an important means of building and maintaining public involvement in local natural area programs.

### Policy Basis

RE-1 Provide opportunities for outdoor recreation, formal and informal education, and interpretive programs on local natural features to the community.

CO-1 Seek the cooperation and assistance of citizens, businesses, community groups, conservation organizations, and governmental agencies in the development and implementation of programs to protect and preserve local natural areas.

### Strategies

STRATEGIES AND WORK PLAN						
Strategy/Action Item	92	93	94	95	96	Future
Strategy 1: In cooperation with local naturalists and organizations, develop brochures, maps, slide shows, videos, and other materials on the educational, interpretive, and recreational values and opportunities of local natural areas. Design materials to allow "self-guided" use by residents and visitors.						
Prepare an overall map and guide to local natural areas.						

xx

**STRATEGIES AND WORK PLAN**

Strategy/Action Item	92	93	94	95	96	Future
<b>Strategy 1: (Continued)</b>						
Prepare a video guide to local natural areas.	XX					
Prepare a brochure on "living with wildlife in the city."		XX				
Prepare a guide to wildlife watching in Fort Collins.		XX				
Prepare a fishing guide for Fort Collins.			XX			
Prepare a guide to the plants and vegetative communities of Fort Collins.				XX		
<b>Strategy 2: Design and construct interpretive signs, displays, and self-guided tours in various public natural areas to portray the richness and diversity of the natural heritage in Fort Collins, the values of local natural areas, and their special management needs. Involve local naturalists and community organizations in the design and construction of the interpretive features.</b>						
Evaluate alternative designs, materials, and locational standards for interpretive features in City-owned natural areas.		XX				
Design and install interpretive features at the Gustav Swanson Nature Area.	XX					
Design and install interpretive features along the Poudre River trail.			XX			
Design and install interpretive features along the Foothills trail.					XX	
Design and install interpretive features at a gravel-mining site.				XX		
Design and install interpretive features at a native prairie site.				XX		
Design and install interpretive features at a wetland site.			XX			
<b>Strategy 3: In cooperation with community organizations and local naturalists, incorporate opportunities for education, interpretation, and recreation into the public programs offered by the Natural Resources Division, Recreation Division, and other City departments.</b>						
Recruit volunteers for a Master Naturalist's Network to make public presentations and lead outings in local natural areas.	XX	XX	XX	XX		XXX>
Develop a regular program of outdoor activities and classes in local natural areas through the recreational programs offered by the City.			XX	XX	XX	XXX>
Include regular features on local natural areas in City News, Environmental News, and other City publications.	XX	XX	XX	XX		XXX>
<b>Strategy 4: Evaluate the need for additional trails, or other public facilities, to meet the community's need for recreation, education, and interpretive features in local natural areas.</b>						
Construct an accessible fishing/observation area at the Gustav Swanson Nature Area.	XX					
Complete a feasibility study to define the potential for establishing a "world class environmental learning center" in Fort Collins, in cooperation with Colorado State University.				XX		
Evaluate opportunities and feasibility for establishing a public use program at Water Treatment Plant 1 in the Poudre Canyon and the Meadow Springs Ranch.	XX	XX				

STRATEGIES AND WORK PLAN						
Strategy/Action Item	92	93	94	95	96	Future
<b>Strategy 4: (Continued)</b>						
As part of the planned update to the Parks and Recreation Master Plan evaluate the need for, and cost of, additional trails or other improvements in City natural areas.			XX			
Evaluate the feasibility and cost of expanding the local natural history displays at the Fort Collins Museum.			XX			
Incorporate information on the relationship between water management and local natural areas into the programs developed for the Poudre River National Water Heritage Area.						XXX>
<b>Strategy 5: Develop a public recognition program to honor the contributions of the community to the conservation of natural areas and celebrate the community's progress in achieving the natural area goals and objectives.</b>						
Publicize in City publications, on Channel 27, and in the local media the contributions of individuals, organizations, and businesses to natural area programs.	XX	XX	XX	XX	XX	XXX>
Develop an award program to honor the contributions of the community to natural area conservation.		XX	XX	XX	XX	XXX>
Sponsor an annual community-wide event to celebrate the community's achievements toward conservation of natural areas.		XX	XX	XX	XX	XXX>

**PUBLIC INFORMATION**

**Overview**

Although the Natural Areas Policy Plan was based on an extensive field reconnaissance and the best available scientific information, additional information is needed to evaluate many natural areas, and to make decisions about their future protection or management. Ongoing collection and compilation of data on the location, values, regulatory status, and management needs of local natural areas is recommended.

Fortunately, Fort Collins is home to Colorado State University and other ecological research organizations. Cooperative research programs will be developed to encourage ongoing research and monitoring by local naturalists and research organizations, in association with City staff.

The City will ensure that available data on local natural areas are accessible to the public. The City will also report to the community on the status of local natural areas and progress in implementing the Natural Areas Policy Plan.

**Policy Basis**

PI-1 Collect, maintain, and distribute up-to-date information on the location, values, status, and management needs of local natural areas.

CO-1 Seek the cooperation and assistance of citizens, businesses, community groups, conservation organizations, and governmental agencies in the development and implementation of programs to protect and preserve local natural areas.

PE-1 Report periodically on the status of natural areas in the community.

**Strategies**

STRATEGIES AND WORK PLAN						
Strategy/Action Item (Shaded items are completed).	92	93	94	95	96	Future
<b>Strategy 1: Compile and distribute up-to-date information on the location, values, and management needs of local natural areas on maps and in other data bases.</b>						
Maintain and publish a series of maps to show the location and resource values of local natural areas.		XX	XX	XX	XX	XXX>
Maintain a data base of photographs and available information on individual natural areas.	XX	XX	XX	XX	XX	XXX>
Make maps, photographs, site inventories and other pertinent information available for public inspection and sale in the Environmental Information Center at 281 North College Avenue.		XX	XX	XX	XX	XXX>
Evaluate the feasibility and costs of entering natural areas inventory information into a computerized Geographic Information System.					XX	
<b>Strategy 2: Report periodically on the status of local natural areas and the City's progress in implementing the Natural Areas Policy Plan.</b>						
Include a comprehensive report on the status of local natural areas and plan implementation in the Community Environmental Report.	XX		XX		XX	XXX>
Publish articles on natural area values and plan implementation in Environmental News.	XX	XX	XX	XX	XX	XXX>
Update the Action Plan for implementing the Natural Areas Policy Plan every 2 years.	XX		XX		XX	XXX>
<b>Strategy 3: Conduct ongoing research on the location, values, management needs, and regulatory status of local natural areas.</b>						
In cooperation with local naturalists and research organizations, continue to conduct site inventories to improve understanding of the values of individual natural areas.	XX	XX	XX	XX	XX	XXX>
Survey citizen use, values, and satisfaction with City services related to natural areas.				XX	XX	XXX>

**STRATEGIES AND WORK PLAN**

Strategy/Action Item (Shaded items are completed).	92	93	94	95	96	Future
<b>Strategy 3: (Continued)</b>						
In conjunction with Larimer County, expand the natural areas inventory to include the 3-mile area of joint City-County planning concern.		XX	XX	XX		
Monitor the success of pilot projects to restore or enhance natural areas.	XX	XX	XX	XX	XX	XXX>
Monitor and evaluate state and federal regulatory proposals that affect local natural areas. Work through the Council legislative committee to support legislation that enhances local natural area objectives.	XX	XX	XX	XX	XX	XXX>
<b>Strategy 4: Develop cooperative agreements and incentives to encourage research on local natural areas by researchers from local ecological research organizations and students and faculty of Colorado State University, Front Range Community College, and Poudre R-1 School District.</b>						
Continue to involve students and faculty from CSU, Front Range, and Poudre R-1 in ongoing field inventories of local natural areas.	XX	XX	XX	XX	XX	XXX>
Provide opportunities for internships and class projects related to local natural areas.	XX	XX	XX	XX	XX	XXX>
Develop a cooperative research program with the Colorado Division of Wildlife on the use of the Fort Collins area by birds of prey and management of prairie dog colonies within the urban area.		XX	XX	XX		
Develop a cooperative research program with the U.S. Fish and Wildlife Service, National Ecology Research Center on methods of creating wetland habitats during mined-land reclamation.		XX	XX	XX		
Develop a cooperative research program with the U.S. Fish and Wildlife Service, National Ecology Research Center to better understand the long-term relationships between hydrologic conditions and habitat conditions along the Poudre River.			XX	XX	XX	
Promote cooperative research on urban natural areas throughout northeast Colorado by participating in the activities of the Colorado Rockies Regional Cooperative.	XX	XX	XX	XX	XX	XXX>

**PROGRAM FUNDING**

**Overview**

Table 5 provides a summary of estimated costs to implement the Action Plan outlined in previous sections. Because many programs could be implemented at various funding levels, a range of costs is shown. "Level A" estimates assume current funding levels will be maintained, while "Level C" estimates assume full implementation. Over a 5-year period, the "Level A" costs total \$1.5 million and the "Level C" costs total \$10.6 million. The major difference in these estimates is the funding level for acquisition of high priority sites; approximately \$7.5 million if all high priority sites were purchased.



Table 5. Estimated Annual Costs for Implementing the Natural Areas Action Plan

Action Element <sup>1</sup>	Cost Estimate at Different Program Levels (\$ in thousands) <sup>2</sup>			Existing	Funding Sources
	Level A	Level B	Level C		
<b>PUBLIC LAND ACQUISITION</b>					
Identify priority sites and amend open space master plan. (ongoing)	staff	staff	staff	Natural Resources	
Coordinate interdepartmental land acquisition efforts. (ongoing)	staff	staff	staff	Planning Natural Resources Parks Stormwater	
Evaluate water augmentation alternatives. (one-time, 94; Levels B and C reflect the possible cost range)	0	50	100		Cooperative agreement State grants General fund
Encourage donations by private landowners. (ongoing)	staff	staff	staff	Natural Resources Planning Parks	
Acquire high priority natural areas. (ongoing; Level A assumes 1993 funding levels; Level B assumes an additional \$100,000 from General Fund; Level C reflects full cost of acquiring high priority sites within 5 years)	200	300	1,500	Lottery Proceeds General Fund	Donations State, Federal grants Private grants General fund New revenue source
Acquire water rights. (ongoing)	0	unknown	unknown		Donations State grants Private grants New revenue source
<b>PUBLIC LAND MANAGEMENT</b>					
Develop management plans for city open spaces. (ongoing)	staff	staff	staff	Natural Resources Parks Stormwater Forestry	
Implement ongoing maintenance of new acquisitions. (ongoing; Level B assumes cost of \$50/acre for all high priority sites; Level C assumes cost of \$150/acre for all high priority sites)	0	110	330		General fund New revenue source

<sup>1</sup> "Ongoing" actions and associated costs would occur annually during the 5-year planning period; "one-time" costs would be incurred once, in the year noted. <sup>2</sup> "Level A" assumes current funding levels are maintained; "Level B" assumes additional funding to begin new programs, or enhance existing ones; "Level C" assumes full program funding. Where "staff" is noted, programs will be integrated into work programs of existing staff and additional costs are not anticipated.

Table 5. (Continued)

Action Element <sup>1</sup>	Cost Estimate at Different Program Levels (\$ in thousands) <sup>2</sup>			Funding Sources	
	Level A	Level B	Level C	Existing	Potential
Control the spread of exotic plants in city open spaces. (ongoing)	staff	staff	staff	Forestry Natural Resources	
Develop guidelines to minimize conflicts between people and natural areas. (one-time, 93)	staff	staff	staff	Natural Resources Parks Stormwater Forestry	
Complete small and moderate sized cleanup and enhancement projects. (ongoing; Level C assumes program expansion)	30	30	45	Natural Resources Planning Forestry Streets Stormwater Parks Donations Grants	Donations Grants
Complete large-scale restoration projects. (one-time, 96; Levels B and C reflect potential cost range)	0	300	500		Grants Donations General fund Utility fees
Complete a pilot project to test the feasibility of using wetlands for water treatment. (one-time, 93)	200	200	200		Water & Wastewater
Develop an adopt-a-natural-area program. (ongoing; Level A assumes initial program startup; Levels B and C assume potential future enhancement)	2	5	5	Natural Resources Parks Stormwater	Grants
<b>PRIVATE LAND MANAGEMENT</b>					
Develop a design and mitigation manual. (one-time, 92)	30	30	30	Planning Natural Resources Parks Stormwater	
Develop revisions to the development regulations. (one-time, 93)	staff	staff	staff	Natural Resources Planning	

<sup>1</sup> "Ongoing" actions and associated costs would occur annually during the 5-year planning period; "one-time" costs would be incurred once, in the year noted. <sup>2</sup> "Level A" assumes current funding levels are maintained; "Level B" assumes additional funding to begin new programs, or enhance existing ones; "Level C" assumes full program funding. Where "staff" is noted, programs will be integrated into work programs of existing staff and additional costs are not anticipated.

Table 5. (Continued)

Action Element <sup>1</sup>	Cost Estimate at Different Program Levels (\$ in thousands) <sup>2</sup>			Funding Sources	
	Level A	Level B	Level C	Existing	Potential
Develop cooperative planning agreements with private landowners. (ongoing)	staff 1	staff 1	staff 1	Natural Resources Planning	Grants
Encourage and recognize efforts by private landowners to protect or enhance natural areas. (ongoing)	0	5	10		General Fund Grants Donations
<b>RECREATION, EDUCATION, AND INTERPRETIVE PROGRAMS</b>					
Prepare brochures, guides, and other materials. (ongoing)	2	2	2	Natural Resources Forestry Planning Parks Stormwater	Grants Donations
Install interpretive signs and displays. (ongoing; Levels A and B reflect potential cost range)	3	5	5	Natural Resources Forestry Planning Parks Stormwater	Grants Donations
Create a Master Naturalists Network. (ongoing; Differences in Levels reflect potential cost range)	1	2	2	Natural Resources Forestry Planning Parks Stormwater	Grants Donations
Develop an outdoor recreation program in local natural areas. (ongoing; Level B assumes initial program implementation; Level C assumes enhanced program if warranted)	0	5	10		Program fees
Complete a feasibility study for a world class environmental center. (one-time, 94)	0	35	35		Grants General fund

<sup>1</sup> "Ongoing" actions and associated costs would occur annually during the 5-year planning period; "one-time" costs would be incurred once, in the year noted. <sup>2</sup> "Level A" assumes current funding levels are maintained; "Level B" assumes additional funding to begin new programs, or enhance existing ones; "Level C" assumes full program funding. Where "staff" is noted, programs will be integrated into work programs of existing staff and additional costs are not anticipated.

Table 5. (Continued)

Action Element <sup>1</sup>	Cost Estimate at Different Program Levels (\$ in thousands) <sup>2</sup>			Funding Sources	
	Level A	Level B	Level C	Existing	Potential
Evaluate opportunities for public use of Meadow Springs Ranch and Water Treatment Plant 1. (one-time, 93-94)	staff 30	staff 30	staff 30	Water & Wastewater Parks	
Evaluate the need for additional trails or public improvements in City natural areas as part of the update to the Parks Master Plan. (one-time, 94)					
Evaluate the feasibility of additional natural history displays at the Fort Collins Museum. (one-time, 94)	staff 1	staff 3	staff 5	Museum Natural Resources Natural Resources	Donations
Develop community recognition programs. (ongoing; Differences among levels reflect potential cost range)					
<b>PUBLIC INFORMATION</b>					
Produce maps and other information data on local natural areas. (ongoing)	2	2	2	Natural Resources	Program fees
Include natural areas information in a geographic information system. (ongoing)	0	45	45		General fund
Report periodically on the status of local natural areas. (ongoing)	staff 1	staff 1	staff 1	Natural Resources	Grants Cooperative agreements General fund
Continue to compile inventory information on local natural areas. (ongoing)					
Survey public attitudes about local natural areas. (one-time, 94)	0	5	10		
Provide opportunities for student projects in local natural areas. (ongoing)	staff 2	staff 2	staff 5	Natural Resources	Grants
Provide internships for CSU students to implement natural area projects. (ongoing)					

<sup>1</sup> "Ongoing" actions and associated costs would occur annually during the 5-year planning period; "one-time" costs would be incurred once, in the year noted. <sup>2</sup> "Level A" assumes current funding levels are maintained; "Level B" assumes additional funding to begin new programs, or enhance existing ones; "Level C" assumes full program funding. Where "staff" is noted, programs will be integrated into work programs of existing staff and additional costs are not anticipated.

Table 5. (Continued)

Action Element <sup>1</sup>	Cost Estimate at Different Program Levels (\$ in thousands) <sup>2</sup>			Funding Sources	
	Level A	Level B	Level C	Existing	Potential
Complete cooperative research projects with state and federal agencies. (ongoing; Levels reflect range of cost-sharing with other organizations)	0	5	10		Cooperative agreements General fund

<sup>1</sup> "Ongoing" actions and associated costs would occur annually during the 5-year planning period; "one-time" costs would be incurred once, in the year noted. <sup>2</sup> "Level A" assumes current funding levels are maintained; "Level B" assumes additional funding to begin new programs, or enhance existing ones; "Level C" assumes full program funding. Where "staff" is noted, programs will be integrated into work programs of existing staff and additional costs are not anticipated.

Clearly, the Action Plan is more ambitious than the financial resources available at present. Implementation plans, especially land acquisition, will be adjusted based on available funding.

Several steps are proposed to meet this challenge and implement the Action Plan identified herein. These include evaluating alternative methods for City funding, including fees, additional sales tax, and other revenue sources. In addition, the City will seek voluntary funding from the community, State and Federal agencies, private foundations, and conservation organizations with the goal of raising 25% of the costs of program implementation from outside sources and in-kind contributions.

**Policy Basis**

PL-2 Coordinate natural areas and other open land programs within the City to maximize public benefit and explore ways of integrating natural areas protection within ongoing City programs.

PF-1 Seek alternative funding sources to implement natural area policies and programs, including private, State, and Federal grants, and donations of money, property, and in-kind services.

CO-1 Seek the cooperation and assistance of citizens, businesses, community groups, conservation organizations, and governmental agencies in the development and implementation of programs to protect and preserve local natural areas.

**Strategies**

STRATEGIES AND WORK PLAN						
Strategy/Action Item (Shaded items are completed)	92	93	94	95	96	Future
<b>Strategy 1: Evaluate alternative methods for funding the Action Plan for implementing elements of the natural areas policy plan.</b>						
Prepare a report to compare and contrast the alternatives available to the City for funding natural area programs.	xx					
Consider adoption of alternative funding methods for implementing the Natural Areas Policy Plan.	xx					
<b>Strategy 2: Seek voluntary contributions from the community to complete the Action Plan for implementing the Natural Areas Policy Plan.</b>						
Establish a Natural Areas Fund with the Fort Collins Community Foundation to receive private donations for natural areas implementation.	xx					
Contact major corporations in the community and seek endorsement of the Plan and financial contributions toward its implementation.	xx	xx	xx	xx	xxx>	

**STRATEGIES AND WORK PLAN**

Strategy/Action Item (Shaded items are completed)	92	93	94	95	96	Future
<b>Strategy 3: Seek Federal and State funding for implementing the Natural Areas Policy Plan.</b>						
Seek State funding for wetlands acquisition through the Colorado duck stamp program.		XX	XX	XX	XX	XXX>
Seek Federal funding for habitat acquisition and restoration programs through the U.S. Fish and Wildlife Service Urban Wildlife Initiative.	XX	XX	XX	XX	XX	XXX>
Seek Federal funding for restoration and enhancement programs through the U.S. Forest Service's urban forestry program.		XX	XX	XX	XX	XXX>
Seek Federal funding for education and interpretive programs through the Environmental Protection Agency's environmental education grant program.	XX	XX	XX	XX	XX	XXX>
Seek Federal funding for a feasibility study of a World Class Environmental Learning Center from the National Endowment for the Arts.		XX				
Incorporate natural area implementation needs into funding proposals associated with the Poudre River National Water Heritage Area.						XXX>
Identify other sources of State and Federal funding and submit proposals as appropriate.	XX	XX	XX	XX	XX	XXX>
<b>Strategy 4: Seek donations and partnerships with private conservation organizations and private foundations to complete the Action Plan for implementing the Natural Areas Policy Plan.</b>						
Seek partnerships with private conservation organizations, including National Audubon Society, Trust for Public Lands, The Nature Conservancy, Ducks Unlimited, Trout Unlimited, and the Urban Wildlife Institute.	XX	XX	XX	XX	XX	XXX>
Seek grants from private foundations, including the Packard Foundation, the National Fish and Wildlife Foundation, the Alton B. Jones Foundation, and others as appropriate.		XX	XX	XX	XX	XXX>

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Note: The following is a partial list of references used to write background material for the Natural Areas Policy Plan.

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RESOLUTION PZ 92-14  
OF THE PLANNING AND ZONING BOARD  
OF THE CITY OF FORT COLLINS  
APPROVING AND ADOPTING THE NATURAL AREAS  
POLICY PLAN AND RECOMMENDING THE INCLUSION  
OF THE "POLICY ELEMENT" OF SAID PLAN AS AN  
ELEMENT OF THE CITY'S COMPREHENSIVE PLAN

WHEREAS, the Goals and Objectives element of the City's Comprehensive Plan directs the City to: (1) ensure that future development will be accomplished so as to create the least degradation of the environment; (2) provide a balanced open space system, including recreational, scenic and natural areas, trails, parks and historical sites; and (3) seek citizen awareness, input and commitment towards maintaining the environmental quality of the area;

WHEREAS, the Land Use Policies Plan element of the City's Comprehensive Plan directs the City to prepare and utilize an environmental management plan which: (1) identifies environmentally scarce and valuable lands; (2) requires development to mitigate negative impacts on such lands; (3) promotes the incorporation of environmentally scarce and valuable lands; and (4) encourages landscaping of open spaces with appropriate native or drought resistant varieties of vegetation; and

WHEREAS, the City Council established a goal of enhancing the environmental quality of our community and, in Resolution 92-14: (1) accepted the "Framework for Environmental Actin for the City of Fort Collins" as a framework for achieving this goal; and (2) affirmed completion and implementation of a Natural Areas Policy Plan as a priority action item; and

WHEREAS, the Natural Areas Policy Plan is consistent with the foregoing Goals and Objectives, Land Use Policies and Council Resolution; and

WHEREAS, the Natural Areas Policy Plan identifies and evaluates important natural areas within the City and surrounding Urban Growth Area and constitutes a public statement of the City's goals, objectives and policies for their protection and preservation; and

WHEREAS, the Natural Areas Policy Plan has been reviewed and endorsed by the Natural Resources Advisory Board, the Parks and Recreation Board, the Storm Drainage Board and the Water Board; and


WHEREAS, upon review of said proposed Plan and upon public hearing by the Planning and Zoning Board, the Board has determined that the Plan should be approved and that Chapter 5 thereof, being the "Policy Element" of the Natural Areas Policy Plan, should be adopted as part of the City's Comprehensive Plan.

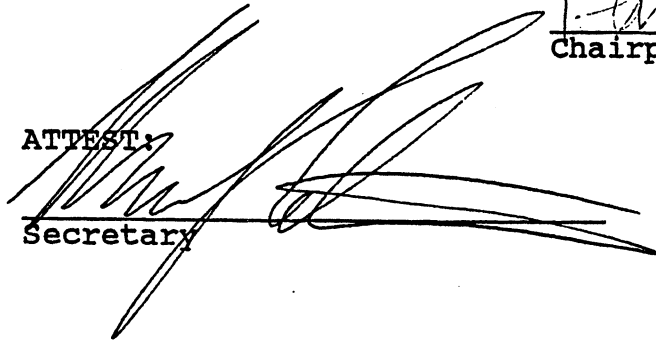
NOW, THEREFORE, BE IT RESOLVED BY THE PLANNING AND ZONING BOARD OF THE CITY OF FORT COLLINS as follows:

Section 1. That the Natural Areas Policy Plan is hereby approved and that Chapter 5 thereof, being the "Policy Element" of the Natural Areas Policy Plan, is hereby adopted for incorporation into the City of Fort Collins Comprehensive Plan.

Section 2. That the Natural Areas Policy Plan is recommended to the City Council for acceptance and that Chapter 5 thereof, being the "Policy Element" of the Natural Areas Policy Plan, is recommended to the City Council for approval and incorporation into the Comprehensive Plan of the City.

Passed and adopted at a regular meeting of the Planning and Zoning Board of the City of Fort Collins held this 28th day of September, A.D. 1992.

  
\_\_\_\_\_  
Chairperson

  
\_\_\_\_\_  
Secretary

ATTEST:

RESOLUTION 92-156  
OF THE COUNCIL OF THE CITY OF FORT COLLINS  
ACCEPTING THE NATURAL AREAS  
POLICY PLAN AND APPROVING THE "POLICY ELEMENT"  
OF SAID PLAN AS AN ELEMENT OF THE  
CITY'S COMPREHENSIVE PLAN

WHEREAS, the Goals and Objectives element of the City's Comprehensive Plan directs the City to: (1) ensure that future development will be accomplished so as to create the least degradation of the environment; (2) provide a balanced open space system, including recreational, scenic and natural areas, trails, parks and historical sites; and (3) seek citizen awareness, input and commitment towards maintaining the environmental quality of the area;

WHEREAS, the Land Use Policies Plan element of the City's Comprehensive Plan directs the City to prepare and utilize an environmental management plan which: (1) identifies environmentally scarce and valuable lands; (2) requires development to mitigate negative impacts on such lands; (3) promotes the incorporation of environmentally scarce and valuable lands; and (4) encourages landscaping of open spaces with appropriate native or drought resistant varieties of vegetation; and

WHEREAS, the City Council established a goal of enhancing the environmental quality of our community and, in Resolution 92-14: (1) accepted the "Framework for Environmental Action for the City of Fort Collins" as a framework for achieving this goal; and (2) affirmed completion and implementation of a Natural Areas Policy Plan as a priority action item; and

WHEREAS, the Natural Areas Policy Plan is consistent with the foregoing Goals and Objectives, Land Use Policies and Council Resolution; and

WHEREAS, the Natural Areas Policy Plan identifies and evaluates important natural areas within the City and surrounding Urban Growth Area and constitutes a public statement of the City's goals, objectives and policies for their protection and preservation; and

WHEREAS, the Natural Areas Policy Plan has been reviewed and endorsed by the Natural Resources Advisory Board, the Parks and Recreation Board, the Storm Drainage Board and the Water Board; and

WHEREAS, by Resolution PZ 92-14, the Planning and Zoning Board approved the Natural Areas Policy Plan and recommended that the Council accept the Natural Areas Policy Plan and approve Chapter 5 thereof, being the "Policy Element" of the Natural Areas Policy Plan, for incorporation into the City of Fort Collins Comprehensive Plan; and

WHEREAS, the Council has determined that it is in the best interest of the citizens of the City that the Natural Areas Policy Plan be accepted and that Chapter 5 thereof, being the "Policy Element" of the Natural Areas Policy Plan, be approved for incorporation into the Comprehensive Plan.

NOW, THEREFORE, BE IT RESOLVED BY THE COUNCIL OF THE CITY OF FORT COLLINS that the Natural Areas Policy Plan be and hereby is accepted and that Chapter 5 thereof, being the "Policy Element" of the Natural Areas Policy Plan, is approved

for incorporation into the City of Fort Collins Comprehensive Plan.

Passed and adopted at a regular meeting of the Council of the City of Fort Collins held this 6th day of October, A.D. 1992.

Susan Kutztrick  
Mayor

ATTEST:

Paul H. Henjak  
City Clerk