

Rock Creek Grasslands Open Space Management Plan



BOULDER COUNTY OPEN SPACE DEPARTMENT

Approved by the Boulder County Board of County Commissioners on
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PART ONE: BACKGROUND

1 INTRODUCTION

Rock Creek Grasslands Open Space consists of 15 properties (1,373 acres) combined to create a viable grassland similar to the grassland that once dominated the eastern portion of Boulder County (Figure 1). The property consists of gently rolling hills punctuated by intermittent drainages that empty into Rock Creek on the western side of the Open Space. With the growth of the surrounding communities of Louisville, Lafayette, and Broomfield, Rock Creek Grasslands has also come to serve as a buffer and a large open area on the borders of these communities.

For the last 60 years most of the properties that make up the Grasslands were used to grow winter wheat. Prior to being in dryland farming, some of the properties were mined for coal. Coal mining on the properties began in the 1900s and the last mine closed in 1950. Soon after the end of coal mining, the area beneath the Grasslands was recognized as part of a larger oil field and oil and gas wells began to appear on the property. Natural gas extraction continues on the property and is expected to continue for years to come.

The development of the eastern portions of Boulder County has been an economic boon to the County and to its residents. However, development and agricultural practices have had a severe impact on the native grasslands that once dominated this portion of the County. The remaining grassland is rare and fragmented. As a protected buffer between the growing communities of the eastern county, Rock Creek Grasslands can play a unique role in restoring and conserving this grassland.

The Rock Creek Regional Trail provides access to the western edge of the property. Now with the conversion of the property from cropland to grassland, Boulder County Parks and Open Space (BCPOS) sees an opportunity to expand educational opportunities on the site through the completion of the Rock Creek Regional Trail and the development of connector trails from adjacent residential developments to the Rock Creek Trail. This will allow BCPOS to educate the public about the history of the site, the process of conversion, and grassland. All this can be accomplished while protecting the grassland and the flora and fauna that call it home.

Staff is grateful to the stakeholders involved in developing the foundations for this plan through the Coordinated Resource Management Process led by, Colorado State University Master's degree candidate Ms. Jessica Jones and attended by neighbors of the Open Space and stakeholders and experts from around the County.

[illegible]

Map Created by Jesse Rounds 3/12/09
NAD 1983 HARN State Plane Colorado North FIPS 5001 feet
ENCLOSURE

This map is for illustrative purposes only, and is not suitable for parcel
specific decision making. The areas depicted here are approximate.
More site specific studies may be required to draw accurate conclusions.

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2 GENERAL DESCRIPTION OF THE PROPERTY

2.1 Location

The Rock Creek Grasslands Open Space consists of 1,373 acres located over parts of sections 12, 13, 14, and 23, T1S, R69W in the southeast corner of Boulder County. The Property is on the northwest edge of the City and County of Broomfield, east of U.S. Highway 287 and the Burlington Northern Railroad line, and south of the Two Creeks Open Space (Figure 2).

2.2 Property Context

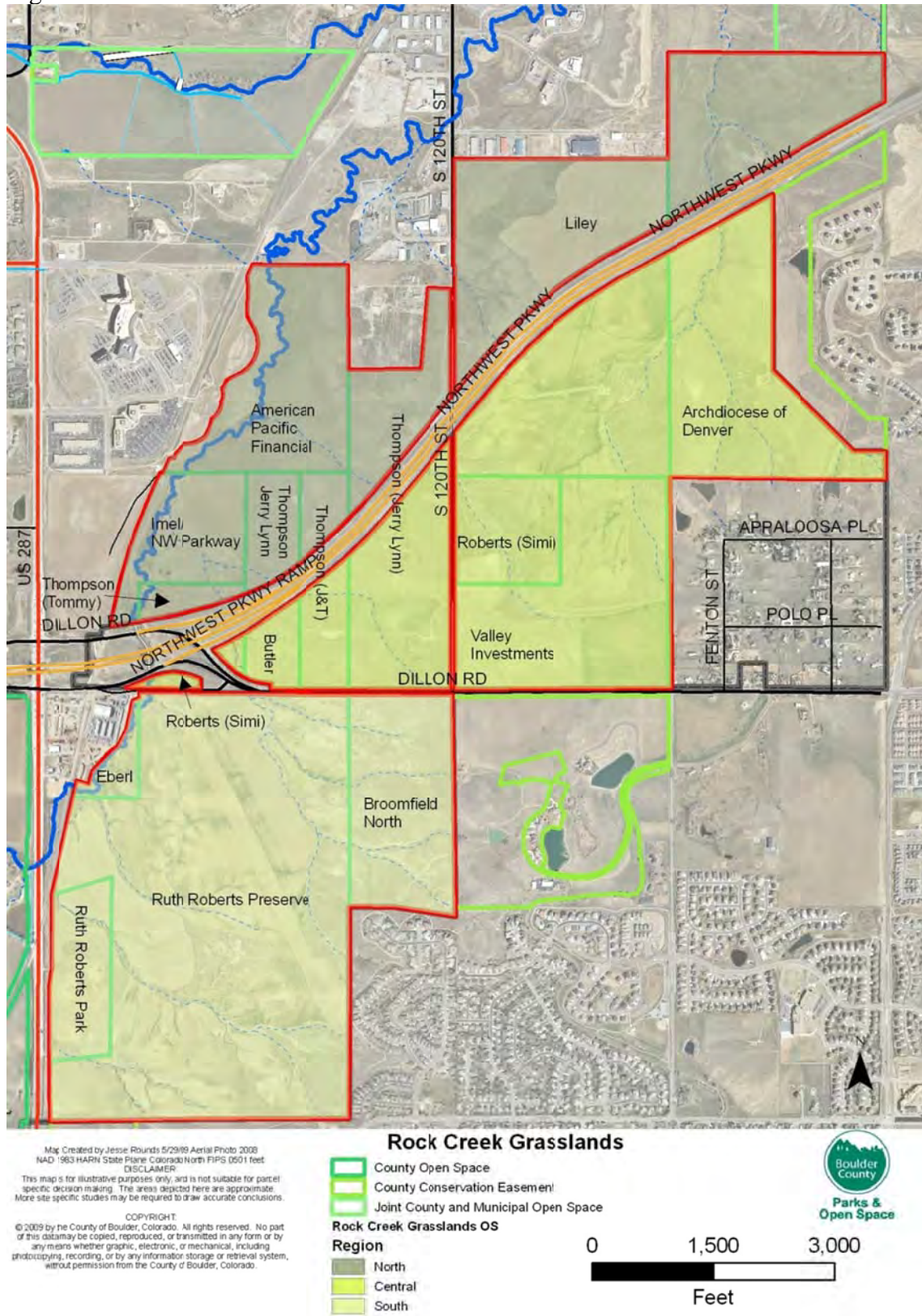
The Rock Creek Grasslands Open Space is situated in an area in which development displaced cropland. Dryland farming operations became less and less viable due to loss of farmable acreage and fragmentation of cropland. In addition, a significant portion of the remaining farmland left had marginal crop production potential. The Boulder County Comprehensive Plan recognized the growth potential of neighboring Lafayette, Louisville, Superior, and the City and County of Broomfield. In order to create a rural buffer, the County and the surrounding jurisdictions set aside this space as open space through intergovernmental agreements. This open space could limit development, provide areas for public recreation and education, and preserve unique resources in a rapidly urbanizing area of the County.

2.3 Access

The property has been closed to the public as agricultural land under lease. However, gates from the various properties' agricultural uses and roads enabling access to oil and gas claims are located at a number of locations on Rock Creek Grasslands. A total of 22 gates provide access to oil and gas wells and the remaining agricultural land on the property. Access to these gates is granted to lessees and the Department.

The western edge of the property is accessible by a segment of the Rock Creek Regional Trail. Approximately 1.1 miles of the trail run along the edge of the Open Space. The Rock Creek trail is largely complete from McCaslin Boulevard in Superior to Flagg Park in Lafayette. Once complete, the trail will connect with the Coal Creek Regional trail and will provide a 20-mile plus loop that will link Louisville, Superior, Lafayette, Erie and Broomfield residents.

Figure 2: Rock Creek Grasslands



2.4 Adjacent Land Use and Ownership

The Rock Creek Grasslands Open Space is surrounded by a variety of land uses. The City and County of Broomfield borders the southern and eastern edges of the Property. The Broomfield North Non-Urban Planned Unit Development is adjacent to the eastern boundary of the Broomfield North parcel and the southern boundary of the Valley Investments parcel. The Pony Estates Subdivision is adjacent to the eastern boundary of the Valley Investments parcel and the southern boundary of the Archdiocese of Denver parcel. A 60-ac. conservation easement granted by the Archdiocese of Denver to Boulder County is adjacent to the indented eastern edge of the Archdiocese parcel, to the east of this is the Broomfield Wildgrass neighborhood. Also bordering the eastern boundary of the Archdiocese of Denver parcel is the Broomfield Anthem neighborhood.

Much of the north and northwest sides of the Rock Creek Grasslands Open Space is bordered by the City of Lafayette. The Boulder County and Lafayette Jointly Owned Two Creeks Open Space is north of the Archdiocese of Denver property. Lafayette's Rock Creek West Open Space borders the American Pacific Financial parcel to the north and west.

The Burlington Northern Railroad and U.S. Highway 287 run along much of the western edge of the Property. Lafayette is proposing to develop a parcel of land south of the Exempla Hospital and west of the Imel/Northwest Parkway parcel as a potential large retail location.

Across Highway 287 from the Ruth Roberts Park parcel is the Carolyn Holmberg Preserve. This property, owned by Boulder County Parks and Open Space, contains a working farm, popular recreational trails, and a conference center for registered non-profits.

2.5 Terms of Acquisition

The Rock Creek Grasslands Open Space is composed of a dozen parcels that were obtained from 1992 to 2004:

JL Thompson

Boulder County purchased 126.64-ac. in two closings in 1992 and 1994. An additional 40 acres adjacent to the west were then purchased in 1995. These properties were designated Proposed County Open Space in the Boulder County Comprehensive Plan (BCCP). The Northwest Parkway IGA between Boulder County, Louisville, Lafayette, and Broomfield listed them as land to be left open along the highway corridor.

Boulder County has granted a one-sixth interest in a conservation easement each to the City and County of Broomfield (Boulder County and the City and County of Broomfield 1994), the City of Lafayette (Boulder County and the City of Lafayette), and the City of Louisville (Boulder County and the City of Louisville, 1994) over the parcel. The easement prohibits Boulder County

from allowing, “any fire to be set, controlled, or uncontrolled, or any hunting, trapping, or poisoning of wildlife”, on the parcel.

Tommy Thompson

Boulder County purchased this 13.37-ac. Property in 1994. It was designated Proposed County Open Space in the BCCP. The Northwest Parkway IGA listed it as land to be left open along the highway corridor.

Boulder County has granted a one-sixth interest in a conservation easement each to the City and County of Broomfield (Boulder County and the City and County of Broomfield, 1994), the City of Lafayette (Boulder County and the City of Lafayette), and the City of Louisville (Boulder County and the City of Louisville, 1994) over the parcel. The easement prohibits Boulder County from allowing, “any fire to be set, controlled, or uncontrolled, or any hunting, trapping, or poisoning of wildlife”, on the parcel.

Broomfield North

Boulder County purchased this 80.13-ac. annexed property in four closings from 1994 to 1997. The Northwest Parkway IGA listed this as land to be left open along the highway corridor.

Ruth Roberts Preserve

Boulder County purchased this 410.94-ac. property in 11 closings from 1994 to 2002. It was designated Proposed County Open Space in the BCCP as part of the Louisville/Lafayette/Broomfield Buffer (a.k.a. the Rock Creek Buffer East and West). The Northwest Parkway IGA reaffirms the intent to preserve this property as open space.

Butler

Boulder County purchased this 40.04-ac. property in two closings in 1995 and 1996. The BCCP designated it as Proposed County Open Space. The Northwest Parkway IGA listed it as land to be left open along the highway corridor.

Simi Roberts

Boulder County purchased the 26.76-ac. parcel south of the Tommy Thompson parcel in 1995 and the 41.04-ac. parcel on the east side of 120th St. in 1996. The BCCP designated this property as Proposed County Open Space. The Northwest Parkway IGA listed it as land to be left open along the highway corridor.

Valley Investments

Boulder County purchased this 117.11-ac. property in 1996. The BCCP designated the property as Proposed County Open Space as part of the Louisville/Lafayette/Broomfield Buffer. The Northwest Parkway IGA listed it as land to be left open along the highway corridor.

There is a 40-ft. private easement that runs along the eastern boundary of the property for roadway purposes.

Archdiocese of Denver

Boulder County purchased 200 acres in 1997. The BCCP designated this property as Proposed County Open Space and part of the Louisville/Lafayette/Broomfield Buffer. The Northwest Parkway IGA listed the property as land to be left open along the highway corridor.

The Archdiocese of Denver granted a conservation easement to Boulder County over an additional 61 acres immediately to the east.

Further, Boulder County granted a conservation easement on the parcel to the City and County of Broomfield and the City of Lafayette in 1997. The easement prohibits Boulder County from allowing, “any fire to be set, controlled, or uncontrolled, or any hunting trapping, or poisoning of wildlife,” on the parcel (Boulder County et al, 1997a).

Liley

Boulder County purchased this 216.9-ac. property in three closings from 1997 to 1999. The BCCP designated the property as Proposed County Open Space. The Northwest Parkway IGA listed the property as land to be left open along the highway corridor.

Boulder County granted two conservation easements on this parcel group. The first easement was granted to the City of Broomfield in 1997, covering the southern 71.282 acres of the parcel (Boulder County et al, 1997b). The second easement was granted to the City and County of Broomfield and the City of Lafayette in 1999 and covers the northern 77.911 acres (Boulder County et al, 1999). Both easements prohibit Boulder County from allowing, “any fire to be set, controlled or uncontrolled, or any hunting or trapping or poisoning of wildlife,” on the parcel.

Eberl

Boulder County purchased this 10.05-ac. property in 1998 to protect the Rock Creek corridor, which runs through the entire property, and to provide a link in the future construction of the Rock Creek Trail. The BCCP designated the property as Proposed County Open Space as part of the Louisville/Lafayette/Broomfield Buffer and also as a Conceptual Trail Alignment.

American Pacific Financial

Boulder County purchased this 89.31-ac. annexed property in 2000. It was purchased for agricultural preservation and as a regional trail connection. It preserves over one-half mile of the Rock Creek Corridor.

Imel/Northwest Parkway

The Northwest Parkway Public Highway Authority conveyed this 41.85-ac. property to BC in 2004 for open space purposes as a compensation requirement in the Northwest Parkway IGA.

2.6 Boulder County Comprehensive Plan

The properties that make up the Rock Creek Grasslands and the surrounding area are mentioned in the following sections of the Boulder County Comprehensive Plan:

- The *Southeast Boulder County Intergovernmental Agreement* contains significant direction with respect to the proposed character of the Rock Creek Grasslands (“Comprehensive Plan Map - Intergovernmental Agreements Between Boulder County and Municipalities”);
- *Major Geologic Hazards* exist on the southwestern portion of the site and in two isolated areas on the Liley and Archdiocese of Denver properties (“Comprehensive Plan Map - *Geologic Hazard & Constraint Areas*”) Approved by the Boulder County Commissioners: April 6, 1978.
- *Trail Corridor* on Broomfield North property and *Trail Alignment* on western edge of Grasslands (“Comprehensive Plan Map – County Trails Map”) adopted on January 20th 1999 by Boulder County Planning Commission.
- *Travel Route* on western edge of property along Rock Creek and *Archaeologically Sensitive Area* on Ruth Roberts Preserve (“Comprehensive Plan Map – Archaeologically Sensitive Areas”) adopted on November 30th 1983 by Boulder County Planning Commission.

2.7 Encumbrances and Easements

Rock Creek Grasslands is a single management unit formed from the combination of 16 properties. Many of the properties within Rock Creek Grasslands carry a number of easements affecting access and management. The effect of these easements will be described in detail within the management plan where the stipulations of a particular easement impact management practices. A complete list of easements is provided in Appendix A.

3 CURRENT MANAGEMENT

Rock Creek Grasslands Open Space is closed to the public as an agriculturally leased property. The majority of the Open Space is fenced in order to protect areas of undisturbed grassland and allow areas currently under conversion to remain unmolested.

The last 90 acres of cropland was harvested in 2010. While no active dryland farming remains on the properties, there is an on-going effort to convert former cropland to native grassland species. From the beginning of the revegetation efforts, much of the restoration process has been performed by the agricultural tenant. These activities include tillage, planting of cover crop and mowing for weed management. The conversion activities are being carried out at the direction, and under the guidance, of

BCPOS Agricultural Resources with funding from the Resource Management Work Group. There is also an agricultural lease for grazing on the Broomfield North property.

To convert the former cropland to native grassland, BCPOS staff worked closely with the Rock Creek Grasslands tenant. The program began after the tenant and staff agreed that the marginal cropland could not be profitably farmed. In 2001, the project was included in the Capital Improvement Program (CIP) as a large scale conversion. At that point, the conversion project expanded to include all properties within Rock Creek Grasslands and became a joint project between Resource Management and Agricultural Resources.

Once the project became part of the CIP, staff partnered with the tenant at the time to do all tillage, seed bed preparation, and cover crop planting. In the early years of the process a contractor planted the native seed mix. Highly variable results led to the Agricultural Resources staff purchasing appropriate equipment and doing all of the seeding of the native grasses using internal time and labor. The partnership between Agricultural Resources and Resource Management within BCPOS led to the staff using multiple resources including field surveys and the Natural Resources Conservation Service to develop an appropriate seed mix. The partnership between BCPOS and the tenant meant savings for the county, continued income for the farmer, and a chance to participate in the conversion of a property which the tenant's family was first to plow and grow crops.

Access to much of the site is limited to BCPOS staff for monitoring, management, and resource protection activities; the agricultural tenants; and operators of the oil and gas leases on the site. In 2010 the Department of Transportation completed a missing link in the Rock Creek Regional Trail using an alignment crossing Ruth Roberts and the Eberl properties. Trespass continues to be a major issue on the site and has an impact on both plants and wildlife. Resource Protection staff within BCPOS have identified major access points and continue to attempt to limit access using fencing and regular patrols.

4 PLANNING OVERVIEW

4.1 Purpose and Need for Management Plan

Boulder County Parks and Open Space is intent on managing open space with a long-term vision. When first purchased, the majority of properties that make up the Rock Creek Grasslands Open Space were being actively farmed. With the development of the Northwest Parkway, Boulder County and the surrounding communities recognized the value of maintaining the area as an open space buffer. Though the area continued to be farmed, loss of acreage and the marginal nature of the acreage available made farming continuously less profitable. It was at this point that Boulder County Parks and Open Space recognized the value of converting the property to native grassland. This conversion is nearly complete, so it is important to develop a strategy for maintaining a native grassland on the property for the long term.

In order to develop and manage Rock Creek Grasslands Open Space over the long term, any actions taken on the site need to be viewed within a larger context. This management plan provides that context. Through the development of a vision, establishment of short- and long-term goals and objectives, and the creation of an implementation strategy, this management plan will guide future actions on the Rock Creek Grasslands Open Space.

This document should be viewed within the context of existing plans and documents. The Boulder County Comprehensive Plan supports the development of management plans for Open Space Properties. Intergovernmental Agreements, the BCPOS Grasslands Management Policy, easements, and the Coordinated Resource Management planning process all provide a framework in which to develop a management plan. With empirical data gathered by BCPOS staff, actions can be developed to guide future management. This document provides both the background and the proposed management actions for the Rock Creek Grasslands Open Space.

While this management plan does provide a long-term vision for the Open Space, it is imperative to note that the plan should be regularly reviewed. As conditions change on the grassland and in the surrounding communities, planned actions will need to be adjusted to meet the vision for the property.

4.2 Intergovernmental Agreements

Four intergovernmental agreements (IGA) have an impact on the planning and management of Rock Creek Grasslands. These agreements arose for different reasons, but all have reiterated the open space's importance as a buffer between the growing communities of Broomfield, Lafayette, and Louisville.

In 1991, the Northwest Parkway Comprehensive Development Plan IGA included a section on the use and development of "open space" parcels affected by the development of the Northwest Parkway. The IGA restricts developments to those already approved or zoned prior to the passage of the IGA in the affected area. It further restricts open space development to "passive recreational uses." In order to ensure appropriate development on the property the IGA requires the formulation of an Open Space Lands Management Committee to review and recommend a management plan to the Boulder County Parks and Open Space Advisory Committee and the Boulder County Board of County Commissioners.

The Southeast Boulder County Area Comprehensive Development Plan IGA (1997) explicitly recognized the Rock Creek Grasslands area as community buffer. The Plan further defined the procedure by which open space could be purchased in the area affected by the plan without affecting the ability of the signatories to complete the Northwest Parkway. The agreement also tendered to each of the signatories an undivided interest in a conservation easement over all lands purchased for open space within the subject area. Finally, the IGA defines the uses the open space can serve and recognizes the rights of both Broomfield and Lafayette residents to use the open space amenities provided by Boulder County. In 1999 the parties from the 1997 IGA ratified the "Southeast Boulder County, South 96th Street, Dillon Road, and US 287

Area Comprehensive Development Plan.” This plan included the City of Louisville as a party of the IGA and altered some of the wording regarding the Northwest Parkway to recognize that more concrete decision had been made in the intervening two years.

The 1998 IGA between the City of Broomfield and Boulder County, “Concerning the Proposed City and County of Broomfield,” recognized the role that Rock Creek Grasslands plays in shaping the northern border of the City and County of Broomfield. The IGA also established a cost to Broomfield for the open space based on the tax revenue that would have gone to paying off the purchase of the open space if portions of Broomfield had remained part of Boulder County. As a result of this provision the City and County of Broomfield contributed \$8.9 million toward the purchase price of twelve of the properties that now make up Rock Creek Grasslands Open Space. In the IGA it is explicitly stated that Broomfield residents shall have access and rights to the open space, “upon the same terms and conditions to which Boulder County residents are subject.” Finally, the IGA states that when future open space facilities are considered for the properties, “the two entities shall consider joint funding of said facilities.”

The Intergovernmental agreements listed above are viewed as the basis for continued cooperation between all parties with respect to the planning, development, and management of Rock Creek Grasslands.

4.3 Intended Use of Management Plan

Boulder County Parks and Open Space manages more than 60,000 acres of Open Space within Boulder County. Each parcel comes into the BCPOS inventory with different existing conditions and each property is destined for a unique purpose. In order to best manage these disparate landscapes, BCPOS drafts management plans.

Management plans combine expert analysis with public input to create guidance for how BCPOS will develop, manage, and maintain individual properties. Any management plan begins with the collection of baseline data. An interdisciplinary team within BCPOS gathers this data. This information can then be extrapolated to predict future trends. Public input is sought regarding preferred uses for particular parcels. In order to begin the development of a management direction, existing conditions, trends, and public input are combined to create goals. The interdisciplinary team then gathers to develop steps to reach the goals created in concert with the community. These actions form the management plan for a particular open space property.

This management plan documents the current uses occurring within the Rock Creek Grasslands Open Space and develops specific actions that can be taken to help guide the property towards the condition desired by BCPOS. Staff worked closely with community stakeholders and internally to develop a management direction for this management plan and for the Rock Creek Grasslands Open Space. It should be noted that staff may take actions not outlined here in order to manage the property for the values noted throughout the document and based on the Department’s mission.

4.4 Property Description

Rock Creek Grasslands Open Space is managed by BCPOS as a single management unit as opposed to individual properties. Therefore, this plan will generally not identify specific properties. Instead the plan divides the property into three subunits defined by the roads that divide the property. In some cases property names will remain in order to identify specific conditions that will affect the management of that property or to clarify location issues.

The two major roads that cross the property, Dillon Road and the Northwest Parkway, define the three subunits. The north Subunit, called Rock Creek Grasslands North, consists of all sections of properties north of the Northwest Parkway. Rock Creek Grasslands Central includes all areas between the Northwest Parkway and Dillon Road. The Rock Creek Grasslands South subunit includes all properties and portions of properties south of Dillon Road. Figure 2 shows how the property is divided.

4.5 Stakeholder Process

Open space is a public good. In other words, it provides a service to the public at large; its intent is to provide this good to all users without diminishing that good for other users. This difficult task requires input from the public.

4.5.1 Collaborative Process

Boulder County Parks and Open Space uses a number of tools to develop management plans for parks and open space. The Department gathers empirical data on the open space being studied, it gathers data on surrounding uses, it looks at use patterns for similar open spaces in the County and in the State, and it gathers input from user groups.

For the Rock Creek Grasslands Management Plan, BCPOS chose to gather stakeholder input using a method called Coordinated Resource Management (CRM). The CRM method was devised to capitalize on local knowledge of resources and use patterns to best protect, preserve, and manage resources.

The CRM process was managed by Ms. Jessica Jones as part of her masters degree program at Colorado State University and implemented by the Agricultural Resources staff. The process consisted of six stakeholder meetings and several visits to the Grasslands. Participants were given access to subject-matter experts and each meeting was an open discussion of the pros and cons of different management decisions led by BCPOS staff and technical experts.

The process was not carried out to develop the management plan, but to provide yet another form of guidance to BCPOS staff on the direction for the management plan based on the input of the stakeholders.

The result of the stakeholder process and the stakeholders involved can be found in Appendix B.

4.6 Public Meetings

Internal scoping such as the opportunities and constraints listed above led to draft plans and internal discussions of management goals. However, it is important to develop a public process that checks in with stakeholders during the internal scoping process and then fully vets the plan after it is drafted.

To that end, staff met with the Broomfield Open Space and Trails Advisory Committee and with neighboring Boulder County residents in order to test ideas and find common ground. This occurred during the drafting of the document.

In 2011, the planning team finalized a draft for public comment. After a draft plan was complete the team created a schedule for public input. The team presented the plan to the Broomfield Open Space and Trails Advisory Committee and through a public meeting before presenting a final draft to the Boulder County Open Space Advisory Committee. With three public venues for comment as well as an open comment period complete, the plan was then presented to the Boulder County Commissioners for final approval during a Public Hearing.

4.7 Plan Format

Part two of this plan is the management plan. The plan is organized to elucidate the purpose for managing the property, provide background on the resources extant on the property, and then provide a general overview of the methods BCPOS expects to use to manage the shared vision for the property's future. Actions proposed in the plan are subject to the availability of staff, funding, and policy changes.

The latter stages of this document serve to provide guidance to the Parks and Open Space Department's staff as well as to the community as a whole. As such, this plan should be updated and amended as conditions change on the property. It is recommended that as more data becomes available portions of the plan be reviewed and revised as necessary.

PART TWO: Management Plan

1 VISION STATEMENT

Rock Creek Grasslands will provide a diverse grassland ecosystem as a buffer between the communities of Lafayette, Louisville, and City and County of Broomfield. Through the restoration of both the grassland and Rock Creek, visitors will have a chance to see and experience native grassland on the edge of their community.

2 MANAGEMENT DIRECTION

Rock Creek Grasslands Open Space was acquired in order to provide an open space buffer between the growing communities of Broomfield, Louisville, and Lafayette. This buffer serves many purposes beneficial to these surrounding communities. It allows increased connectivity between communities through via trails, provides viewsheds, protects the floodplain during flood events, and provides habitat for wildlife.

In order to reach the goal of providing a sustainable buffer space, Boulder County Parks and Open Space's goal is to establish a permanent grassland made up of native species that will develop healthy ecosystem functions similar to an intact, native grassland. It will provide all of the values associated with native grasslands: habitat for flora and fauna, protection of soil, healthy watershed, and recreational opportunities. This process involves preparation of the soil for planting the agricultural fields to native species, controlling weeds, use of cover crops and planting multiple seed mixes containing grasses, forbs and shrubs that were historically native to the sites within the project area.

Visitors will have a chance to see the grassland up close, appreciating a native grassland ecosystem in all its constituent parts. Educational and interpretive opportunities will be provided in addition to access across the property to a regional trails network.

3 MANAGEMENT GOALS

Management of the Rock Creek Grasslands Open Space shall be based on the goals and direction of a number of different guiding documents. The Boulder County Comprehensive Plan (BCCP) provides broad goals and policies for the protection and interpretation of natural and cultural resources (Open Space 2.01 & 2.04), manage invasive species (OS 2.05), create a coherent trail system (OS 3.01), provide for recreational opportunities in accordance with the overall mission of BCPOS (OS 4.02 & 4.03), and provide trails for public use (OS 6.0).

The Boulder County Parks and Open Space Department's mission as defined by the Board of County Commissioners is:

To conserve natural, cultural, and agricultural resources, and provide public uses that reflect sound resource management and community values.

In 1997, Boulder County, the cities of Lafayette and Louisville, and the City and County of Broomfield signed the Southeast Boulder County Area Comprehensive Development

Plan IGA. In a section regarding open space policy for the area bordered by Lafayette, Louisville, Broomfield, and unincorporated Boulder County a series of guidelines is laid out for open space:

- *Open space shall serve one or more of the following functions:*
 - *Urban shaping between or around municipalities or community service areas and buffer zones between residential and non-residential development;*
 - *Preservation of critical ecosystems, natural areas, scenic vistas and areas, fish and wildlife habitat, natural resources and landmarks, and cultural, historical and archaeological areas;*
 - *Linkages and trails, access to public lakes, streams and other usable open space lands, stream corridors and scenic corridors along highways;*
 - *Areas of environmental preservation, designated as areas of concern, generally in multiple ownership, where several different preservation methods (including other governmental bodies' participation or private ownership) may need to be utilized;*
 - *Conservation of natural resources, including but not limited to forest lands, range lands, agricultural lands, aquifer recharge areas, and surface water;*
 - *Preservation of land for outdoor recreation areas limited to passive recreational use, including but not limited to hiking, photography or nature studies, and, if specifically designated, bicycling, horseback riding, or fishing;*
 - *Underground public facilities, public utility mains, lines; other public facilities may be located thereon where approved by the governing bodies of each of the Parties.*

Based on analysis of the BCCP, the Department's mission statement, the Department's Grassland Management Plan, this property's resource evaluation, and the Coordinated Resource Management Exercise carried out in 2006, staff developed the following as a list of foundational management goals for the property:

- *Provide an open space buffer for surrounding communities;*
- *Enhance and protect the native grassland habitat on the property;*
- *Protect and maintain the wetlands and riparian areas on the property;*
- *Create a coherent trail system to enhance both local and regional trail systems.*
- *Interpret the area's history and ecology.*

4 MANAGEMENT STRATEGY

The overall goal of this management plan is to develop a path toward protecting and enhancing the grassland, wetland, and riparian habitats, while ensuring access to and across the Open Space. The Rock Creek Grasslands Open Space provides a unique opportunity to protect and enhance grasslands but also to carry out and study the restoration of agricultural land back to native grassland. Rock Creek Grasslands Open Space will be managed to highlight the value of native grasslands within the development surrounding the open space.

Managing the restoration of cropland to native prairie will require the application of the tools available to BCPOS staff. Staff will use the best available science, field-tested principles, and BCPOS policies to manage Rock Creek Grasslands using an adaptive

management approach. Adaptive management allows staff to make management decisions in a more flexible manner, allowing for faster decision-making.

The first stage of management is to complete the conversion of agricultural land to native grassland. This process began in 1996 and is scheduled to be complete by late 2011 if weather cooperates and funding is available. The second stage will be to foster the growth of diverse plant and animal communities through regular maintenance and sometimes, intense management.

Once all former cropland has been seeded, management for the next 3 to 4 years will likely consist primarily of maintenance for weed control. It is expected that some re-seeding or interseeding may be necessary and will be completed during that same timeframe.

Enhancing Diversity

Management activities that will enhance biological diversity and heterogeneity across the project area will begin to be implemented in the short term and will continue indefinitely as needed. Several plantings of bare root and containerized shrubs in the relatively moist soils in the bottoms of some of the larger draws was initiated in the last several years. These plantings will continue in order to establish “patches” of shrub species that do not establish well from direct seeding.

The seed mix formulations and planting methods used on the restoration project were designed to provide for as much plant diversity as possible. The varying soils and topography will influence the plant materials that were seeded and will contribute significantly to the diversity of plant communities as they establish and develop across the project area. Further diversity can be achieved through prescribed burning and grazing. Some of the areas that were seeded in the early years of the project have begun to experience a decline in the health of the plant communities there. Fire and grazing are important ecological disturbances to grasslands. As prescribed tools, they will benefit the health and diversity of the areas for plants and wildlife.

Over the long term, management will shift to maintaining the health of the restored grassland and riparian habitat within Rock Creek Grassland. The shift will involve continued resource protection activities and increased long term monitoring of plant communities, wildlife, and ecological function of the grassland. Maintaining plant diversity, vigor, and overall ecosystem health will be key elements of long term management.

The key management activities to achieve these objectives will be dominated by addressing weed issues as monitoring identifies them, application of prescribed fire and grazing, manipulation of prairie dog populations and ongoing attention to the needs of the shrub “patch” plantings.

All of this should be carried out in a manner that is supportive of public involvement and education. Management activities that may directly impact neighbors and users will require both outreach and education before, during, and after these actions are taken.

Continued dialogue may also allow for a more nimble approach to future planning and management activities.

Rock Creek Grassland's role as a buffer between communities offers the opportunity to involve the elected and appointed officials from these communities in future planning and management as well. By involving surrounding communities, the plans gain support and become more possible to carry out in the long term.

5 PHYSICAL RESOURCES

5.1 Climate

The climate of the Lafayette area can be described as a high plains, continental climate, with light rainfall and low humidity situated in the rain shadow of the Rocky Mountains. Winds are channeled from the Continental Divide down the Front Range and can be severe. Prevailing winds are generally from the west (USDA, 1975).

The average high temperature in July is 88° F, and the average low in January is 14° F (Weatherbase, 2010). Temperatures fluctuate greatly between day and night, often differing by 25° to 30° F. Annual precipitation averages 16 inches with the most rainfall occurring from May to July. Annual snowfall is 31 inches with March being the snowiest month (Weatherbase, 2007). Relative humidity is about 30-35% in the summer and about 40-50% in the winter. Periods of drought are frequent, usually occurring in the fall and winter. The length of the growing season is approximately 140 days. The average date of the first killing frost is September 28 with the last killing frost occurring around May 11 (USDA, 1975).

5.2 Topography

Located about 10 miles east of the Front Range of the Southern Rocky Mountains, the Rock Creek Grasslands Open Space is characterized by gently rolling terrain with many, steeply sloped, intermittent drainages meandering to the northwest towards Rock Creek. Most of north and central properties east of 120th drain to the north east, where the confluence with Rock Creek and Coal Creek is on the Stephenson-Nelson property.

The grasslands highest point (5460 feet) is located in the southwestern part of Rock Creek Grasslands South near the border with the City and County of Broomfield. The lowest point is approximately 5160 feet located just east of the 120th Street at the corner of Rock Creek Grasslands North.

5.3 Geology

The Boulder County Comprehensive Plan shows portions of the Rock Creek Grasslands Open Space are classified as major or moderate geologic hazard areas or are moderate geologic constraint areas (Boulder County, 1999). Areas of major and moderate geologic hazard are recognized as containing potential for risk related to

intensive land uses (Boulder County, 1999). Potential problems include subsidence (abandoned coal mines), expansive soil or claystone, flooding, and landslides (Figure 3).

The Rock Creek Grasslands Open Space lies over the Boulder-Weld Coal Field, which extends for about 160 square miles from Marshall in Boulder County to Firestone in Weld County. Coal is found in roughly five zones in the lower portion of the Laramie Formation (Colorado Department of Natural Resources, 1986). Coal in this area is largely lower quality sub-bituminous and has low importance in the current National Coal Resource Assessment. This coal is unlikely to be utilized within the next 20 to 30 years.

The Rock Creek Grasslands Open Space also lies over the Wattenberg Oil and Natural Gas Field. This field is the eighth largest field in the U.S. in terms of natural gas production and 22nd in oil production (Cappa et al, 2006). It covers parts of Adams, Boulder, Broomfield, Larimer, and Weld Counties.

5.4 Soils

The soils of the Rock Creek Grasslands Open Space fall primarily under two associations. The Samsil-Shingle association that makes up most of the property is associated with gently sloping to moderately steep, shallow soils on shale or sandstone hills and ridges. The Nunn-Heldt association is characterized by nearly level to moderately sloping, deep soils on terraces and uplands (Soil Conservation Service, 1975).

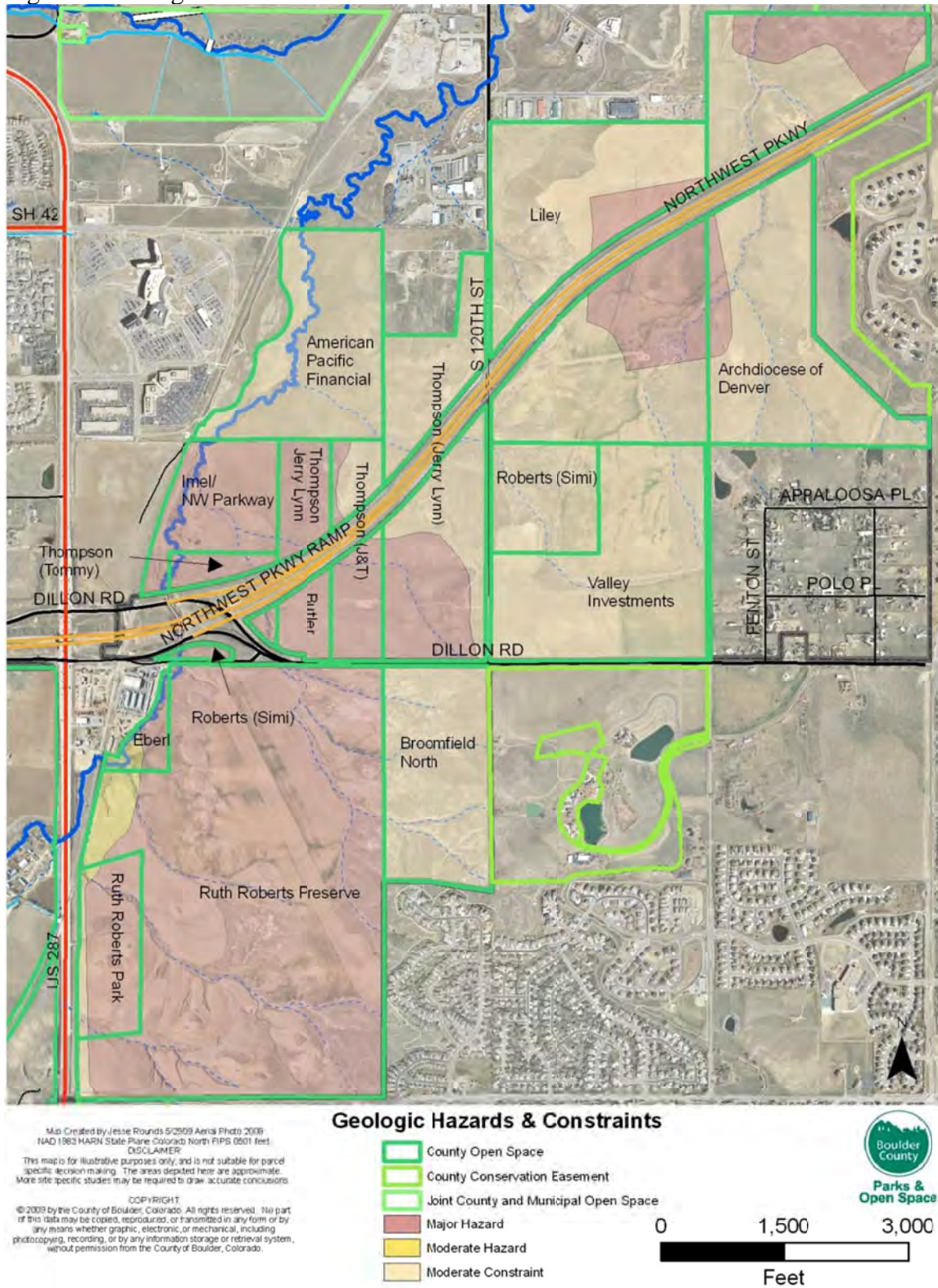
The Property represents six different soil series composed of 10 different soil mapping units (Figure 4):

Colby Series

CoC – Colby silty clay loam, three to five percent slopes, runoff is medium, erosion hazard is moderate to high, capability class VIe-1.

CoD – Colby silty clay loam, five to nine percent slope, runoff is rapid, erosion hazard is high, capability class VIe-1.

Figure 3: Geologic Hazards and Constraints





Gaynor Series

GaD – Gaynor silty clay loam, three to nine percent slopes, runoff is rapid, hazard of water erosion and wind blowing is high, capability class VIe-1.

Heldt Series

HeB – Heldt clay, zero to three percent slopes, runoff is medium to rapid, erosion is hazard is moderate, takes water slowly, difficult to work, capability class IVe-4.

HeC – Heldt clay, three to five percent slopes, runoff is rapid, erosion hazard is high, takes water slowly, difficult to work, capability class VIe-1

McClave Series

Mm – McClave clay loam, zero to one percent slopes, runoff is slow, erosion hazard is slight, capability class IIw-1.

Nunn Series

NnB – Nunn sandy clay loam, one to three percent slopes, runoff is medium, permeability is moderately slow, erosion hazard is moderate, capability class IIe-2.

NuB – Nunn clay loam, one to three percent slopes, runoff is medium, permeability is slow, erosion hazard is moderate, capability class IIIs-1.

NuC – Nunn clay loam, three to five percent slopes, runoff is medium, permeability is slow, erosion hazard is moderate, capability class IIIE-7.

Samsil Series

SeE – Samsil-Shingle complex (40 percent Samsil clay and 40 percent Shingle soils), five to twenty-five percent slopes, runoff is rapid, erosion hazard is high, capability class VIe-3.

5.5 Hydrology

The major water feature of the Rock Creek Grasslands Open Space is Rock Creek, which flows across the western edge of the Property in a northeasterly direction. As catalogued by the USGS, Rock Creek is part of the St. Vrain watershed and is considered to be a part of the South Platte watershed by the Colorado Division of Wildlife (Boulder County, 2002b). Rock Creek was intermittent in the past in this area but now experiences year round flows with continuous contributions from Superior's wastewater treatment plant. Irrigation water combined with stormwater drainage from increased urban development upstream from Broomfield and Superior likely also contribute to the continuous flows and more frequent flood events (Biohabitats, 2009). This increase in runoff has had detrimental effects on the stream including, increased erosion, deepening of the stream channel, and loss of vegetation.

Under the stream classification system developed by Rosgen (1996), Rock Creek is an E/F6 channel. The letters represent the shape and form; E is for meandering streams, and F is for entrenched streams. The number represents rock and soil types; 6 is for silt/clay. Streams in silt clay soils typically are entrenched since these soils are highly erosive.

In 2008, a BCPOS contractor completed a stream assessment of 19 reaches of Rock Creek on 12 Open Space properties (Biohabitats, 2008). The assessment listed all reaches studied as either “Moderate” or “Low Functioning”. Moderate Functioning streams are those that have “some or most of the desirable stream and riparian characteristics but which have a high likelihood of degradation with winds, waves, [and] overland flows.” Low Functioning streams are, “clearly lacking all or most desirable characteristics listed.” The reaches of Rock adjacent to Rock Creek Grasslands South are listed as Moderate Functioning. The reaches adjacent to Rock Creek Grasslands North were listed as Low Functioning.

There are several intermittent drainages that run across the Property. They run in a northwest to north direction into Rock Creek and Coal Creek. These intermittent drainages provide unique habitat for plants and wildlife. Some of the drainages are eroding from stormwater runoff that has been diverted to these drainages.

5.6 Mining Resources

5.6.1 Oil and Natural Gas

Drilling within the Wattenberg Oil and Gas Field is expected to increase in the future. Since 2003, the number of feet drilled in Colorado has increased 156 percent (Cappa et al, 2006). In 2005, the Colorado Oil and Gas Conservation Commission approved an amendment to Rule 318A that would allow companies to increase the number of wells in each quarter section from five to eight wells. The additional wells are to be directionally drilled from previously established drilling windows unless the surface owner authorizes another location (Cappa et al, 2006).

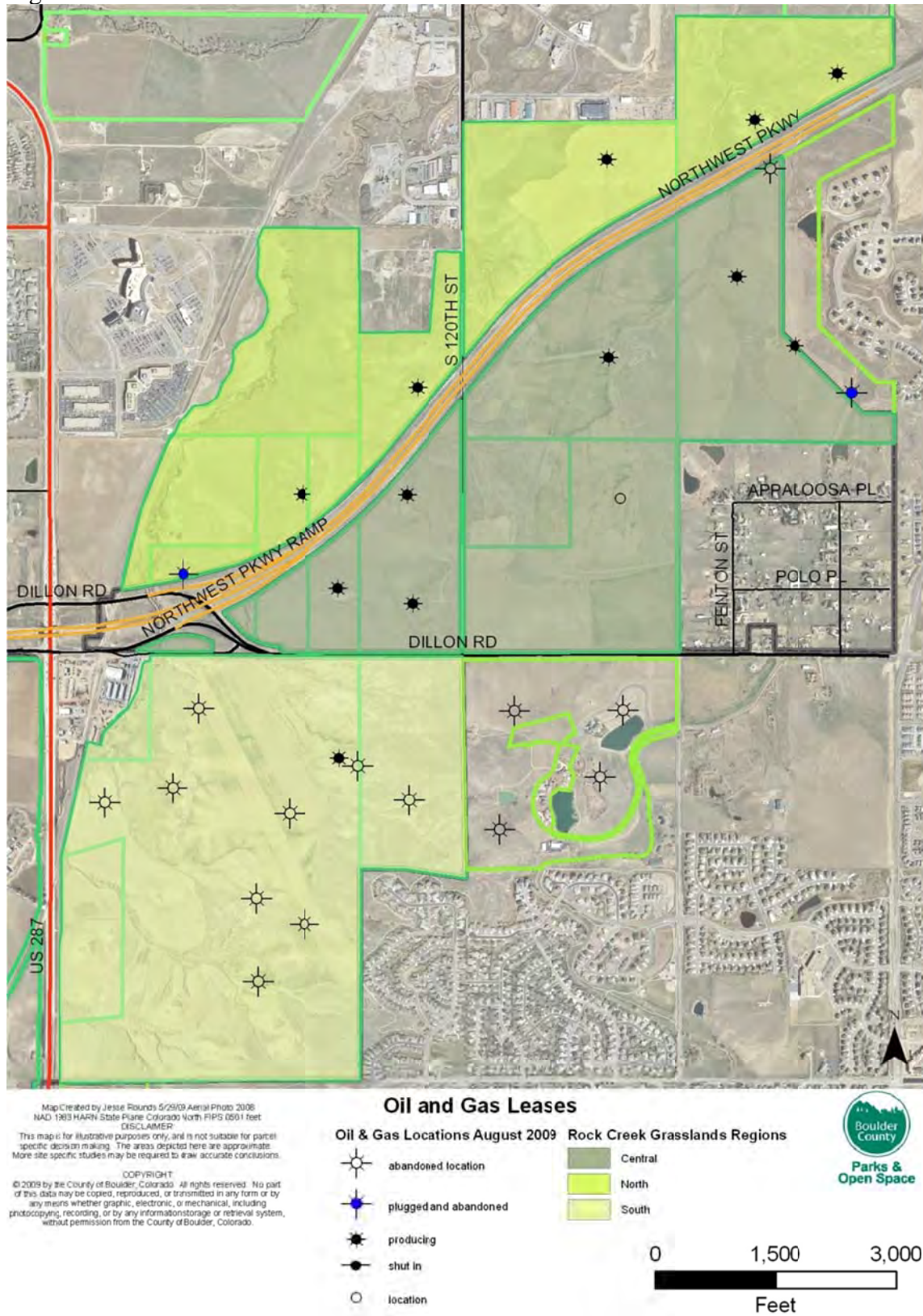
Houston-based Noble Energy Incorporated, which is the major stakeholder in oil and gas production on the Wattenberg Field and operates 13 producing wells on the Property, has stated that they probably have thousands more projects left to do in the Wattenberg area (Figure 5).

In 2008, Noble Energy informed BCPOS that they intended to develop approximately 5 new well sites on Liley-Archdiocese properties south of NW parkway. One year later, they indefinitely postponed their intentions to drill. No reason was provided. In the future, drilling of new wells is possible.

5.6.2 Roads

A number of dirt roads crisscross the property. A small number of the roads remain from agricultural use. However, most of the remaining roads were built and are maintained to afford access to the gas wells on the property. Parks and Open Space works closely with lessees to consolidate roads and weed control along the roads.

Figure 5: Oil and Gas Leases



5.1 Physical Resource Management

The goals and objectives for physical resource management on Rock Creek Grasslands are tied to the desire to maintain the property as native grassland. Limiting soil erosion and protecting the water quality of Rock Creek and several intermittent drainages on the property will provide much of the basis for healthy grassland.

However, these physical resources are closely linked with natural resources. Many of the management strategies intended to improve physical resources will improve natural resources and vice versa.

Human created disturbance is of particular concern. The gas wells and the accompanying access roads have an impact on the healthy function of the grassland. Required regular maintenance of the areas associated with gas wells means regular access by monitors and work crews. This regular access can promote the spread of weeds that negatively impact native species and can destabilize the grassland and associated wildlife. Continued dialogue with well owners is imperative to reducing the weed impact. When new wells are contemplated, BCPOS should make every effort to encourage fewer wellheads, directional drilling, and centralized storage near roads. BCPOS should commit to working with gas companies in order to monitor and address the spread of weeds along the access roads and promote options for reducing or eliminating that impact.

As industrial uses, gas wells should not be located near publicly accessible amenities. Since trails can be more easily relocated and/or redesigned than oil and gas facilities, trail design should take into account the need to limit the interaction of these facilities.

6 NATURAL RESOURCE EVALUATIONS

Before being converted to farmland, the area encompassed by the Rock Creek Grasslands Open Space was part of the native prairie that covered the eastern part of Boulder County. Areas that were too steep to farm remained intact and now provide examples of the species that should be present when converting this property from cropland back to native grassland.

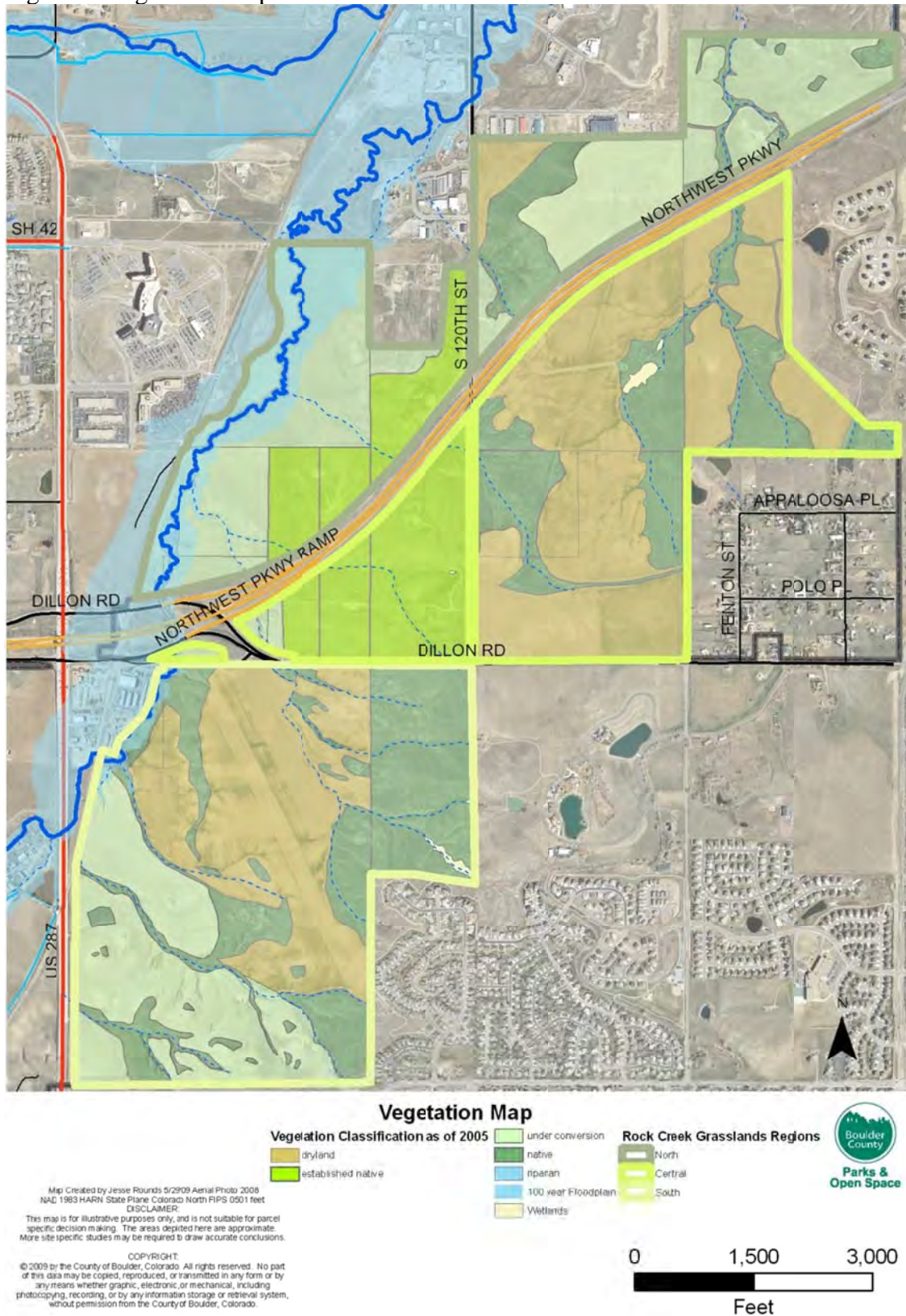
In order to develop appropriate objectives, goals, and actions, BCPOS gathers data on the existing conditions of flora and fauna. These studies establish existing resources and their condition. Studies may also identify potential habitat and the likelihood of various changes to the landscape and populations. The property's history as an agricultural landscape makes initial surveys of plant life less useful to future management decisions as the populations of native flora and fauna would be limited.

6.1 Vegetative Resources

The Rock Creek Grasslands Open Space is a matrix of cropland in varying stages of conversion to prairie, wetlands, and riparian areas (Figure 6). Cropland and grassland restoration areas are discussed in the proceeding Agriculture Resources, section 6.2.

As the property has been primarily used for agriculture since its acquisition by BCPOS, a full vegetation survey was not deemed useful. The results of a limited 2004 vegetation inventory and the BCPOS 1999 wetlands inventory along with mapping and information provided by the Natural Resource Conservation Service were used to determine the species most likely to be found on the rest of the property.

Figure 6: Vegetation Map



6.1.1 Field Studies

In 2004, BCPOS staff conducted a vegetation inventory over the remaining native areas of Rock Creek Grasslands South. This survey documented the native plant alliances of these areas on the Property. Overall, 90 different plant species have been identified on the Rock Creek Grasslands Open Space (Appendix C).

In 1999, BCPOS staff conducted an inventory of wetlands on BCPOS properties. Six small wetlands were identified, none of which were considered to be significant in terms of size, functionality, diverse ecology, educational value, or location (Gage, 1999).

6.1.2 Native Grasslands

Native grassland on the open space is found primarily in the northeast portion of Rock Creek Grasslands South and remain intact primarily because they were either too steep or too rocky to farm efficiently. There are smaller remnant areas in all three Rock Creek Grasslands regions. Native grasslands provide habitat for ground-nesting birds, raptors, black-tailed prairie dogs and other animals and important forage for livestock and native ungulates.

These native grassland areas are composed primarily of typical prairie species, such as western wheatgrass (*Pascopyrum smithii*), buffalograss (*Buchloe dactyloides*), blue grama (*Chondrosium gracile*), sideoats grama (*Bouteloua curtipendula*), green needlegrass (*Nassella viridula*), three-awn grass (*Aristida purpurea*), fringed sage (*Artemisia frigida*), prickly pear (*Opuntia macrorhiza*), fourwing saltbush (*Atriplex canescens*), rubber rabbitbrush (*Chrysothamnus nauseosus*), broom snakeweed (*Gutierrezia sarothraea*), and yucca (*Yucca glauca*).

In order to better understand and inventory plant species on Boulder County Open Space, BCPOS uses a standardized system known as the U.S. National Vegetation Classification System to differentiate between disparate plant alliances. The vegetation mapping does not take into consideration the quality of the plant alliances and is not a species-specific inventory, such as a rare plant inventory. However, the information gathered in the vegetation mapping can be used to direct further investigation of habitat quality and rarity surveys. An explanation of the U.S. National Vegetation Classification System is located in Appendix C of this plan.

The different grass and shrubland alliances mapped on the grassland portions of Rock Creek Grassland are the Western Wheatgrass Herbaceous alliance, Blue Grama Herbaceous Alliance, Fourwing Saltbush Shrubland Alliance, Western Wheatgrass Temporarily Flooded Herbaceous Alliance, Black-tailed Prairie Dog Grassland Complex, Crested Wheatgrass Semi-Natural Herbaceous Alliance, Soapweed Yucca Shrub Savannah Herbaceous Alliance, Three-Leaved Sumac Shrub Savannah Herbaceous Alliance, and the Smooth Brome Semi-Natural Herbaceous Alliance.

The Colorado State University Cooperative Extension, the Natural Resources Conservation Service, the Longmont and Boulder County Conservation Districts, and the Arkansas Valley and Pawnee Buttes Seed companies collaborated with BCPOS in establishing a 14-acre demonstration site on the northwest corner of the Liley parcel. It consists of 150 plots of different native and introduced range grass species. The demonstration planting is to observe the potential for various native grasses and introduced grasses for prairie restoration, prevention of noxious weeds, xeriscaping, and pasture (for introduced grasses).

6.1.3 Riparian Corridor

Rock Creek runs along much of the western border of the Grasslands. The stream, part of the Boulder Creek watershed, provides important habitat and a travel corridor for many wildlife species.

At its headwaters in Rocky Flats National Wildlife Refuge and up to where it passes through the Town of Superior, Rock Creek is an intermittent stream. Between the Town of Superior and Rock Creek's confluence with Coal Creek, the stream becomes perennial. The increased flow from developed land has had a severely negative impact on streambank stability in the creek. Erosion within the stream degrades downstream habitats and affects in-stream habitats.

The recently completed riparian assessment listed unstable or highly erosive streambanks in each of the Rock Creek reaches adjacent to the Open Space. Development pressure on the western side of the creek and road crossings also play a heavy role in degrading Rock Creek.

The main plant species found in this riparian community are plains cottonwood (*Populus deltoides*), peachleaf willow (*Salix amygaloides*), sandbar willow (*salix exigua*), and the non-native reed canarygrass (*Phalaroides arundinacea*) and crack willow (*salix fragilis*). The major association on this riparian corridor is the eastern cottonwood temporarily flooded woodland alliance.

6.1.4 Wetlands

According to the BCPOS wetland inventory, there are small wetlands on both the Rock Creek Grasslands Central and North areas (Gage, 1999). Wetlands provide many important ecological functions such as ground water recharge, flood retention, sediment trapping, and toxicant removal. They are also unique and important ecosystems with diverse plant and animal species.

An approximate quarter-acre wetland is located along the eastern border of the Broomfield North parcel. It is fed by runoff from a pond located uphill on private land to the east. Its flora is dominated by a spikerush/foxtail barley community. Plant species found in this wetland include pale spikerush (*Eleocharis macrostachya*), foxtail barley (*Critesion jabatum*), broadleaf cattail (*Typha latifolia*), and shortbeak sedge (*Carex brevior*).

Also on the Broomfield North parcel is another approximate quarter-acre wetland that runs northwest from the southeast corner along a drainage. This wetland is fed by runoff from adjacent developments. It is composed of cattail species and spikerush/foxtail barley communities. Within the cattail community is narrowleaf cattail (*Typha angustifolia*), broadleaf cattail, hardstem bulrush (*Schoenoplectus lacustris* subsp. *acutus*), and pale spikerush. The spikerush/foxtail barley community contains pale spikerush, foxtail barley, Dudley's rush (*Juncus dudleyi*), Colorado rush (*Juncus confusus*), sandbar willow, and Kentucky bluegrass (*Poa pratensis*).

On the JL Thompson parcel is a very small ephemeral wetland. It consists of cattail and willow species.

Located on the Liley parcel south of the Northwest Parkway is a small ephemeral wetland with broadleaf cattails and pale spikerush. There is also a nearly two-tenths of an acre marsh that has large cottonwoods.

On the Archdiocese of Denver parcel there is an approximately two-tenths of an acre ephemeral stream along a drainage that is fed by runoff from adjacent developments. It runs southeast to northwest from the border along the Northwest Parkway. The dominant plant community here is foxtail barley/threesquare bulrush (*Schoenoplectus pungens*) containing pale spikerush, cloaked bulrush (*Scirpus pallidus*), and showy milkweed (*Asclepias speciosa*). There are also apparently unmapped wetlands present in the drainages of Ruth Roberts.

6.1.5 Noxious Weeds

Invasive weeds threaten native plant communities by out-competing native species for resources and thus displacing them. Non-native plants often do not have natural pathogens or predators that have adapted with them to keep their populations under control. When the native plants are displaced, the native wildlife that depends on them for food and cover are also displaced. Furthermore, these weeds can alter ecosystem processes by increasing erosion, altering soil fertility, and by changing wildland fire regimes. Invasive weeds are expensive to control and also cause losses in crop and ranch production.

Particularly destructive invasive weeds have been labeled noxious by the State and Boulder County. According to the Colorado Noxious Weed Act (amended in 2004), landowners, both public and private, are required to manage noxious weeds on their property. Noxious weeds are organized into three management categories:

- List A species – targeted for eradication and require specific management actions as well as coordination with the State Weed Coordinator within one year of detection.
- List B species – discrete statewide distributions that are subject to eradication, containment, or suppression in order to stop the spread of the species.

-
- List C species – widespread and are targeted for improved management and public education.

The only List A species that has been found on Rock Creek Grasslands was purple loosestrife (*Lythrum salicaria*). The invasive weed was found and treated on Ruth Roberts but has been found on another part of Rock Creek Grasslands South and treatment is on-going.

Canada thistle (*Cirsium arvense*) is one the most common noxious weeds found on the Rock Creek Grasslands Open Space. It is as List B species of concern found primarily on the outskirts of the Property. Other List B species found on the Property include musk thistle (*Carduus nutans*), bull thistle (*Cirsium vulgare*), Russian olive (*Elaeagnus angustifolia*), Jointed goatgrass (*Aegilops cylindrical*), Russian knapweed (*Acroptilon repens*), Spotted knapweed (*Centaurea maculosa*), salt cedar (*Tamarix spp.*) and quackgrass (*Elytrigia repens*).

For a complete list of noxious weeds managed by BCPOS, please refer to the Boulder County Weed Management Plan (2004).

Oil and gas access roads are necessary for the maintenance and monitoring of the gas extraction wells found throughout the Open Space. Unfortunately, these roads and their regular traffic increase the likelihood of spreading invasive species. As the roads constitute a habitat disturbance they also create a niche where weeds can easily out-compete native flora that requires a more stable ecosystem.

There are two test plots on the American Pacific Financial parcel that Colorado State University runs in partnership with BCPOS. On these plots, different herbicides are tested to see which are most tolerated by shrubs and forbs that have been revegetated. This research helps BCPOS and Colorado State University select herbicides that can target weeds without impacting native plants.

6.1.6 Species of Concern

Some native species have been severely affected by development and land use changes in Boulder County. Most of these plants have been identified through the Colorado Natural Heritage Program and some have been listed as threatened or endangered by the U.S. Fish and Wildlife Service. In many cases particular habitats harbor these important plant species.

These plants are recognized as deserving of special attention and care in planning and management. Identifying not just existing individuals or communities but also potential habitat is a major step in developing management strategies for particular habitats.

Colorado butterfly plant (*Gaura neomexicana coloradensis*)

The Colorado butterfly plant was listed as threatened by the U.S. Fish and Wildlife Service (USFWS) in October of 2000. This species occurs in sub-irrigated, alluvial soils of drainage bottoms surrounded by mixed grass prairie, between 5,800 and 6,200 feet in elevation (Spackman et al, 1997). Individuals are found in low depressions or along bends in wide, meandering stream channels, a short distance upslope of the actual channel. Populations are usually found in areas that are intermediate in moisture between wet, streamside communities dominated by sedges, rushes, and cattails, and adjacent dry, upland shortgrass prairie (NatureServe, 2005). There is no federally designated critical habitat for this species in Colorado (USFWS, 2005b). Colorado Natural Heritage Program (CNHP) data indicate that this species has the potential to occur in Boulder County, but not in the area of the Rock Creek Trail corridor (2005).

During a survey for threatened and endangered species along the Rock Creek Trail corridor conducted for the Boulder County Department of Transportation (BCDT) in 2005, it was determined that the corridor contains potential habitat, but no Colorado butterfly plants were found.

Ute ladies'-tresses orchid (*Spiranthes diluvialis*)

The Ute ladies'-tresses orchid was listed as threatened by the USFWS in January of 1992. This species occurs in sub-irrigated alluvial soils along streams, and in open meadows in floodplains at elevations of 4,500 to 6,800 feet in elevation (Spackman et al, 1997). It occurs primarily in areas where the vegetation is relatively open and not dense, overgrown, or overgrazed (USFWS, 1992). Populations are located in mesic riparian meadows in relict tall grass prairie areas near Boulder Creek in the City of Boulder and in mesic meadows in the riparian woodland understory along Clear Creek in adjacent Jefferson County. There are also occurrences identified in El Paso, Larimer, Moffat, and Weld Counties (Spackman et al, 1997). CNHP data indicate that the Ute ladies'-tresses orchid has the potential to occur in Boulder County but not within the Rock Creek Trail corridor (2005).

The survey conducted for the BCDT in 2005 determined that the Rock Creek Trail corridor does not contain suitable habitat for the Ute ladies'-tresses orchid because the drainage slopes are steeper and the cover is thicker than is typical for this species. Furthermore, no Ute ladies'-tresses orchids were found during the survey.

6.1.7 Vegetation Management

One of the goals of this management plan is to convert Rock Creek Grasslands into a landscape that can provide ecological functions similar to those provided by intact native grassland. Through an arrangement with the current lessee, crop production has been phased out on all the properties that comprise the Open Space. During the phase out, fields formerly in crop production have been planted in native grasses, forbs, and shrubs. Conversion of all the remaining cropland will be complete in 2011. In order to preserve the converted landscape and address the

on-going management needs, Rock Creek Grasslands will be managed as the Rock Creek Grasslands Habitat Conservation Area. Public access to the open space will be limited to designated trail corridors only.

To ensure that native plants are able to succeed on the Open Space, BCPOS will regularly monitor the progress of new plantings and areas under threat from weeds. In cases where weeds have had an opportunity to establish, BCPOS staff will take whatever action is necessary to combat weeds within the limits of safety, regulations, and covenants placed on specific land parcels that make up the Open Space.

Black-tailed prairie dogs are a part of the grassland ecosystem in Boulder County. Boulder County Parks and Open Space works diligently to maintain healthy populations of prairie dogs on open space properties where they are appropriate. To guide decision-making, BCPOS developed the Prairie Dog Element of the Grasslands Management Policy. In most cases, the Prairie Dog Element clearly defines how prairie dogs will be managed in specific situations. Since grassland restoration at the scale of the Rock Creek Grasslands Open Space has never been carried out by BCPOS, there are no policies that directly address the specialized issues inherent in a grassland restoration.

The specifics of the management actions to be carried out are outlined in the prairie dog management section of this plan. In essence, BCPOS staff will allow established restoration areas and prairie dog colonies to develop with as little interference as possible. When management, such as removal or lethal control, is necessary it will be undertaken only during times that will have minimal impact on colony health and the health of associated species such as the Burrowing owl.

The long-term health of the grassland depends on the health of its various plant communities. Management of these resources must be adaptable to various conditions and situations. Therefore, BCPOS staff will need to monitor the status of plant communities as well as the ultimate goal for the plant communities. Instead of prescribing specific strategies here, BCPOS staff will be charged with developing strategies that are flexible enough to respond to changing conditions, a form of adaptive management.

Fire is an important part of the natural cycle within the grassland ecosystem. With the growth of residential communities adjacent to Rock Creek Grassland, concerns about the use of fire as a management tool have limited its use. Some properties within Rock Creek Grasslands Open Space have conservation easements on them that prohibit the use of fire as a management tool. Boulder County Parks and Open Space is working with our neighboring communities to allow fire through prescribed burns. These prescribed burns are highly managed events that help to control weeds and maintain a healthy grassland. The concerns of neighbors are understandable, however to truly manage the habitat, prescribed fire must be a management option.

6.1.8 Weed Management

Rock Creek Grassland's location and uses make it highly susceptible to weed infestations. In order to manage a healthy environment for the desired native grassland flora and fauna, BCPOS will combine multiple strategies to control and, if possible, eradicate exotic invasive plants.

As the Open Space cropland uses have been replaced by an interest in preserving the area as native grassland, the impact and management strategy for noxious weeds have changed. Species on Lists A, B, and C have already been identified within Rock Creek Grasslands Open Space. Furthermore, the presence of oil & gas well access roads increases the chances of distributing noxious weeds within and around the site. Finally, adding multi-use trails throughout the Open Space will increase the chances of noxious weed spread.

All of these factors make management of noxious weeds more difficult. In order to better manage weeds on the Open Space, four strategies will be implemented. One will be to focus on already identified problem species in List A, B, and C. The second strategy will be managing all weeds on existing cropland and land that has been converted from cropland to native grassland species. The third strategy will focus on weeds associated with oil and gas roads and the fourth will deal with weeds along existing and new multi-use trails.

As List A, B, and C species and locations have already been identified; management should focus on monitoring areas with previous populations. Where resurgence occurs, eradication using best management practices adopted by BCPOS should be used.

In areas converted from cropland to native grassland plant species, weed monitoring and control will be an annual effort using mechanical mowing, targeted herbicide applications, and managed grazing. As best management practices evolve, management in these areas should evolve as well.

The impact of oil and gas well access roads on the spread of noxious weeds is a serious concern for management of open space properties in Boulder County. As maintenance vehicles have access to properties managed for all different sorts of purposes, the likelihood that these maintenance vehicles can become vectors for the spread of weeds increases. In order to reduce the opportunity for weed spread, BCPOS shall work with Oil and Gas well operators to reduce the number of oil and gas roads on the property in order to consolidate access points and areas affected by the roads. This strategy will have the effect of reducing the areas affected by noxious weed spread.

Developing new recreational multi-use trails is an important part of managing the Rock Creek Grasslands Open Space so as to improve public appreciation and understanding of the importance of native grasslands in Boulder County. However, the addition of trails to the open space creates opportunities for weeds to be transported by trail users or on their animals and equipment. This problem

exists in all Open Space areas open to the public in Boulder County. To combat the spread of weeds along existing and new trails within the Rock Creek Grasslands Open Space, BCPOS shall apply best practices learned through management of other open space parks within the County. Please refer to the Boulder County Noxious Weeds Management Plan.

6.2 Agricultural Resources

The majority of the Rock Creek Grasslands Open Space was farmed using dryland-farming techniques prior to BCPOS acquisition. In 1996, BCPOS began converting portions of the property from cropland to native grassland. This process is scheduled to continue, as formerly cultivated areas are converted and managed, to promote the establishment of native grassland.

6.2.1 Cropland

The parcels that make up the Rock Creek Grasslands, excluding the Broomfield North parcel, were broken out of grasslands and converted into dryland cropland beginning in the mid 1940's (Jones, 2005). The properties continued to be farmed for 60 years. The Boulder County Comprehensive Plan utilizes Natural Resource Conservation Service/CSU Extension designations of agricultural land National, Regional, or Local Agricultural Importance. This designation is based on soil suitability and the availability of irrigation. Rock Creek Grasslands Open Space is designated as Significant Agricultural Land of Local Importance (Figure 7).

6.2.2 Grassland Restoration

The agricultural production on Rock Creek Grasslands has helped support its role as an urban buffer between the communities of Lafayette, Louisville, and Broomfield. However, though much of the property supported dryland wheat production for many years, the viability of the land to continue in crop production in the future is limited due to the marginal production potential (amount of wheat produced per acre) and the farming practices necessary to prevent erosion (Both the shallow soils and steep slopes on the property limit crop production potential.) The reduced acreage of farmland in the general area makes the economic viability of a large-scale operation difficult. This, coupled with a desire to create more native grasslands in the County, led to the decision to convert the property to native grassland.

The Department plans to achieve this by planting croplands back to native species. The conversion process began in 1996 on the Tommy Thompson property (Figure 8). Conversion has continued since 1996 and the last cropland will be seeded with native grasses for the 2011 growing season.

The revegetation process and the methods implemented have remained fairly consistent throughout the project. The process begins with a concerted effort at effective weed control in the wheat and fallowed land while the land is still in crop production for 2 years prior to initiation of conversion. Following the final wheat

crop harvest in July, fall and spring tillage operations are then performed to catch and conserve moisture, relieve compacted soils, incorporate wheat stubble and to provide a good seedbed. An additional (and usually final) tillage operation the following spring is timed to conserve soil moisture and control early weed emergence to the greatest extent possible. A second flush of weeds usually germinates following the final tillage operation. These weed are usually addressed with herbicide just prior to planting the cover crop during the last week of May. Herbicide is used rather than tillage to conserve precious moisture for a successful cover crop. Milo (grain sorghum) is the typical cover crop planted. It is a very drought tolerant plant, is short, and has a strong stalk. Good summer precipitation may dictate a final herbicide application in the growing milo cover crop. It can be disastrous if kochia and/or Russian thistle germinate and are not treated in a timely manner. The characteristics of these weed species can prevent effective planting operations.

The seed mixes of the perennial grassland species are then planted directly into the standing milo beginning in October, when cool soil temperatures will preclude germination in the fall that would expose seedlings to freezing. Planting is done with a specialized no-till planter or drill that effectively plants the seeds in the heavy residue of the milo. Planting of the grassland seed mixes is performed by BCPOS staff using our own drills. Multiple seed mixes are used according to the varying soils.

Through the winter, the milo cover crop protects the planted seeds from being blown out by wind and from drying out. The standing milo eventually lays down and serves as a mulch well into the first growing season.

Weed control the first growing season is critical. Growth of weeds are monitored closely and usually addressed by mowing. If the growing season is dry, a single mowing may be adequate. Average precipitation nearly always dictates the need for two mowings. Weeds control is usually necessary and planned for during the second and third years after planting as well. Herbicides are an alternative during these years and can be used alone or in combination with mowing.

6.2.3 Agricultural Management

The last wheat crop to be raised on the Rock Creek Grasslands area was planted and harvested on 90 acres of the Ruth Roberts property in 2010. The importance of maintaining the agricultural heritage of Boulder County is borne out by the Boulder County Comprehensive Plan. However, due to marginal crop production potential and overall viability for continued dryland crop production for these lands, dryland farming has become less sustainable on the property. For this reason, BCPOS and its lessee made an arrangement to phase out the farming operations on the property. . As dryland farming has been phased out, the cropland has been prepared and seeded so as to promote the establishment of native grassland species. To control weeds prior to seeding, cover crops have been

planted initially to compete with the weeds, conserve soil moisture and protect seeded areas from wind.

Conversion to native grassland is not a quick process. It requires multiple seasons to become established. Usually 3 to five years for the planted stand of vegetation to dominate. The amount of time to reach fully established plant communities is highly correlated to weather, particularly the amount of precipitation and the timing of when it falls. Full establishment of the plant communities has been reached when the root systems of desirable plants have reached their maximum potential depth and volume within the soil profile. The plants then have the resilience to survive disturbances and/or regenerate from reproductive structures. Boulder County Parks and Open Space expects to continue intensive management of the converted lands for approximately 10 years after initial conversion.

Determining if and when the grasslands of Rock Creek Grassland are established will be a cooperative effort undertaken by staff from the Plant Ecology and Agricultural Resources workgroups. An established grassland exhibits appropriate characteristics within its soils, plant communities, and ecosystem function. Establishment will not occur all at once, but may occur at different times in different areas of Rock Creek Grasslands.

Some of the ways to measure establishment include root depth and volume of desirable plant species, successful reproduction indicating self-sustenance, and general adherence to characteristics listed within the Natural Resource Conservation Service's Ecological Site Description for the areas being restored. Measuring "establishment," is thus a complicated undertaking.

The major issues that must be addressed during conversion are competition from non-native species, and survival during periods of drought. These issues make regular monitoring a necessity. In the long term, the native plant communities should establish and begin to offer strong competition to non-native species. Over time, their growth and development of healthy plant communities will once again shape the landscape of Rock Creek Grassland.

The grasslands found in Colorado are accustomed to, and sometimes require disturbance in order to thrive. Disturbance can take many forms including fire and grazing. Once native grassland species begin to successfully thrive at Rock Creek Grasslands, Resource Management and Agricultural Resources staff will review whether any such management through disturbance is necessary. If they deem it necessary, staff may implement either controlled burns or limited grazing in order to foster a healthy grassland.

Figure 7: Significant Agricultural Lands

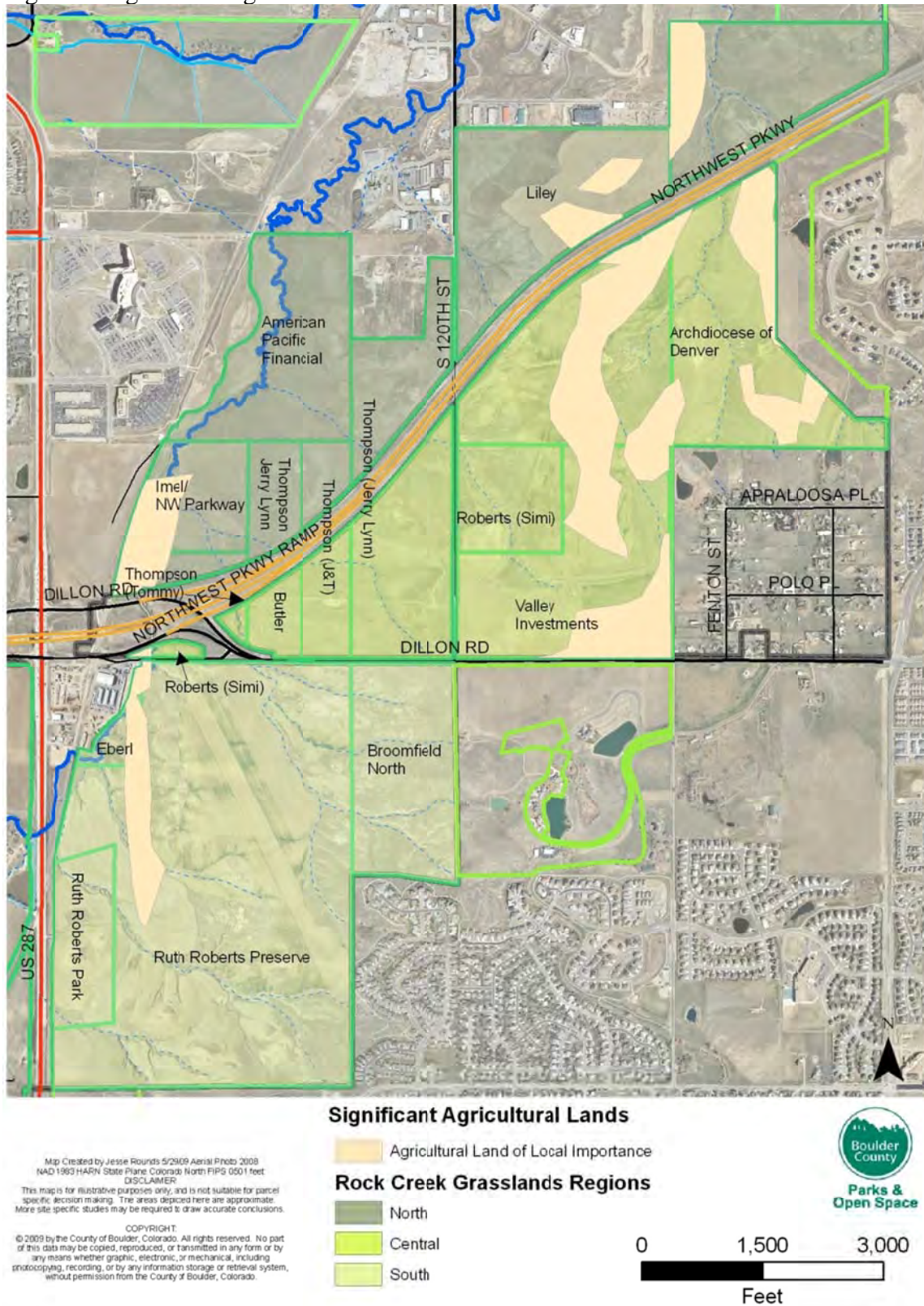
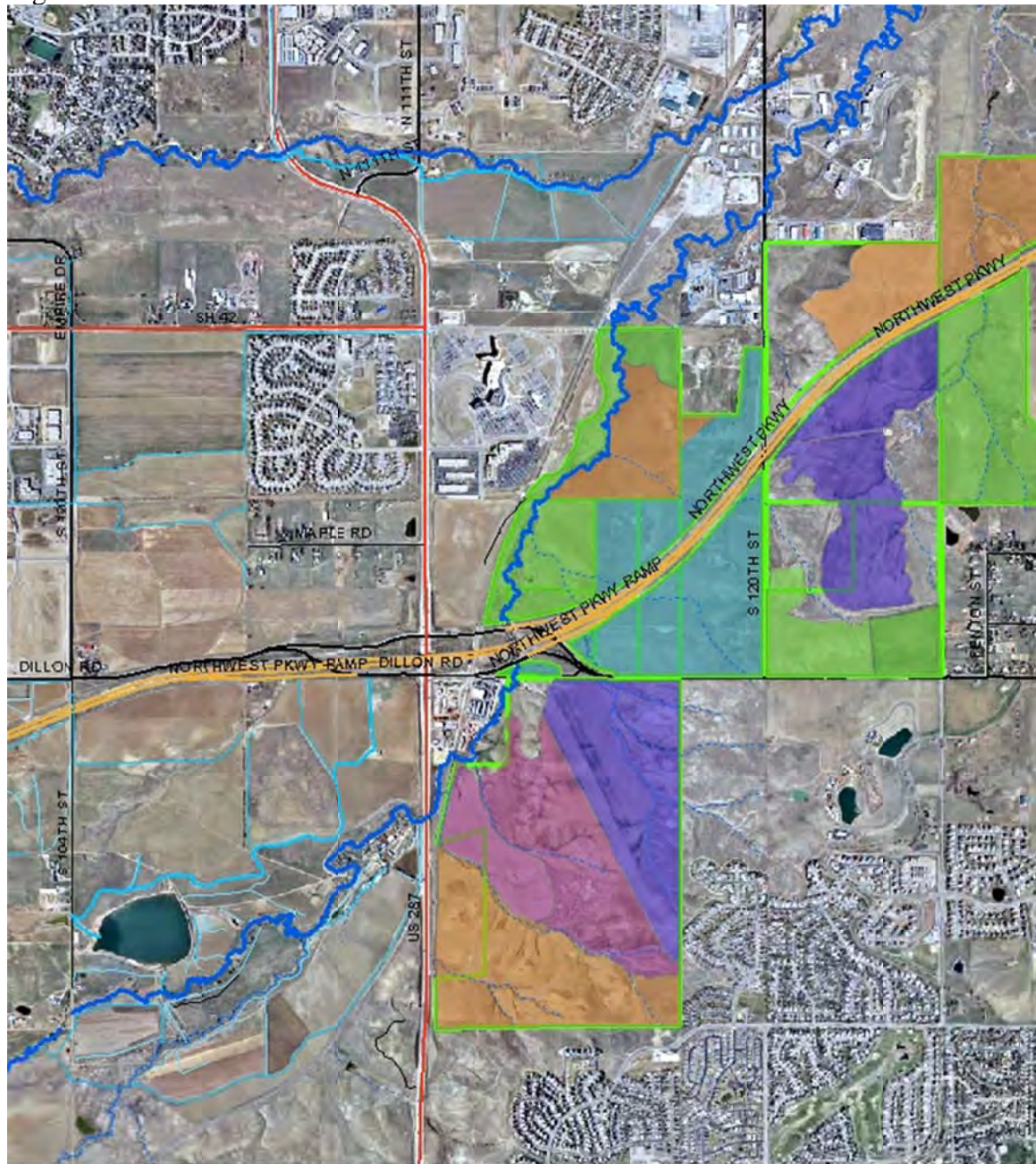
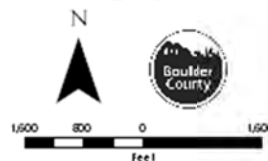


Figure 8: Restoration Areas



Status of Revegetation at Rock Creek Grasslands Properties

Map Created by Jesse Romo 4/28/2011 Aerial Photo 2008
 NAD 1983 HARN State Plane Colorado North FIPS 5001 feet
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 specific decision making. The areas depicted here are approximate.
 More site specific studies may be required to draw accurate conclusions.
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Revegetation Phase

- To be seeded in 2011
- New seeding
- Early establishment
- Mid establishment
- Established
- Rock Creek Grassland Project Area

6.3 Wildlife Resources

6.3.1 Field Studies

Field studies in the planning area include the following: breeding bird surveys conducted on the Liley property from 2007-2009, burrowing owl surveys on prairie dog colonies, annual mapping of prairie dog colonies, incidental sightings from previous site visits, a survey of threatened and endangered species in the Rock Creek Trail corridor (Boulder County Transportation 2005), and a resource assessment of the American Pacific Financial parcel (Behl 2001).

A stream assessment of Rock Creek on Rock Creek Grasslands found the creek to be functioning poorly (Boulder County Parks and Open Space 2009a). Restoration recommendations to improve the ecological health of the creek included: repairing actively eroding streambanks, creating low terrace areas to accommodate increased and flashy flows to improve functionality of floodplains, removing non-native trees, controlling noxious weeds, restoring meanders to improve hydrologic conditions and reduce downcutting, removing trash from the creek and eliminating its sources.

A rapid resource assessment on the American Pacific Financial property also noted the potential for restoration on Rock Creek (Behl 2001). Specifically, the report states that the creek has become armored by vegetation on its banks and because of this, experiences substantial down-cutting during high water flows. To mitigate this effect, some portion of the banks should be widened to accommodate high flows.

Contracted biologists surveyed in the area in summer 2005 and concluded that creating the Rock Creek Trail would have “no effect on any threatened or endangered species potentially present within the project area”, largely because the area did not contain suitable habitat for any of the 13 targeted species (Boulder County Transportation 2005).

6.3.2 Mammals

The grasslands, riparian areas, and croplands of the Rock Creek Grasslands Open Space have the potential to support a wide variety of mammal species. Common species that are found on mixed grass prairie in Colorado (Fitzgerald et al. 1994) include coyote (*Canis latrans*), red fox (*Vulpes vulpes*), striped skunk (*Mephitis mephitis*), raccoon (*Procyon lotor*), whitetail deer (*Odocoileus virginianus*), mule deer (*Odocoileus hemionus*), deer mouse (*Peromyscus maniculatus*), eastern cottontail rabbit (*Sylvilagus floridanus*), and fox squirrel (*Sciurus niger*). A list of potential mammal species can be found in Appendix G.

6.3.3 Birds

Grassland bird populations in North America have declined sharply throughout their range because of their specific habitat requirements and preference for ecologically undisturbed areas (Knopf 1994, Peterjohn and Sauer 1999). Thus, the presence of some species of birds is an effective indicator of grassland health.

Staff began breeding bird surveys on Liley in 2007 in response to grassland restoration efforts, and expanded survey efforts in 2008 and 2009. Staff detected 24 different species from 5 established points, which were surveyed three times each in 2008 and 2009 (Appendix D). Of these, 92% (n = 22) were native species and 25% (n = 4) of those were grassland obligates, meaning that they require grasslands to breed (Knopf 1994). On average, staff detected comparable numbers of birds in 2008 (33.8 ± 5.07) and 2009 (29.8 ± 4.7) (Appendix E). Staff also detected similar numbers of species at each point between years (2008: 9.4 ± 0.6 ; 2009: 8.6 ± 1.6 , Appendix F).

Since 2006, prairie dog colonies on Rock Creek Grasslands have provided habitat for at least three nesting pairs of burrowing owls (*Athene cunicularia*), which are a state-threatened species (see section 6.3.6). In 2006, burrowing owls fledged four nestlings in the area; in 2010, two nesting territories were identified—one pair fledged two nestlings, the other pair fledged three nestlings. Two red-tailed hawk (*Buteo jamaicensis*) nesting territories exist along Rock Creek. Irregular visitors to the grasslands include foraging bald eagles (*Haliaeetus leucocephalus*), northern harriers (*Circus cyaneus*) and ferruginous hawks (*Buteo regalis*) during the non-breeding season.

As a former agricultural landscape undergoing conversion to native grassland, many bird species that breed or forage in Rock Creek Grasslands will be similar to birds found in adjacent grassland areas. Appendix G identifies the species that may be observed on the property in future surveys.

6.3.4 Amphibians and Reptiles

In summer 2010, staff detected a group of twenty northern leopard frogs (*Rana pipiens*) along Buffalo Gulch on the Carolyn Holmberg Preserve at Rock Creek Farm west of Hwy 287. This species is currently under status review by the US Fish and Wildlife Service to be protected under the Endangered Species Act (see below for more information). Because Rock Creek Grasslands is connected to Buffalo Gulch via Rock Creek, it is possible that this species may utilize restored wetland habitats on Rock Creek Grasslands in the future. Staff did not detect any frogs or document any high-quality amphibian habitat along Rock Creek during a visit in summer 2010. With increased restoration efforts in the Rock Creek drainage, this area should be expected to support other species indicative of a relatively functional wetland ecosystem (Appendix G).

6.3.5 Fish

In the resource assessment report for the American Pacific Financial (APF) parcel, it was determined that the segment of Rock Creek that ran through APF should support warm water aquatic species, but none were observed during opportunistic surveys (Behl 2001).

As a result of increased urbanization in the area, Rock Creek, which was formerly an intermittent stream, now carries a perennial flow of water. This change in regime affects the species and numbers of fish that would usually occur in a more natural stream habitat. A list of fish species that could be present in Rock Creek, particularly following restoration treatments, can be found in Appendix G.

6.3.6 Species of Concern

Preble's meadow jumping mouse

The Preble's meadow jumping mouse (*Zapus hudsonius preblei*) is a species that occurs along the Front Range of Colorado and southeastern Wyoming. It is federally listed as a threatened species in Colorado. As determined by the U.S. Fish and Wildlife Service (FWS), Preble's habitat consists of well-structured plains riparian vegetation with adjacent, undisturbed grassland communities and a nearby water source. The mouse's habitat includes up to 330 feet beyond the 100-year floodplain (USFWS 2003). Although there is no designated critical habitat for Preble's on Boulder County Parks and Open Space property, the Rock Creek drainage south of Hwy 128 on land managed by US Fish and Wildlife Service was designated critical habitat (USFWS 2010).

Contracted biologists conducted a habitat assessment in the Rock Creek Trail project area for the Boulder County Department of Transportation in 2005. They concluded that although the Rock Creek riparian area qualifies as suitable habitat for the Preble's meadow jumping mouse, it is unlikely to support any individuals because of the "extensive negative trapping data for the areas, the low quality of upland habitat present, and the substantial level of development surrounding the project area". However, if proper restoration measures were enacted, including native plant restoration and reducing bank slopes, Rock Creek could be returned to an ecological functioning stream, and in the future could support this species (Behl 2001).

Northern Leopard Frog

The western population of northern leopard frogs is currently under status review by the US Fish and Wildlife Service to be considered under the Endangered Species Act (USFWS 2009). It is considered a sensitive species by the Bureau of Land Management, United States Forest Service, and State of Colorado. Declines in leopard frog populations are well documented throughout the west (Hammerson 1999, Smith and Keinath 2007), and specifically in Boulder County (Livo 1997, Hammerson 1982). Leopard frog declines in Colorado are most likely the product of interactions between land-use change (including habitat loss) and invasive species (Hammerson 1999, Johnson and McKenzie 2009).

The detection of this species by staff in summer 2010 near Rock Creek Grasslands indicates that Rock Creek may support leopard frogs in the future if actions are undertaken to restore natural streamside habitat. Leopard frogs prefer low vegetation that is partially covered with slow moving water on flat banks. Restoration actions aimed at creating this type of littoral habitat on Rock Creek would substantially increase the likelihood that the creek could support leopard frogs.

Black-tailed prairie dog

In August of 2004, the USFWS removed the black-tailed prairie dog (*Cynomys ludovicianus*) from the candidate species list (USFWS 2004). The species had been a candidate species for listing as threatened since February of 2000. In December of 2008, it was again

petitioned for candidacy under the ESA, but a final decision was issued that listing the species as either threatened or endangered was not warranted (USFWS 2009b).

The black-tailed prairie dog is considered an important grassland species because numerous other animals may depend on it for their survival. For example, the burrows dug by the prairie dog serve to provide cover and nest sites for animals like burrowing owls, badgers, rabbits, tiger salamanders, frogs, ground squirrels, and snakes. Within their range, black-tailed prairie dogs are an important food source for many raptors, the endangered black-footed ferret, and coyotes.

According to the BCPOS Grassland Management Policy – Prairie Dog Element 2009 Addendum, much of the Property is classified as a Multiple Objective Area (MOA) for prairie dog management. MOA's serve to "allow prairie dogs to function in coexistence with other uses, without negative impacts" (Boulder County 2009b). There are also areas on the Property that are considered Non-suitable Habitat (NSH). NSH is defined by characteristics such as wetlands, riparian and shrub/forest acreage, acreage above 7000 ft. elevation, and grassland in excess of a 10% slope. For more information on BCPOS prairie dog management see <http://www.bouldercounty.org/live/environment/land/pages/wildlife.aspx>

In 2009, staff identified five prairie dog colonies on Rock Creek Grasslands Open Space (Figure 9). The colonies averaged 6.6 acres in size and ranged from 1 to 12 acres. All of the colonies are on properties identified as MOA, except one colony which resides on habitat considered non-suitable, none of the colonies are located on restored grassland (Boulder County 2009b).

Burrowing Owl

The western burrowing owl is a grassland specialist distributed throughout western North America, primarily in open areas with short vegetation and bare ground in desert, grassland, and shrub-steppe environments. Burrowing owls are dependent on the presence of fossorial mammals (primarily prairie dogs and ground squirrels), whose burrows are used for nesting and roosting. Burrowing owls are protected by the Migratory Bird Treaty Act in the United States and Mexico. They are listed as Endangered in Canada and Threatened in Mexico. They are considered by the U.S. Fish and Wildlife Service (USFWS) to be a Bird of Conservation Concern. At the state level, Burrowing Owls are listed as Endangered in Minnesota, Threatened in Colorado, and as a Species of Concern in California, Montana, Oklahoma, Oregon, Utah, Washington, and Wyoming (Klute et al. 2007).

Burrowing owls prefer active portions of larger prairie dog colonies, possibly because a larger colony may reduce the chance of predation. Pezolesi (1994) found significant difference between the size of available (mean size: 17 acres) and owl-occupied (mean: 45 acres) prairie dog colonies. Burrow disturbance at the nest site by humans and dogs caused a drop in reproductive success (Thomsen 1971, Millsap and Bear 1988, Haug et al. 1993).

Nest-site fidelity by burrowing owls is relatively high for raptors. On the Rocky Mountain Arsenal, of the 38 percent of banded adults that returned, 66 percent reused the same prairie dog town from the prior year (Plumpton 1992). Colony re-use may be related to the pair's nesting success during the previous year as 84% of successful adults returned to the same colony the next year.

6.3.7 Wildlife Management

Rock Creek Grasslands is currently undergoing a conversion from agricultural land to native grasslands. The purpose of this conversion is to create a healthy and functioning grassland ecosystem. All management decisions and practices will be focused on achieving that goal. A healthy grassland ecosystem will help develop and maintain a diverse wildlife population.

In order to understand the developing and changing wildlife populations on the properties, BCPOS staff will monitor wildlife in the area on a regular basis as part of the Department's wildlife monitoring effort. Specific monitoring methods and timelines will be agreed upon by Resource Management staff and will become part of the increasing amount of data the county maintains on our open space properties.

Rock Creek Grasslands Open Space serves many different purposes. One of the original reasons for its purchase as open space was to create open space between existing communities. As those adjacent communities have grown, the potential for resource conflicts on either side of the urban-wildland interface have increased. Conflicts such as predators taking pets, noxious weeds crossing in either direction across boundaries, and prairie dog colonies expanding onto private land will be managed in accordance with Parks and Open Space policy and through working with neighboring land owners and appropriate state management agencies, as applicable. For specific management policies with respect to prairie dogs, please see the Prairie Dog Habitat Element of the Boulder County Grassland Management Plan, section 7.6.3.

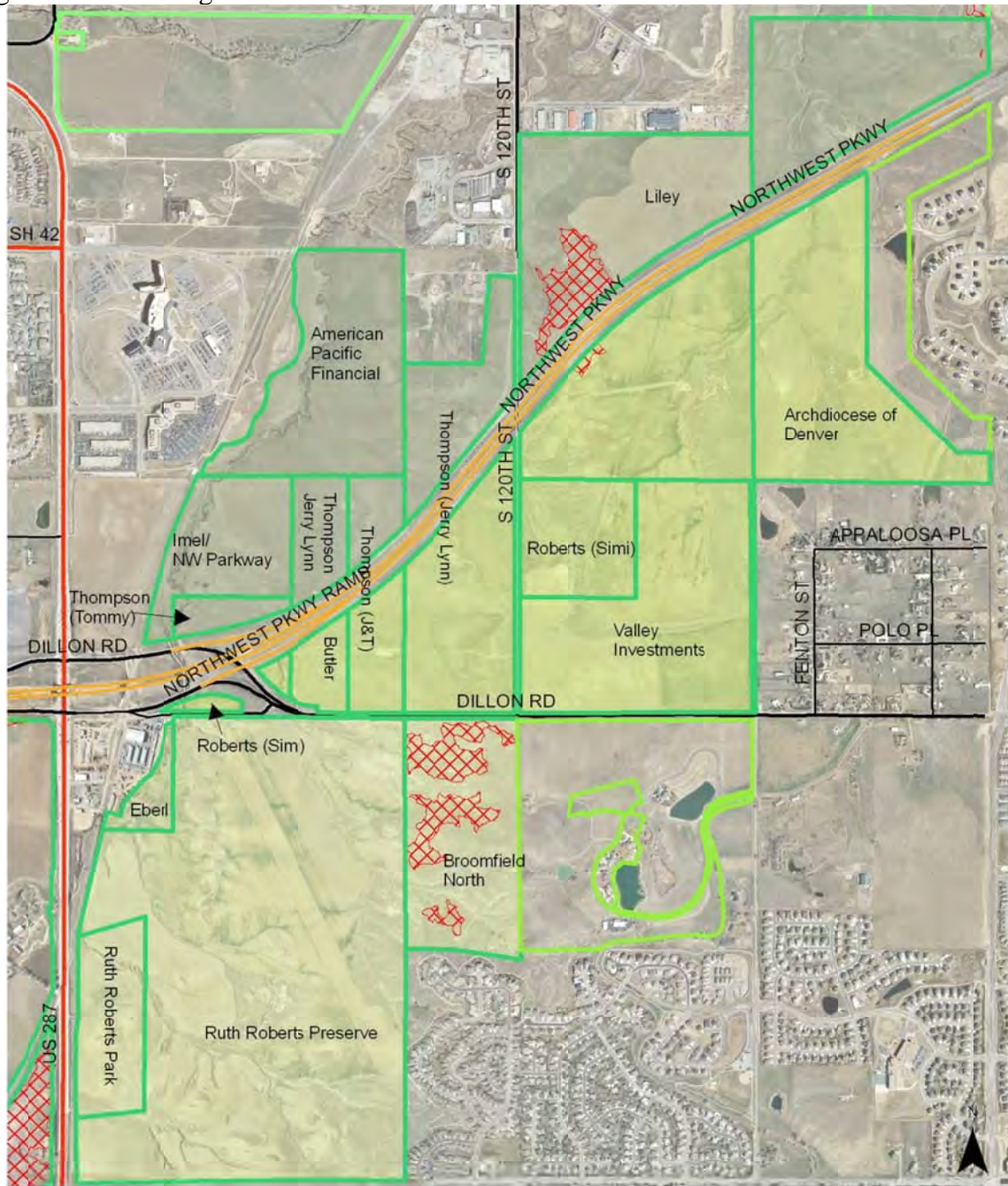
As natives to the grasslands of Boulder County, prairie dogs are an integral part of a healthy ecosystem. However, due to a lack of sufficient predator pressure and finite space within which a colony can expand, populations sometimes grow to unsustainable ecological levels. While natural measures usually return the population to equilibrium, dense populations of prairie dogs can adversely affect vegetation structure and composition.

In order to protect restoration areas, management of colonies may be necessary. However, Prairie dog colonies will only be managed when their growth begins to destroy areas restored within the previous 5 years. Colonies with active burrowing owl nests will not be managed until owls have not returned for 3 nesting seasons. This period of inactivity reflects the strong nest-site fidelity exhibited by burrowing owls, as most owl territories are re-used within three years of previous occupation (Rich 1984, California Fish and Game 1995). Further, burrowing owl habitat is protected in a similar manner by other land management agencies in Boulder County (City of Boulder 2010). Finally, because larger prairie dog colonies may increase burrowing owl nesting success (Pezzolesi 1994, Dechant et al. 2002), colony management will be approved by staff on a

site-by-site basis and will only occur during parts of the year in which burrowing owls are not present in Boulder County. All management techniques used will be in accordance with Boulder County Policy.

Rock Creek Grasslands will, overtime, transition from a Multiple Objective Area to a Habitat Conservation Area for prairie dogs, under the guidelines found in the Prairie Dog Element of the Grassland Management Plan (section 7.6). No prairie dog relocations onto Rock Creek Grasslands will be permitted unless existing colonies decline significantly. Prairie dogs are an important part of the grassland ecosystem in this area; however, as stated earlier the primary management goal is the establishment of native grassland within Rock Creek Grassland. Large populations of prairie dogs make establishment difficult.

Figure 9: Prairie Dog Colonies



Map Created by Jessie Rounds 5/29/09 Aerial Photo 2008
 NAD 1983 HARN State Plane Colorado North FIPS 0501 feet
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 specific decision making. The areas depicted here are approximate.
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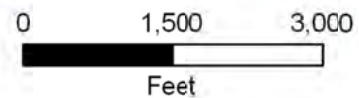
Prairie Dog Colonies 2009

Boulder County Open Space

- County Open Space
- County Conservation Easement
- Joint County and Municipal Open Space
- Prairie Dogs 2009

Rock Creek Grasslands Regions

- North
- Central
- South



7 CULTURAL RESOURCES

According to the Boulder County Comprehensive Plan and its corresponding maps, parts of the Rock Creek Grasslands Open Space are designated as part of a Historic Travel Route and as part of two separate Archaeologically Sensitive Areas.

7.1 Cultural History

Prehistoric groups lived in northeastern Colorado as long ago as 11,500 years. These groups were hunters and gatherers that traveled the area in search of food (Native Cultural Services, 1989).

Throughout the 1700's, the nomadic Plains Apache wandered the plains of eastern Colorado until the Ute and Comanche eventually pushed them out of the area. As those tribes moved west and south in the early 1800's, the Arapaho and Cheyenne Tribes moved into eastern Colorado (LCPOL, 2006).

During this time, eastern Colorado became part of the United States with the Louisiana Purchase in 1803. Many expeditions into this new territory subsequently followed to gather information about natural resources, Native American tribes, topography, and climate. One such exploration into the region was Major Stephen Harriman Long's 1820 expedition. These expeditions spurred fur trappers, hunters, and other traders to explore and settle the area (Boulder County, 2007).

In the 1840's, the concept of "Manifest Destiny" was introduced to the American population and exploration shifted focus towards locating suitable areas for settlement and finding transportation routes. Further stimulating the movement of people into and through the area was the discovery of gold in California and, soon after, areas around Pike's Peak. As mining towns grew, farmers and ranchers who took root in the surrounding plains filled the need for flour, vegetables, meat and dairy products. The agricultural heritage of the land was firmly established in the 1870's as railroads connected the coasts of America making the region a center for agricultural commerce (Boulder County, 2007).

Also, during this time, coal was discovered in the area. The coal-mining era began with the discovery of the Boulder-Weld Coal Field in 1859. Mining in this field began in 1864 in Marshall and eventually made its way to Louisville in 1877 and Lafayette in 1889. Two historic mines were sunk on the Rock Creek Grasslands Open Space. The Hi-Way Mine operated from 1927 to 1954 when fire destroyed the main shaft and tibble. The Liley Mine opened in 1937 and closed on January 1, 1949 when the tibble burned down (Colorado Department of Natural Resources 1986). Eventually, natural gas began to replace the use of coal for fuel after World War II and the coal mines began to cut production and were eventually closed (City of Lafayette, 2007). The last mine in Boulder County closed in 1958.

7.2 Field Studies

In 1989, Native Cultural Resources conducted a class III cultural resource inventory of the Rock Creek/Coal Creek Trail Corridors for BCPOS. The project area included the land within 100 feet on each side of the center of Rock Creek from McCaslin Boulevard in Superior downstream to South 120th Street in Lafayette.

Three historic sites were found within the vicinity of the Rock Creek Grasslands Open Space. Of the three, only site 5BL374 has been determined eligible for the National Register of Historic Places (NRHP).

Site 5BL2721 is a historic concrete bridge constructed on U.S. Highway 287 over Rock Creek that dates to the early 1890's. This bridge has no significant engineering features and has lost historical associations because of maintenance activities.

Site 5BL2717 is an irrigation ditch in the west half of Section 14 that flows east into Rock Creek. At one time it diverted water from the now non-existent Clark's Reservoir. It was constructed relatively late and is therefore not considered a pioneer ditch. This site has been significantly modified and no longer conveys the character of a late 19th century ditch. The ditch also has no significant engineering features.

Site 5BL374 is the currently used Burlington Northern Railroad spur that runs adjacent to the northwest boundary of the property. It has been altered through maintenance activities over the last 50 years. Any significance the spur has was when it served the coal mining activity of the area between 1875 and 1930. Therefore, while it is eligible through its age, the changes make it less necessary to propose inclusion in the National Register of Historic Places.

Another inventory was conducted in 1994 for the Basin Operating Company as required by BCPOS (Brechtel, 1994). The survey area included approximately 12.6 acres around the now abandoned Roberts 21-23 well near the northwest corner of the Ruth Roberts Park parcel. Three unidentified Native American sites (sites 5BL4876, 5BL4877, and 5BL4878) were found within the survey area but all were heavily disturbed and are not considered eligible for the NRHP.

This survey also referenced other sites within the vicinity of the survey area. Of significance is site 5BL294. This site located just north of the Roberts 12-23 well and recorded in 1953, contained one Woodland projectile point and unidentified bones. There has been no determination as to whether or not the site is eligible for the NRHP, and further investigation may be warranted.

7.3 Cultural Resource Management

Due to the lack of evidence of significant cultural resources on Rock Creek Grasslands, no specific management actions shall be taken to preserve or protect specific cultural resources. However, due to the importance of the area for its native habitat, mining potential, and agricultural uses; interpretative elements should be included in trail developments for the site.

The trails offer an opportunity to discuss use of natural resources by Native Americans as well as settlers. It should also be noted that any disturbances created to construct trails, build new oil and gas roads, or make any other changes to the landscape should be closely monitored for evidence of cultural resources. If evidence of cultural resources is detected, work should stop immediately and the BCPOS Historic Preservation Specialist should be consulted immediately.

8 VISITOR RESOURCES

8.1 Existing Recreation

Located in the vicinity of Lafayette, Louisville, the City and County of Broomfield, Superior, and Erie, The Rock Creek Grasslands Open Space is an inviting area that currently provides passive recreation via the Rock Creek Regional Trail.

The Rock Creek Regional Trail is the major recreational feature on the Property. Both the Boulder County Comprehensive Plan (2002) and the Coal Creek-Rock Creek Trail Corridor Master Plan (1991) identify trail alignments on the Rock Creek Grasslands along Rock Creek. The goal of the Rock Creek Trail is to create a multiple-use regional trail that connects Superior, Broomfield, Lafayette, Weld County, and various public recreation lands.

The Rock Creek Regional Trail currently traverses the Ruth Roberts, Imel and American Pacific Financial properties. This major recreational feature provides great views into the Open Space and may provide opportunities for interpretation.

In accordance with the Southeast Boulder County Area Comprehensive Development Plan IGA, the Rock Creek Grasslands Open Space shall serve to provide “linkages and trails, access to public lakes, streams and other usable open space lands, stream corridors and scenic corridors along highways.” The Property will also preserve land “for outdoor recreation areas limited to passive recreational use, including but not limited to hiking, photography or nature studies, and, if specifically designated, bicycling, horseback riding, or fishing” (Boulder County et al. 1997). Also, the IGA states that residents of the cities of Broomfield and Lafayette will be allowed use of the Property upon the same terms and conditions as all Boulder County residents.

The City and County of Broomfield holds a permanent trail easement across the southeast corner of the Ruth Roberts parcel. This easement provides for a 40-foot wide trail corridor for the purposes of construction and maintenance of a hiking and bike trail that connects with Broomfield’s trail system. Public use of the trail is subject to Broomfield’s rules and regulations and Broomfield is responsible for its maintenance (Boulder County and City and County of Broomfield, 2005).

In addition, the City and County of Broomfield maintains an extensive network of trails including a 9-mile Lake Link Trail that extends from Josh’s Pond near Brainerd Drive to McKay Lake at Zuni Street. This, when coupled with the extensive trail

network within subdivisions like Wildgrass, provide great recreational opportunities for area residents.

8.2 Recreation Resources

As noted above, the Rock Creek Regional Trail passes through the Rock Creek Grasslands Open Space. The trail's current northern terminus is the southwest corner of the Two Creeks Open Space. It will eventually be connected to the Coal Creek Trail within the Two Creeks Open Space. From there, the trail winds its way south following Rock Creek and the Burlington Northern Railroad line. The trail then passes under the Northwest Parkway and continues southwest to the Carolyn Holmberg Preserve/Rock Creek Farm at Highway 287, and continues south and west to Superior.

Rock Creek Regional Trail is 10 feet wide and composed of crusher fines. It provides access for hikers, bikers, and horseback riders. There are currently two formal access points to the Rock Creek Trail within Rock Creek Grasslands. One point is at the eastern boundary of the Exemplar Hospital. The other access point is located along 120th St. at the Rock Creek East Trailhead in the City of Lafayette.

8.3 Education

Currently, there are no interpretive facilities or programs on the Rock Creek Grasslands Open Space. However, the many natural, cultural, and agricultural resources that occur in the area provide opportunities for interpretation. Some subjects for interpretation may include Rock Creek, the mining history of the area, the agricultural history of the area, revegetation on the Property, and the Burlington Northern Railroad.

8.4 Recreation Management

As an agriculturally leased property, Rock Creek Grasslands has been closed to public use since it was purchased. With restoration comes an opportunity to open the property to recreation and education. In order to provide access to the property and educational opportunities a number of new trails and trail connections are proposed (Figure 10). Trails will be between 8 and 10 feet wide (the proposed trail from Pony Estates to its intersection with Broomfield trails from the Wildgrass neighborhood will be four (4) feet wide). The proposed trails will create connections to larger trail networks in Boulder County, The City and County of Broomfield, and the City of Lafayette.

The trail network will be designed to minimize impacts on wildlife and vegetative resources while maximizing recreational potential. No trailheads are planned for the Rock Creek Grasslands properties. The County will work closely with The City and County of Broomfield in order to manage and provide recreational opportunities for interested users. Trail alignments will generally follow the paths indicated on Figure 10, one on the west side of the open space and one on the east side. No shelters will be developed along the trail; however, benches may be located at appropriate locations

along the trail's length. Where possible, alignments should follow existing trails or other trails already planned.

Developing access opportunities is an important part of this plan. However, the need to preserve and protect some areas under restoration meant that siting the trails was a key decision. The proposed trails are sited to provide connections and recreational opportunities while offering opportunities for education regarding the value of native grasslands. While no new trailheads are proposed, existing trailheads near Rock Creek Grasslands are being enhanced in accordance with other plans. There will also be several neighborhood access points. Alternative trail alignments that were seen as unsuitable are shown in Appendix H. The reasons for selecting the two preferred trail alternatives are outlined in Table 1.

The Western Link Trail is designed to connect existing trails in Broomfield with the Rock Creek Trail south of the Northwest Parkway. The trail generally parallels U.S. Highway 287 on Rock Creek Grasslands South. The chosen alignment uses a path that minimizes the need to construct bridges and crosses drainages at specific points to limit disruption of the drainage. The trail is also aligned to minimize slope to make the trail accessible.

On the east side of the Open Space the Eastern Link Trail connects Rock Creek Grasslands Central to the Coal Creek Trail in the Two Creeks Open Space. The staff team explored two options for this trail. The preferred option connects both the Pony Estates subdivision and the Wildgrass subdivision to the Rock Creek Trail. The trail uses a county-owned access easement on the north side of the Pony Estates subdivision, follows the eastern edge of the Rock Creek Grasslands Open Space, and connects to the Wildgrass subdivision in the City and County of Broomfield. The City and County of Broomfield and Boulder County will work together to see if it is possible to share trail access across the Wildgrass Conservation Easement to use funding efficiently and to avoid site disturbance. After connecting with the Broomfield trail system, the trail uses an existing underpass at the Northwest Parkway to head north toward the Two Creeks Open Space.

The trail alignments in this plan cross multiple jurisdictions. The opportunity to link these communities should not be overlooked. New trails can draw traffic to existing neighborhoods and this is not a desired impact. Therefore, prior to trail construction, Boulder County, the City and County of Broomfield, and the City of Lafayette should develop an intergovernmental agreement to govern cost-sharing and management responsibilities, where necessary. Though these new trails are being proposed, Boulder County Parks and Open Space is not proposing new trailhead locations. There are trailheads for the Rock Creek Trail at Rock Creek Farm and for the Coal Creek Trail at Flag Park and at 120th Street in Lafayette.

Table 1. Trail Decisions

Trail Segment	General Location	Preferred	Reasoning
Western Link	Western edge of property adjacent to U.S. 287	Yes	This alignment minimizes drainage crossings and is adjacent to an existing disturbance
Eastern Link A	Rock Creek Grasslands Central to RCG North. From Northern edge of Pony Estates	Yes	<ul style="list-style-type: none">- Direct Route- Avoids drainages- Few steep segments
Eastern Link B	RCG Central to RCG North. From Western edge of Pony Estates	No	<ul style="list-style-type: none">- Disrupts more drainages- Steep in parts
Liley Connection	NW Parkway underpass to west end of Liley at 120 th Street	No	<ul style="list-style-type: none">- Very steep sections- Crosses restored grassland
Archdiocese Connection	NW Parkway underpass north and east to Two Creek Open Space	No	<ul style="list-style-type: none">- Alignment would cross creek- Utilize undisturbed areas

8.4.1 Dogs on Open Space

Dogs are permitted on Rock Creek Grasslands Open Space. Boulder County Parks and Open Space permits dogs on certain open space properties throughout the County. Dog owners are required to keep their pets on a leash at all times within the open space (2008-31-5). This is for the safety of the pets as well as the flora and fauna on the open space.

8.4.2 Resource Interpretation

Rock Creek Grasslands presents an opportunity to interpret both natural and cultural history in a low impact manner. Interpretive signs should be located along the connector trails planned for the east and west edges of the property. Placement and sign context should be coordinated between the Education and Outreach Office of BCPOS, the Operations Department, the Resource Protection Department, and the Resource Management Department.

Signage shall meet standards set by BCPOS and should be designed to have a low impact on surrounding resources. Design should take into account the effect of interpretive signage on trail usage so as to discourage off-trail use.

8.4.3 Recreational Amenity Funding & Use

The cost of recreational amenities may be shared between interested political entities on a case-by-case basis. As recognized in the IGA Concerning the Proposed City and County of Broomfield, access to the Rock Creek Grasslands Open Space will be given to Broomfield residents on the same terms as Boulder County residents and joint funding will be considered between City and County of Broomfield and Boulder County.

Rules and regulations on the open space will conform to all Boulder County Parks and Open Space regulations. Rules and regulations on the connector trails will conform to all rules and regulations governing the Rock Creek Regional Trail. Enforcement will be the responsibility of the Boulder County Parks and Open Space Park Rangers and the Boulder County Sheriff's Department.

Map Created by: Lyle & Kuhnle Tishler & Associates, 2006
 1400 140th St, Suite 100, Golden, CO 80601
 (303) 440-1100

This map is for informational purposes only, and is not suitable for general specific decision-making. The values displayed here are approximate and may vary slightly due to changes in data or other factors.

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Rock Creek Grasslands Trails

- Eastern Unit A
- Western Unit
- Existing Broomfield Trails
- Proposed Broomfield Trails
- Regional Trail, Existing
- Regional Trail, Proposed
- County Open Space
- County Conservation Easement
- Joint County and Municipal Open Space

Rock Creek Grasslands Regions

- North
- Central
- South

0 1,500 3,000 Feet

Partners & Open Spaces

9 MANAGEMENT

9.1 Visitor Experience

The Rock Creek Grasslands Open Space shall, in concert with other grassland open spaces throughout the Boulder County Open Space Inventory, serve as a link to the open grassland heritage of Boulder County. Visitor use and alternative uses for the grassland must be managed with this in mind.

9.1.1 Conservation Area

The major feature available to visitors will be a trail system designed to minimize detrimental impact to the grassland, while providing a connection to the larger regional trails system and interpretation of the historical, agricultural, and ecological features of the Open Space. Consistent with the goal of preserving native grassland, the property shall remain closed to the public except in the proposed corridors. The open space will be closed as a Conservation Area under Restoration. Unlike some of BCPOS' Conservation Areas, this site will continue to experience intensive management while the native flora and fauna are recovering and reestablishing themselves within the grassland. Management will consist of activities described in the agricultural and wildlife management sections of this plan. Trail closures may occur within the trail corridors in order to facilitate management activities. However, these closures will be of a temporary nature.

Within 10 years of the establishment of the Rock Creek Grasslands Conservation Area, restoration activities will be assessed and regular intensive management may cease. However, the Rock Creek Grasslands, excluding trail corridors, shall remain closed to public use.

9.2 Management Plan Actions

The Rock Creek Grasslands Management Plan consists of both an assessment of the Open Space and a series of management actions. In order to ensure that management actions are carried out and occur in the proper order, a guide to these actions is provided as part of this document (Appendix I).

Due to the need for long range planning for many activities, this list does not specify dates for completion. Instead, actions are divided into short, medium, and long-term time frames. As a general rule, short-term actions are planned to take place within five years, medium-term actions within ten years, and long-term actions within twenty years of the adoption of the plan. These time frames allow BCPOS to plan for expenditures of public funds, staff allocation, and time actions for the greatest benefit over the life of the management plan.

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Appendix A: Easements

Ruth Roberts:

- Permanent Trail easement to Broomfield from Boulder County. Access to construct and maintain a trail for public use on southeastern corner of Ruth Roberts property. 40 foot trail easement.
- Non-exclusive access easement to Public Service Company (Excel) from Boulder County. Access to relocated valve set off of Dillon Road.
- Pipeline easement to Public Service Company (Excel) from Boulder County. Pipeline easement from intersection of Dillon Road and Rock Creek south along creek for ~1328 feet. 50 foot wide easement (25 feet on center).

Ruth Roberts Park:

NONE

Eberl:

- Gas line easement to Public Service Company from Boulder County. Pipeline easement basically the rest of the Ruth Roberts parcel easement.

Broomfield North:

NONE

Valley Investments:

NONE

Liley:

- Undivided Conservation Easement to both Lafayette and Broomfield for all areas of Liley not purchased by Broomfield for Northwest Parkway (NWP) Right of Way (ROW).

American Pacific Financial:

NONE

Thompson

- 300-foot highway easement to the NWP as part of the Northwest Parkway Intergovernmental Agreement (IGA).

11 ARCHDIOCESE

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- ROW easement for the NWP. Conveyed as part of the IGA with Northwest Parkway Authority.

12 BUTLER

- ROW easement for NWP. Conveyed as part of the IGA with NWPA.
- 30-foot roadway easement for Dillon Road on southern edge of property.

Roberts (Simi)

- Maintenance easement to NWPA from Boulder County on property.

Imel/Northwest Parkway:

NONE

Appendix B. Stakeholder Process Outcomes

The CRM process resulted in a number of proposed management actions. The stakeholders focused on a number of broad issues detailed below:

Property Conversion

- The property should be taken out of dryland crop production and planted to native grassland.

Weed Management

- Invasive weeds should be controlled.
- Grazing is an acceptable tool for weed management.
- Prescribed burning is an acceptable tool for weed management.
- Herbicide is an acceptable tool for weed management in an Integrated Weed -Management program.
- Public education and outreach should occur to help with the acceptance of prescribed burns and herbicide use.

Riparian Areas

- Sensitive ecological areas should be closed to the public.

Grazing

- Grazing is an acceptable management tool for maintaining healthy grassland, but should not be used strictly for promoting an agricultural focus for the area.
- However, grazing management should be designed to facilitate an operation that would be economically viable for a lessee.

Public Access

- Public access should be allowed.
- On-trail requirements are appropriate when there is a reason for them.
- Off-trail use is acceptable when it is not in conflict with other uses.
- Dusk to dawn hours are acceptable.

Trails

- Multi-use trails should be the focus.
- Regional trail connections should be pursued.
- Trail alignments should be designed to minimize recreational conflicts and impacts to the land.
- Amenities should be addressed as a staff discretion/site-planning item.

Dogs

- Dogs should be allowed.
- On-leash areas should occupy the majority of the property.
- Assess the area for appropriate off-leash areas and establish zone(s) where it is allowed.
- Plan off-leash areas to prevent conflict and in areas that use natural and existing boundaries.
- Implement a survey and monitoring program to see if this approach is working.
- Incorporate a public education program about the dog policies.

Education and Interpretation

- Some educational and interpretative areas should exist.

Property Naming

- The many property names that exist in the area should be eliminated and a new name should be created that gives a sense of place and meaning to the area. Property name suggestions included Northwest Parkway Grasslands, Heritage Grasslands, and Rock Creek Hills.

Partnering with a corporation or selling the naming rights should be considered in order to generate funding for expedited property reclamation and improvement.

Stakeholder Process participants:

Tina Nielsen	Boulder County
Dave Robertson	Boulder County POSAC
Cindy Lair	Louisville
Jeff Moline	Louisville
Pat Hornbostel	Louisville OSAC
Erin Frazier	Lafayette OSAC
Kristan Pritz	Broomfield
Patrick Quinn	Broomfield OSTAC
Al Green	Agricultural Tenant
Gail Harris	Agricultural Tenant
Byron Roderick	Agricultural Tenant
Jack May	Agricultural Tenant
Arlene Penner	BV Conservation District
Grant Burchell	Neighboring Homeowner
Beth Kane	Neighboring Homeowner
Kathleen Marr	Neighboring Homeowner
Jodi Hansen	Neighboring Homeowner
Carl Schlueter	Neighboring Homeowner
Bob Humphreys	Boulder County Horse Assoc.
Arnold Turner	Boulder County Horse Assoc.
Ann Henson	Colorado Native Plant Society
Sarada Krishnan	Colorado Native Plant Society
Rachel Dickson	Sierra Club
Eric Vogelsberg	Boulder Area Trails Coalition

Appendix C: Vegetation

Common Name	Scientific Name	Life Form	Native/Introduced	Noxious Weed Listing
Wild blue flax	<i>Adenolinum lewisii</i>	Forb	Native	
<u>Crested wheatgrass</u>	<u><i>Agropyron cristatum</i></u>	Graminoid	Introduced	
Redtop	<i>Agrostis gigantea</i>	Graminoid	Introduced	
<u>Alyssum</u>	<u><i>Alyssum parviflorum</i></u>	Forb	Introduced	
<u>Ragweed</u>	<u><i>Ambrosia psilostachya</i></u>	Forb	Native	
Big bluestem	<i>Andropogon gerardii</i>	Graminoid	Native	
Cheatgrass	<i>Anisantha tectorum</i>	Graminoid	Introduced	C
Purple three-awn	<i>Aristida purpurea</i>	Graminoid	Native	
Fringed sage	<i>Artemisia frigida</i>	Forb	Native	
Prairie sage	<i>Artemisia ludoviciana</i>	Forb	Native	
Showy milkweed	<i>Asclepias speciosa</i>	Forb	Native	
Fourwing saltbush	<i>Atriplex canescens</i>	Shrub	Native	
Sideoats grama	<i>Bouteloua curtipendula</i>	Graminoid	Native	
<u>Smooth brome</u>	<u><i>Bromopsis inermis</i></u>	Graminoid	Introduced	
<u>Japanese brome</u>	<u><i>Bromus japonicus</i></u>	Graminoid	Introduced	
Buffalograss	<i>Buchloe dactyloides</i>	Graminoid	Native	
Musk thistle	<i>Carduus nutans</i>	Forb	Introduced	B
Shortbeak sedge	<i>Carex brevior</i>	Wetland Graminoid	Native	
Emory's sedge	<i>Carex emoryi</i>	Wetland Graminoid	Native	
Spotted Knapweed	<i>Centaurea maculosa</i>	Forb	Introduced	B
Pin cherry	<i>Cerasus pensylvanica</i>	Tree	Native	
Common lambsquarters	<i>Chenopodium album</i>	Forb	Native	
Narrowleaf goosefoot	<i>Chenopodium leptophyllum</i>	Forb	Native	
Blue grama	<i>Chondrosium gracile</i>	Graminoid	Native	
Rubber Rabbitbrush	<i>Chrysothamnus nauseosus</i>	Shrub	Native	
<u>Dwarf rabbitbrush</u>	<i>Chrysothamnus nauseosus</i> subsp. <i>nauseosus</i>	Shrub	Native	
Canada thistle	<i>Cirsium arvense</i>	Forb	Introduced	B
Bull thistle	<i>Cirsium vulgare</i>	Forb	Introduced	B
Field bindweed	<i>Convolvulus arvensis</i>	Forb	Introduced	C
Hawthorn	<i>Crataegus erythropoda</i>	Shrub	Native	
Foxtail barley	<i>Criteston jubatum</i>	Graminoid	Native	
Hen-and-chickens	<i>Echinocereus viridiflorus</i>	Succulent	Native	

Common Name	Scientific Name	Life Form	Native/Introduced	Noxious Weed Listing
Russian olive	<i>Elaeagnus angustifolia</i>	Tree	Introduced	B
Pale spikerush	<i>Eleocharis macrostachya</i>	Wetland Graminoid	Native	
Squirreltail	<i>Elymus elymoides</i>	Graminoid	Native	
Quackgrass	<i>Elytrigia repens</i>	Graminoid	Introduced	B
Spreading fleabane	<i>Erigeron divergens</i>	Forb	Native	
Spreading buckwheat	<i>Eriogonum effusum</i>	Forb	Native	
Wild licorice	<i>Glycyrrhiza lepidota</i>	Forb	Native	
Broom Snakeweed	<i>Gutierrezia sarothrac</i>	Shrub	Native	
Common sunflower	<i>Helianthus annuus</i>	Forb	Native	
Little sunflower	<i>Helianthus pumilus</i>	Forb	Native	
Needle and thread grass	<i>Hesperostipa comata</i>	Graminoid	Native	
Hairy golden aster	<i>Heterotheca villosa</i>	Forb	Native	
Poverty weed	<i>Iva axillaris</i>	Forb	Native	
Colorado rush	<i>Juncus confusus</i>	Wetland Graminoid	Native	
Dudley's rush	<i>Juncus dudleyi</i>	Wetland Graminoid	Native	
<u>Kochia</u>	<u><i>Kochia scoparia</i></u>	Forb	Introduced	
Winterfat	<i>Krascheninnikovia lanata</i>	Forb	Native	
<u>Prickly lettuce</u>	<u><i>Lactuca serriola</i></u>	Forb	Introduced	
Duckweed	<i>Lemna sp.</i>	Forb	Native	
Gayfeather	<i>Liatris punctuata</i>	Graminoid	Native	
Purple loosestrife	<i>Lythrum salicaria</i>	Forb	Introduced	A
Lacy tansy aster	<i>Machaeranthera tanacetifolia</i>	Forb	Native	
Wild alfalfa	<u><i>Medicago sativa</i></u>	Forb	Introduced	
Yellow clover	<u><i>Melilotus officinale</i></u>	Forb	Introduced	
Green needlegrass	<i>Nassella viridula</i>	Graminoid	Native	
Wild tarragon	<i>Oligosporus dracunculus</i>	Forb	Native	
Prickly pear	<i>Opuntia macrorhiza</i>	Succulent	Native	
Indian ricegrass	<i>Oryzopsis hymenoides</i>	Graminoid	Native	
Chokecherry	<i>Padus virginiana</i>	Shrub	Native	
Switchgrass	<i>Panicum virgatum</i>	Graminoid	Native	
Western wheatgrass	<i>Pascopyrum smithii</i>	Graminoid	Native	
Opposite leaf bahia	<i>Picradeniopsis oppositifolia</i>	Forb	Native	
Woolly Plantain	<i>Plantago patagonica</i>	Forb	Native	
Kentucky bluegrass	<i>Poa pratensis</i>	Graminoid	Native	
Sandberg bluegrass	<i>Poa secunda</i>	Graminoid	Native	

Common Name	Scientific Name	Life Form	Native/Introduced	Noxious Weed Listing
Cottonwood	<i>Populus deltoides</i>	Tree	Native	
Skunkbrush	<i>Rhus aromatica</i>	Shrub	Native	
Curly dock	<u><i>Rumex crispus</i></u>	Forb	Introduced	
Peachleaf willow	<i>Salix amygdaloides</i>	Tree	Native	
Sandbar willow	<i>Salix exigua</i>	Shrub	Native	
<u>Crack willow</u>	<i>Salix fragilis</i>	Tree	Introduced	
Russian thistle	<u><i>Salsola iberica</i></u>	Forb	Introduced	
Tumblegrass	<i>Schedonnardus paniculatus</i>	Graminoid	Native	
Hardstem bulrush	<i>Schoenoplectus lacustris</i>	Wetland Graminoid	Native	
Threesquare bulrush	<i>Schoenoplectus pungens</i>	Wetland Graminoid	Native	
Panicled bulrush	<i>Scirpus microcarpus</i>	Wetland Graminoid	Native	
Cloaked bulrush	<i>Scirpus pallidus</i>	Wetland Graminoid	Native	
Butterweed	<i>Senecio spartioides</i>	Forb	Native	
Canada goldenrod	<i>Solidago canadensis</i>	Forb	Native	
Scarlet globemallow	<i>Sphaeralcea coccinea</i>	Forb	Native	
Sand dropseed	<u><i>Sporobolus cryptandrus</i></u>	Graminoid	Native	
Snowberry	<i>Symphoricarpos occidentalis</i>	Shrub	Native	
Hopi tea greenthread	<i>Thelesperma megapotamicum</i>	Forb	Native	
<u>Intermediate wheatgrass</u>	<i>Thinopyrum intermedium</i>	Graminoid	Introduced	
Salsify	<u><i>Tragopogon dubius</i></u>	Forb	Introduced	
Narrowleaf cattail	<i>Typha angustifolia</i>	Wetland Graminoid	Introduced	
Broadleaf cattail	<u><i>Typha latifolia</i></u>	Wetland Graminoid	Native	
White woody aster	<i>Virgulus ericoides</i>	Forb	Native	
Six weeks fescue	<i>Vulpia octoflora</i>	Graminoid	Native	
Lichen	<i>Xanthoparmelia sp.</i>	Lichen	Native	
Yucca	<i>Yucca glauca</i>	Shrub	Native	

U.S. National Vegetation Classification System

The U.S. National Vegetation Classification System (NVCS) is a standard vegetation classification and mapping system used by numerous federal, state, and local government agencies, as well as other non-governmental organizations (e.g. state Natural Heritage programs). Boulder County Parks & Open Space is utilizing this system to map, classify, and track long-term changes in vegetation across much of its non-agricultural open space properties.

The following shows the hierarchy and an example of the NVCS and provides definitions for terms used in the classification system. BCPOS classifies vegetation down to the level of Alliance.

Hierarchy of U.S. National Vegetation Classification System

Class (vegetation structure, e.g. woodland)

Subclass (leaf phenology, e.g. evergreen woodland)

Group (leaf type, climate type, e.g. temperate or subpolar needle-leaved evergreen woodland)

Subgroup (degree of naturalness, e.g. natural/semi-natural temperate or subpolar needle-leaved evergreen woodland)

Formation (other physiognomic or environmental factors, e.g. rounded-crowned temperate or subpolar needle-leaved evergreen woodland)

Alliance (dominant species in uppermost stratum, e.g. Ponderosa pine woodland alliance)

Association (additional dominants from any stratum, e.g. Ponderosa pine/Ross's sedge /silver sage/hairy false golden aster/needle-and-thread)

Definition of Terms (from Maybury 1999, Appendix B, p. 26)

Forest: *Trees with their crowns overlapping (generally forming 60 percent to 100 percent cover).*

Woodland: *Open stands of trees with crowns not usually touching (generally forming 25 percent to 60 percent cover).*

Shrubland: *Shrubs generally greater than 0.5 meter tall with individuals or clumps overlapping to not touching (generally forming more than 25 percent cover, with trees generally forming less than 25 percent cover). Vegetation dominated by woody vines is generally treated in this class.*

Dwarf-Shrubland: *Low-growing shrubs usually under 0.5 meter tall with individuals or clumps overlapping to not touching (generally forming greater than 25 percent cover, with trees and tall shrubs generally forming less than 25 percent cover).*

Herbaceous: *Herbaceous plants dominant (generally forming at least 25 percent cover; with trees, shrubs, and dwarf-shrubs generally forming less than 25 percent cover).*

Maybury, K.P., editor. 1999. Seeing the Forest and the Trees: Ecological Classification for Conservation. The Nature Conservancy, Arlington, VA. 23 pp. plus appendices.

Appendix D: Common and scientific names of all bird species (n = 24) detected within 100 meters of the observer during breeding bird surveys on the Liley property in Rock Creek Grasslands, 2007-2009.

Common Name	Scientific Name
American Goldfinch	<i>Carduelis tristis</i>
American Kestrel	<i>Falco sparverius</i>
American Robin	<i>Turdus migratorius</i>
Black-billed Magpie	<i>Pica hudsonia</i>
Blue Grosbeak	<i>Passerina caerulea</i>
Bullock's Oriole	<i>Icterus bullockii</i>
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>
Common Grackle	<i>Quiscalus quiscula</i>
Common Nighthawk	<i>Chordeiles minor</i>
Common Yellowthroat	<i>Geothlypis trichas</i>
European Starling*	<i>Sturnus vulgaris</i>
Great-tailed Grackle	<i>Quiscalus mexicanus</i>
Horned Lark**	<i>Eremophila alpestris</i>
House Finch	<i>Carpodacus mexicanus</i>
Killdeer	<i>Charadrius vociferus</i>
Lark Sparrow**	<i>Chondestes grammacus</i>
Mourning Dove	<i>Zenaida macroura</i>
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>
Red-winged Blackbird	<i>Agelaius phoeniceus</i>
Rock Pigeon*	<i>Columba livia</i>
Vesper Sparrow**	<i>Poocetes gramineus</i>
Western Kingbird	<i>Tyrannus verticalis</i>
Western Meadowlark**	<i>Sturnella neglecta</i>
Western Wood-Pewee	<i>Contopus sordidulus</i>

*non-native

**grassland obligate

Appendix E: Bird abundance detected \leq 100 meters of the observer at each point on the Liley property in Rock Creek Grasslands, 2007-2009.

2007

Station	Common Name	Total Individuals
6	Horned Lark**	6
	House Finch	1
	Common Grackle	2
	Cliff Swallow	10
	European Starling*	1
	Mourning Dove	7
	Vesper Sparrow**	2
	Western Meadowlark**	1
	American Robin	3
	Western Kingbird	2

2008

1	Black-billed Magpie	1
	Blue Grosbeak	1
	Cliff Swallow	10
	Common Nighthawk	1
	Horned Lark	8
	House Finch	1
	Mourning Dove	3
	Vesper Sparrow	2
	Western Meadowlark	3
	Western Wood-Pewee	1

Station	Common Name	Total Individuals
2	Black-billed Magpie	6
	Blue Grosbeak	2
	Cliff Swallow	15
	Killdeer	2
	Red-winged Blackbird	3
	Vesper Sparrow	4
	Western Meadowlark	8
	Western Wood-Pewee	1
	Cliff Swallow	3
	Common Grackle	15
3	Horned Lark	2
	Killdeer	4
	Mourning Dove	5
	Red-winged Blackbird	9
	Vesper Sparrow	3
	Western Meadowlark	8

*Non-Native

**Grassland Obligate

2008

Station	Common Name	Total Individuals
4	American Kestrel	4
	Black-billed Magpie	2
	Cliff Swallow	4
	Common Grackle	1
	Horned Lark	1
	Killdeer	1
	Mourning Dove	1
	Vesper Sparrow	2
	Western Kingbird	2
	Western Meadowlark	2
6	Cliff Swallow	9
	Common Nighthawk	1
	Horned Lark	6
	House Finch	1
	Mourning Dove	4
	Northern Rough-winged Swallow	2
	Rock Pigeon*	1
	Vesper Sparrow	1
	Western Kingbird	1
	Western Meadowlark	1
	Western Wood-Pewee	1

2009

3	Common Yellowthroat	1
	Horned Lark	2
	Mourning Dove	8
	Red-winged Blackbird	6
	Vesper Sparrow	6
	Western Kingbird	1
	Western Meadowlark	6
4	American Goldfinch	4
	Black-billed Magpie	2
	Blue Grosbeak	1
	Bullock's Oriole	1
	Common Grackle	1
	European Starling	8
	Horned Lark	1
	House Finch	3
	Lark Sparrow**	2
	Mourning Dove	5
	Red-winged Blackbird	1
	Vesper Sparrow	1
6	Western Kingbird	5
	Western Meadowlark	7
	American Robin	1
	Horned Lark	3
	Vesper Sparrow	4
	Western Meadowlark	5

Appendix F. Numbers of different species (i.e., species richness) detected \leq 100 meters of the observer at each point on the Liley property on Rock Creek Grasslands, 2007-2009.

Survey Point	Year	Species Richness
1	2008	10
1	2009	9
2	2008	8
2	2009	9
3	2008	8
3	2009	7
4	2008	10
4	2009	14
6	2007	11
6	2008	11
6	2009	4

Appendix G: Wildlife

Common Name	Scientific Name	US ESA	State / BOCO Status	Federal Sensitive Species (Agency)	CNHP
Birds					
American Goldfinch	<i>Carduelis tristis</i>				
American Kestrel	<i>Falco sparverius</i>				
American Robin	<i>Turdus migratorius</i>				
Bald Eagle	<i>Haliaeetus leucocephalus</i>		SC (CDOW)	USFS	
Barn Swallow	<i>Hirundo rustica</i>				
Black-billed Magpie	<i>Pica pica</i>				
Black-capped Chickadee	<i>Poecile atricapillus</i>				
Black-crowned Night Heron	<i>Nycticorax nycticorax</i>				
Blue Grosbeak	<i>Passerina caerulea</i>				
Brewer's Blackbird	<i>Euphagus cyanocephalus</i>				
Brown-headed Cowbird	<i>Molothrus ater</i>				
Bullock's Oriole	<i>Icterus bullockii</i>				
Burrowing Owl	<i>Athene cunicularia</i>		State Threatened	USFS	Y
Cassin's Sparrow	<i>Aimophila cassinii</i>			USFS	
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>				
Common Grackle	<i>Quiscalus quiscula</i>				
Common Nighthawk	<i>Chordeiles minor</i>				
Common Snipe	<i>Gallinago gallinago</i>				
Common Yellowthroat	<i>Geothlypis trichas</i>				
Dickcissel	<i>Spiza americana</i>				
Downy Woodpecker	<i>Picoides pubescens</i>				
Eastern Kingbird	<i>Tyrannus tyrannus</i>				
European Starling	<i>Sturnus vulgaris</i>				
Ferruginous Hawk	<i>Buteo regalis</i>		SC	USFS, BLM	
Golden Eagle	<i>Aquila chrysaetos</i>				
Grasshopper Sparrow	<i>Ammodramus savannarum</i>				
Great Blue Heron	<i>Ardea herodias</i>				
Great Horned Owl	<i>Bubo virginianus</i>				
Horned Lark	<i>Eremophila alpestris</i>				

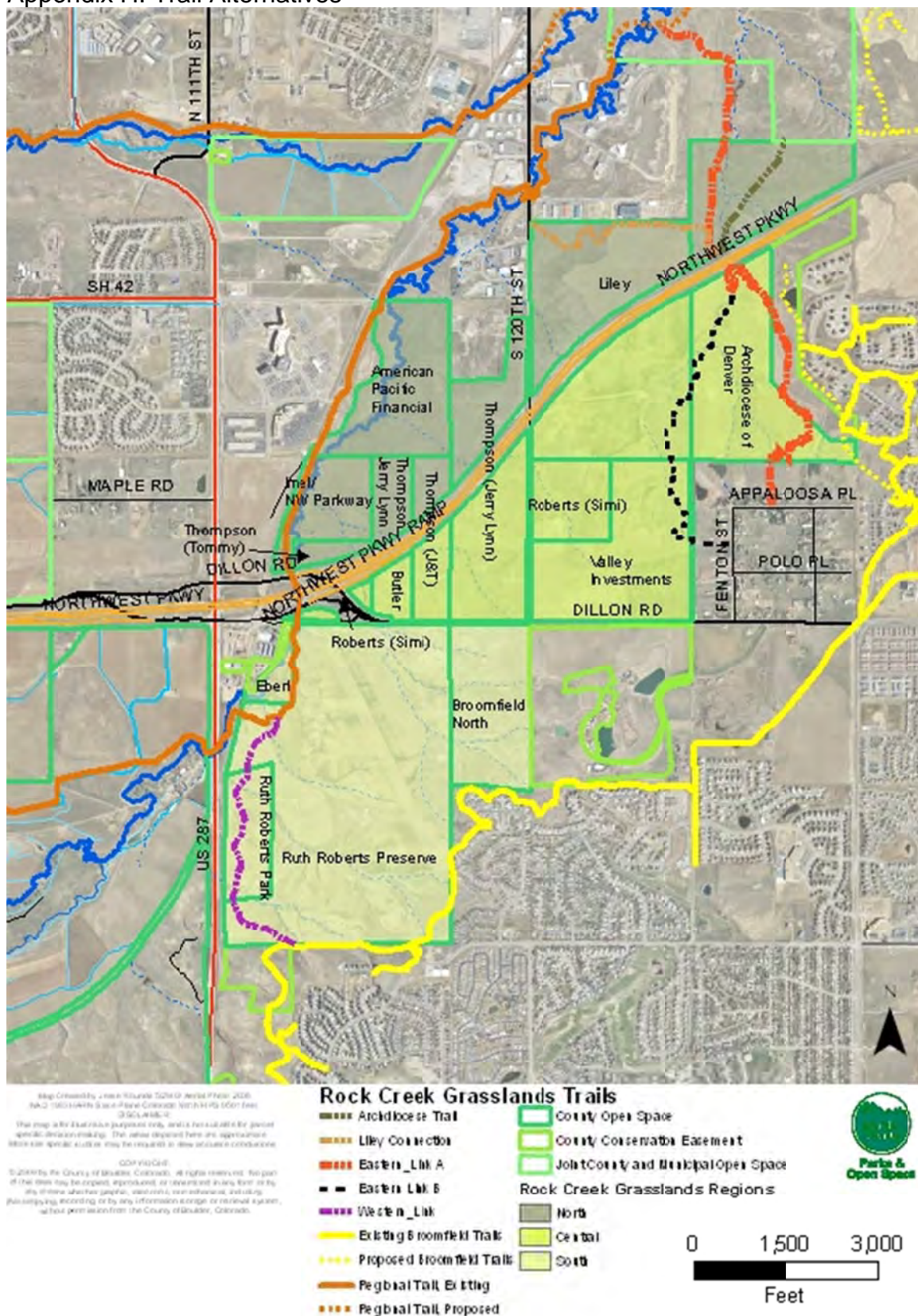
Common Name	Scientific Name	US ESA	State / BOCO Status	Federal Sensitive Species (Agency)	CNHP
House Finch	<i>Carpodacus mexicanus</i>				
House Wren	<i>Troglodytes aedon</i>				
Killdeer	<i>Charadrius vociferus</i>				
Lark Bunting	<i>Calamospiza melanocorys</i>				
Lark Sparrow	<i>Chondestes grammacus</i>				
Loggerhead Shrike	<i>Lanius ludovicianus</i>			USFS	
Mallard	<i>Anas platyrhynchos</i>				
Mourning Dove	<i>Zenaidura macroura</i>				
Northern Flicker	<i>Colaptes auratus</i>				
Prairie Falcon	<i>Falco mexicanus</i>				Y
Red-tailed Hawk	<i>Buteo jamaicensis</i>				
Red-winged Blackbird	<i>Agelaius phoeniceus</i>				
Rock Pigeon	<i>Columba livia</i>				
Rough-legged Hawk	<i>Buteo lagopus</i>				
<i>Savannah Sparrow</i> (?)	<i>Passerculus sandwichensis</i>				
Say's Phoebe	<i>Sayornis saya</i>				
Short-eared Owl	<i>Asio flammeus</i>			USFS	
Song Sparrow	<i>Melospiza melodia</i>				
Spotted Towhee	<i>Pipilo maculatus</i>				
Swainson's Hawk	<i>Buteo swainsoni</i>				
Turkey Vulture	<i>Cathartes aura</i>				
Vesper Sparrow	<i>Pooecetes gramineus</i>				
Western Kingbird	<i>Tyrannus verticalis</i>				
Western Meadowlark	<i>Sturnella neglecta</i>				
Yellow Warbler	<i>Dendroica petechia</i>				
Yellow-breasted Chat	<i>Icteria virens</i>				
Yellow-headed Blackbird	<i>Xanthocephalus xanthocephalus</i>				
Mammals					
American Badger	<i>Taxidea Taxidis</i>				
Big Brown Bat	<i>Eptesicus fuscus</i>				

Common Name	Scientific Name	US ESA	State / BOCO Status	Federal Sensitive Species (Agency)	CNHP
Black-tailed Jackrabbit	<i>Lepus californicus</i>				
Black-tailed Prairie Dog	<i>Cynomys ludovicianus</i>		SC	USFS	
Bobcat	<i>Lynx rufus</i>				
Coyote	<i>Canis Latrans</i>				
Deer Mouse	<i>Peromyscus maniculatus</i>				
Desert Cottontail	<i>Sylvilagus audubonii</i>				
Eastern Cottontail	<i>Sylvilagus floridanus</i>				
Fox Squirrel	<i>Sciurus niger</i>				
Hispid Pocket Mouse	<i>Chaetodipus hispidus</i>				
Hoary Bat	<i>Lasiurus cinereus</i>				
House Mouse	<i>Mus musculus</i>				
Least shrew	<i>Cryptotis parva</i>				
Little Brown Myotis	<i>Myotis lucifugus</i>				
Long-tailed Weasel	<i>Mustela frenata</i>				
Merriam's Shrew	<i>Sorex merriami</i>				
Mule Deer	<i>Odocoileus hemionus</i>				
Muskrat	<i>Ondatra zibethicus</i>				
Northern Grasshopper Mouse	<i>Onychomys leucogaster</i>				
Northern Pocket Golpher	<i>Thomomys talpoides</i>		SC		
Norway Rat	<i>Rattus norvegicus</i>				
Olive-backed Pocket Mouse	<i>Perognathus fasciatus</i>		S3		
Ord's Kangaroo Rat	<i>Dipodomys ordii</i>		S3	USFS	
Plains Harvest Mouse	<i>Reithrodontomys montanus</i>		SH		
Plains Pocket Gopher	<i>Geomys bursarius</i>				
Plains Pocket Mouse	<i>Perognathus flavescens</i>				
Prairie Vole	<i>Microtus ochrogaster</i>				
Preble's Meadow Jumping Mouse	<i>Zapus hudsonius preblei</i>	T	S1		
Raccoon	<i>Procyon lotor</i>				
Red Fox	<i>Vulpes vulpes</i>				
Rock Squirrel	<i>Spermophilus variegatus</i>				
Silky Pocket Mouse	<i>Perognathus flavus</i>				

Common Name	Scientific Name	US ESA	State / BOCO Status	Federal Sensitive Species (Agency)	CNHP
Silver-haired Bat	<i>Lasionycteris noctivagans</i>				
Spotted Ground Squirrel	<i>Spermophilus spilosoma</i>				
Striped Skunk	<i>Mephitis mephitis</i>				
Swift Fox	<i>Vulpes velox</i>		S3	USFS	Y
Thirteen-lined Ground Squirrel	<i>Spermophilus tridecemlineatus</i>				
Virginia Opossum	<i>Didelphis virginiana</i>				
Western Harvest Mouse	<i>Reithrodontomys megalotis</i>				
Western Small-footed Myotis	<i>Myotis ciliolabrum</i>				
White-tailed Deer	<i>Odocoileus virginianus</i>				
White-tailed Jackrabbit	<i>Lepus townsendii</i>				
Amphibians					
Bullfrog	<i>Rana catesbeiana</i>				
Great Plains Toad	<i>Bufo cognatus</i>				
Northern Leopard Frog	<i>Rana sphenoccephala</i>		SC (CDOW)	USFS, BLM	
Plains Spadefoot	<i>Spea bombifrons</i>				
Tiger Salamander	<i>Ambystoma tigrinum</i>				
Western Chorus Frog	<i>Hyla chrysoscelis</i>				
Woodhouse's Toad	<i>Bufo woodhousii</i>				
Lizards					
Lesser Earless Lizard	<i>Holbrookia maculata</i>				
Many-lined Skink	<i>Eumeces fasciatus</i>				
Prairie/Plateau Lizard	<i>Sceloporus consobrinus</i>				
Short-horned Lizard	<i>Phrynosoma douglassi</i>				
Six-lined Racerunner	<i>Cnemidophorus sexlineatus</i>				
Snakes					
Bull Snake/Gopher Snake	<i>Pituophis catenifer</i>				
Common Garter Snake	<i>Thamnophis sirtalis</i>		SC		
Lined Snake	<i>Tropidoclonion lineatum</i>		S4		

Common Name	Scientific Name	US ESA	State / BOCO Status	Federal Sensitive Species (Agency)	CNHP
Milk Snake	<i>Lampropeltis triangulum</i>			BLM	
Plains Blackhead Snake	<i>Tantilla nigriceps</i>				
Plains Garter Snake	<i>Thamnophis radix</i>				
Racer	<i>Coluber constrictor</i>				
W.Terrestrial Garter Snake	<i>Thamnophis elegans</i>				
Western Hognose Snake	<i>Heterodon nasicus</i>				
Western Rattlesnake	<i>Crotalus oreganus</i>				
Insects					
Cross-line skipper	<i>Polites origenes rhena</i>				Y
Mottled duskywing	<i>Erynnis martialis</i>				
Ottoo skipper	<i>Hesperia ottoe</i>				
Prairie Arogos skipper	<i>Atrytone arogos iowa</i>				
Prairie regal fritillary	<i>Speyeria idalia</i>				
Two-spotted skipper	<i>Euphyes bimacula</i>				
Prairie tiger beetle	<i>Cicindela nebraskana</i>				
Fish					
Creek Chub	<i>Semotilus atromaculatus</i>				
Common Shiner	<i>Luxilus cornutus</i>		ST		
Longnose Dace	<i>Rhinichthys cataractae</i>				
White Sucker	<i>Catostomus commersoni</i>				
Johnny Darter	<i>Etheostoma nigrum</i>				
Western Mosquito Fish*	<i>Gambusia affinis</i>				
Plains Topminnow	<i>Fundulus sciadicus</i>				
Bluegill*	<i>Lepomis macrochirus</i>				
Largemouth Bass*	<i>Micropterus salmoides</i>				
Sand Shiner	<i>Notropis stramineus</i>				
Green Sunfish	<i>Lepomis cyanellus</i>				
Central Stoneroller	<i>Camptostoma anomalum</i>				
Plains Killfish	<i>Fundulus zebrinus</i>				
Fathead Minnow	<i>Pimephales promelas</i>				

Bolded bird species are listed as Boulder County Species of Concern by the Boulder County Nature Association



Appendix I: Management Actions

Action	Time Frame	Duration	Priority
	Short-term = 1-5 years Medium-term = 5-10 years Long-term = 10-20 years	Short Long Continuous	High Medium Low
Vegetation Management			
Complete Grassland Conversion	S	S	H
Limit Public Access	S	C	H
Control Invasive Species	S	C	H
Manage prairie dog colonies	S	C	H
Develop restoration management plan	S	S	H
Agricultural Management			
Control Invasive Species	S	C	H
Complete Grassland Conversion	S	S	H
Develop restoration plan	S	S	H
Wildlife Management			
Develop Wildlife Monitoring Program	S	C	M
Manage Prairie Dog Colonies to reduce land use conflicts	S	C	M
Manage Prairie Dogs to Promote Burrowing Owl Habitat	S	C	H
Cultural Resource Management			
Monitor trail development	M	S	M
Recreation Management			
Complete trail connections/agreements with Broomfield and Lafayette	S	S	H
Construct western trail	S	S	H
Construct eastern trail	S	S	M
Enforce Trail Closures	S	C	H
Maintain Trails	S	C	M
Develop Interpretive Signage	M	S	L