



Parks and Open Space

5201 St. Vrain Road • Longmont, Colorado 80503
303.678.6200 • Fax: 303.678.6177 • www.bouldercounty.org

MINUTES AND PROCEEDINGS OF THE PARKS AND OPEN SPACE ADVISORY COMMITTEE May 25, 2017

The meeting was called to order at 6:34 p.m. by John Nibarger in the Hearing Room of the Board of Commissioners, Third Floor, Boulder County Courthouse, Boulder, Colorado.

POSAC Members in Attendance

Present: Jenn Archuleta, Cathy Comstock, Jim Krug, Scott Miller, John Nibarger, and Gordon Pedrow

Excused: Sue Anderson, James Mapes, and Heather Williams

Staff in Attendance

Sandy Duff, Tina Burghardt, Dave Hoerath, Janis Whisman, Renata Frye, Conrad Lattes, Al Hardy, Therese Glowacki, and Eric Lane

Approval of the April 27, 2017 Meeting Minutes

Action Taken: Jenn Archuleta moved to accept the previous month's minutes. Gordon Pedrow seconded the motion. Motion carried 5-0. [Scott Miller abstained because he was not at the April meeting.]

Public Participation - Items not on the Agenda

None

Wall Street Lots, Betasso and Hannum (Philip)-2017 Transfer of Management

Staff Presenter: Tina Burghardt – Land Officer

Action Requested: Recommendation to BOCC

Public Comments: None

Action Taken: Jim Krug moved to accept staff recommendation for the transfer of management as presented, and Scott Miller seconded the motion. ***After discussion, motion carried unanimously.***

BLM Exchange-Ward Area-Tamminga Exchange and BLM Exchange-Ward Area-Columbine CE Amendment

Staff Presenter: Sandy Duff – Land Officer

Action Requested: Recommendation to BOCC

Public Comments: None

Action Taken: Jenn Archuleta moved to accept staff recommendation for the exchange as presented, and Jim Krug seconded the motion. **After discussion, motion carried unanimously.**

Marshall-Superior-Coalton Trail Corridor Management Plan Amendment for Coal Creek Connector Trail

Staff Presenters: Al Hardy – Recreation and Facilities Division Manager

Action Requested: Recommendation to BOCC

Public Comments:

- Robert Besen, 214 6th Ave., Superior. He spoke in favor of the proposed amendment.
- Peter Bottomley, 2101 Goldeneye Pl., Superior. He spoke in favor of the proposed amendment.

Action Taken: John Nibarger moved to accept staff recommendation for the amendment, but with one proposed change to move the northernmost redundant connection. Gordon Pedrow seconded the motion. **After discussion, motion carried unanimously.**

Heil 2 Temporary Trailhead

Staff Presenters: Al Hardy – Recreation and Facilities Division Manager

Action Requested: Information Only

Public Comments: None

Rabbit Mountain Elk Management Plan (Part 2)

Staff Presenters: Therese Glowacki – Resource Management Division Manager

Action Requested: Recommendation to BOCC

No Public Comments were allowed at this second meeting.

Action Taken:

Motion 1: Cathy Comstock moved to accept the plan with the exception of hunting and with the addition of fencing, extensive hazing, partner with the CSU contraception research team, and an independent review of results. ***Motion failed after not being seconded.***

Motion 2: Jim Krug moved to accept the staff's plan as presented. Scott Miller seconded the motion with a friendly amendment to direct staff to frequently revisit the plan to consider alternative methods as a management tool for sustaining appropriate populations for the herd. ***Motion failed 3-3 [Jim, Scott, and John voted in favor; Jenn, Gordon, and Cathy voted against].***

POSAC Recommendation:

After failing to get a motion passed, POSAC members individually made their own recommendations.

- John Nibarger: All options should be looked into, including working with CSU, fencing, hazing, culling, and regularly reevaluating the results.
- Jenn Archuleta: Place trails in the area with the elk and conduct extensive hazing along with discussions with private property owners.
- Scott Miller: Staff should look into culling, but he agrees that something should happen quickly.
- Gordon Pedrow: Culling has real promise and should be examined.
- Cathy Comstock: Staff should use non-violent methods including cheap fencing, extensive hazing, CSU contraceptive project, additional experts, independent review, and the use of grants.
- Jim Krug: He thinks something should be done due to the vegetative damage.

Director's Update

- Tina Nielsen and Al Hardy led the regional bike trail tour on May 20. Two POSAC members attended. A total of twenty people attended, representing open space advisory boards from Longmont, Superior, Boulder, and Lafayette.
- The phone app Avenza is very useful for finding open space properties in Boulder County.

Adjournment

The meeting adjourned at 10:33 p.m.

The full audio, available staff memos, and related materials for this meeting can be found on our website: www.BoulderCountyOpenSpace.org/POSAC



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PARKS AND OPEN SPACE ADVISORY COMMITTEE MEETING

DATE: Thursday, May 25, 2017
TIME: 6:30 pm
PLACE: Commissioners' Hearing Room, 3rd Floor, Boulder County Courthouse,
1325 Pearl Street, Boulder, CO

AGENDA

Suggested Timetable

- 6:30 1. **Approval of the April 27, 2017 Meeting Minutes**
- 6:35 2. **Public Participation - Items not on the Agenda**
- 6:40 3. **Wall Street Lots, Betasso and Hannum (Philip)-2017 Transfer of Management**
Staff Presenter: Tina Burghardt – Land Officer
Action Requested: Recommendation to BOCC
- 6:50 4. **BLM Exchange-Ward Area-Tamminga Exchange and BLM Exchange-Ward Area-Columbine CE Amendment**
Staff Presenter: Sandy Duff – Land Officer
Action Requested: Recommendation to BOCC
- 7:10 5. **Marshall-Superior-Coalton Trail Corridor Management Plan Amendment for Coal Creek Connector Trail**
Staff Presenters: Al Hardy – Recreation and Facilities Division Manager
Action Requested: Recommendation to BOCC
- 7:30 6. **Rabbit Mountain Elk Management Plan (Part 2)**
Staff Presenters: Therese Glowacki – Resource Management Division Manager
Action Requested: Recommendation to BOCC
- 9:30 7. **Heil 2 Temporary Trailhead**
Staff Presenters: Al Hardy – Recreation and Facilities Division Manager
Action Requested: Information Only
- 9:45 8. **Director's Update**
- 9:55 9. **Adjourn**

Available staff memos & related materials for this meeting may be viewed on our website:
www.BoulderCountyOpenSpace.org/POSAC



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PARKS AND OPEN SPACE ADVISORY COMMITTEE MEETING

TO: Parks & Open Space Advisory Committee

DATE AND LOCATION: 6:30 p.m., Thursday, May 25, 2017 Commissioners Hearing Room, 3rd floor Boulder County Courthouse, 1325 Pearl Street, Boulder, CO

AGENDA ITEM TITLE: Walls Street Lots, Hannum (Philip) & Betasso-Transfer of Management (For Upper & Lower Four Mile Road Repair and Stream Restoration)

PRESENTER: Tina Burghardt, Land Officer

ACTION REQUESTED: Recommendation to the BOCC

Summary

Boulder County proposes to transfer management of approximately 0.026 acres of land that is currently under the management of the Boulder County Parks and Open Space Department to the Boulder County Transportation Department for road repairs and stream restoration work on Upper and Lower Four Mile Canyon Road in Boulder County.

Background

Boulder County Transportation is repairing multiple sections Upper and Lower Four Mile Canyon Road that were damaged in the 2013 Flood. Repairs to the road also include stream restoration work, which is also being conducted by the Boulder County Transportation Department. These efforts will affect relatively small portions on the Wall Street Lots, Hannum (Philip) and Betasso Open Space properties. Although both the road and properties are owned by Boulder County, they are under different managing departments.

Transportation will be taking over management of the 0.026 acres of land that is currently under the management of Boulder County Parks and Open Space. Since the above referenced properties were purchased with Open Space Sales Tax funds, Parks and Open Space needs to be reimbursed by Transportation for the loss of open space. Both Departments are part of the county, so Transportation has proposed acre-for-acre swaps, rather than dollar transfers, because from time to time, Transportation acquires more land than what is needed for road right-of-way land that might be suitable for open space.

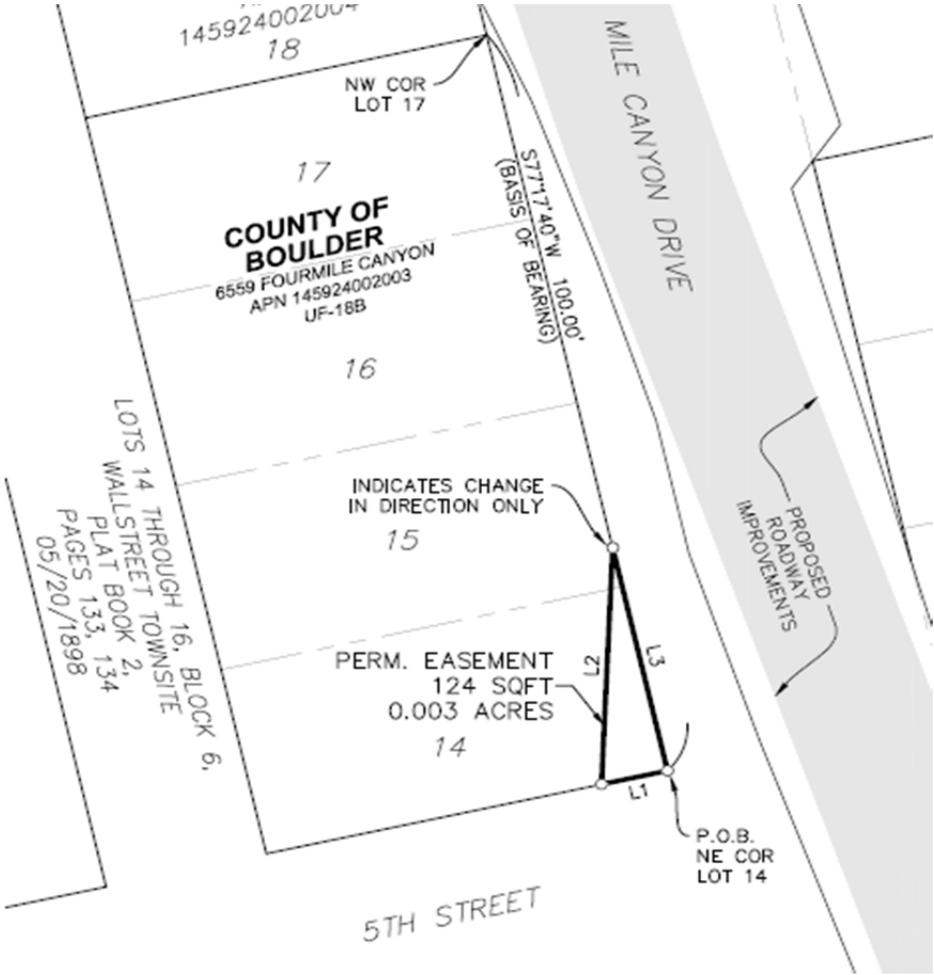
Public Process

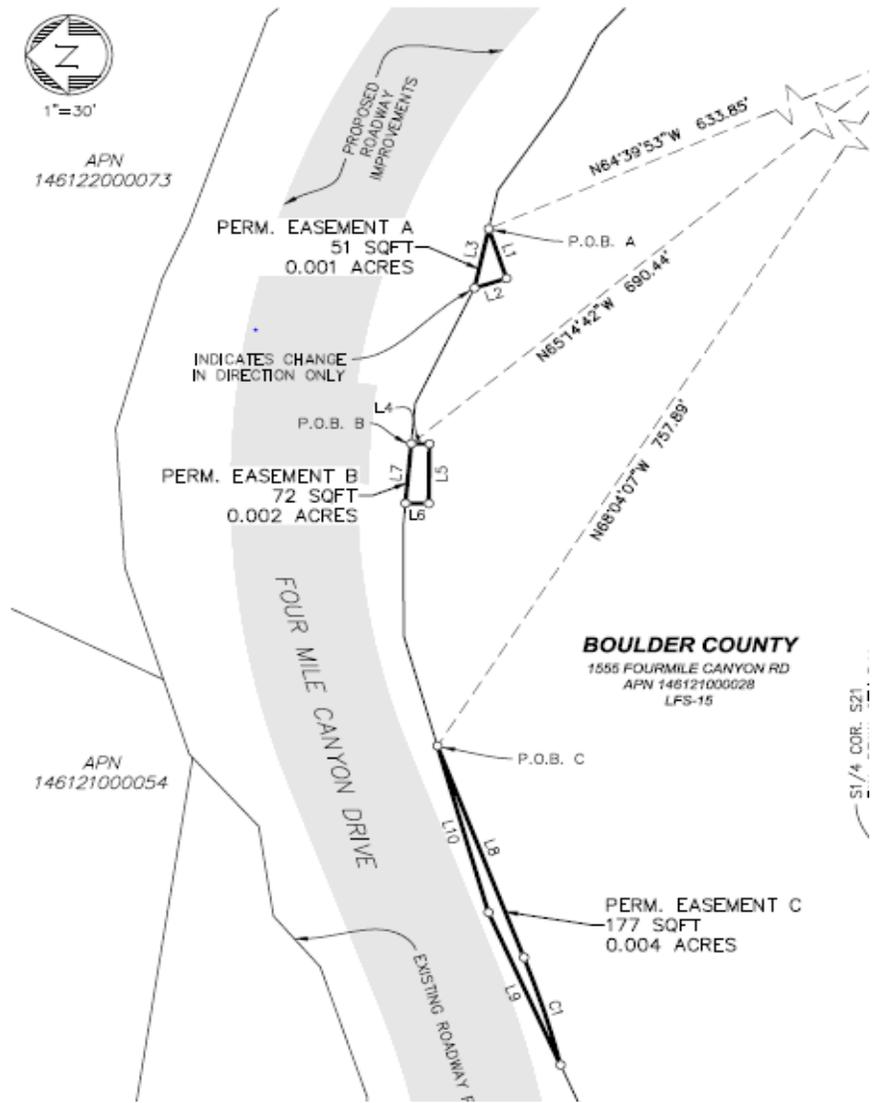
The terms of the resolution creating the sales tax that was used to purchase the Walls Street Lots, Hannum (Philip) and Betasso Open Space properties require specific procedures be followed to dispose of these properties, including adjacent property owner notification, newspaper notice, and a 60-day waiting period following county commissioner approval. The notices included an invitation to attend and comment at this meeting. No public comments have been received to date, and any additional comments we receive will be shared with you at the meeting.

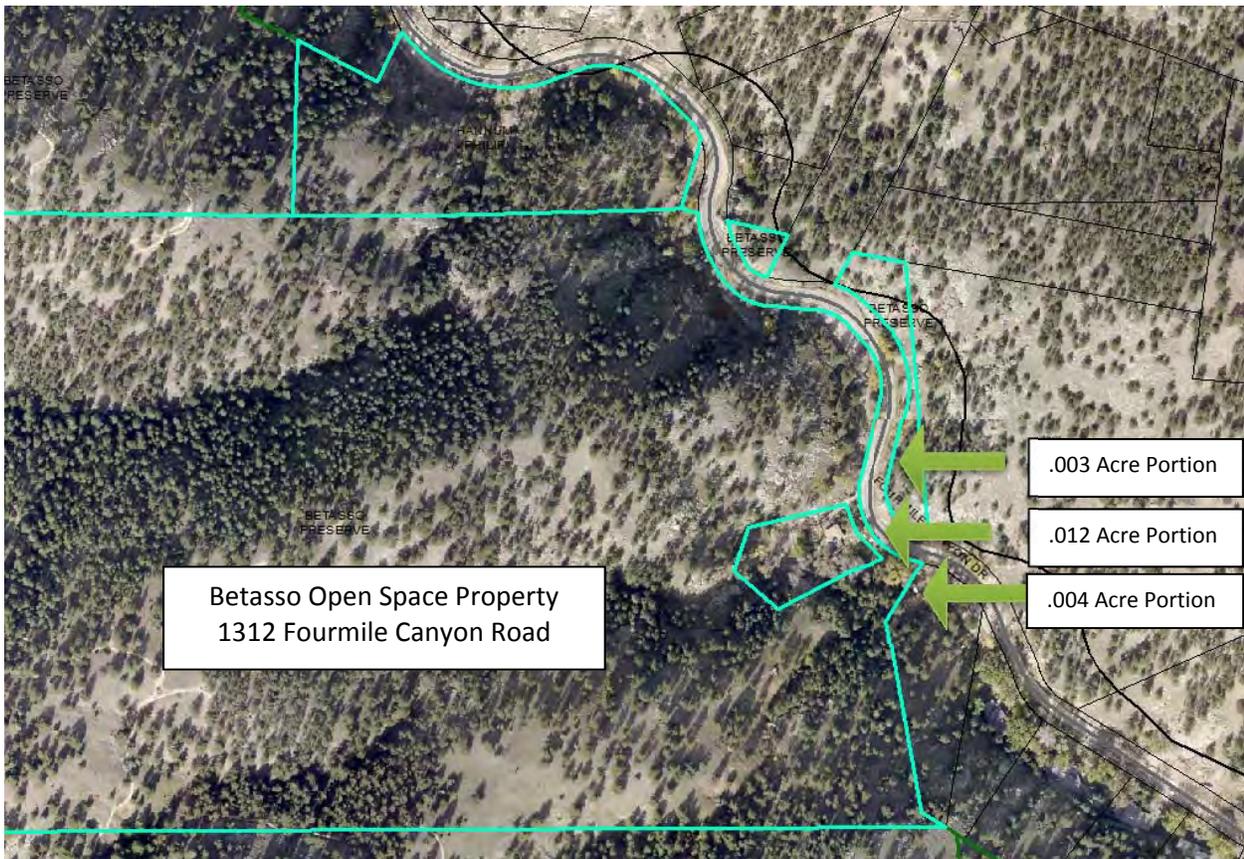
Staff Discussion and Recommendation

Staff recommends the requested transfer of management and swap arrangement for approval. Parks and Open Space will maintain the balance sheet to track land transferred for transportation uses v. land received for open space, and Parks will ensure that the balance sheet doesn't get one-sided.

POSAC Action Requested: Recommendation to the Boulder County Commissioners for approval.





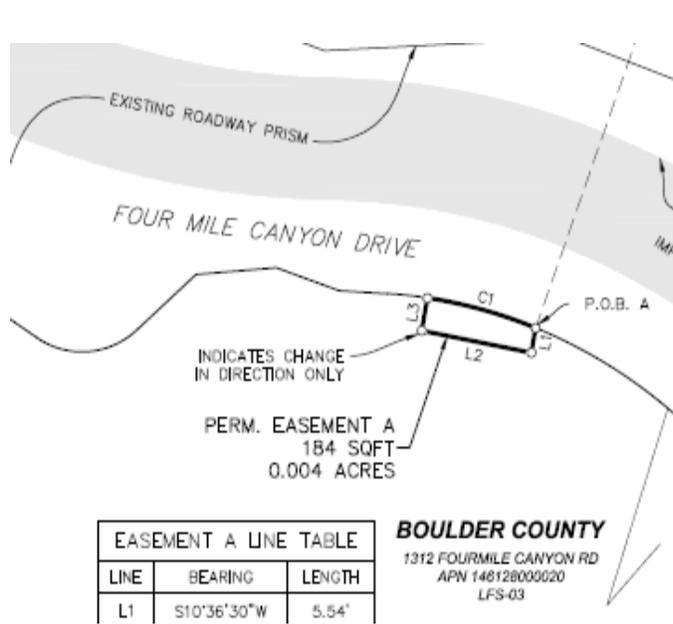


Betasso Open Space Property
1312 Fourmile Canyon Road

.003 Acre Portion

.012 Acre Portion

.004 Acre Portion



BOULDER COUNTY
1312 FOURMILE CANYON RD
APN 146128000020
LFS-03

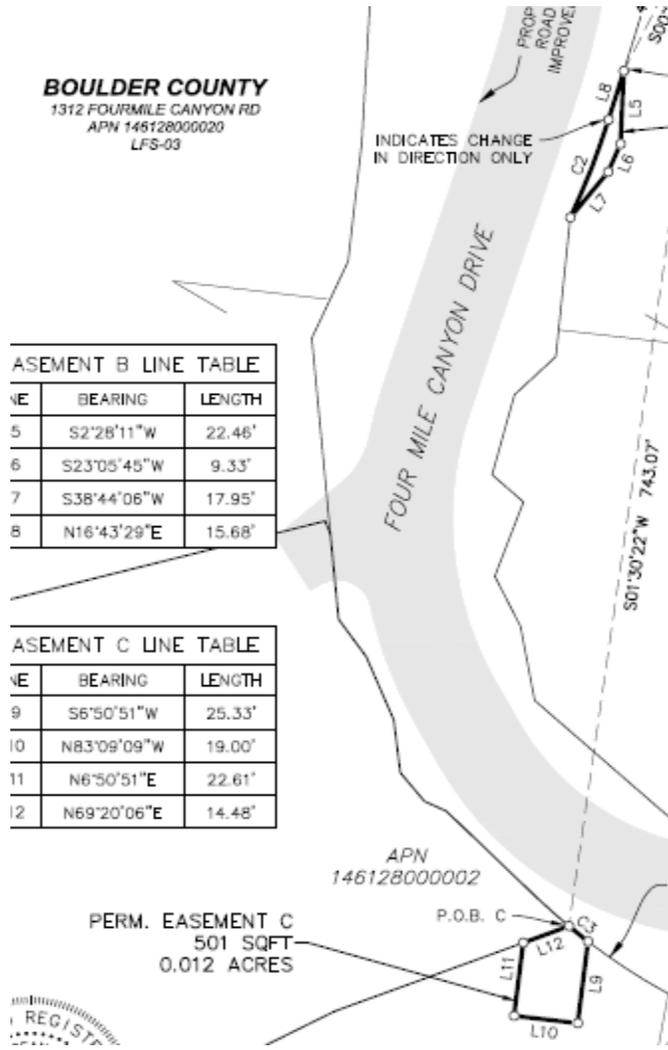
BOULDER COUNTY
1312 FOURMILE CANYON RD
APN 146128000020
LFS-03

ASEMENT B LINE TABLE

LINE	BEARING	LENGTH
5	S2°28'11"W	22.46'
6	S23°05'45"W	9.33'
7	S38°44'06"W	17.95'
8	N16°43'29"E	15.68'

ASEMENT C LINE TABLE

LINE	BEARING	LENGTH
9	S6°50'51"W	25.33'
10	N83°09'09"W	19.00'
11	N6°50'51"E	22.61'
12	N69°20'06"E	14.48'





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PARKS AND OPEN SPACE ADVISORY COMMITTEE MEETING

Time/Date of Meeting: 6:30 p.m., Thursday, May 25, 2017

Location: BOCC Hearing Room, 1325 Pearl Street, 3rd Floor, Boulder, CO

TO:	Parks & Open Space Advisory Committee
AGENDA ITEM:	BLM Exchange-Ward Area-Tamminga Exchange and BLM Exchange-Ward Area-Columbine CE Amendment
PRESENTER:	Sandy Duff, Land Officer
ACTION REQUESTED:	Recommendation to the BOCC

Summary

Boulder County is considering exchanging approximately 16 acres of county land for approximately 25 acres of private land owned by Duncan Tamminga Holdings, Ltd. near Duck Lake and Highway 72, north of Brainard Lake Drive. The exchange would also involve amending an existing conservation easement to remove one development right. The subject properties are generally depicted on the attached map. The Parks and Open Space Department's staff recommendation is to approve the request.

Background

Boulder County acquired several parcels from the U.S. Bureau of Land Management (BLM) in a land exchange in 2003. The exchange included a number of parcels in various sizes near Ward. The county is proposing to exchange approximately 16 acres, subject to a conservation easement, surrounding a private mining claim owned by the Duncan/Tamminga family in exchange for two parcels of land owned by the Duncan/Tamminga family. One parcel consists of approximately 1.5 acres immediately adjacent to the Duck Lake Open Space property, and the second parcel consists of approximately 23 acres also lying adjacent to existing open space properties that abut the Peak to Peak Highway. This transaction will also include an amendment to the Duncan/Tamminga family's BLM Exchange-Ward Area-Columbine Conservation Easement property, which the county acquired in 2008 from the Duncan/Tamminga family.

A Phase I Environmental Assessment is being completed and if the results show that there are any mining hazards on the property being acquired, staff will proceed to notify the State of Colorado's Division of Mining, Reclamation and Safety for formal closure.

Deal Terms

The approximately 16 acres of county land was acquired from the BLM land exchange in 2003, and included no mineral or water rights. A division of land process will take place through this approval process where the 16 acres will be exchanged for 23 acres, including mineral rights. The amendment to the Columbine Conservation Easement will remove the one development right associated with that parcel and make it an unbuildable parcel.

Summary

Acres County Acquires	Acres County Exchanges	# Building Rights County Will Acquire	Price per Bldg. Right	Water Right Value	Total Purchase Price
23	16	1	N/A	N/A	N/A

Boulder County Comprehensive Plan Designations

The maps in the comprehensive plan are intended to be illustrative rather than specific, these designations are indicators of the importance but not of the confirmation that these features exist on the property. The Boulder County Comprehensive Plan maps indicate the property being acquired in the exchange contains these features: Indian Peaks Environmental Conservation Area, Riparian Area, High Biodiversity Significance, Open Roadside Corridor, and Geologic Hazards of Moderate Constraint.

Public Process

It is the county's practice to notify property owners who are immediately adjacent to the county's property when a future exchange of county property is being contemplated, as well as any amendment to a conservation easement. Also, the process to create parcels of land under 35 acres require commissioners' approval pursuant to the Community Facility Lot Split regulations contained in the Land Use Code, and so adjacent property owners have been notified according to standard practice.

The notices included an invitation to attend and comment at this meeting. No public comments have been received at this time, and any additional comments we receive will be shared with you at the meeting.

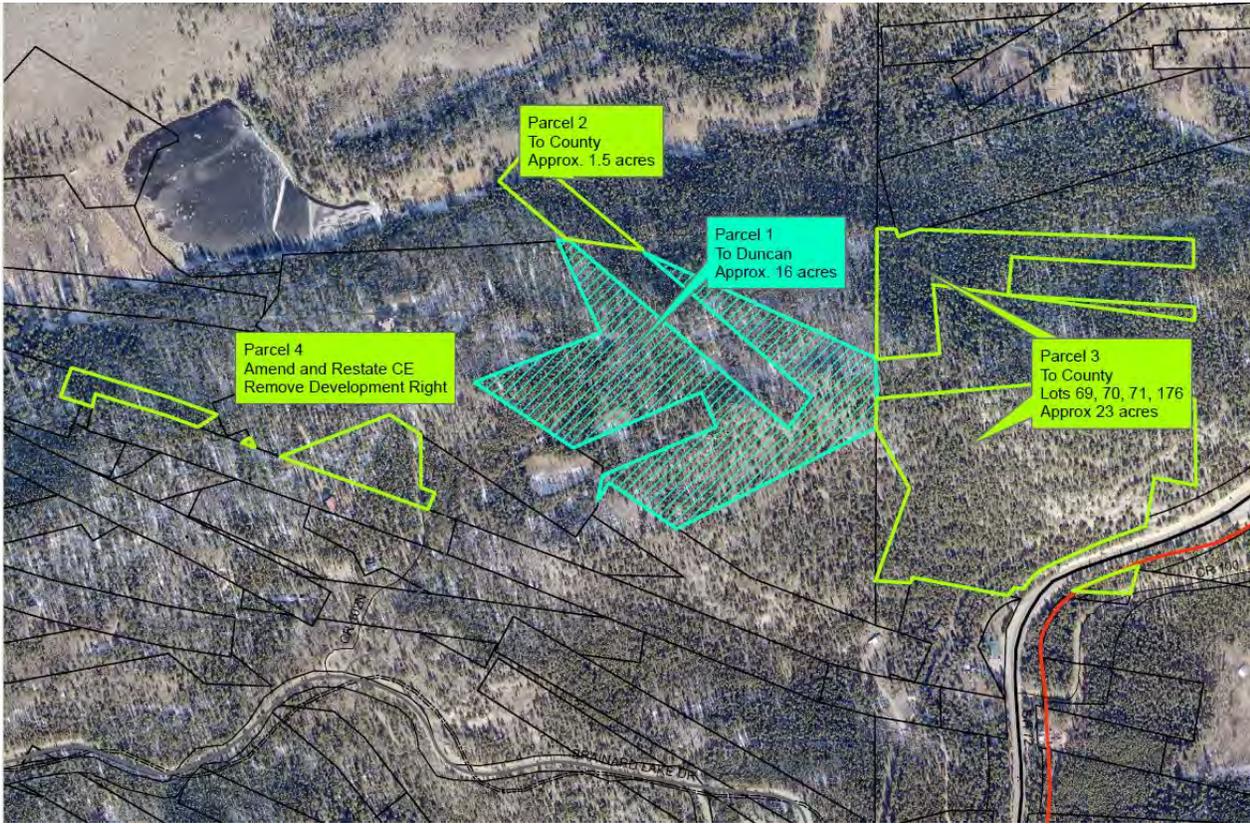
Staff Discussion and Recommendation

Staff recommends approval of this request. The properties being acquired by the county have extensive resource values, especially at the creek area near Duck Lake. Both the 1.5 acre parcel and the 23 acres near Peak to Peak Highway are immediately adjacent to existing Open Space fee properties which provides a contiguity of open space lands. The amendment to the conservation easement removes the one development right associated with the property. The county, in exchange, will transfer 16 acres of land (subject to a conservation easement) to consolidate Duncan/Tamminga family lands. As a result, the county's lands will also be consolidated and easier for the county to manage.

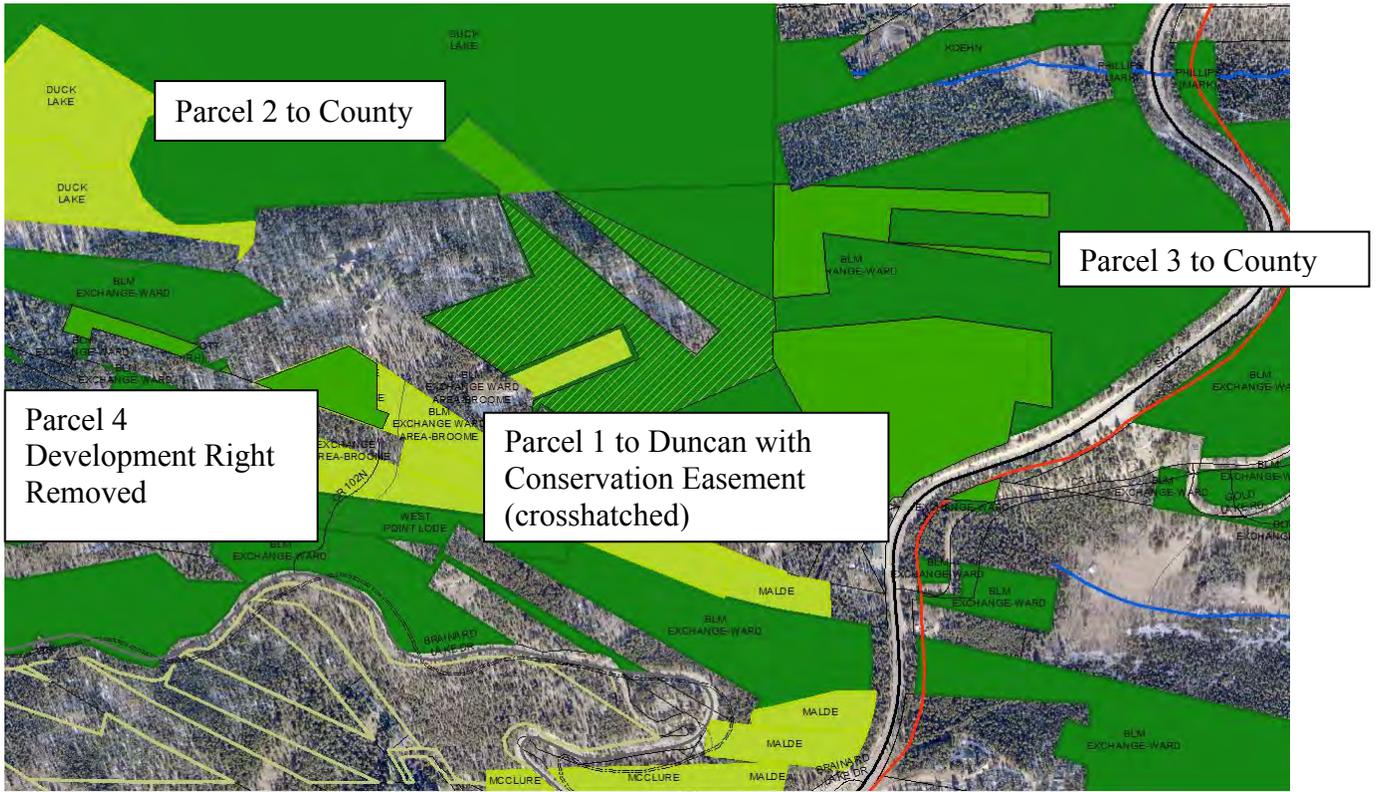
POSAC Action Requested

Recommendation to the Boulder County Commissioners for approval of the exchange, division of land, and amendment to the conservation easement as described above.

Proposed Exchanges and CE Amendment



After Exchange





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PARKS AND OPEN SPACE ADVISORY COMMITTEE MEETING

TO: Parks & Open Space Advisory Committee

DATE AND LOCATION: May 25, 2017, Commissioners Hearing Room, 3rd floor Boulder County Courthouse, 1325 Pearl Street, Boulder, CO

AGENDA ITEM TITLE: Marshall-Superior-Coalton Trail Corridor Management Plan Amendment for Coal Creek Connector Trail

PRESENTER: Al Hardy

ACTION REQUESTED: Recommendation to BOCC

Action Requested

Recommend this amendment to the 2007 Marshall-Superior-Coalton Trail Corridor Management Plan to establish a small formal trail connection from the Mayhoffer Singletree Trail to the Town of Superior neighborhood of Coal Creek Crossing. The trail would be built and maintained by the Town of Superior.

Location and Background

Boulder County Parks and Open Space (BCPOS) manages the Boulder County and City of Boulder jointly owned Erin Arsenault property that this trail connection will be located on (Figure 1 – Trail Alignment). The proposed connection is approximately 280 feet long and would join a trail that has been constructed on Town of Superior Open Space by the developer of the Coal Creek Crossing neighborhood to the Mayhoffer Singletree Trail.

A connecting trail at this location has been contemplated and discussed several times during the planning and construction phases of the Coal Creek Crossing development project. The Town of Superior first initiated dialogue with BCPOS in 2007 seeking comments related to the potential trail alignment. BCPOS Resource Planning division provided that the location seemed appropriate with consideration needed for county trail standards, reduce crossings of the Hake Ditch, fencing, City of Boulder Wetland ordinance compliance if needed, and consultation with the U.S. Fish & Wildlife Service. In 2015, The Town of Superior continued the discussion and planning was taken up again with BCPOS as the development was coming to fruition. With input from BCPOS the Town of Superior had a preliminary trail design completed to further the discussion and submitted a formal request for the trail connection in November of 2016. BCPOS met on site with the Town of Superior in late 2016 and agreed to bring the request forward in the form of a management plan amendment.

City of Boulder

A draft of the amendment was provided to the City of Boulder for the opportunity to comment per the Boulder County and City of Boulder Jointly Owned Open Space Management IGA. City of Boulder Open Space and Mountain Parks staff support the

amendment because it will provide managed visitor access to the BCPOS's designated trail system from Superior, and especially the newly developed Coal Creek Crossing neighborhood. The City of Boulder Open Space Board of Trustees also had the opportunity to comment on a staff written report (Appendix A) related to the trail connection at their March 8, 2017 meeting. There were no questions. City of Boulder staff did have three comments regarding resource stewardship associated with the trail and recommends consultation with the BCPOS cultural resource manager to ensure the proposed alignment will not adversely affect cultural resources, to consider possible educational opportunities and to consider moving the southern end of the trail westward to direct visitors and pets away from the wetland habitat along the Hake Ditch.

Public Process

The Town of Superior had several meetings related to this trail connection that was originally one of two trails to be developed in the Coal Creek Crossing neighborhood. An east/west trail connection from the neighborhood ended up being removed by the Town Board. The trail connection was reviewed by two town advisory committees. The Open Space Advisory Committee did not support this trail connection and provided that the current trail system is adequate. The Parks, Recreation, Open Space, and Trails Advisory Committee recommended the connection to the Town Board. The Town of Superior Board met on February 22, 2016 and approved the trail connection motion with all six of the seven board members present voting in favor of the connection (majority of public comments were in favor).

This Parks and Open Space Advisory Committee (POSAC) meeting will provide the opportunity for the public to provide comment along with any recommendations that POSAC may provide. The Board of County Commissioners (BOCC) will also consider the approval of this amendment request with the opportunity for the public to provide comment.

Staff Discussion

BCPOS is the lead management agency for this property, which is jointly owned with the City of Boulder. The Boulder County Comprehensive Plan states that the county will work with the Consortium of Cities to assure linkage of county trails and connections between communities. This trail provides a public connection to the Coal Creek Crossing neighborhood, which will avoid social trail development. The Town of Superior and members of the public desire the connection and the proposed trail strives to minimize resource impacts to open space.

BCPOS has been open to the concept of a trail in this area for the past ten years. A site visit in December of 2016 by BCPOS staff representing disciplines from Recreation and Facilities, Resource Planning, Plant Ecology, Wildlife, and Agriculture did not identify major concerns with this connection. Input from staff included fencing considerations related to agriculture and desire to move the trail connection on the west end slightly further from the Hake ditch to avoid possible disturbance to the plant communities associated with the ditch.

Vegetation broad scale mapping of the area was done in 2012. The two vegetation areas affected by the trail are Western Wheat Upland Meadow and a semi-permanently flooded Cattail/Clubbrush wetland and ditch edge (Figure 2 – Mayhoffer Trail Plant Communities). Staff does not think there would be impact to any wetlands on the Erin Arsenault property and there would be minimal wetland impact related to an abandoned Hake Ditch lateral on

Town of Superior Open Space. The Town of Superior received a *No Concerns* response from the US Fish and Wildlife Service in February 2017 related to this trail project. The trail and grading for construction would impact approximately 0.13 acres based on the original design by Loris and Associates (Figure 3 – Typical Trail Detail).

Upon approval of this amendment BCPOS would develop an IGA with the Town of Superior that would provide specific conditions related to the trail connection such as:

- Town of Superior responsible for construction (working with the developer and following specifications from Typical Trail Detail), revegetation of disturbed area, and maintenance of trail connection. The centerline of the trail connection at the Mayhoffer Singletree Trail junction should be moved a minimum of 5 feet to the north to ensure no impact to the nearby wetland vegetation associated with the Hake Ditch.
- BCPOS will continue to utilize approximately 1.4 acres of Town of Superior Open Space that is adjacent to this area based on the existing fence not being on the property line
- New fencing and gates would need to be installed as part of the construction of the trail connection
- Town of Superior would acquire and be responsible for any needed permits or approvals

Photo of the general trail alignment area:



Staff Recommendation

Recommend the BOCC approve this amendment to the 2007 Marshall-Superior-Coalton Trail Corridor Management Plan to include this new trail connection.

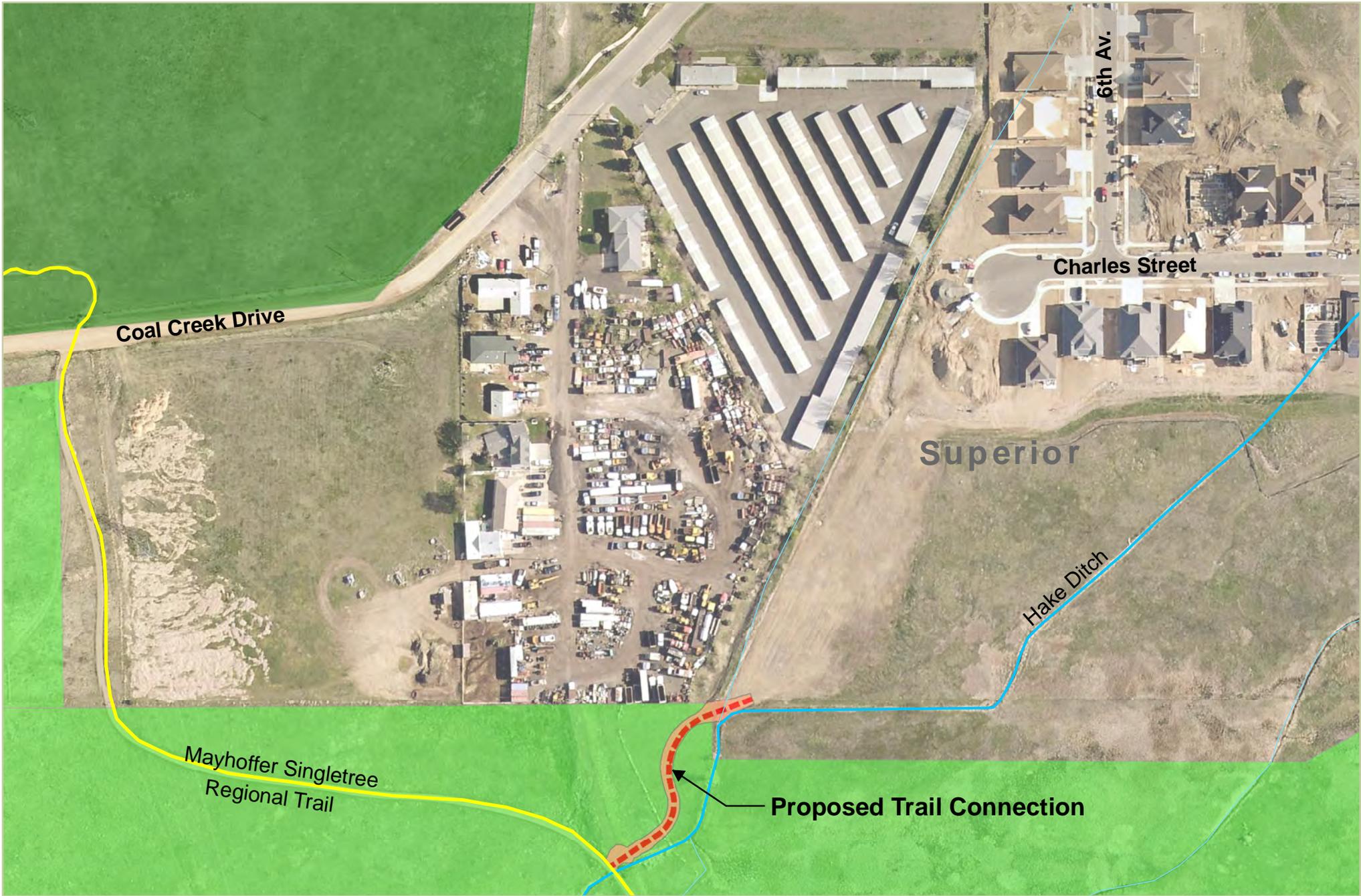
Figures

1. Map of Trail Connection.
2. Mayhoffer Trail Plant Communities
3. Typical Trail Detail – Loris and Associates

Attachments

1. City of Boulder Written Report

Figure 1 - Coal Creek Connector Trail Alignment



2017



Boulder County Open Space



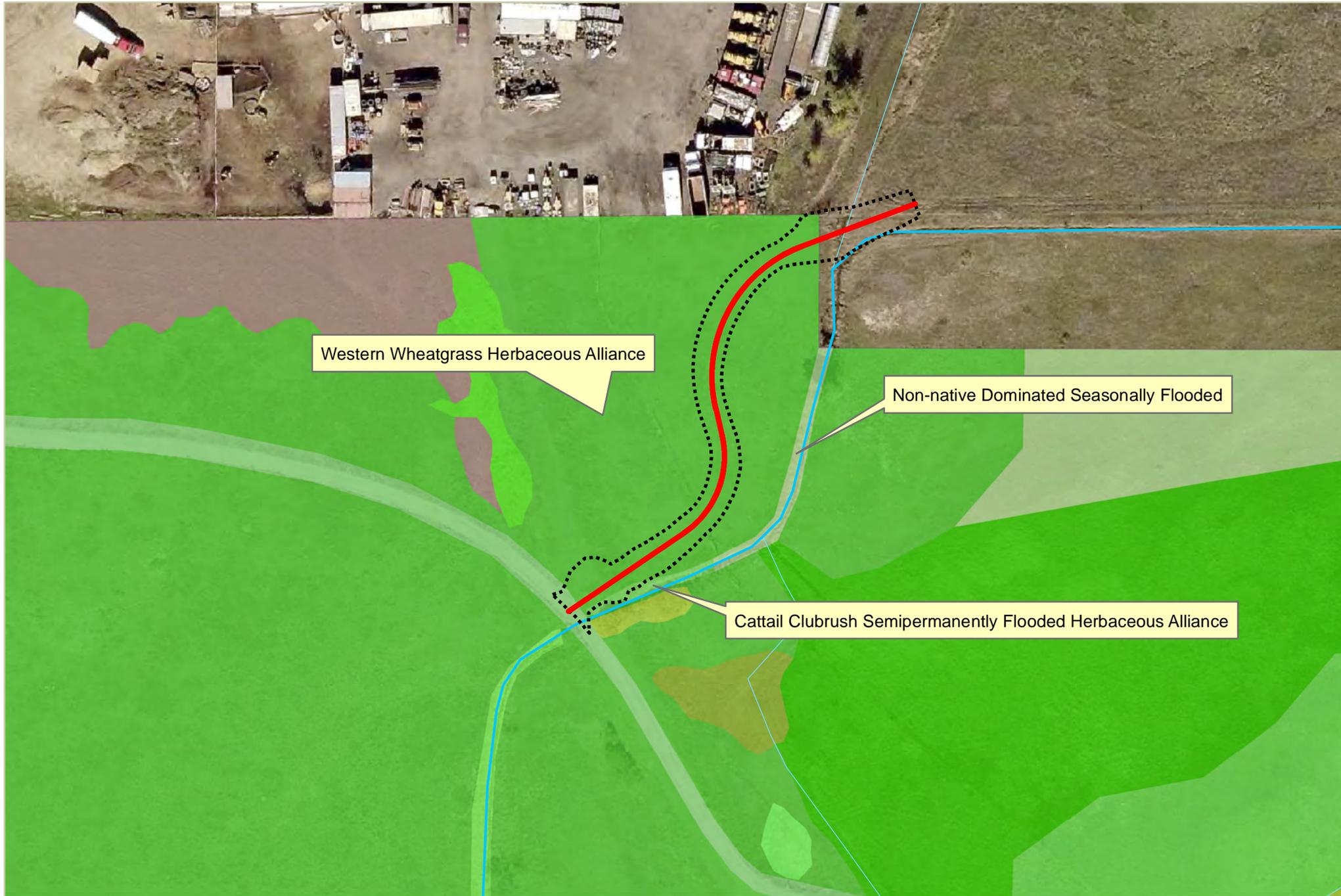
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Figure 2 - Coal Creek Connector Trail Plant Communities



Western Wheatgrass Herbaceous Alliance

Non-native Dominated Seasonally Flooded

Cattail Clubrush Semipermanently Flooded Herbaceous Alliance

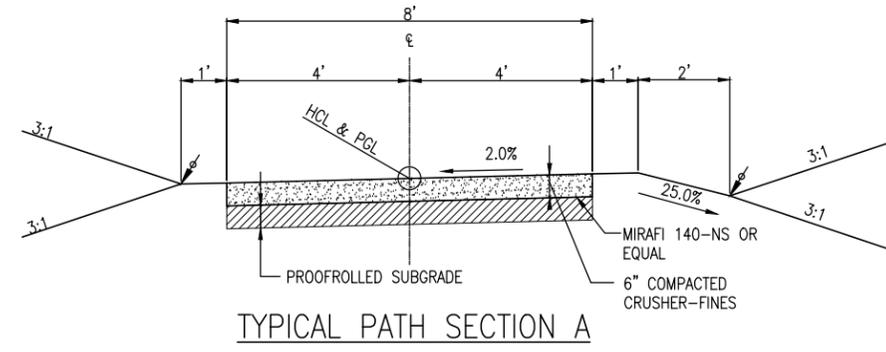
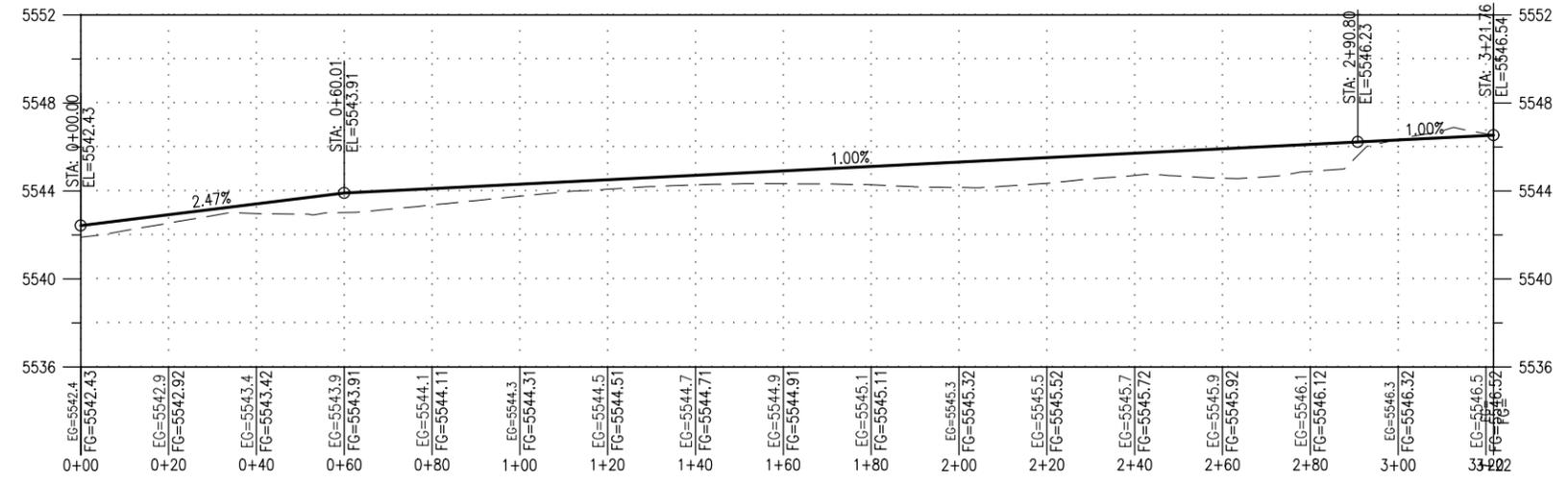
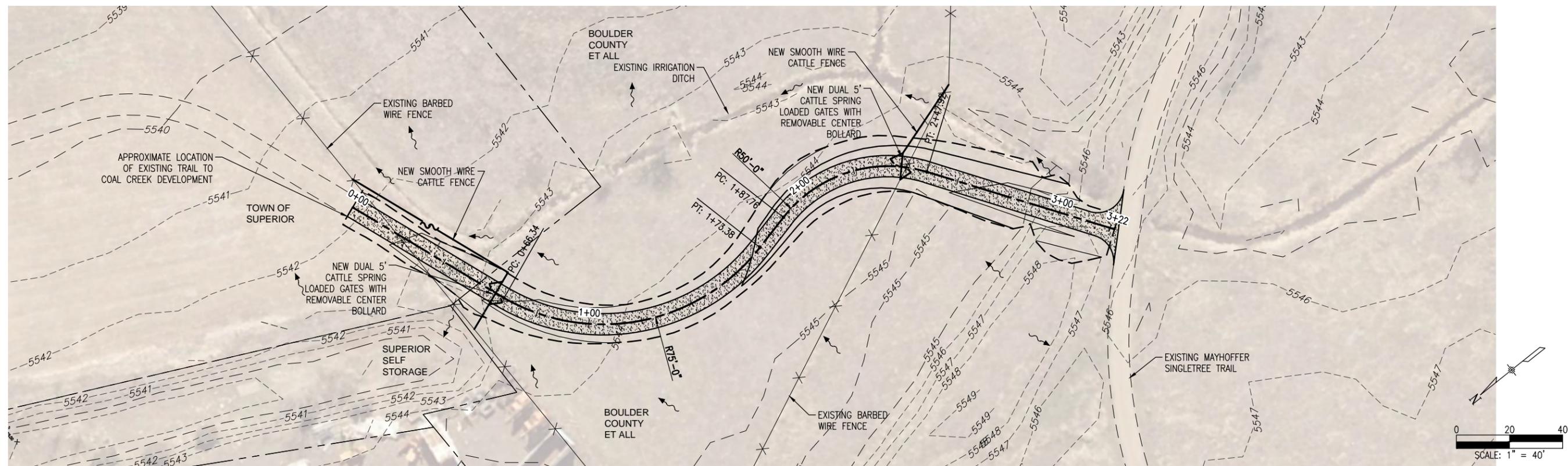


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G:\7.2 Clients\328 - Town of Superior\16116 - Superior Trails\50 DWG\16116-(x-x) Plan & Profile (CoalCreek).dwg Nov 07, 2016 - 8:43am



Print Date: November 07, 2016	Sheet Revisions			 100 Superior Plaza Way Suite 220 Superior, Colorado 80027 303.444.2073 www.LorisandAssociates.com	As Constructed	SUPERIOR TRAILS PLAN & PROFILE, TYPICAL DETAIL COAL CREEK NEIGHBORHOOD CONNECTOR		Project No./Code	
File Name: 16116-(x-x) Plan & Profile (CoalCreek).dwg								Date:	Comments
Horiz. Scale: Vert. Scale: As Noted					Revised:	Detailer: AJP		Sheet Number	
Unit Information Unit Leader Initials					Void:	Sheet Subset: PP-01	Subset Sheets:	1	

Appendix A: City of Boulder Written Report

MEMORANDUM

TO: Open Space Board of Trustees

FROM: Tracy Winfree, Director, Open Space and Mountain Parks
Mark Davison, Manager Community Connections and Partnerships
Mark Gershman, Planning Services Supervisor

DATE: March 8, 2017

SUBJECT: Written Report: Boulder County Parks and Open Space Coal Creek Connector Trail

The City of Boulder and Boulder County have an Intergovernmental Agreement (IGA) concerning the management of properties where the city and county each own an undivided fee interest. Under the provisions of this IGA, each of these properties is assigned a *lead agency*. The lead agency is responsible for management of the property. Among other things, the IGA requires that the lead agency develop management plans for the properties it manages, and provides the non-lead agency the opportunity to comment on draft management plans and proposed updates/amendments to those plans.

The Erin Arsenault property is a jointly-owned property covered in the IGA (Attachments A and B). In 2007, Open Space and Mountain Parks (OSMP) assisted Boulder County Parks and Open Space (POS) with the development of its *Marshall-Superior-Coalton Trail Corridor Management Plan*. This plan describes trail development and management covering the Erin Arsenault Property.

POS is proposing to amend the 2007 plan in response to a request from the Town of Superior. Superior has asked for a 280-foot-long trail to connect the Mayhoffer-Singletree Trail with Superior's open space. In accordance with the provisions of the IGA, POS staff has provided city OSMP staff with an opportunity to review the proposed amendment (Attachment C).

OSMP staff supports the amendment providing visitor access to POS's designated trail system from Superior, including the newly developed Coal Creek Crossing neighborhood. The connection will provide healthy opportunities for community members to connect with nature and enjoy passive recreation activities on open space. City staff also supports POS findings that managed access is preferable to building no trail, an alternative which will likely result in one or more social trails impacting resources. OSMP staff agrees the proposed trail alignment provides for an improved recreation experience as well as minimizing resource impacts. OSMP has recommended that POS analyze the proposed alignment to ensure it will not adversely affect cultural resources, and to reconsider the alignment of the southern end of the trail to provide for possible educational opportunities while also ensuring protection of the wetland habitat along the Hake Ditch.

The plan amendment will be presented at a public hearing before the Boulder County Parks and Open Space Advisory Committee (POSAC) on April 27 at which time POS staff will be requesting that POSAC recommend the amendment to the Board of County Commissioners (BOCC). The BOCC will also consider the approval of this amendment request at a meeting that includes an opportunity for public comment.

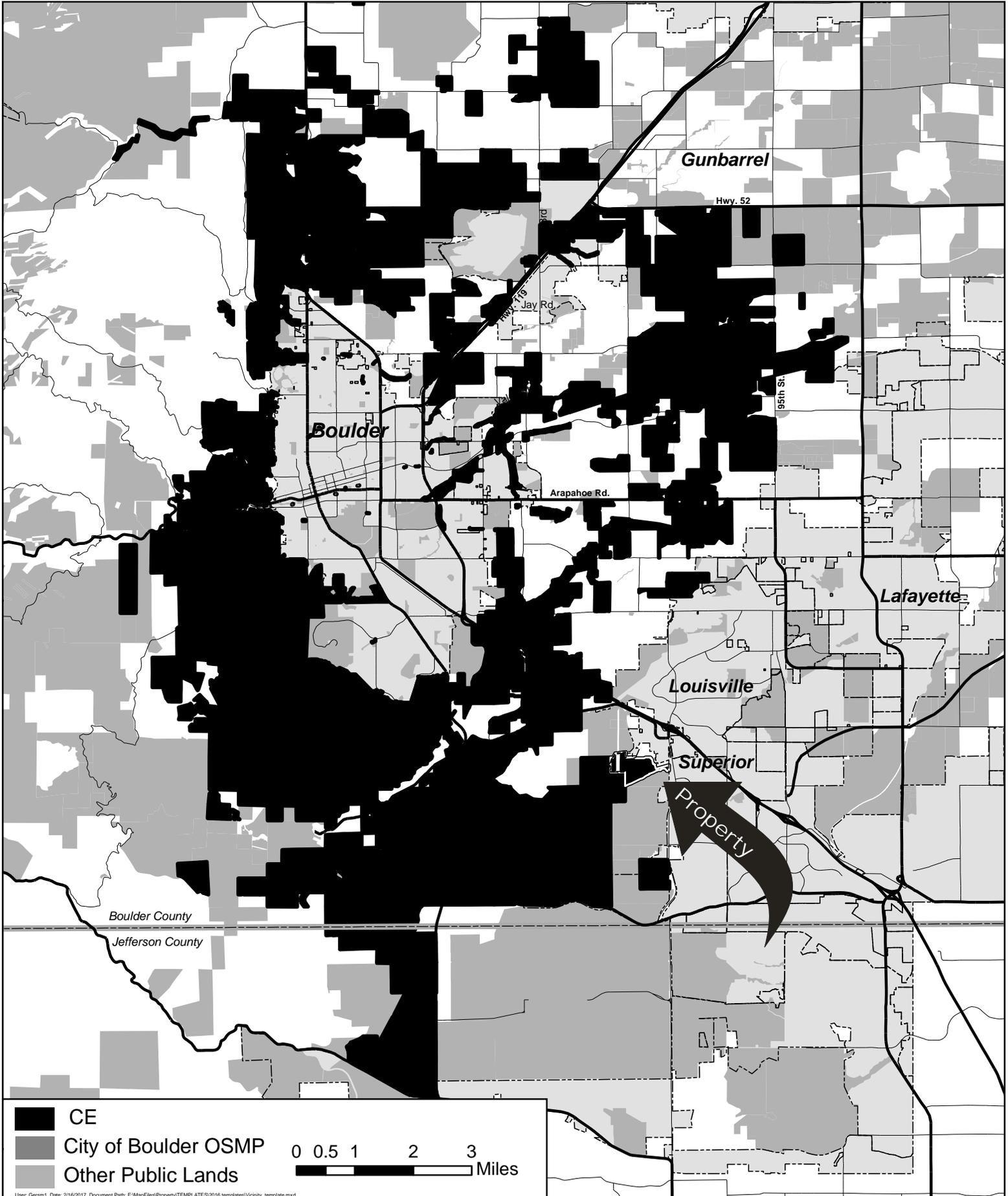
ATTACHMENTS:

- A: Vicinity Map - Erin Arsenault Property
- B: Vicinity Map - Erin Arsenault Property-Coal Creek Connector Trail
- C: Coal Creek Connector Trail Alignment

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Attachment A: Vicinity Map Erin Arsenault Property

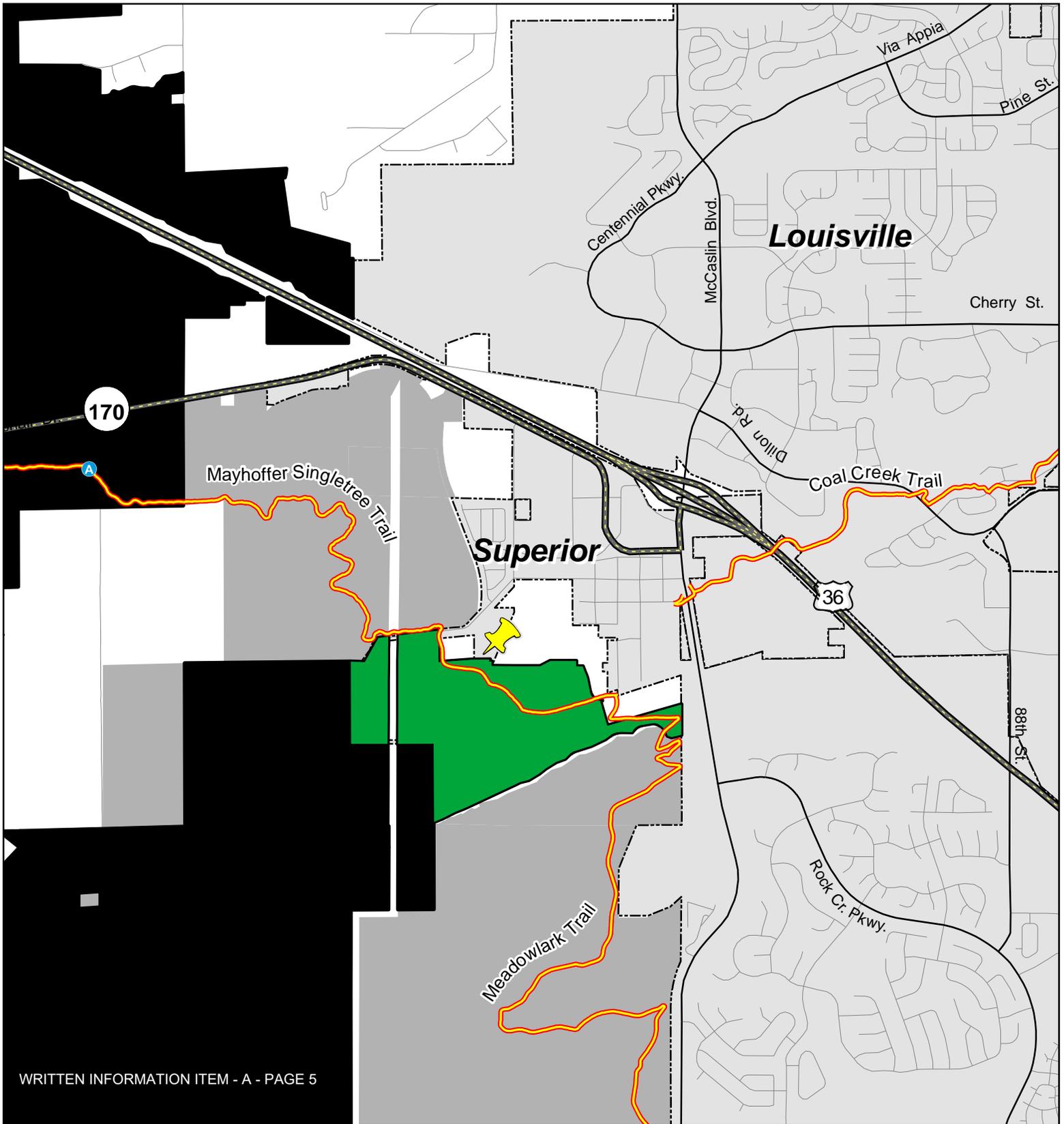


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ATTACHMENT B: Vicinity Map

Erin Arsenault Property-Coal Creek Connector Trail



WRITTEN INFORMATION ITEM - A - PAGE 5

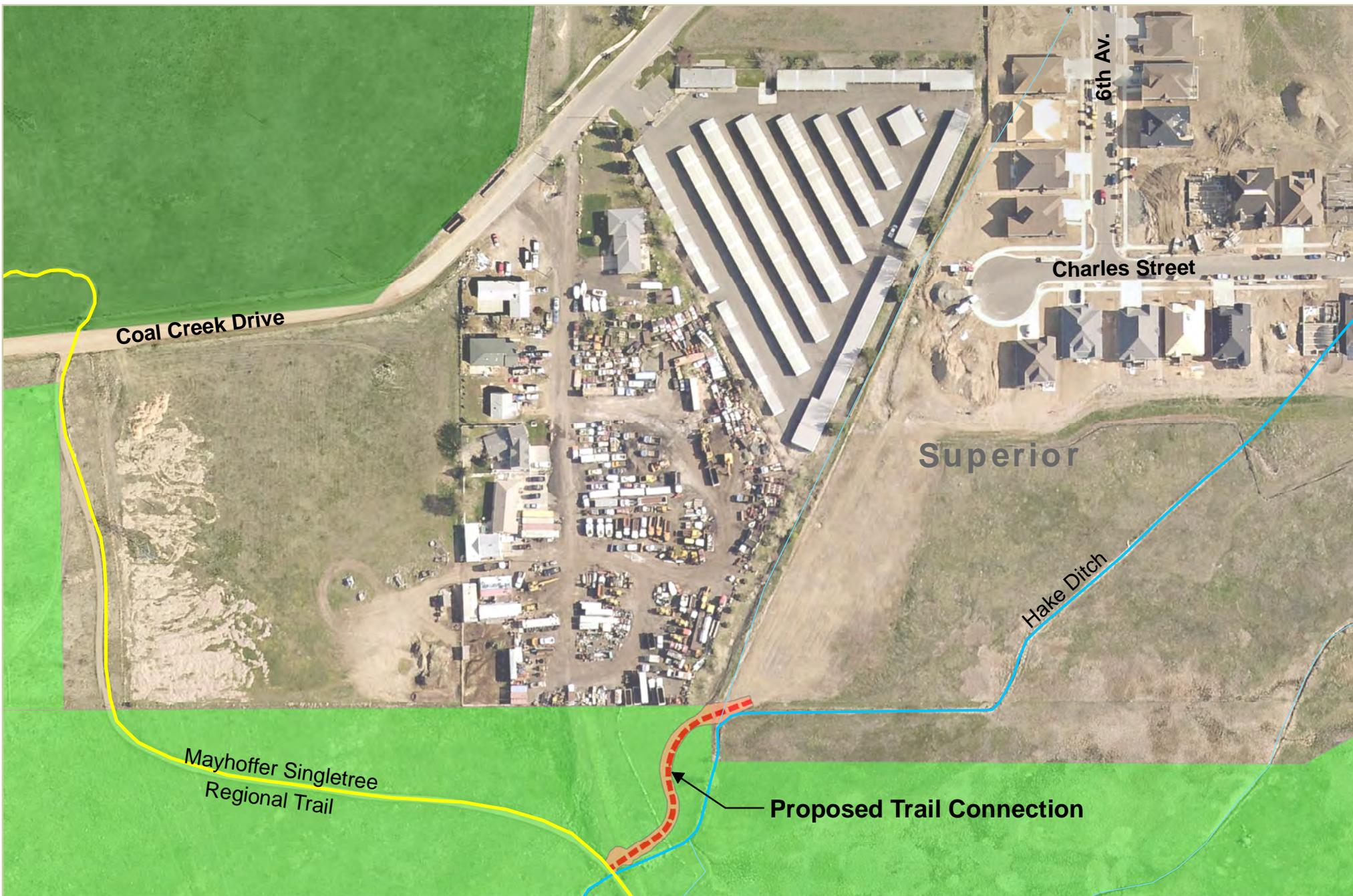
	Location Coal Creek Connector		Cities
	Erin Arsenault Property		Other Public Land
	City Open Space & Mountain Parks		Multiuuse Trail

0 0.25 0.5 1 Miles

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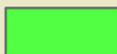
Attachment C: - Coal Creek Connector Trail Alignment



2017



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PARKS AND OPEN SPACE ADVISORY COMMITTEE MEETING

TO: Parks & Open Space Advisory Committee

DATE AND LOCATION: Thursday, May 25, 2017, 6:30 p.m. Commissioners Hearing Room, 3rd floor Boulder County Courthouse, 1325 Pearl Street, Boulder, CO

AGENDA ITEM TITLE: Rabbit Mountain Elk and Vegetation Management Plan

PRESENTER: Therese Glowacki, Resource Management Manager

ACTION REQUESTED: Recommendation to Board of County Commissioner

Boulder County Parks and Open Space (BCPOS) presented the Rabbit Mountain Elk and Vegetation Management Plan at the April 27, 2017 POSAC meeting. In order to protect the significant natural biodiversity of Rabbit Mountain, BCPOS recommends limited public hunting, fencing, and hazing to encourage this herd to migrate and reduce overall elk numbers on Rabbit Mountain. We propose using an adaptive management approach including continued elk and vegetation monitoring to determine the effects of this management throughout plan implementation.

POSAC requested further clarification on the alternatives staff considered to manage the growing elk population and their non-migratory behavior.

In the attached revised Rabbit Mountain Elk and Vegetation Management Plan, we have updated the text and added several appendices with more information on the alternatives considered. Some of the changes in the plan include:

- 1) A broader explanation of fertility control (page 11), FAQs and reference material (Appendix A);
- 2) A proposal to use hazing in conjunction with hunting and after the hunting season (page 14);
- 3) Culling verses hunting including why Rocky Mountain National Park used it, costs, and differences between culling and hunting (Appendix B);
- 4) Fencing alternatives and costs (Appendix C) both on Rabbit Mountain for vegetation protection, and on adjacent properties for crop and property damage;
- 5) Modification of hunting days, beginning after Labor Day, and locations to include the Indian Mountain and Cushman open space throughout the week (page 16);
- 6) BCPOS gathered public input on-line for 4 weeks. Over 350 people commented on the plan with 73% supporting the plan (page 17). Of the comments, less than 2% support culling instead of a limited public hunt (see public comments summary presented at April POSAC);

We will present more information during the POSAC meeting on game damage unit hunting. We have invited John Mack from Rocky Mountain National Park and Jenny Powers from the National Park Service to speak on culling and fertility control.

Action Requested: Recommendation to the Board of County Commissioners.

Rabbit Mountain Elk and Vegetation Management Plan

2017-2027

Draft May 16, 2017



Parks &
Open Space

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Introduction

This document presents the history of elk presence at Rabbit Mountain Open Space. It describes the population increases since the late 1990s and the impacts the elk are having on the native biodiversity of Rabbit Mountain. It outlines the elk-human conflicts that have arisen since the elk population has increased. It further describes actions taken by Colorado Parks and Wildlife (CPW) and Boulder County Parks and Open Space (BCPOS) to measure and mitigate these impacts. Finally, it presents recommendations for management of elk with the goal of getting elk to move from Rabbit Mountain, and re-establishing seasonal migration, thus reducing the negative impacts of too many elk using Rabbit Mountain.

Background

The Rabbit Mountain elk sub-herd is a segment of the St. Vrain elk herd residing in northern Boulder and southern Larimer counties. Elk immigrated to Rabbit Mountain and Indian Mountain sometime in the mid-1990s after being absent from the area for decades, and more likely since the early 1900s. Radio telemetry data from elk captured on Heil Ranch Open Space during 1998 and 2003 indicate that the Heil Valley sub-herd was the original source of this Rabbit Mountain herd. The Rabbit Mountain population initially grew slowly to about 30 animals by the mid-2000s. Elk numbers remained at around 10-30 animals until about 2010, when the herd's numbers burgeoned to at least 100 animals by 2013 and to over 350 in 2016 (Figure 1).

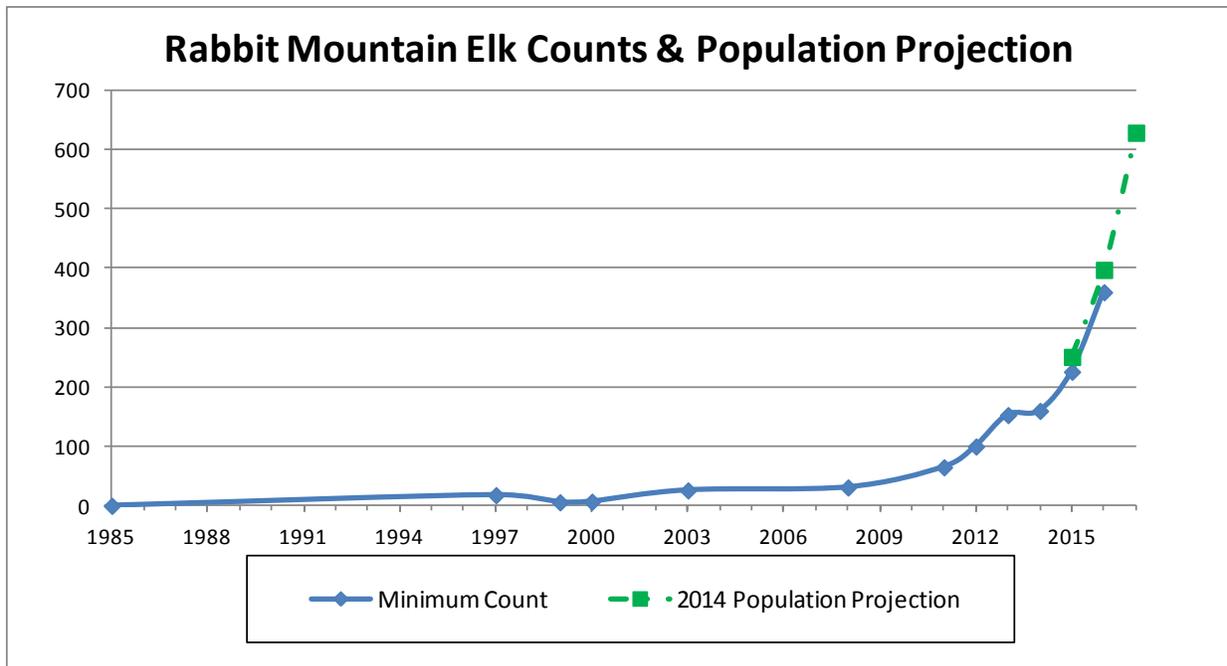


Figure 1. The Rabbit Mountain elk herd minimum counts and projected population growth. Population projection was prepared in 2014 and subsequent minimum counts included as available (e.g. 2015 and 2016).

When elk first appeared on Rabbit Mountain, hunting on nearby private land adequately controlled population growth. However, the elk have learned to avoid hunters by using areas where hunting is not allowed. Female elk, which make up most of the Rabbit Mountain herd, have ceased the seasonal migration to higher elevation summer range and now stay on or around Rabbit Mountain year-round. The most recent telemetry studies confirmed that the herd does not migrate and found that the elk spend the day on Rabbit Mountain and Indian Mountain Open Space and move to adjacent agriculture fields each night (Figure 2).

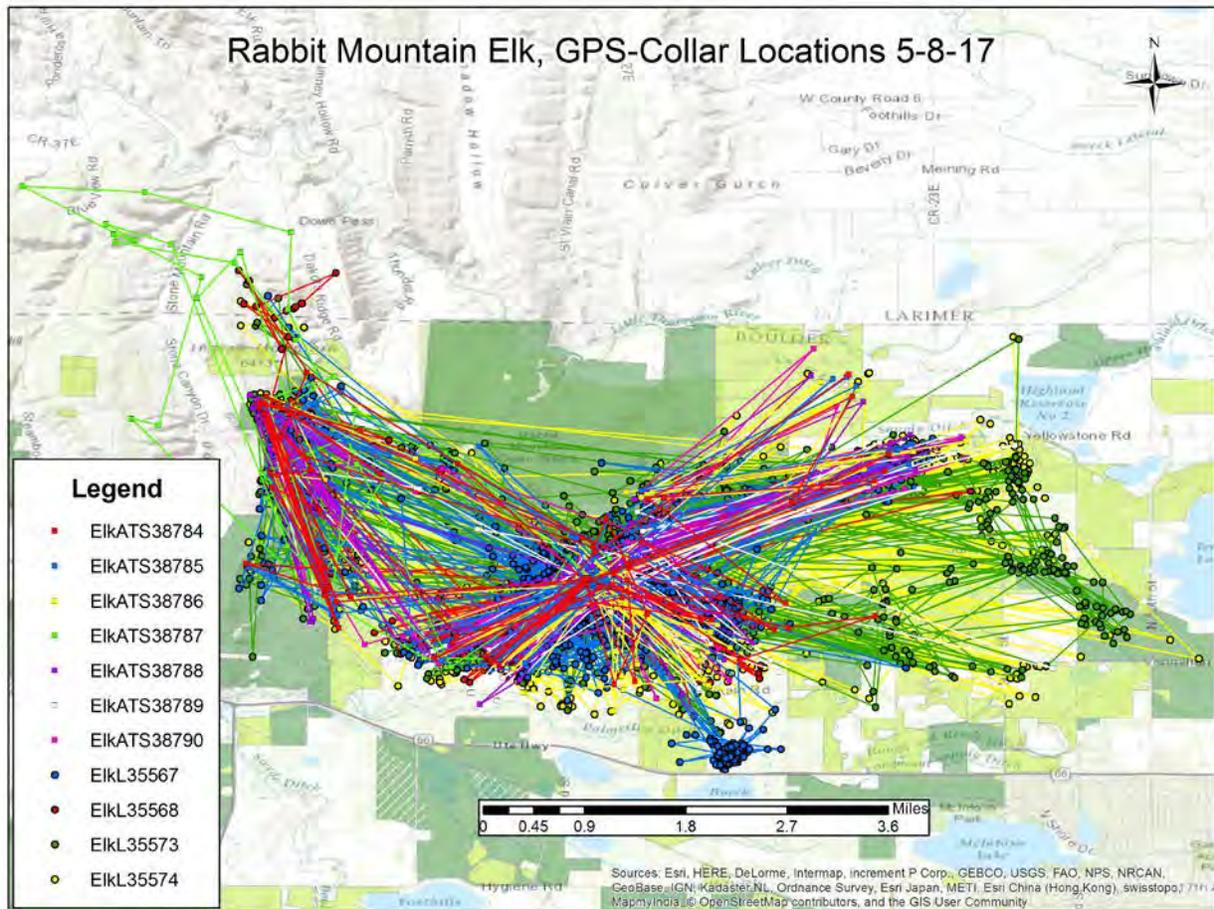


Figure 2. Telemetry locations of four female elk from the spring of 2015 to the spring of 2016.

High Biodiversity at Rabbit Mountain

Colorado Natural Heritage Program (CNHP) inventoried Boulder County in 2007 and 2008 to assess the county’s biodiversity. This survey identified areas with the highest biodiversity significance based on rare, threatened, and endangered species and habitats:

“The foothills of Boulder County harbor the highest concentration of globally rare biodiversity elements. There are two foothills areas with outstanding biodiversity significance (B1), **Rabbit Mountain** and Red Hill South of Lyons, which achieve B1 ranks due to their concentration of four or more globally critically imperiled to

globally imperiled (G1-G2) element occurrences that are in excellent or good (A- or B-ranked) condition. These elements include foothills natural communities, several mountain mahogany shrublands, and two Piedmont grassland communities. Additionally, embedded within these areas are shale outcrops with globally imperiled Bell’s twinpod (etc.). Rabbit Mountain and Red Hill South of Lyons are the only areas in Boulder County where foothill shrublands contribute significantly to the vegetation mosaic on the landscape” (CNHP 2009).

There is also significant biodiversity in the reptiles found at Rabbit Mountain. Ehrenberger et al. (2015) revealed that of 33 species of snakes found in Colorado, nearly one-third (nine species) are found on Rabbit Mountain. These species are dependent on the vegetation and habitat found on the mountain.

Vegetation Monitoring Summary

Native plants on Open Space are experiencing extensive damage by browsing, grazing and trampling, even down to mineral soil in elk bedding areas. In mid-July 2016, Plant Ecology staff at BCPOS conducted vegetation monitoring at Rabbit Mountain Open Space to assess vegetation cover and diversity in the three prominent habitats; grassland (meadow), shrubland and forest.

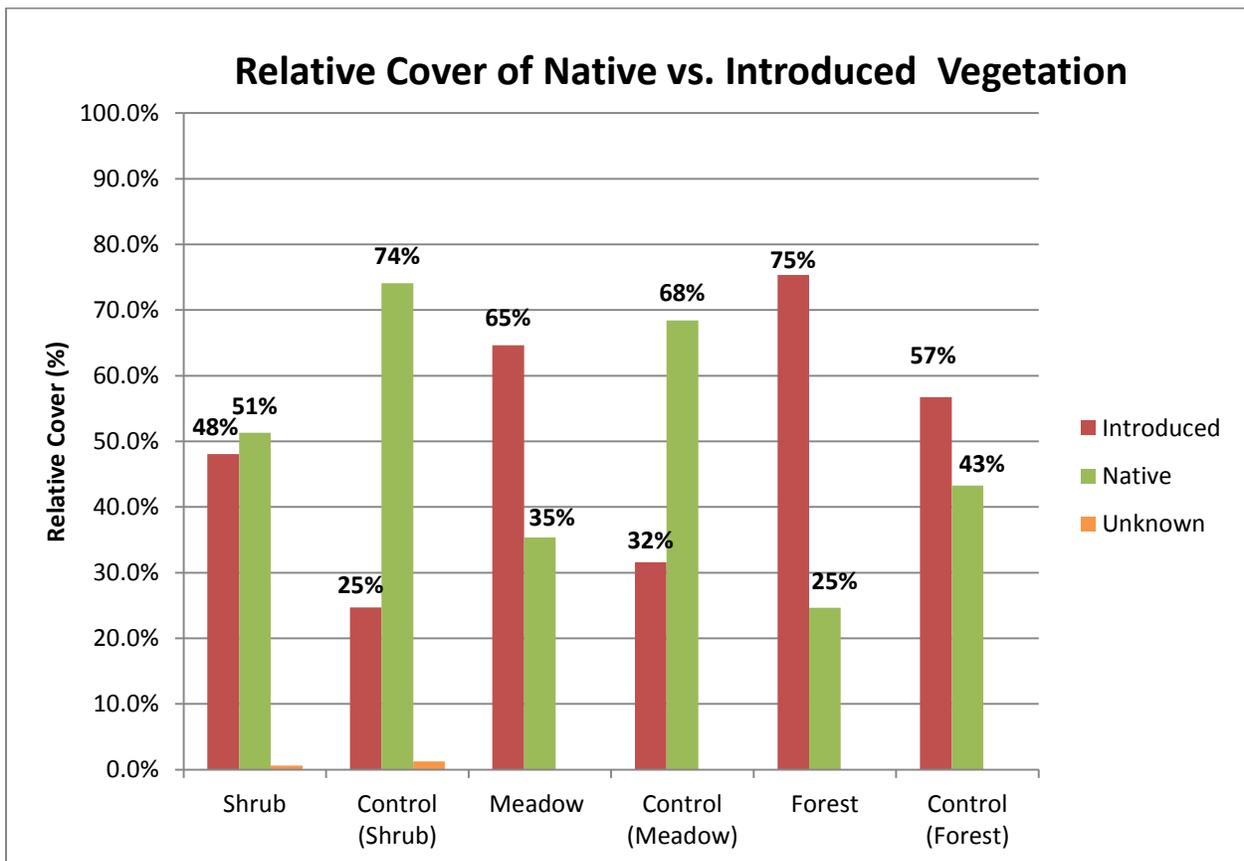


Figure 3. Relative Cover Native vs. Introduced Vegetation

Shrub Utilization Study Summary

The biologically diverse shrub communities mentioned by CNHP are comprised of both three-leaf sumac (*Rhus trilobata*) and mountain mahogany (*Cercocarpus montanus*). The dominant of the two is the mountain mahogany, which is a deciduous, many-branched shrub that can grow to over 6 feet in height. Mountain mahogany is utilized by both deer and elk as important winter forage, and our shrub monitoring assessed only this species.

In 2016, wildlife staff established monitoring transects in the heavily used elk core area, on the periphery of the core area, and outside of the core area (control transects). The results indicate that the shrubs are being heavily impacted in the high elk use area (BCPOS, 2017) (Figures 5, 7).

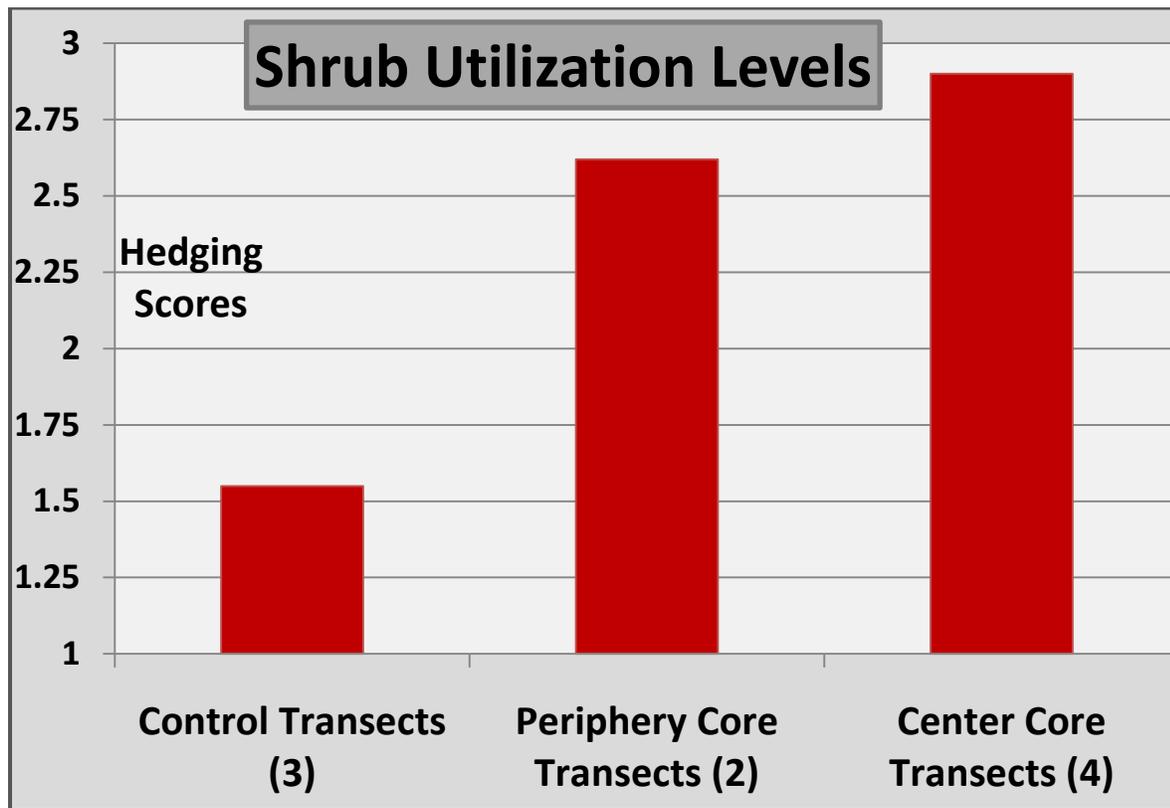


Figure 5: Averaged Shrub Utilization Levels



Figure 6. Photo Documentation of Shrub Utilization Study Transect Areas

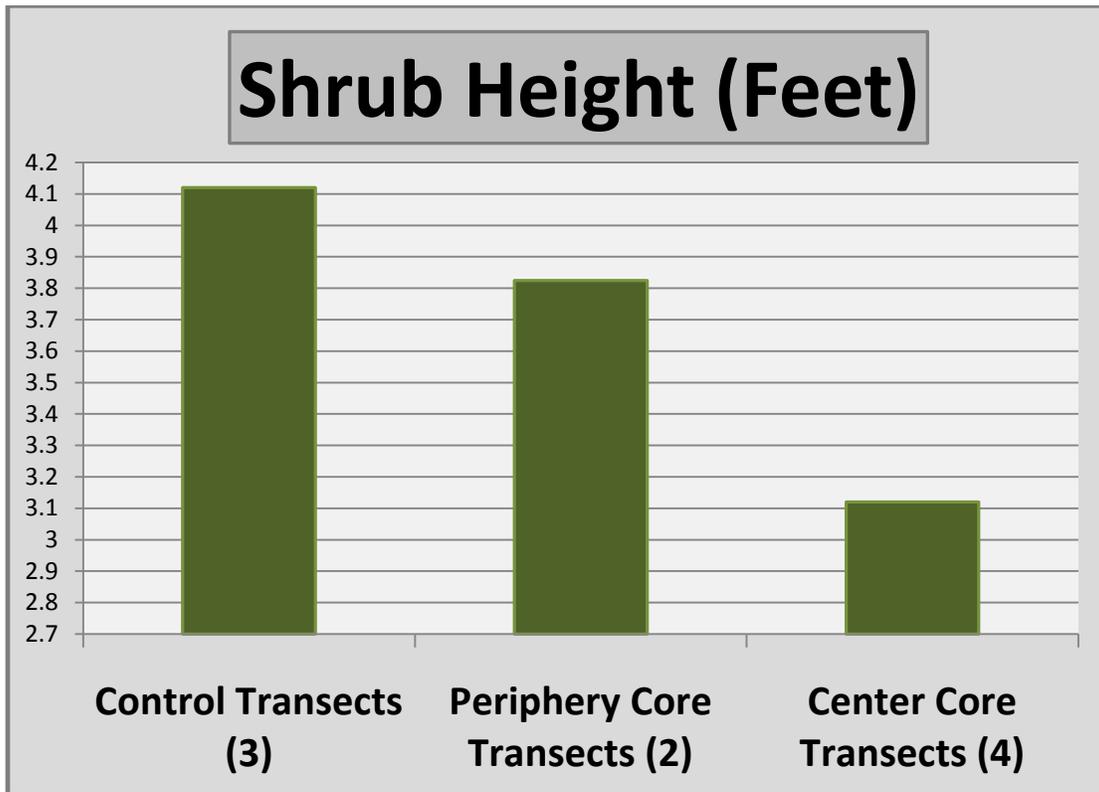


Figure 7. Averaged Shrub Heights per Transect Group

Comparing the transects, the pattern of use shows heavier utilization in the core area, with a gradient of use from core to periphery, to control. However, as this was the study's pilot year, more control transects will be added to increase sample size to better inform our statistical analysis. (BCPOS, 2017).

However, these preliminary results show that elk are shaping the shrub component in the core use area through heavy utilization. It is acceptable and expected to have areas of high ungulate use across a landscape. However, with the growth trajectories we are seeing for this herd, we expect to see increased habitat damage, including potential loss of shrubs, in the core area over time. The disturbance being caused to this valuable habitat area will take many years to recover if elk populations are not managed now, and will require management actions such as weed management and restoration efforts.

Elk-Human Conflicts

In addition to elk intensive use of natural plant communities, elk-human conflicts increase each year. The elk from Rabbit Mountain have caused damage to growing crops including corn, alfalfa and grass hay, orchards, ornamental trees and shrubs, standing forage such as hay stacks, fences, agricultural equipment such as irrigation lines, and a variety of personal property including sheds and outbuildings. Colorado Parks and Wildlife (CPW) is liable for damage by elk to agricultural products and fences (C.R.S. 33-3-103 and 33-3-104). In the last four years alone (2012-2015), CPW has paid \$56,727 in damages to agricultural crops caused by the Rabbit Mountain elk herd where official claims were filed and an increasing number of landowners indicate they may file game damage claims in the future.

Summary of Elk Impacts

Since 2003, elk numbers on Rabbit Mountain have increased from 25 to over 270, a ten-fold increase. The elk have developed use patterns where they spend the days on Rabbit Mountain and move to private lands at night to feed on crops. They avoid hunting pressure on private lands and do not migrate. Their current range is six square miles. This large number of elk has heavy impacts on the native biodiversity of Rabbit Mountain with trampling and browsing vegetation. In addition, human-elk conflicts in the surrounding area are on the rise. For these reasons, Colorado Parks and Wildlife has approached Boulder County to find a solution for this increasing problem.

Plan Goal and Objectives

Goal:

Manage a sustainable elk population on Rabbit Mountain and surrounding areas through adaptive management.

Objectives:

- 1) Re-establish seasonal migration patterns where the elk migrate to higher elevation summer range for 3-5 months each year and do not concentrate year-round on Rabbit Mountain.

- 2) Reduce impacts to grassland sites, shrub stands, and forested areas in the high-use area of Rabbit Mountain. Curtail any expansion of high-use areas from the current core area.
- 3) Maintain an elk herd of 30-70 animals on Rabbit Mountain based on historic numbers. The lower end of the range is for non-migratory elk. The upper end if seasonal migration is re-established and elk use Rabbit Mountain for winter range. (See figure 1).
- 4) Continue to work with agricultural producers and landowners to minimize elk damage and elk-human conflicts to private property to the extent possible.

Actions Taken to Mitigate the Elk Impacts

- CPW has issued game damage hunting licenses to landowners, provided panels to protect stacked hay, and facilitated hazing efforts on private lands with agricultural damage since 2003.
- CPW and Boulder County Parks and Open Space (BCPOS) staff established a working group in August 2013 to discuss the herd status, examine natural resource and agricultural damage caused by the high density, non-migratory elk population, and possible remedies.
- In 2014, CPW created a special elk hunting subunit around Rabbit Mountain to concentrate elk harvest and hunting pressure on the over abundant elk around Rabbit Mountain, while reducing the risk of overharvesting elk in other areas of the St. Vrain elk herd. To date, liberal season dates and license quotas are allocated each year. The appropriate number of licenses for the subunit is reviewed annually.
- CPW, with assistance from BCPOS, captured four cow elk and deployed GPS collars in March 2015 to study the herd's movements and demographics (Figure 2).
- CPW, with assistance for BCPOS, captured a further 7 elk on Rabbit Mountain (for GPS collars) in February/March 2017, and as of March 2017, have captured an additional 3 (of planned 7) cows at Heil Valley Ranch.
- Based on new radio telemetry data and to fully encompass the range of Rabbit Mountain elk sub-herd, the subunit was expanded in 2016. Approximately 20 antlerless elk were harvested during the 2015 season, which is not enough to stabilize the elk population growth trajectory (Figure 1). In addition, intensifying hunting pressure on private land surrounding Open Space may be further concentrating elk on Open Space (which is not open to hunting) and intensifying resource damage.
- BCPOS tested hazing in fall-winter 2015-16.
- BCPOS established elk habitat monitoring in 2016 and will continue in 2017. Wildlife staff established six shrub transects documenting use levels on mountain mahogany in the core area used by the elk. In 2016, Plant Ecology staff established nine vegetation cover and composition transects in the core area and three outside (controls) documenting impacts from prolonged presence of elk. (Results summarized above).

- CPW and BCPOS gave a presentation describing the Rabbit Mountain elk situation to the Regional Elk Working Group in Estes Park in October 2015 to solicit input for possible remedies.
- BCPOS and CPW presented to the Boulder County Parks and Open Space Advisory Council (POSAC) on April 29, 2016. POSAC gave direction to work on an elk management plan.

Management Options Considered

Status Quo

At present, the elk population at Rabbit Mountain continues to increase. If no management action occurs, resource damage on Rabbit Mountain will continue and expand. The availability of agricultural crops to the south and east adjacent to refuge on Rabbit Mountain ensures that the herd will not self-regulate according to resource availability. Therefore damage to crops will increase as the elk numbers increase. Other types of conflict will continue as well (fence trampling, elk-vehicle collisions, damage to landscaping and fruit trees). CPW and BCPOS agree that management action is needed.

Fertility Control

The Environmental Protection Agency (EPA) has regulatory authority over fertility control agents for use in free-ranging wildlife under the Federal Insecticide, Fungicide and Rodenticide Act (1947). Although two fertility control agents have been approved for use in feral horses (PZP and GonaCon) and one in white-tailed deer (GonaCon), the EPA has not approved any fertility control agent for use in free-ranging elk populations. As a result, currently there is no legally available fertility control agent that could be considered for management of elk using Rabbit Mountain.

Even if a fertility control agent, such as GonaCon, was legally available for use in elk, it would require capture and treatment of a large portion of the breeding-age female elk population (>100 animals currently) at least every other year. Under the most favorable conditions, fertility control would prevent population growth, but not reduce the herd size. Based on recent experience capturing and collaring 4 females in 2015 and 7 females in 2017, capture and treatment logistics are an insurmountable barrier to fertility control. These elk are wary and cannot be approached within dart gun range and bait is not as effective as in normal circumstances due to the lack of persistent snow cover and the abundance of alternate food sources. In addition, human infrastructure and high velocity winter winds preclude effective helicopter capture of such a large number of elk.

Fertility control would not facilitate meeting this plan's goals because of the immediate need to reduce impacts on native plant communities and biodiversity caused by overabundant, resident elk. Elk are long lived, with female life spans of 15-20 years. As a result, it would require a decade or more before fertility control would result in any population reduction and then only in the absence of immigration from other nearby elk subpopulations, such as Heil Valley Ranch or Chimney Hollow. Also, fertility control agents would not promote greater movement of the elk herd or a return to seasonal migration. In addition, there is no evidence in the literature to indicate that fertility control techniques can be effectively applied on a scale large enough to

limit population growth rates of open populations of free-ranging elk (Walter et al. 2010, Powers et al. 2014, Powers and Moresco 2015).

There are also ecological, behavioral and natural selection concerns, both known and unknown, associated with fertility control agents in free-ranging wildlife to be considered. Female ungulates treated with PZP experience multiple estrus cycles (which is not a common occurrence under natural circumstances), prolonging the breeding seasons and stress on treated and untreated animals (Powers and Moresco 2015). Fertility control may affect timing of mating and birthing seasons, and longevity of treated animals (Powers et al. 2014, Powers and Moresco 2015).

For these reasons, BCPOS and CPW conclude that fertility control is not a solution for management of the Rabbit Mountain elk herd. (See Appendix A for additional information.)

Trap and Transplant

Chronic wasting disease (CWD) occurs in both elk and deer on Rabbit Mountain and within the St. Vrain Elk herd. CWD, and potential transmission of other diseases, is reason not to transplant elk from Rabbit Mountain to areas far enough away to ensure elk will not return. In addition, Colorado elk herds are near or above population objectives, so finding a suitable release location is problematic especially for elk habituated to feeding on agricultural crops. Cost and logistics as described in the Fertility Control option are also restrictive for such an extensive capture operation. For these reasons, CPW and BCPOS conclude trap and transplant is not a viable option.

Professional Culling

While this method can potentially be effective at reducing ungulate populations, it is in opposition to state statute 33-1-101 (4) C.R.S which states that hunting will be the primary method of effecting necessary wildlife harvests. Agency and professional culling is also counter to the North American Model of Wildlife Conservation (Organ et al. 2012).

Past CPW experience involving agency culling for CWD management and a public survey of Evergreen residents regarding elk management options (Chase et al. 2002) indicates that the public prefers public harvest over professional culling in Colorado. In BCPOS' on-line survey of public input on this plan, of 353 respondents, only 7, or less than 2% suggested professional culling.

Culling is much more costly to implement. Estimates range from \$300 (White Buffalo personal communication) to \$4,700 an animal (Powers and Moresco 2015). It would require a significant amount of staff and volunteer time.

While CPW has, in limited circumstances, employed agency or professional culling, it has only occurred when necessary removals could not be achieved by public harvest or hunting programs (i.e. Rocky Mountain National Park). The State and CPW does not currently have a statewide standard for application and implementation of a contract or municipal culling program for overabundant ungulates. We would be requesting for a permit for which there is no process. This would take time and any permit, thus action on the herd, would not happen this year. Therefore, CPW and BCPOS conclude that agency or professional culling is not a viable option. (See Appendix B for additional information.)

Fencing

Temporary limited fencing can be an effective tool to aid in native plant recovery in areas overgrazed/trampled by elk when employed in conjunction with population reduction and distribution management options. BCPOS will use fencing as a part of managing the vegetation in conjunction with any other action we take.

All fencing would be built to be wildlife friendly (allow movement of other species). However, monitoring would need to occur to prevent unfenced areas from damage as the elk are excluded from the fenced area. Fencing of the pine stands, used by the elk for bedding, would force elk into other areas and would be expensive. Standard 8' game fencing on wood posts is likely to cost between \$15-30/meter. Electric fence for elk has also been used with high efficacy (high tensile and braided hotwire). The high tensile 5-7-strand fence costs \$10-12/meter (\$25-30,000 for the large field enclosure). Electric braid fencing costs \$10-12/meter as well. BCPOS would determine the best alternative to fence the highly impacted native vegetation on Rabbit Mountain.

Fencing of agricultural fields was considered, but the number of properties and diversity of crops being utilized by the elk make this option cost prohibitive and has unacceptable ecological and esthetic consequences. While to date, CPW has paid game damage on only two corn fields, radio telemetry and landowner's complaints indicate elk are using grass pastures and grass and alfalfa hay fields as their primary agricultural forage. If the one or two corn fields are fenced, it will likely increase intensity of elk damage on other agricultural crops, which in turn would prompt landowners to call to fence their hay field and/or file for game damage payments. The larger of the two cornfields that sustain repeated damage is 27 ha with a perimeter of 2500m (\$70,000 enclosure at the high end).

From a statewide perspective, CPW does not support (nor fund) the use of large-scale fencing due to impacts to wildlife movement corridors and sustained costs. Fencing one field can lead to use of other fields and request for fencing by adjacent landowners and it is not possible to fence all affected fields. In addition, funding fencing on private property sets a precedent that would not be sustainable in the Rabbit Mountain Area and in other areas of the state. (See Appendix C for more details.)

If the elk herd population size is not reduced simultaneously, fencing will only move overabundant elk to other areas prompting new areas of damage to crops, landscape and native plants.

Crop alternatives

Changes to the types and rotation of agricultural crops may impact game damage payments. Farmers could be approached with the option to plant alternate, less palatable crops and compensating for the difference in worth (Cattanach et al, 1991). Fallowing an acre of corn may cost around \$600-750/ac (\$50,000 for one year of the large acreage cornfield). The cost would be less if a substitute crop were planted.

Elk are a highly mobile and adaptable species with a wide ranging diet. Currently, the Rabbit Mountain herd utilizes native grass and shrubs, grass pastures, grass and alfalfa hay fields, corn, triticale and stacked hay as forage. In other areas of Colorado, CPW has noted elk damage to a

variety of crops, including but not limited to, pumpkins, organic potatoes, growing wheat and beans.

In the closing weeks of 2016 and early 2017, radio telemetry locations indicate the Rabbit Mountain herd use of agricultural crop fields has expanded east of N95th almost to US Hwy 287 involving dozens of landowners. Most of these landowners grow grass and alfalfa hay that elk are feeding on. Of note, grass hay grown in the Hygiene and Longmont area is well known as superior horse hay and is priced accordingly. Also of note, in 2016, one of the fields that had previously held corn that received annual game damage payments changed to alfalfa and triticale. Elk continued to utilize the field extensively, and although a game damage claim was not filed, the producer indicates a claim will be forthcoming in 2017 if elk damage continues.

CPW and BCPOS agree that alone this option will not solve the Rabbit Mountain elk herd situation because it does not reduce elk numbers. While CPW would welcome decreases in game damage payments, based on experiences with elk crop damage around Colorado, CPW concludes that crop alternatives will likely not be able to be implemented at a scale which will significantly contribute to an overall solution to the Rabbit Mountain elk situation. However, conversations with farmers will continue in order to find a comprehensive solution to the elk issue.

Hazing

Hazing of elk can cause elk to move at least temporarily, but the literature and experience shows it is labor intensive and elk eventually habituate over time (Walter et al. 2010). In addition, hazing does not result in direct population reduction of overabundant elk. CPW may be liable for damage to real and personal property by elk while being moved by CPW (C.R.S 33-3-104(b)).

BCPOS tested hazing on Rabbit Mountain during the fall and winter of 2015-2016. BCPOS staff visited the southern portion of Rabbit Mountain 20+ times from July 2015 through March 2016. The elk always chose to move away from the staff, be they one or many. In nearly all cases elk ran away as a large group. Some of the time they chose to cross the grass flats, N. 55th, and the mine west of Rabbit Mountain to Indian Mountain, without pursuit from staff. Staff was able to influence the direction of travel in most cases. Radio-collared animals returned to Rabbit Mountain in usually one-to-three days (as long as six days) if they crossed the mine to Indian Mountain. No noisemakers, dogs, horses, cracker shells, gun shots, etc. were required to make the elk move.

BCPOS and CPW proposed to continue to use hazing to move elk from Rabbit Mountain in conjunction with the public hunting. Elk can be hazed off Rabbit Mountain towards Indian Mountain on days that Rabbit Mountain is open to the public. This combined effort may result in more elk disturbance and encourage elk movement. Also, during February and March, after hunting season and before the elk calving begins, we can continue to use hazing to encourage migration to the north.

BCPOS and CPW Staff Management Options Recommendations

BCPOS proposes to use a combination of approaches to address the natural resource damage occurring on Rabbit Mountain due to the large, non-migratory elk herd. We propose to include fencing, hazing, coordinated hunting with adjacent land-owners, and a limited public harvest program on Rabbit Mountain.

Public Harvest Program

The problem of elk overpopulation and its impacts on the biodiversity of Rabbit Mountain, and the limits of effective alternatives, lead CPW and BCPOS to consider a public harvest program. Below outlines an implementation plan of this option as our preferable alternative for review.

This technique has proven highly effective in managing wildlife populations and their distribution (Organ et al, 2012). Harvest of elk and deer for food on land that is now Rabbit Mountain Open Space is a traditional human use dating back to Native Americans over 10,000 years ago. The pros and cons of this option rely heavily upon the method in which it would be implemented. CPW and BCPOS staff time would be necessary, and could be augmented via oversight provided by a volunteer or paid program coordinator. This option would require minimal cost to CPW and BCPOS, provided that participants are required to purchase an elk hunting license, provide their own equipment and volunteer their time. All harvested animals will be properly prepared and all edible parts will be removed from the property as legally required.

The mechanisms for licensure allowing animal harvest already exist via established CPW processes. A public harvest program would be in compliance with state statute 33-1-101(4) C.R.S that articulates the state will use hunting as the primary method of effecting wildlife harvest and is compatible with the North America Model of Wildlife Conservation (Organ et al. 2012).

- 1) All harvest activities are aimed at encouraging elk to move, perhaps returning to seasonal migration. Actual numbers of elk harvested may be relatively low. The purpose is to make Rabbit Mountain no longer a safe haven for elk.
- 2) Implement a public harvest program that prioritizes public safety using trained, skilled and licensed volunteers to harvest female elk on Rabbit Mountain and Indian Mountain Open Space. Continue to facilitate hunting on adjacent private lands using targeted, liberal elk licensing strategies.
- 3) Consider temporary fencing in limited areas on Rabbit Mountain to allow for recovery of native plants on Open Space if BCPOS funding is available. Elk exclusion fence, as has been used on other BCPOS property, may be needed in the most heavily impacted area.
- 4) In winter 2017, capture and deploy up to 10 GPS collars on Rabbit Mountain elk to monitor the results of management actions and to allow adaptive management approaches.
- 5) Employ adaptive management approaches in addition to the public harvest program, including hunting on private land, continued discussions about crop alternatives, and possible hazing if legal and effective.
- 6) Implementing techniques to accelerate vegetation recovery will be essential. Native vegetation impacted by elk overuse may take years to recover even after elk numbers are reduced to objective.

Rabbit Mountain Elk Public Harvest Program

Following is the proposal for an adaptive management approach. Updates on this program, and significant changes to this approach, will be brought to POSAC and the County Commissioners in 2018.

Who: GMU 20 antlerless rifle license holders, except Private Land Only licenses

What: Limited Antlerless Elk Harvest

How: Lottery type-access system administered by BCPOS or CPW. Firearms (rifles) only, foot and horse or llama travel only.

When: September (day after Labor Day) – December 15. (All areas, including eagle closure)
December 15-January 31 (Areas outside eagle closure only)
Per week = Monday – Wednesday

Two hunters, each with up to two companions, in one vehicle (on the access road only) per one week slot. No motorized vehicles will be allowed, off road.

One hour before sunrise and one hour after Sunset. Hunters can hunt only one-half hour prior to sunrise and one-half hour after sunset per CPW regulation, but additional time before and after legal hunting hours may be needed for access and game retrieval.

Where: All of Rabbit and Indian Mountain Open Spaces, and the Cushman Open Space with the exception of a 300 yard buffer around property edges and open space facilities (kiosks, trailheads, and designated parking areas). No activity will occur within eagle closure area after Dec. 15. We will allow hunting on Indian Mountain and Cushman seven days/week. These properties are closed to the public therefore don't pose a safety risk or displace park visitors. This additional pressure could be beneficial in getting the elk to move out of the area. Further consideration of hunting on other closed agricultural properties will be evaluated as a part of our adaptive management.

Proposed Access

- Top of Rabbit Mountain (drive in to top on the access road).
- Corner of N 75th & Woodland
- Corner of N 55th Street
- Driveway to Money property.

Mandatory Hunter Orientation by BCPOS

- Training and Property Orientation
- Hunt Coordinator to lead program (BCPOS staff-Rangers) *This person would get calls for check-ins, success reporting, and end of season success reporting.*
- Signed Agreement from Hunter
- Mandatory Reporting
- Use of non-lead bullets

- No posting of harvested elk photos on social media or other electronic media
- No dogs

Public Input and Opinion

BCPOS published the draft elk management plan in March on-line with proposed limited public hunting. We requested public input on the draft for one month. Of 353 respondents to our survey, 231 (66%) support the plan, 26 (7%) support the plan with modifications, and 96 (27%) don't support the plan. The largest number of comments (60) supported the plan because of concern for the natural resources that are being impacted by too many elk. The largest objection to the plan was opposition to hunting on county open space (31).

A survey conducted by Responsive Management finds that 77% of Americans support hunting. The survey indicates 83% support for hunting for population control, 81% support hunting for wildlife management, 71% support hunting to protect property, but only 28% support it for harvesting a trophy. (Responsive Management Report, 2015.)

Frequently Asked Questions

Q: Is this a ploy by Colorado Parks and Wildlife to generate revenue?

A: No. In Colorado, big game populations are managed for specific population size objectives, which are approved in a public process by the Parks and Wildlife Commission. The number of licenses issued is determined by size of the population relative to the objective. If the population is above the objective, more licenses are issued. If the population is below the objective, fewer licenses are issued. Finally, it is likely that the implementation of a public harvest program on Rabbit and Indian Mountain Open Space will result in fewer licenses issued than are currently issued after the refuge situation is removed and the elk population reductions are realized.

Q: Do other Municipalities use public harvest to manage wildlife?

A: Yes, several open spaces and municipalities have public harvest programs to help manage wildlife populations. Below, is a list of some programs on the Front Range.

-Jefferson County's Centennial Cone for deer and elk (<http://jeffco.us/open-space/parks/centennial-cone-park>)

-Larimer County's Red Mountain Open Space for elk, deer and pronghorn (http://larimer.org/parks/red_mountain_hunting.htm)

-The Green Ranch at Golden Gate State Park for elk

(<http://cpw.state.co.us/placestogo/parks/GoldenGateCanyon/pages/huntinggreenranch.aspx>)

-The City of Elizabeth Deer Management Program (<http://www.townofelizabeth.org/deer-management-program.html>)

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Appendices

Appendix A: Efficacy of Fertility Control for Managing Rabbit Mountain Elk FAQ

What fertility control agents are approved for use in free-ranging elk populations?

Fertility control agents must first be approved by the Environmental Protection Agency (EPA) and then by individual states before application in management situations. No agents have been approved for elk by the EPA or any states.

Have fertility control agents been tested in elk?

Porcine zona pellucida (PZP) and GonaCon have been tested in captive and in free-ranging elk. Both agents are effective in reducing pregnancy rates, although, they are less effective in free-ranging elk than in captive elk. To date, neither fertility control agent is used or has proven to be effective at managing population size in free-ranging elk.

What free-ranging animals are PZP and GonaCon approved for?

PZP is approved for use in feral horses. GonaCon is approved for use in feral horses and white-tailed deer.

What are the health or behavioral effects in treated animals?

Females treated with PZP continue to have estrus cycles, but most often fail to become pregnant. As a result, the breeding season may be extended in members of the deer family from a few weeks to several months. The presence of PZP treated female elk may result in bull elk continuing to bugle, tend harems and fight other males past the normal September-October breeding season. The extended breeding behavior could result in social stress and reduced body condition for animals within the herd. For these reasons, PZP is not the preferred fertility control agent for members of the deer family. In contrast, females vaccinated with GonaCon showed a decrease in sexual activity and breeding behavior, although they were maintained as part of the harem. Behavioral effects of any type of fertility control have not been well studied in free-ranging elk.

What is the treatment method for GonaCon in white-tailed deer?

GonaCon must be hand injected in deer. At this time, it is not approved for use in elk. At the time of approval, an appropriate treatment method would be determined.

How often would female elk need to be treated if GonaCon was approved?

A study in Rocky Mountain National Park indicated that GonaCon was effective at reducing pregnancy rates in female elk for 1-2 years post treatment (Powers et al. 2014). Thus, female elk would need to be treated at a minimum every other year. It is unknown if after multiple treatments, they would be permanently infertile or maintain infertility for an extended period.

What proportion of an elk herd would need to be treated to prevent population growth?

Population modeling for other deer and elk herds indicates that a large proportion (80% or more) of breeding age female elk would need to be treated once every 1-2 years.

How much would it cost to administer GonaCon in the Rabbit Mountain elk herd if it were legalized for use in elk?

The GonaCon vaccine itself costs approximately \$50 per dose. However, the main cost associated with using GonaCon, or any fertility control agent, is associated with the time, money and logistical constraints associated with capture and vaccination of elk. In most of Colorado, cost for helicopter capture of elk ranges from \$600-\$1000 per animal or more in difficult capture conditions.

The Rabbit Mountain elk are wary, unapproachable and their range remains snow free most of the winter due to down slope (Chinook) winds making capture difficult. In addition, the amount of human infrastructure in the area and the frequent high velocity winter winds precludes effective helicopter capture techniques. Based on the 2017 capture effort to radio-collar 7 female elk on Rabbit Mountain, the fertility control cost estimate would be up to \$2,000 per elk including personnel time, vehicle mileage, bait, capture drugs, equipment (syringes, needles, ear tags, visual collars, etc.) and equipment repair (jab sticks, Clover traps). The high proportion of the elk herd that would require capture, treatment and marking will add significantly to this cost due to unintended recaptures of previously treated animals.

This equates to approximately \$200,000 per 100 elk. Current estimates put the number of breeding age female elk on Rabbit Mountain at 125-160.

Would it be logistically possible to capture 80% of the female elk in the Rabbit Mountain herd?

Rabbit mountain elk cannot be approached within darting range (<60m) on foot or in a vehicle, unlike elk further north in and around Loveland, Estes Park and Rocky Mountain National Park. Bait has reduced effectiveness due to the lack of persistent snow cover in the area and the abundance of alternative food sources including crops, stacked hay and landscaping. Helicopter capture is precluded due to human development and frequent high velocity winter winds. Several weeks of effort were required to capture and collar 4 elk in 2015 and again for 7 elk in 2017, so it is not logistically possible to capture so many individual elk each year within this particular herd.

If fertility control could be administered to 80% of the elk every other year, how long would it take to see a population reduction?

Elk are long lived with female elk often reaching 15-20 years of age. While fertility control might “freeze” population growth, it would take a decade or more to see any reduction in elk numbers. Fertility control is not an effective population reduction technique.

What about immigration or emigration with other elk herds?

Immigration of elk from the nearby Heil Valley elk subherd to Rabbit Mountain has been documented by radio telemetry and the Chimney Hollow elk herd is also nearby. As a result, untreated female elk would periodically join the Rabbit Mountain herd diluting the treatment effect. Conversely, some treated elk would disperse from the Rabbit Mountain area losing the benefit and investment in these treated animals. These types of inter-population movements add further to the expense and logistical challenges of using fertility control as a management tool.

Are there ecological effects of fertility control agents in elk?

Potentially. Changes to natural selection, effects on social structure and behavior, timing of mating and birthing season, changes to longevity, impacts to migration all need to be studied before use as a management tool in free-ranging native populations (Powers et al. 2014, Powers and Moresco, 2016).

Is fertility control recommended for the Rabbit Mountain elk herd?

Even if a fertility control agent were legally available, its use would not facilitate meeting the Rabbit Mountain Elk Management Plan goals because of the immediate need to reduce impacts on native plant communities and overall biodiversity by overabundant, resident elk. Elk are long lived, with female life spans at 15-20 years. Thus it would require a decade or more before fertility control alone would result in any population reduction and then only in the absence of immigration from other nearby elk subpopulations, such as Heil Valley Ranch or Chimney Hollow. Fertility control agents would not promote greater movement of the herd or a return to seasonal migration. Indeed, there is no evidence in the literature to indicate that fertility control techniques can be effectively applied on a scale large enough to limit population growth rates of free ranging elk or other cervids (Walter et al. 2010, Powers et al. 2014, Powers and Moresco 2015).

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Appendix B: Culling vs Hunting

Rocky Mountain National Park

Elk & Vegetation Management Plan Fact Sheet

https://www.nps.gov/romo/learn/management/elkveg_fact_sheet.htm

- A variety of conservation tools are being used in (the RMNP) plan implementation including fencing, vegetation restoration, and culling. Culling is the primary conservation tool that is being used for lethal reduction of the herd. In future years, the park, using adaptive management principles, could reevaluate opportunities to use elk redistribution, wolves, or fertility control as additional tools.
- The actual number of animals the NPS may cull, and the costs, will vary each year based on annual population surveys and hunter success outside the park. The level of management action taken to control the population size is adjusted annually based on the current population size estimates. Based on adaptive management, actions to control the population will be taken to manage for a population size within the range specified in the ROD (600-800 elk in the park subpopulation and 1,000 to 1,300 elk in the Estes Park subpopulation) and to meet vegetation objectives.
- National Park Service personnel are responsible for culling operations. To augment NPS personnel, authorized agents assist in culling operations under the direct supervision of NPS personnel. Cost, efficiency, and effectiveness are the factors that determine when additional personnel are needed. For purposes of this plan, "authorized agents" can include: professional staff from other federal, state, or local agencies or Indian tribes, or qualified volunteers. The NPS selects and supervises all personnel, including qualified volunteers. Short term closures can be implemented while culling activity is occurring.
- Cullers, including NPS personnel and authorized agents, are certified in firearms training, specially trained in wildlife culling, and are required to pass a proficiency test in order to qualify and participate in culling activities. Cullers are expected to work in teams under the supervision of a NPS team leader to insure humane dispatch and quality meat recovery.
- Culling activity has occurred during the winter months, early in the morning, to minimize impacts on park operations, visitors, private inholdings, and neighbors
- What is the difference between hunting and culling?
Hunting is not allowed in Rocky Mountain National Park and is not a part of the elk management plan. Hunting is a recreational activity that includes elements of fair chase and personal take of the meat. Hunting is administered by the state fish and game agency.

Culling is used as a conservation tool to reduce animal populations that have exceeded the carrying capacity of their habitat.

Culling is done under very controlled circumstances in order to minimize impacts on park operations, visitors, private inholdings, and neighbors. Culling is an efficient and humane way to reduce herds of animals that are habituated to the presence of humans.

- Why was public hunting considered but dismissed as an alternative?
Hunting is prohibited in the park by law. In 1929, Congress prohibited hunting within the limits of Rocky Mountain National Park. Public hunting within the park raises several issues:
 - 1) It would significantly change the visitor experience in the park. Visitors expect to come to Rocky Mountain National Park and not encounter hunters.
 - 2) It would require changing the law that has been in place in the park since 1929.
 - 3) It would significantly displace the existing recreational use of park visitors and would compromise visitor safety.

Park managers selected culling of elk, using specially trained park staff and authorized agents, to reduce the elk herd and minimize the impacts on park operations, visitors, private inholdings, and neighbors. For over 90 years, visitors have expected that recreational activities can take place in Rocky Mountain National Park without interference from hunting. Hiking, horseback riding, snowshoeing, and skiing in the backcountry are very popular activities along with sightseeing and wildlife viewing along the park's roadways.

The NPS recognizes that public hunting is an important recreational activity and wildlife management tool in Colorado. Currently, hunting is permitted on approximately 98% of the federal lands in Colorado, including lands managed by the U.S.D.A. Forest Service (Forest Service), the Bureau of Land Management, and numerous national wildlife refuges throughout the state. Further, the NPS recognizes and supports Colorado Parks and Wildlife's (CPW) use of hunting for management of wildlife in areas outside and adjacent to the park.

_____End of RMNP Fact Sheet_____

Other FAQs for Rabbit Mountain Culling

What were the resources necessary to carry out this culling program?

RMNP had volunteer sharpshooters, who passed a proficiency test, work alongside parks and CPW staff to take out the elk. Two teams of 4 people each carried out the culling, with additional volunteers and staff retrieved the animals, field dressed them and transported them. CPW distributed the meat through a lottery system. Volunteer sharpshooters were not eligible for the lottery. The estimated cost was \$4700/elk.

How many elk did they cull?

RMNP management plan estimated up to 200 elk could be culled. In the 3 years of implementation, 53 elk were culled.

How much would it cost to hire a company to cull the elk at Rabbit Mountain?

White Buffalo provides this service. They estimate it would cost between \$300 and \$500/elk. They are from out of state and would come for a period of time (perhaps 2 weeks) and conduct the culling.

Would culling be effective at Rabbit Mountain?

We are unsure if culling would be effective at Rabbit Mountain because the elk are skittish. Cullers may not have the opportunity to harvest large numbers of elk because they would move off the mountain and be inaccessible in a short (i.e. 2 week) period. In order to meet our plan's objectives, we would need to cull over an extended period of time, such as that proposed for the limited public hunting.

Appendix C: Fencing

Successfully fencing out animals as large and athletic as elk is a challenge. There are many variables to erecting fencing: terrain, proximity to roads/access, budget (construction and maintenance), landowner willingness, public acceptance, aesthetics, efficacy, materials choice, the logistics of construction (and maintenance), durability in the elements and over time, proximity to a power source (for long distance electric), and what is inside/across the fence. A good summary of elk damage issues is by Walter *et al* 2010. There are multiple citations of fencing and fence types, as well as some other techniques for ameliorating elk damage impacts and reducing elk populations.

BCPOS will install fencing around impacted sites inside the 500-acre core use area to reduce the vegetation degradation caused by the large number of elk. Outside of Rabbit Mountain, options include fencing high value crop areas, or fencing along the border of the property.

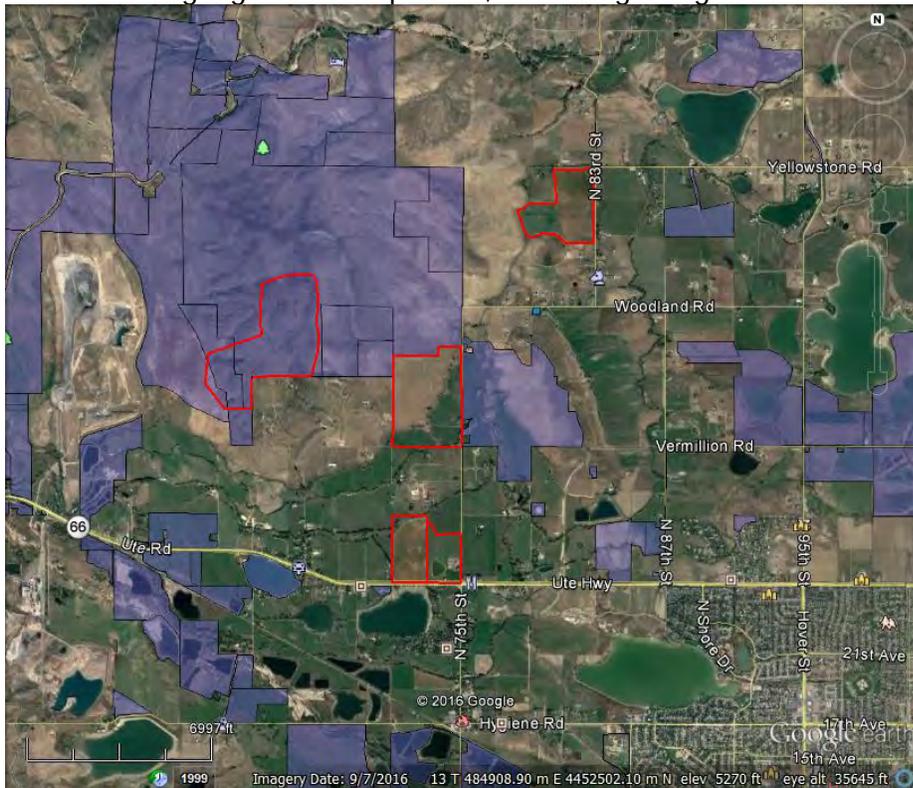


Figure 1 – Areas that might be suitable for fencing to alleviate resource damage on Rabbit Mountain and crop damage on 4 private properties.

Individual landowners may or may not be receptive to having high fences along their boundaries. Any gaps in perimeter fencing would allow elk to pass through and access other private (and open space) residential or ranch parcels farther to the east. Figure 2 illustrates the numerous individual private properties in the area.

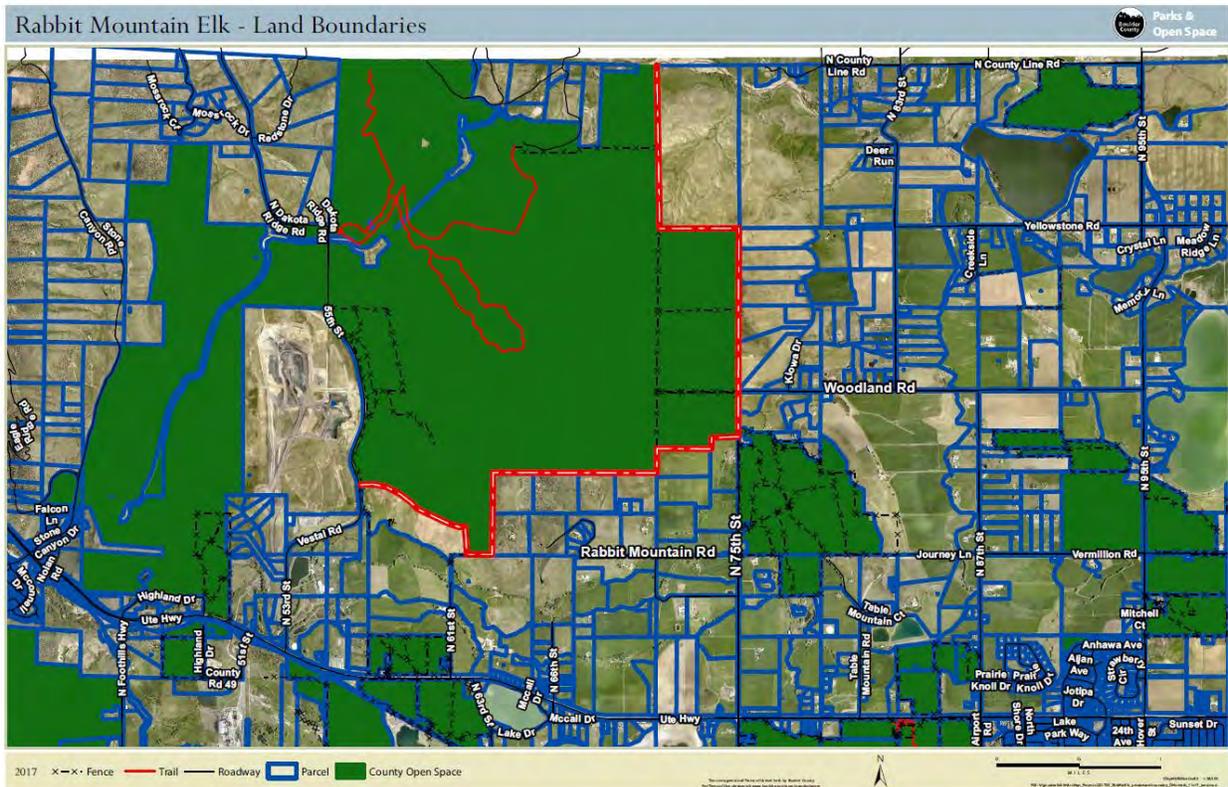


Figure 2 – Private land boundaries on the Southeast side of Rabbit Mountain potentially subject to fencing.

An 8' game fence of woven wire mesh is the industry standard for highway Right's-of-Way. The heavy-duty mesh fence is attached to 6" x 12' wooden upright poles (necessary to support both the weight and the wind/snow/ice drag) at 16-24' spacing (Photo 1). This fencing excludes most terrestrial species, but can be tunneled under or even fitted with small, low openings. However, in most highway situations complete exclusion is desired for highway safety. Wildlife passage is restricted to small, unintentional gaps or culverts and bridges.

One landowner immediately adjacent to Rabbit Mountain installed some of this fence to protect their acreage and landscaping from deer (Photo 2). A new owner removed most of the fencing in 2016 (Photos 3 and 4), likely due to aesthetics. Rocky Mountain National Park used a variation of that fencing suited to their sites protecting aspen and willow. Their styles topped out at about 6' 6" and allowed for passage of small/short animals via a 16" gap above the ground (Photo 5). Their mesh was a lighter, square mesh targeting only elk exclusion and used metal pipes as posts, set in concrete.

BCPOS has created two similar, smaller enclosures using two different types of mesh at the Minnick and Reynolds properties (Photos 6 & 7). These enclosures were designed to preclude herbivory by livestock and elk on new aspen and lodgepole pines. Elk (or moose) did damage one of the enclosures at Minnick. This type of design has also been used outside Rocky Mountain National Park on a 1 hectare aspen patch (VerCauteren et al 2007). We also tried a

log jack-leg fence at Reynolds Ranch, due to the ready supply of on-site logs and volunteer labor (Photo 8). A third type of enclosure, using live trees as posts, has been successful at regenerating a small aspen stand at Walker Ranch (Photo 9).

CPW has a third design specifically for orchards and vineyards that uses a 7' panel on wood posts with an additional strand overhead at 8' (Figure 3). Electric fencing can be done in the 8' style, with fewer wood line posts or at a lower height (Seamans and VerCauteren 2006, Johnson *et al* 2014). Some electric fencing can be temporary or seasonal, allowing passage by wildlife at non-key times (for crops). Simple barbed wire livestock or Right-of-Way fencing is not tall enough to exclude elk (Photos 10-12).

Fencing costs will vary by scale and terrain.

Exclusion Fencing

8' game fence	\$3-4.50/ft (\$15,000-\$25,000/mile)
76" RMNP exclosures	\$5200/acre (roughly \$75,000/per exclosure)
5-7' electric fence	\$3-4/ft
CPW orchard fence	\$2/ft (old figure?)

Small scale/resource Fencing

POS E-Z Fence	\$2500 for two 1/6 th acre exclosures (materials only)
	\$1500 for 1/2 acre exclosure (materials only)
	\$3000-\$7500/acre (materials only)
POS mesh/tree fence	\$850 for 5-6 acre exclosure (materials only)
VerCauteren <i>et al</i> /mesh Fence	no published cost



Photo 1 – Standard game fence along I-70.



Photo 2 – Existing portion of landowner 8' game fence adjacent to Rabbit Mountain.



Photo 3 – Removed portion of landowner 8' game fence adjacent to Rabbit Mountain. The small stubs are the remnants of the 12' posts.



Photo 4 – Elk in the core area of Rabbit Mountain headed toward the old game fence on the boundary.



Photo 5 – Rocky Mountain National Park elk enclosure (CBS photo).



Photo 6 – Aspen enclosure on USFS adjacent to POS Minnick property.



Photo 7 – Aspen enclosure on Reynolds Ranch (1/2ac in size).



Photo 8 – Aspen enclosure (log fencing; 1 ac in size).



Photo 9 – Mesh on trees enclosure fence at Walker Ranch



Photo 10 – Elk crossing livestock fence near Rabbit Mountain.



Photo 11 – Elk crossing through damaged Right-of-Way fence along US36.



Photo 12 – Damaged wooden rail fence near Rabbit Mountain (attributed to elk).

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Parks and Open Space

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PARKS AND OPEN SPACE ADVISORY COMMITTEE MEETING

TO: Parks & Open Space Advisory Committee

DATE AND LOCATION: Commissioners Hearing Room, 3rd floor Boulder County Courthouse, 1325 Pearl Street, Boulder, CO

AGENDA ITEM TITLE: Heil 2 Temporary Trailhead

PRESENTER: Al Hardy

ACTION REQUESTED: Informational

The Heil 2 Small Area Management Plan recommendations are being implemented. The larger northern multi-use trail loop identified for the western side of the Heil 2 property is almost complete and staff is moving forward with opening the loop to public use in July when all needed improvements are ready.

The management plan approved trailhead is not ready for construction, so we will be installing a small temporary parking lot to assist with accommodation of additional users. The location of the temporary lot is in an area of disturbance related to the flood. It will not require any import of materials and we would delineate the boundaries using existing boulders sourced on site. Boulder County Land Use approved this concept of a temporary parking lot.

Opening the trail when completed provides the public with new trail to access while also protecting the investment of volunteers and staff who contributed to its construction by compacting the tread and lessening plant encroachment.

Figures

1. Heil Valley Ranch 2 Management Plan: Proposed Facilities
2. Heil 2 Trailhead Area Plan
3. Heil 2 Draft Temporary Parking

Figure 1

Heil Valley Ranch 2 Management Plan: Proposed Facilities



Figure 3: Trails and Facilities



**Parks &
Open Space**

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5201 St. Vrain Road
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Phone: (303) 678-6200
Fax: (303) 678-6180
www.BoulderCounty.org

Area Plan
Heil 2 Trailhead
Geer Canyon Drive, Boulder, CO

SCALE: 1" = 40'
DRAWN BY: DM
DESIGNED BY: DM
CHECKED BY:

SUBMITTAL DATE
DRAFT CD SET 2016-12-12

SHEET: 1 of 5

L1
NOT FOR CONSTRUCTION

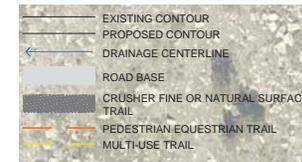
Figure 2



NOTES

1. **VERIFY PERMITS** REQUIRED, INCLUDING, BUT NOT LIMITED TO:
STATE OF COLORADO STORMWATER MANAGEMENT PERMIT
BOULDER COUNTY PUBLIC HEALTH ONSITE WASTEWATER TREATMENT SYSTEM PERMIT.

LEGEND



SHEET INDEX

1. L1 AREA PLAN
2. L2 LAYOUT & MATERIALS PLAN
3. L3 GRADING PLAN
4. L4 SECTIONS
5. L5 SWPP PLAN

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Figure 3

