

**MINUTES AND PROCEEDINGS OF THE
PARKS AND OPEN SPACE ADVISORY COMMITTEE
February 25, 2016**

The meeting was called to order at 6:30 p.m. by Eric Hozempa in the Hearing Room of the Board of Commissioners, Third Floor, Boulder County Courthouse, Boulder, Colorado.

POSAC Members in Attendance

Present: Jenn Archuleta, Sue Cass, Cathy Comstock, Russell Hayes,
Eric Hozempa, James Mapes, and Scott Miller

Excused: John Nibarger

Staff in Attendance

Sandy Duff, Renata Frye, Janis Whisman, Jeff Moline, Jesse Rounds, Therese Glowacki

January Meeting Minutes

Sue Cass moved to accept the January 28 minutes. Jenn Archuleta seconded the motion. ***Motion carried unanimously.***

Public Participation for Items not on the Agenda

- Dan Lisco, 6936 Jay Rd., Boulder County. He is a farmer in Boulder County. He wanted to speak on the Cropland Policy meeting on February 29. He encouraged people to attend that meeting and ceded the remainder of his time to Jules Van Thyne.
- Jules Van Thyne, 10323 Monarch Rd., Longmont. He farms in Boulder County. His family has farmed here for 100 years. He farms approximately 700 acres that have conservation easements held by Boulder County. He also leases 100 acres from the county. He argued that farmland is needed in Boulder County, and the land can't farm itself. He stated that the open space program needs farmers like him to meet its goals, as much as those farmers need the program to keep their operations going. He and other farmers need to have the option to continue to grow genetically engineered corn and sugar beets.
- Scott Smith, 67 Wagon Wheel Gap Rd., Boulder. In 2011 he was part of a group that advocated for a modification to the Cropland Policy that was put forth by BCPOS. He recommends a paper by retired agricultural economics professor Edna Loehman.
- Mary Smith, 67 Wagon Wheel Gap Rd., Boulder. She claims collusion between Boulder County, Colorado Department of Agriculture, and Conservation Districts. She states that the biotech industry has a presence in this community that has taken away the right of the people.

- Artie Almquist, 3642 Villa Rosa Pkwy, Longmont. He is an irrigated farmer. He was involved in the process of shaping the Cropland Policy. He was involved with the Strip Till Committee, which helped bring new technology to farmers in Boulder County. Many farmers have adopted the new technology, which has improved soil health and reduced the use of pesticides. He stresses that new technology, such as drones, can continue to improve farming and the environment. It's important to understand that sustainable agriculture doesn't necessarily mean going certified organic.

Musser-Transfer of Management (for Longmont Dam Road Repairs)

Transfer of Management of 0.15 acres to Boulder County Transportation

Staff Presenter: Sandy Duff

Action Requested: Recommendation to the BOCC

See Staff Memo for Detail on Presentation.

Questions

None

Public Comment

None

Motion

Jenn Archuleta moved to accept staff recommendation for the transfer of management as presented, and Scott Miller seconded the motion. ***After discussion, Motion carried unanimously.***

Discussion on Motion

Jenn Archuleta: This looks like something we need to do, and it's one of the easiest things we will consider tonight.

Roberts (Ruth)-Transfer of Management, and Roberts (Simi)-Transfer of Management (for Dillon Road at Rock Creek Road Repairs)

Transfer of Management of 0.296 acres to Boulder County Transportation

Staff Presenter: Sandy Duff

Action Requested: Recommendation to the BOCC

See Staff Memo for Detail on Presentation.

Questions

None

Public Comment

None

Motion

Scott Miller moved to accept staff recommendation for the transfer of management as presented, and Sue Cass seconded the motion. ***After discussion, Motion carried unanimously.***

Discussion on Motion

Scott Miller: It will be nice to finally have this fixed, as I live across the road from this.

Heil Valley Ranch 2 Small Area Plan

Staff Presenter: Jesse Rounds

See Staff Memo for Detail on Presentation.

Questions

Russell Hayes: The plan says there will be up to four passenger car spaces. That doesn't seem like it will be enough to solve the parking problem up at the main trailhead. It also says there will be up to four horse trailer spaces, which will eliminate the horse trailer spaces at the main trailhead. How many are up there now?

Jesse Rounds: I believe there are six currently. We've based the new number on use we see for the horse trailer parking currently. We have heard from equestrians who have told us that traffic is part of the reason for the lack of use there. We are pretty confident that four is enough in the new area.

Public Comment

- Erica Cooper, 8470 Stirrup Lane, Boulder County
- Tom Barth, 3055 Stanford Ave., Boulder
- Piet Sawvil, 716 Bittersweet Lane, Longmont
- Suzanne Webel, 5735 Prospect Rd., Longmont
- John DeRussell, 1186 N. Franklin, Louisville
- Philip Schreiber, 1950 King Ave. Boulder
- Mike Barrow, 1103 Alexandria, Lafayette
- Isaac Nagel-Brice, 2535 Meadow Ave., Boulder
- David Holshouser, 5591, Longmont
- Susan Douglass, 3045 Galena Way, Boulder
- Herschel Goldberg, 600 Manhattan Dr., Boulder
- Jesse Vogt, 2335 South St., Boulder
- Eric Sherrill, 3236 Ouray St., Boulder
- Steve Watts, 1237 Elder Ave. Boulder
- Joe Richardson, 4537 Apple Way, Boulder County

Motion 1

Jim Mapes moved to ask staff to consider more public comment for the Heil Valley Ranch 2 plan and bring the plan to POSAC at a later time. Jenn Archuleta seconded the motion. **After discussion, Motion failed 4 to 3.**

Discussion on Motion 1

Cathy Comstock: I think staff has addressed the comments here tonight.

Jenn Archuleta: Part of the reason I seconded the motion is because the public comment period extends past the date of this meeting.

Jesse Rounds: We don't have all the answers. You are here to tell what you think based on public comment. If you want us to bring this back, we can do that.

Eric Hozempa: I think it's extremely difficult to take everyone's comments into consideration and build a perfect trail. I won't vote for this motion because I think the public has been heard up to this point.

Jenn Archuleta: I'm not looking for perfection, but rather representation. We haven't heard from very many naturalists, or people with other interests. Are we shutting down voices who thought they could comment until next week?

Jesse Rounds: I intentionally had the comment period extend past this meeting so the BOCC can have those comments in addition to what comes out of this meeting.

Sue Cass: One reason you haven't heard many comments from the conservation side is because staff has done their plan with regard to protecting the environment, protecting wildlife, protecting cultural areas. I think for the most part we [environmentalists] are comfortable with the plan as it has been presented.

Scott Miller: How far do you go in getting further comments? This looks like a good plan to me, although maybe additional parking should be addressed.

Motion 2

Eric Hozempa moved to accept staff recommendation for the Heil Ranch 2 area plan and Cathy Comstock seconded the motion. **After discussion, Motion passed 6 to 1.**

Discussion on Motion 2

Scott Miller: Maybe the parking should be addressed before it goes to the BOCC for approval.

Eric Hozempa: I look at a management plan as something that will evolve over time. This plan will probably evolve as well. This is a starting place, and I'm in favor of it.

Jenn Archuleta: I do think this is a good plan, but one of my concerns is increasing use. The out and back trail is not ideal. I would encourage staff to put in stacked loops whenever possible.

Jesse Rounds: We will take all of these comments into consideration before we take it to the BOCC.

Jim Mapes: I'm a user of the Lichen Loop, because I have a small child. I wouldn't take her on the Wapiti Trail either. I have a concern about defaulting to user-restricted trails without observing that there is actually a problem. I'm not sure the eastern trail [the yellow trail] provides a useful experience because it provides a short out and back. Most users have told us that loop experiences are just better. I question whether or not the yellow trail will be well-loved. Our default should be making trails open to everyone, with fewer discrepancies in speed.

Rocky Mountain Greenway Federal Lands Access Program Grant Request

Staff Presenter: Jeff Moline

See Staff Memo for Detail on Presentation.

Questions

Eric Hozempa: To clarify, you are asking for approval for an investment so you can move forward with the grant application process?

Jeff Moline: Yes, we would like you to indicate your interest in this project and if you want us to commit to it and keep it moving forward. The money probably won't need to be allocated until 2017.

Sue Cass: Does this agreement allow POS to management its properties safely and according to policies?

Jeff Moline: The application is just for the crossing areas. I feel like we definitely have the ability to control where this location will be.

Public Comment

- Suzanne Webel, 5735 Prospect Rd., Longmont. Before 2012 she was on the Rocky Flats Trails Taskforce. They had looked a lot at the issue of contamination and the green donut area was determined to be free of contamination. She is excited to see this happening and she supports the project. She also stressed that the box culverts built for crossing should be large enough for both people and wildlife.

Staff Response [to public comment]

Jeff Moline: To address the crossing issue, they will be large enough to accommodate equestrians.

Motion

Sue Cass moved to accept staff recommendation for the Parks & Open Space Department's participation in this project, and James Mapes seconded the motion.

After discussion, Motion carried with 6 for, 0 against, and 1 abstention.

Discussion on Motion

Sue Cass: This is an extraordinary project and it's wonderful to see it finally starting to take form.

James Mapes: I can't wait to get on to Rocky Flats, so if this will make it happen faster, it's wonderful.

Jenn Archuleta: I think it's great you were able to get so many partners.

Cathy Comstock: I agree with the other comments, and I'm very happy for the potential for a wildlife crossing. However, I've seen so much research indicating risks from building in the Rocky Flats area from the Rocky Mountain Peace Center that I will abstain from this because I can't approve of anything that takes people in there.

North Trail Study Area

Presenters: Steve Armstead-City of Boulder & Jeff Moline-Boulder County POS

See Staff Memo for Detail on Presentation.

Questions

Sue Cass: Could you explain the City's rationale for issuing off-trail permits? If there is a trail through a habitat conservation area [HCA], you issue no off-trail permits. Is that correct?

Steve Armstead: Typically, for a habitat conservation area, we would allow off-trail permits. It would be the exception that we would not. With the trail being on the west side, we would not issue off-trail permits. We look at ways to strike balance. We considered what works for providing access out to Joder Ranch on the east side that works well for the environment, but also provides an enjoyable experience for users. In looking at the west side, we have connectivity but it has serious implications for the natural resources. Limiting access to on-trail only was one of those restraints that help us conserve.

Sue Cass: Will you speak to the environmental values associated with the foothills-plains ecotone, and how they relate to the HCA on West Beech?

Heather Swanson [City of Boulder]: Ecotones occur when two ecosystem types come up against each other. When that happens, the two ecosystems tend to finger in with one another and you end up with a dynamic mosaic of habitats. The diversity is much higher in ecotones. On West Beech we see that happening.

Eric Hozempa: The City of Boulder owns most of the property. Am I mistaken that we can't kick this up the BOCC? Is this more than a courtesy?

Jeff Moline: The IGA states that the entity with management responsibility will come before staff for the other entity, which BCPOS staff has done. The idea for tonight was to have POSAC provide input as well.

Sue Cass: I want to bring to your attention that part of the area that the city is managing [the Beech property] has a HCA and is owned in fee by Boulder County Parks & Open Space. I feel strongly that POSAC should hand down judgment on this.

Janis Whisman [BCPOS Real Estate Division Manager]: The Beech property is about 1,200 acres. About 200 acres of that is presently owned by the county in fee. There was a 1988 agreement about how we were going to purchase that property, help the city buy it, and at the end of the day the county would have a 33% interest in the entire 1,200 acres. We haven't finished that up because we were waiting for the city to finish their BMPA payments and to get the fee title to the property, which happened a few years ago, and so now it's on the list of things to do, but it just hasn't been accomplished yet. But at the end of the day the county will have a 33% interest in 1,200 acres and the city will have a 67% interest. At the moment the county owns in fee 200 acres just west of the industrial site.

Sue Cass: Which is designated a habitat conservation area.

Janis Whisman: Yes; and the reason we own that is because the county had money to put into the project while the city was getting the BMPA payments together.

Public Comment

- Suzanne Webel, 5735 Prospect Rd., Longmont
- Raymond Bridge, 435 S. 38th St., Boulder
- Susan Douglas, 3045 Galena Way, Boulder
- Jackie Ramaley, Boulder
- Erica Cooper, 8470 Stirrup Lane, Boulder County
- Tim Hogan, 2540 6th St. Boulder
- Nickie Kelly, 1080 Fairway Ct., Boulder
- Edie Stevens, 2059 Hardscrabble Dr., Boulder
- Kirk Cunningham, 977 7th St., Boulder
- Tom Issacson, 3165 Nobel Ct., Boulder
- Amy Strombotne, 8502 Stirrup Ct., Boulder County
- Mike Barrow, 1103 Alexandria St., Lafayette
- Molly Davis, 5635 Corey Ct., Boulder

Russell Hayes: My understanding of our job is to advise the BOCC on items they will vote on and we are being asked to do something else. I think any motion we make will be a motion to go to the BOCC rather than the city. I think the notion that POSAC, with the little exposure to this problem that we have formally had really cannot do justice to this job. If the BOCC could slow things down, that would be really good.

Sue Cass: I believe I have attended every panel discussion, every workshop, every breakout group, and every study session, so I'm really familiar with this. I would be willing to make a motion tonight. We are talking about county owned land that is being impacted by this decision.

Motion

Sue Cass moved to ask the Boulder County Commissioners to intervene in this process to secure Scenario A as the selected alternative for this trail, and Cathy Comstock seconded the motion. **After discussion, Motion failed 5-2.**

Discussion on Motion

James Mapes: I'm in awe of the city process. I didn't attend every meeting, but I did watch them, at least in part, online. I can say that everyone brought a lot of integrity and attention to the process. This is ultimately a political decision and there is no right answer to this. I don't think POSAC should intervene in the city's political process after POS staff agreed to let this process go forward.

Jenn Archuleta: I agree with James. The city is following their HCA policy, and the county agreed to allow them to manage the property. The City of Boulder spent a lot of time and money getting to their decision and I trust their staff is as professional as Boulder County staff.

Scott Miller: It seems that it's the county's dumb luck that we still have fee interest in this. It was the intention that we would have a minority undivided interest in this property. I agree with James that whether we totally agree with the decision or not, the city had a responsible, prudent process to come to the decision they've come to, and it still has to go in front of the Boulder City Council.

Cathy Comstock: I respect all the complexities of this issue. I'm on this committee because I believe in the same things the founders of the open space program believed. The vote of the Board of Trustees was only one vote different. There would be no losses to anyone to have it on the east side, and the immense losses on the west side. I can't imagine not speaking up and saying this is not an alignment with the county's open space values.

Sue Cass: Without question, OSMP staff did an exemplary job of delineating all of the impacts that would occur. I would not want to impugn city staff. There is a perfectly acceptable alternate solution here that would not require a whole lot of sacrifice on anybody's part.

Eric Hozempa: This is a difficult situation. Innately I would fully support Sue's position, but because POS staff has worked with OSMP staff on this for a year, I have to agree with what James and Jenn have said. County staff have worked with them and have given their blessing; I feel it is not our matter to intervene and I will not support this motion.

Director's Update [given by Therese Glowacki]

- The Prairie Dog Amendment was approved by the BOCC
- David Bell has left POS Agricultural Resources Division to take a job with City of Longmont
- POS received a \$150,000 grant to look at our riparian habitat post-flood
- POSAC was notified 2 hours before the public notice went out for the Feb. 29 joint POSCA/BOCC GMO hearing.

Adjournment

The meeting adjourned at 11:30 p.m.

Note: This is only a summary of this month's POSAC meeting. You may listen to the entire audio recording at: www.BoulderCountyOpenSpace.org/POSAC



Parks and Open Space

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

PARKS AND OPEN SPACE ADVISORY COMMITTEE MEETING

DATE: Thursday, February 25, 2016
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 January 28, 2016 Meeting Minutes**
2. **Public Participation - Items not on the Agenda**
- 6:45 3. **Real Estate Transactions:**
- Musser-Transfer of Management (for Longmont Dam Road Repairs)**
Transfer of Management of 0.015 acres
to Boulder County Transportation
Staff Presenter: Sandy Duff
Action Requested: Recommendation to the BOCC
- Roberts (Ruth)-Transfer of Management, and Roberts (Simi)-Transfer of Management (for Dillon Road at Rock Creek Road Repairs)**
Transfer of Management of 0.296 acres
to Boulder County Transportation
Staff Presenter: Sandy Duff
Action Requested: Recommendation to the BOCC
- 7:05 4. **Heil Valley Ranch 2 Small Area Plan**
Staff Presenter: Jesse Rounds
Action Requested: Recommendation to the BOCC
- 8:05 5. **Rocky Mountain Greenway Federal Lands Access Program Grant Request**
Staff Presenter: Jeff Moline
Action Requested: Recommendation to the BOCC
- 8:35 6. **North Trail Study Area**
Presenters: Steve Armstead - City of Boulder
& Jeff Moline - Boulder County POS
Action Requested: Advise City of Boulder's Open Space & Mountain Parks
- 10:00 7. **Director's Update**
- 10:05 8. **Adjourn**



Parks and Open Space

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

PARKS AND OPEN SPACE ADVISORY COMMITTEE MEETING

TO: Parks & Open Space Advisory Committee

DATE AND LOCATION: 6:30 p.m., Thursday, February 25, 2016 Commissioners Hearing Room, 3rd floor Boulder County Courthouse, 1325 Pearl Street, Boulder, CO

AGENDA ITEM TITLE: Musser-Transfer of Management (for Longmont Dam Road Repairs)

PRESENTER: Sandy Duff, Land Officer

ACTION REQUESTED: Recommendation to the BOCC

Summary

Boulder County proposes to transfer management of approximately 0.15 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 permanent grading as an overflow area associated with the road repair work on Longmont Dam Road. The location of the property is on Longmont Dam Road, approximately a little less than a mile from the intersection of US 36 and Longmont Dam Road.

Background

Boulder County Transportation is preparing to permanently repair Longmont Dam Road from the devastating effects of the 2013 flood event and provide some stream grading and restoration work to assist with overflow capacity. Boulder County Parks and Open Space has a number of open space properties in the area of Longmont Dam Road. Although both the road and properties are owned by Boulder County, they are under different managing departments.

Transportation will be taking over management of 0.15 acres of land that is currently under the management of Boulder County Parks and Open Space. Since the Musser property was purchased with Open Space Sales Tax fund, Transportation will be reimbursing the appropriate Parks and Open Space Sales Tax fund for the fair market value of the 0.15 acres which equates to \$11,545 based on a value of \$76,230/acre. This money will be used to invest in other open space, as required by the sales and use tax legal language.

Transportation will be permanently grading the area and will reclaim the vegetation upon completion of the project.

Public Process

The terms of the resolution creating the sales tax that was used to purchase the Musser Open Space property require specific procedures be followed to sell this property, 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. Public comments received to date are attached, and any additional comments we receive will be shared with you at the meeting.

Staff Discussion and Recommendation

Staff recommends the Transfer of Management of 0.15 acres of the Musser Open Space property from Parks and Open Space to Boulder County Transportation.

POSAC Action Requested

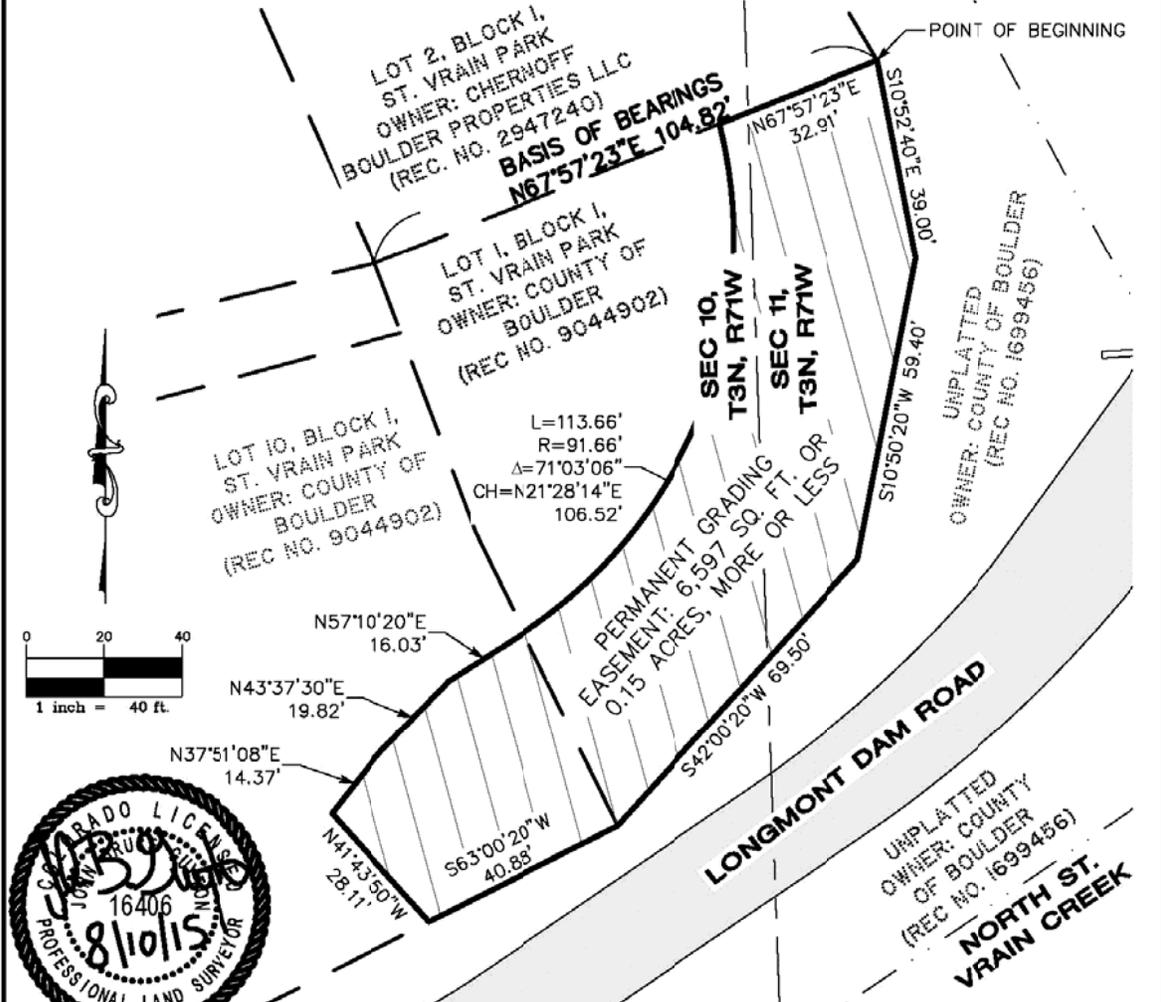
Recommendation to the Boulder County Commissioners for approval of the Transfer of Management as described above.



Approximate area of transfer of management in yellow.

LOCATED IN THE SOUTHEAST QUARTER OF SECTION 10 AND THE SOUTHWEST QUARTER OF SECTION 11, TOWNSHIP 3 NORTH, RANGE 71 WEST OF THE 6TH PRINCIPAL MERIDIAN, COUNTY OF BOULDER, STATE OF COLORADO

SHEET 2 OF 2



BY:EDAVIS FILE:100519-EASEMENTS.DWG DATE:8/10/2015 11:30 AM



JOB NUMBER: 14-100,519
 DRAWN BY: E. DAVIS
 DATE: AUGUST 7, 2015

THIS IS NOT A "LAND SURVEY PLAT" OR "IMPROVEMENT SURVEY PLAT" AND THIS EXHIBIT IS NOT INTENDED FOR PURPOSES OF TRANSFER OF TITLE OR SUBDIVISIONS OF LAND. RECORD INFORMATION SHOWN HEREON IS BASED ON INFORMATION PROVIDED BY CLIENT.

Flatirons, Inc.
 Surveying, Engineering & Geomatics



655 FOURTH AVE
 LONGMONT, CO 80501
 PH: (303) 776-1733
 FAX: (303) 776-4355
www.FlatironsInc.com



Parks and Open Space

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

PARKS AND OPEN SPACE ADVISORY COMMITTEE MEETING

TO: Parks & Open Space Advisory Committee

DATE AND LOCATION: 6:30 p.m., Thursday, February 25, 2016 Commissioners Hearing Room, 3rd floor Boulder County Courthouse, 1325 Pearl Street, Boulder, CO

AGENDA ITEM TITLE: Roberts (Ruth)-Transfer of Management, and Roberts (Simi)-Transfer of Management (for Dillon Road at Rock Creek Road Repairs)

PRESENTER: Sandy Duff, Land Officer

ACTION REQUESTED: Recommendation to the BOCC

Summary

Boulder County proposes to transfer management of approximately 0.296 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 installation of a concrete box culvert, regrading Rock Creek, reconstructing 1,000 feet of roadway, raising the roadway to accommodate a 100-year storm event, and installing guardrail and other roadside safety devices. Transportation will also be using temporary areas to construct the improvements and will reclaim the vegetation upon completion of the project.

The location of the property is at Dillon Road and Rock Creek, approximately 1,200 feet east of Highway 287 on Dillon Road.

Background

Boulder County Transportation is preparing to permanently repair Dillon Road over Rock Creek from the devastating effects of the 2013 flood event. Boulder County Parks and Open Space has a number of open space properties in the area of Dillon Road. Although both the road and properties are owned by Boulder County, they are under different managing departments.

Transportation will be taking over management of 0.296 acres of land that is currently under the management of Boulder County Parks and Open Space. Since the Roberts (Ruth) and Roberts (Simi) properties were purchased with Open Space Sales Tax fund, Transportation will be reimbursing the appropriate Parks and Open Space Sales Tax fund for the fair market value of the 0.296 acres which equates to \$10,943 based on a value of \$36,971/acre. This money will be used to invest in other open space, as required by the sales and use tax legal language.

Transportation will reclaim the vegetation upon completion of the project.

Public Process

The terms of the resolution creating the sales tax that was used to purchase the Roberts (Ruth) and Roberts (Simi) Open Space properties require specific procedures be followed to sell this property, 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. Public comments received to date are attached, and any additional comments we receive will be shared with you at the meeting.

Staff Discussion and Recommendation

Staff recommends the Transfer of Management of 0.296 acres of the Roberts (Ruth) and Roberts (Simi) Open Space property from Parks and Open Space to Boulder County Transportation.

POSAC Action Requested

Recommendation to the Boulder County Commissioners for approval of the Transfer of Management as described above.



Parks and Open Space

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

PARKS AND OPEN SPACE ADVISORY COMMITTEE MEETING

TO: Parks & Open Space Advisory Committee

DATE AND LOCATION: Thursday, February 25, 2016, 6:30 p.m. Commissioners Hearing Room, 3rd floor Boulder County Courthouse, 1325 Pearl Street, Boulder, CO

AGENDA ITEM TITLE: Heil Valley Ranch 2 Small Area Plan

PRESENTER: Jesse Rounds, Resource Planner

ACTION REQUESTED: Recommendation to BOCC to approve and adopt the Heil Valley Ranch 2 Small Area Plan

Heil Valley Ranch 2 Open Space (“Heil 2”) is a 210-acre property of grasslands and small timber stands, nestled between two steep hogbacks north of Lefthand Creek. From 1949 into the 21st Century, the property was part of the large ranch owned by the Heil family. In 1996 Boulder County purchased 1,214 acres from the family to create Heil Valley Ranch Open Space. What is now Heil 2 remained the center of the family’s ranching operation until it was purchased by the county in 2012. By 2014, the last ranch activities ceased on the property and the county began to gather the baseline information that informs this Small Area Plan.

This Heil 2 Small Area Plan provides the residents of Boulder County with a guide to the various resources on the property. It describes the management goals set forth by Boulder County Parks & Open Space (BCPOS) and explains how specific management tasks will reach those goals. The department’s land management activities will be guided by this plan, the Boulder County Comprehensive Plan, BCPOS resource policies, and the BCPOS rules and regulations.

Management Direction

Parks & Open Space recognizes that Heil 2 should be managed as part of the Heil Valley Ranch. As a matter of day-to-day management these two parks will be managed as one park. However, the property still contains resources that are unique to the property and thus management is shaped around those resources.

The plan is based on the management goals set forth in the North Foothills Open Space Management Plan:

1. Protect the scenic quality and undeveloped nature of the properties.
2. Protect the ecosystem functions of the properties relative to their values within the North St. Vrain and South St. Vrain/Foothills Environmental Conservation Areas.

3. Protect and properly manage significant plant and animal communities, and rare plants and animals.
4. Preserve the cultural, historical, geological and archaeological integrity of the area.
5. Manage for ecosystem integrity by encouraging and planning for naturally occurring process so they will remain vital components of the ecosystem.
6. Manage vegetative communities by maintaining and encouraging desirable native species, restoring degraded areas, and controlling undesirable exotic species.
7. Protect wildlife habitat by maintaining natural food, cover, nesting sites, resting areas and habitat effectiveness.
8. Provide passive outdoor recreation opportunities which do not adversely impact sensitive resources.
9. Provide opportunities for environmental and cultural interpretation to the public.
10. Provide a good neighbor policy to adjacent neighbors.

The management of Heil 2 will revolve around three objectives. These objectives address off-road access and recreation needs, the protection and conservation of plants and wildlife, and the conservation and interpretation of cultural resources. These three objectives form the backbone of the plan and provide management guidance when combined with the goals from the North Foothills Open Space Management Plan.

The plan includes a proposal to develop more than two miles of new trails. These trails will link existing trails on Heil Valley Ranch with a new trailhead on Heil 2 and with Lefthand Canyon Drive. The trails are intended to allow future connections to Boulder and enable a regional connection between Boulder and Lyons. There are two main trails, one multi-use and the other for pedestrians and equestrians that links to the Lichen Loop.

Heil 2 is uniquely located to protect the movement of wildlife from the mountains to the plains and down Geer Canyon Creek to Left Hand Creek. The property also includes stands of timber, meadows, and two rare plant communities that we propose to manage for protection and possible propagation.

The Heil 2 property has evidence of occupation dating back before European settlement. However, the most obvious cultural artifacts are the Heil Ranch corrals, the Altona Schoolhouse, and the grindstone quarry. These sites will require careful management in order to provide educational opportunities as well as context for the history of our county.

Public Engagement

In April 2015, Parks & Open Space held a public open house to gather ideas from interested members of the public. The Heil Valley Ranch 2 Small Area Plan was available for public review as of February 8, 2016. Public comments will be accepted until March 8. The comment period is open after the POSAC meeting in order for staff to continue to garner additional comment based on ideas presented at the POSAC meeting.

Staff Recommendation

Parks & Open Space is requesting that POSAC make a recommendation of approval to the Boulder County Board of County Commissioners for the Heil Valley Ranch 2 Small Area Plan.

DRAFT

DRAFT Heil Valley Ranch 2 Small Area Plan



**Boulder County Parks & Open Space
Heil Valley Ranch 2 Small Area Plan
February 2016**

The Walker Ranch Management Plan provides guidance to Boulder County Parks & Open Space on management goals at Walker Ranch Open Space.

A public open house was held in April 2015 at the BCPOS building. Public comments on this draft management plan were accepted from February 3 – March 3, 2016. All public comments were analyzed and any necessary revisions to the draft plan were made. The draft plan was presented to the Parks & Open Space Advisory Committee on February 25, 2013, beginning at 6:30 p.m.

For questions about this document or to provide comments, write Jesse Rounds, Resource Planner, Boulder County Parks & Open Space, 5201 St. Vrain Road, Longmont, CO 80503; call 303-678-6271; or e-mail: jrounds@bouldercouny.org.

Parks & Open Space Department • Boulder County

ADOPTED:

Chair, Board of County Commissioners

Date

Table of Contents

Table of Figures.....	2
Introduction	3
Purpose and Need.....	3
Management Goals.....	4
Planning Context.....	5
Location.....	5
September 2013 Flood Event.....	5
Visitor Surveys.....	6
Planning Guidance	9
Management Objectives.....	10
Off-road Access & Recreation.....	10
Trails.....	10
Trailheads.....	11
Protect and maintain existing natural resources.....	14
Plant Ecology.....	14
Alliance Management.....	17
Geer Canyon Creek Restoration.....	17
Forestry.....	17
Weeds.....	18
Wildlife.....	20
Agricultural Resources.....	21
Protect and interpret cultural resources.....	21
Corral Area.....	22
Altona Schoolhouse.....	22
Heil Family Houses.....	22
Grindstone Quarry.....	24
Lime Kiln.....	24
Management Tasks.....	24

Table of Figures

Figure 1: County Context	7
Figure 2: Property Overview	8
Figure 3: Trails and Facilities	13
Figure 4: Vegetation.....	15
Figure 5: Weeds and Weed Management	19
Figure 6: Wildlife	23

Introduction

Heil Valley Ranch 2 Open Space (“Heil 2”) is a 210-acre property of grasslands and small timber stands, nestled between two steep hogbacks north of Lefthand Creek. From 1949 into the 21st Century, the property was part of the large ranch owned by the Heil family. In 1996 Boulder County purchased 1,214 acres from the family to create Heil Valley Ranch Open Space. What is now Heil 2 remained the center of the family’s ranching operation until it was purchased by the county in 2012. By 2014, the last ranch activities ceased on the property and the county began to gather baseline information that informs this Small Area Plan.

This Heil 2 Small Area Plan (later “the plan” or “plan”) provides the residents of Boulder County with a guide to the various resources on the property. It describes the management goals set forth by Boulder County Parks and Open Space (BCPOS) and explains how specific management tasks will reach those goals. The plan describes the long-term vision for how the property will be managed. The department’s land management activities will be guided by this plan, the Boulder County Comprehensive Plan, BCPOS resource policies, and the BCPOS rules and regulations.

Purpose and Need

Boulder County Parks and Open Space seeks to manage county-owned property in a conscientious and comprehensive manner. This small area plan provides both the management direction for the property and the justification for that management direction. This more focused planning document will provide the details necessary to understand the management of this parcel of land.

The Boulder County Comprehensive Plan requires BCPOS to develop management plans for open space properties. These plans must be reviewed by the public and approved by the county commissioners, thereby ensuring that a property’s management reflects and responds to community interests and concerns. BCPOS develops management plans by bringing together an interdisciplinary team staff team to develop management guidance that is developed with public input, reviewed by the Parks and Open Space Advisory Committee (POSAC), and approved by the Boulder County Board of County Commissioners (BOCC). This small area plan has been written to allow this property to be included in the North Foothills Open Space Management Plan when that plan is revised.

Boulder County Parks and Open Space chose to develop this Small Area Plan as a result of the confluence of a number of events. This property would normally be considered part of Heil Valley Ranch and would be covered under the North Foothills Open Space Management Plan, which will not be updated in the near term. However, the development of regional trail connections, flood damage, and trailhead crowding make opening and providing access through this property a priority for Boulder County. This plan will focus on the main purposes for the management and development of this property and attempt to reduce the amount of background information in the main document. The data used to support decisions will be available online and through appendices.

The landscape of the mountain front just west of the plains in Boulder County makes community connections possible. Long, narrow north-south oriented valleys link the City of Boulder with the Town of Lyons. The Boulder County Comprehensive Plan encourages these trail connections and with the City

of Boulder's interest in connecting to Heil Valley Ranch, BCPOS saw an opportunity to conscientiously plan a link between Lefthand Canyon Drive and Heil Valley Ranch through the Heil 2 property.

While the geography of the valleys in the foothills make connections possible, these areas are also important links to our historic and pre-historic past. BCPOS is responsible for the protection of cultural resources on Open Space properties in perpetuity. Public access on the property could impact these resources and a public planning process will allow for the careful consideration of how to both protect and interpret these cultural resources to enrich the open space experience.

In addition to providing a physical link for recreational access, the foothills also comprise an ecological zone that links the ecosystems of plains to the east with the mountains to the west. These transitional areas are both vital to adjacent ecosystems and often play host to unusual or vital communities. BCPOS must consider the impact of additional use for recreation and/or education on these ecosystems and communities of plants and wildlife.

The Small Area Plan will address these needs through considered management practices. The Heil 2 Small Area Plan provides both a management direction and an outline of the specific management tasks that will be carried out by Parks and Open Space throughout the life of the plan. These specific tasks are laid out in a table at the end of the Small Area Plan. While not all of these tasks can be tied to a specific project, many will appear in work plans as well as in the Capital Improvement Projects plan. This helps management and staff define yearly goals and should help the public understand the priorities of BCPOS from year-to-year.

Management Goals

To establish a management direction for a property, BCPOS generally develops a set of management principles. These are the overarching principles to which management decisions should be measured. Heil 2 will be managed as part of North Foothills Open Space and thus will fall under the management plan for those properties. Therefore, the existing management goals from the NFOS plan form the guidance for the Heil 2 Small Area Plan.

The Management Goals established for the North Foothills Open Space Management Plan were adopted by the Board of County Commissioners in April 1996:

1. Protect the scenic quality and undeveloped nature of the properties.
2. Protect the ecosystem functions of the properties relative to their values within the North St. Vrain and South St. Vrain/Foothills Environmental Conservation Areas.
3. Protect and properly manage significant plant and animal communities, and rare plants and animals.
4. Preserve the cultural, historical, geological and archaeological integrity of the area.
5. Manage for ecosystem integrity by encouraging and planning for naturally occurring process so they will remain vital components of the ecosystem.

6. Manage vegetative communities by maintaining and encouraging desirable native species, restoring degraded areas, and controlling undesirable exotic species.
7. Protect wildlife habitat by maintaining natural food, cover, nesting sites, resting areas and habitat effectiveness.
8. Provide passive outdoor recreation opportunities which do not adversely impact sensitive resources.
9. Provide opportunities for environmental and cultural interpretation to the public.
10. Provide a good neighbor policy to adjacent neighbors.

Planning Context

In order to implement the management goals effectively, it is important to establish the context within which Heil 2 exists. The property's location, existing infrastructure, and the proposals for use all influence how a property is managed. The following section provides an overview of that context.

Location

Heil 2 is located in north central Boulder County (Figure 1) where Geer Canyon Creek flows into Left Hand Creek. The property is west of US Highway 36 and north of Left Hand Canyon Drive. Geer Canyon Drive follows Geer Canyon Creek along the north-south axis of the property. The property is bordered on the west and north by Heil Valley Ranch Open Space and to the east and south by private property.

Located between the Dakota Hogback on the east and the mountain front on the west (Figure 2), the property is located in the transition zone between the plains and the mountains of Colorado. These transition zones often contain species that are common in one of the larger ecological regions but would be rare or absent in the adjacent region. These ecotones also provide habitat for species that would be uncommon in both adjacent regions. BCPOS recognizes the vital importance of protecting these areas of transition.

September 2013 Flood Event

During a 48-hour period on September 12 and 13, 2013, a significant amount of rain fell in Boulder County. This event had various impacts across the county depending on the watershed and the location. Some creeks saw extremely high flows consistent with 100-year flood events. Most others saw flows consistent with a 50 to 25-year event. The impacts were felt across the county and damages on County Open Space alone are estimated to have been more than \$50 million.

Geer Canyon Creek which flows through the center of Heil 2 was significantly impacted by the heavy rain fall. The volume of water was extremely high for a small creek and as waters flowed south through the property floodwaters impacted Geer Canyon Drive, scouring the creek to bedrock and removing most riparian vegetation, destroying ditch infrastructure, and heavily damaging a small residence in the southeast corner of the property.

Visitor Surveys

BCPOS performs a system-wide visitor study every five years

(<http://www.bouldercounty.org/os/culture/posresearch/2010posfiveyear.pdf>). These studies are intended to help managers understand how visitors are using the parks throughout the system. The department acquired Heil 2 after the 2010 study, so it was not included. However, the findings from Heil Valley Ranch provide a helpful example of visitor attitudes and usage trends in the area. We can also use interim parking lot surveys to augment the 2010 findings.

Visitor Activity

Primary Activity	2010	2005	2000
Bike	53%	60%	--
Hike	29%	25%	64%
Run	15%	7%	2%
Picnic	1%	1%	25%
Other	2%	7%	--

During the surveys the information was gathered by volunteers and staff over both weekends and weekdays at times throughout each day. At Heil, 167 users were surveyed in 2010. Of all the properties within the system in 2010, Heil Valley Ranch had the greatest visitor acceptance for using open space for trails (90%). Most users came by car and other than Hall Ranch, Heil Valley Ranch had the highest percentage of bikers amongst the users surveyed. The comparison above also points out the development of the property over time. Only one trail, Lichen Loop, existed at Heil Valley Ranch in 2000. By 2015 we have a total of 14.6 miles of trail on the property with 13.3 miles of trails considered multi-use (open to cyclists, equestrians, and pedestrians).

In 2006, BCPOS permanently closed Heil Valley Ranch to dogs. This permanent closure followed a temporary closure and study period. The purpose of the closure is to protect wildlife on the property. The impact of the closure was studied and public opinion surveys at the time supported making the prohibition permanent. Surveys carried out in 2004 found that 63% of users at Heil Valley Ranch supported the closure while 44% supported it at Rabbit Mountain, a nearby open space, open to dogs. In 2005, the visitor use survey found that only 39% of dog owners visiting Heil Valley Ranch wanted to lift the provision.

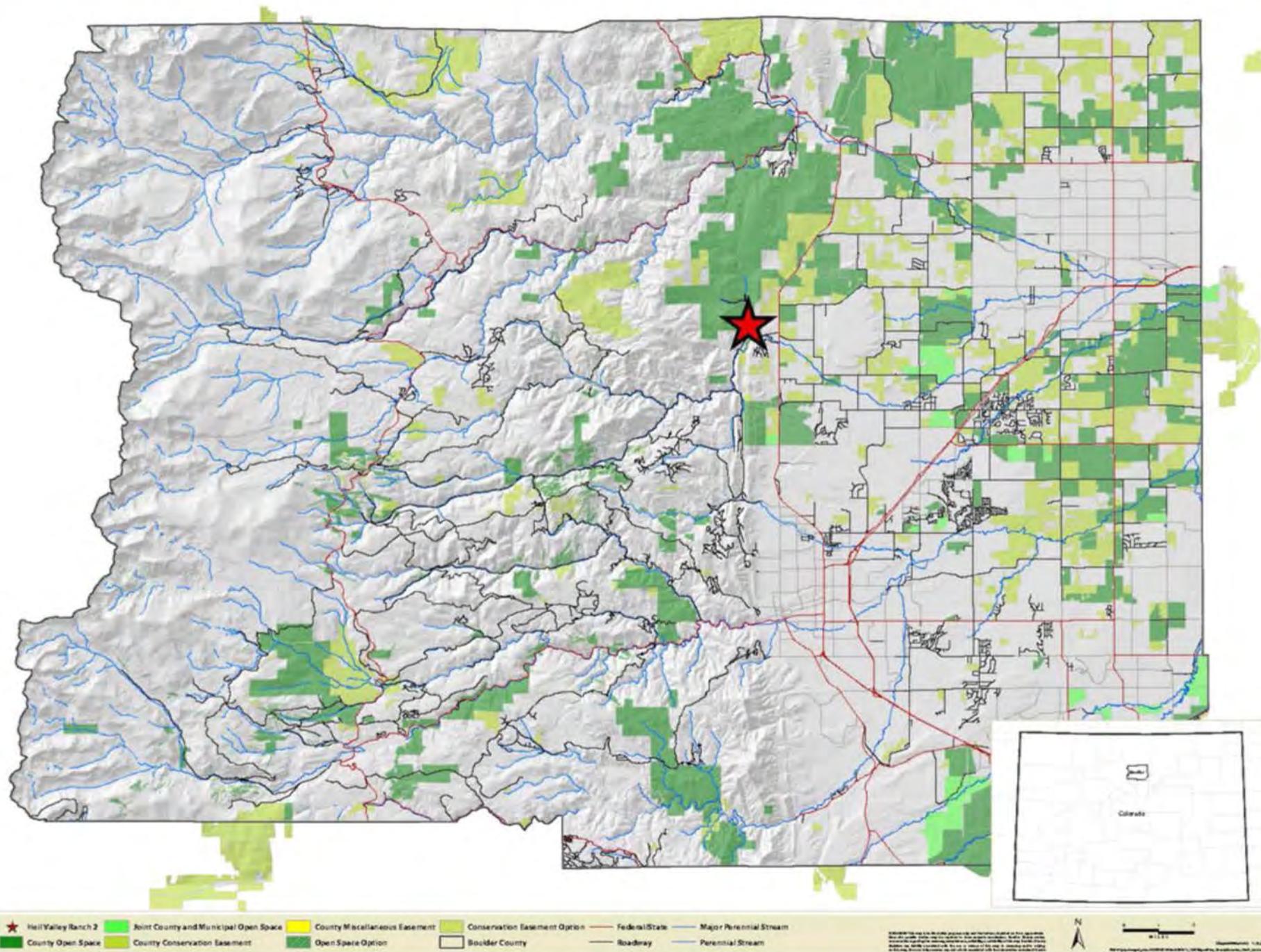


Figure 1: County Context

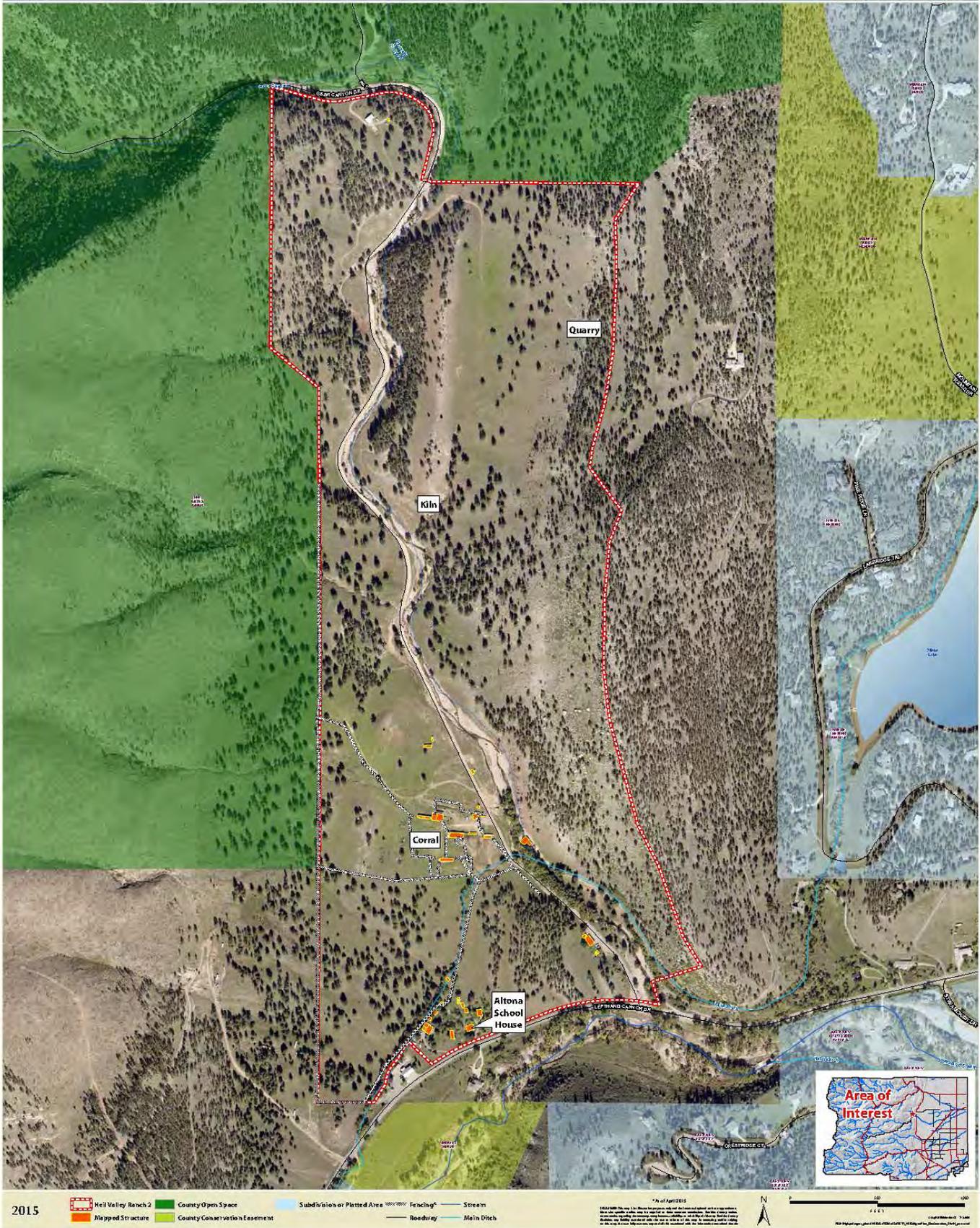


Figure 2: Property Overview

Planning Guidance

The Heil 2 Small Area Plan is the culminating plan for land management on this specific property. The foundational document for open space planning in Boulder County is the Boulder County Comprehensive Plan. The department's subject area policies guide management plan development with respect to specific resources on the property. When taken together they can create the boundaries or "sideboards" of what the plan can and should propose for management of the property.

The Open Space Element of the Comprehensive Plan provides the goals and policies that guide the work of BCPOS. OS 8.03 states:

In developing management plans for open space areas, Parks and Open Space staff shall solicit public participation of interested individuals, community organizations, adjacent landowners and the Parks and Open Space Advisory Committee. Plans shall be reviewed by the Parks and Open Space Advisory Committee, including public comment, and recommended for adoption after public hearing by the Board of County Commissioners.

The Open Space Element provides additional guidance on a variety of subjects vital to the definition the management direction for Heil 2. These policies impact the core mission of BCPOS and provide the grounding for decisions (<http://www.bouldercounty.org/doc/landuse/bococompplan.pdf>).

In an effort to clarify some of the overarching principles of open space management, BCPOS staff created a series of resource policies reviewed by POSAC and approved by the Board of County Commissioners. There are four approved resource policies (Forestry, Conservation Easement, Water, and Cropland) and the department anticipates developing an additional four policies (Cultural Resources, Grassland and Shrubland, Visitor Use, and Wildlife). These policies are developed through a public process and help the department by defining major themes of management. While this plan is not able to take advantage of the next round of policies, staff members that will be involved in their development were able to assess resources and propose options that apply to Heil 2 and that will likely become components of those documents.

On April 7, 2015, BCPOS hosted an open house for public comment on the development of a Small Area Plan for Heil 2. The comments provided are catalogued in Appendix A. Comments received at the meeting and in the subsequent 30-day comment period were distributed to the project team for review. The major themes of the comments included a desire for a diversity of user experiences, multiple bike trails, separation of uses, additional parking, and respect for the ecological importance of the property.

In July, the Parks and Open Space Advisory Committee (POSAC) and the public were invited to tour the property and see some of the opportunities and constraints. The site visit allowed the public and POSAC members to hear directly from staff about on-going planning questions and to offer their own perspectives.

These efforts at public outreach tie together the research and data gathered by staff with the perceptive ideas of the public to help our staff develop a coherent management strategy for Heil 2. When

combined with our rules and regulations and the guidance of the Comprehensive Plan and BCPOS Resource Policies, we are able to create a management direction.

Management Objectives

The Heil 2 Small Area Plan revolves around three objectives that were identified in the purpose and need section earlier in the plan and then reinforced by the Management Goals. These objectives address off-road access and recreation needs, the protection and conservation of plants and wildlife, and the conservation and interpretation of cultural resources. These three objectives form the backbone of this plan. In the following section, the objectives are described, resources are identified, and the management direction is described.

Off-road Access & Recreation

The Boulder County Comprehensive Plan encourages the creation of off-road connections between communities. The County Trails Map of the Boulder County Comprehensive Plan identifies a Conceptual Trail Corridor through Heil 2 along Geer Canyon, from Lefthand Canyon up through Heil Valley Ranch, where existing trails connect north to Lyons. At the same time, the City of Boulder has developed trails that reach from the City of Boulder to Olde Stage Road near the intersection with Left Hand Canyon Drive. An off-road trail at Heil 2 would provide over another mile of trail to bring the Lyons-to-Boulder connection closer to reality.

Geer Canyon Drive provides access to Heil Valley Ranch. However, an off-road trail provides a safer, more enjoyable and appropriate connection from Lefthand Canyon Drive to Heil Valley Ranch for cyclists and pedestrian traffic. Developing trails and facilities requires an understanding of our user community and of the natural and cultural resources on the property. Once planned, trail and facility construction will move forward with oversight from natural and cultural resource staff.

Trails

The facilities map shows the conceptual location (corridors) for two trails to be developed on Heil 2 (Figure 3). These trails are designed to capitalize on the location of Heil 2 while working within the very narrow topography of the property and to capitalize on some of the interesting terrain and beautiful views available on the property. Both east and west side trails will briefly enter the Heil Valley Ranch property for connectivity, sustainability, and user safety.

1. West Side

The trail on the west side of the property is designed to connect Lefthand Canyon Drive with the trails and trailhead located within Heil Valley Ranch. The trail will be designed for multiple uses, will connect to the proposed trailhead at the Corral Area, and to the Wapiti trail at the north end of the Heil Valley Ranch Trailhead. This trail provides the route for a regional connection from Boulder. A short spur trail will also be constructed from the schoolhouse to the adjacent west side multi-use trail. During trail layout and construction, the designers may identify locations where a parallel trail can be constructed for short distances to improve user experience by providing a more or less challenging route or minimize wear and tear on a

particular area. All such decisions will be made in consultation with resource management staff members.

2. East Side

The trail on the east side of the property is intended to connect the Corral Area with the Heil Valley Ranch trailhead. The trail will be open to pedestrians and equestrians only. The trail will use a “low water crossing” structure to cross Geer Canyon Creek without a bridge structure. The trail will provide opportunities to view historic sites as well as the two rare plant alliances located in the northern part of the property. A short spur trail to the Grindstone Quarry will allow pedestrians a closer look and, with signage, an interpretation of the unique site. There will be a pedestrian/equestrian only spur trail that will link the east and west side trails at the north end of Heil 2 utilizing an improved culvert crossing (to be constructed by Boulder County Transportation to connect Geer Canyon Drive with an existing access road).

Trailheads

At Heil 2, trailheads provide access to trails, cultural resources, and educational opportunities. Trailheads are located near adjacent roads where people will use them, and where they will have minimal impact on the important natural and cultural resources on a property. The proposed trailheads at Heil 2 are intended to add overall vehicle parking capacity, enhance equestrian access to the North Foothills Open Space, and provide direct access to the recreational opportunities within the Heil 2 property itself. Heil 2 trailhead improvements are listed and described below:

1. Develop Trailhead at Corral Area

Parks and Open Space will design and construct a trailhead adjacent to the existing corral area (Figure 3). The trailhead will include no more than 4 (four) horse-trailer parking spots and no more than 4 (four) passenger vehicle spots. The trailhead will be designed in the same fashion as the other Heil Valley Ranch trailheads and will include a restroom. The development of this trailhead will allow BCPOS to remove equestrian spaces from the Heil Valley Ranch trailhead, which will provide the opportunity to expand the number of passenger vehicle spaces at the Heil Valley Ranch Trailhead.

The corral trailhead serves multiple purposes which should help reduce conflict as well as expand access. The goal of this trailhead is to provide hikers access to the corral area, Altona Schoolhouse, and trails on Heil 2 along with equestrian parking, which means less parking conflict at the Heil Valley Ranch Trailhead. It will also be expandable, though any expansion will require consultation with neighbors and with Boulder County Transportation. The inclusion of additional parking will be accompanied by signing of Geer Canyon Drive for no parking on shoulders. This trailhead will improve visitor safety and reduce parking conflict on busy days.

2. Parking at Altona School

The Altona Schoolhouse is currently undergoing restoration and its future interpretation will involve the cooperation of multiple BCPOS divisions. Once the restoration is complete, the

schoolhouse will provide an opportunity for the public to see a piece of Boulder County's early education history. The building will also be open to school groups to experience programs inside the schoolhouse. To accommodate future programming at the schoolhouse, the Recreation and Facilities Division will improve the existing driveway encircling the schoolhouse to allow groups to safely park there for the day, separated from the public right-of-way. In order to accommodate the desire of members of the public to visit the site at other un-programmed times, BCPOS will work with Boulder County Transportation to develop a small pull-off parking area along Left Hand Canyon Drive. The parking area will provide for two (2) short term parking spaces and will be signed to prohibit parking except for the purpose of visiting the schoolhouse. A design for the parking area will be created in concert with Boulder County Transportation.

3. Administration/Special Event Parking

At the north end of the Heil 2 property is the Dude Ranch Barn that was used by the previous owners. The Heil Family altered the original small garage building to serve as a food preparation and serving area for the dude ranch visitors. The building has suffered from long-term deferred maintenance and would require major repairs in order to be effectively used for BCPOS activities. At the same time, due to its close proximity to the existing Heil Valley Ranch trailhead, this area has been used for parking for participants in BCPOS-led projects on Heil Ranch as a way to reduce impacts to parking capacity at the main visitor lot. Staff feels this "program parking" is the most appropriate use for this site, helps minimize parking issues, and provides a contained parking area that helps organize groups of visitors participating in employee-led projects and programs.

To accommodate this change, the building will be deconstructed and the area will be graded to permit parking spots on a road base driveway. The parking area will be accessed via an existing access road from Geer Canyon Drive, which will be gated and locked to control use where existing developed areas are reverted to natural areas, staff will reestablish native plant.

Heil Valley Ranch 2 Management Plan: Proposed Facilities



Figure 3: Trails and Facilities

Protect and maintain existing natural resources

Heil 2 is located in an ecologically important Foothills Ecotone, a transition between major ecosystems. Plants and wildlife uncommon in both neighboring ecosystems as well as in either ecosystem come here. In addition, the location of this property between two hogbacks with an intermittent stream flowing through the property, adds to the ecological complexity and high diversity of plants and wildlife.

Plant Ecology

Vegetation at Heil 2 has been strongly influenced by human activity, whether from the history of settlement and ranching or the practice of suppressing the natural disturbance regime of fire. The process of human settlement brought in non-native pasture grasses and forbs and displaced native prairie grasses and forbs. These human activities contributed to the distribution of aggressive invasive weeds and other non-native species that will continue to impact this area for many years.

Although influenced by human occupation and use, the vegetation present at Heil 2 is representative of a Rocky Mountain Lower Montane-Foothill Shrubland Ecosystem (Figure 4). This ecosystem is dominated by shrub communities where poor or shallow soils limit tree growth and grass-dominated meadows where deeper soils are found. These communities are adapted to fire. Native Mountain mahogany (*Cercocarpus montanus*), and three leaf sumac (*Rhus trilobata*) are the dominant shrubs with native mixed grasses and forbs in the understory. These native plants have numerous threats, one of which is competition from the high incidence of non-native grasses, such as cheatgrass, dominate meadows, reducing diversity and impacting ecosystems\.

The Colorado Natural Heritage Program (CNHP) completed an inventory of Boulder County and determined that these Foothill Shrublands have a very limited distribution. These foothill shrublands have been found to have high levels of plant diversity and are important ecological systems for wildlife. CNHP suggested protection and careful management of these areas because of the quality, rarity and threat posed to these systems.

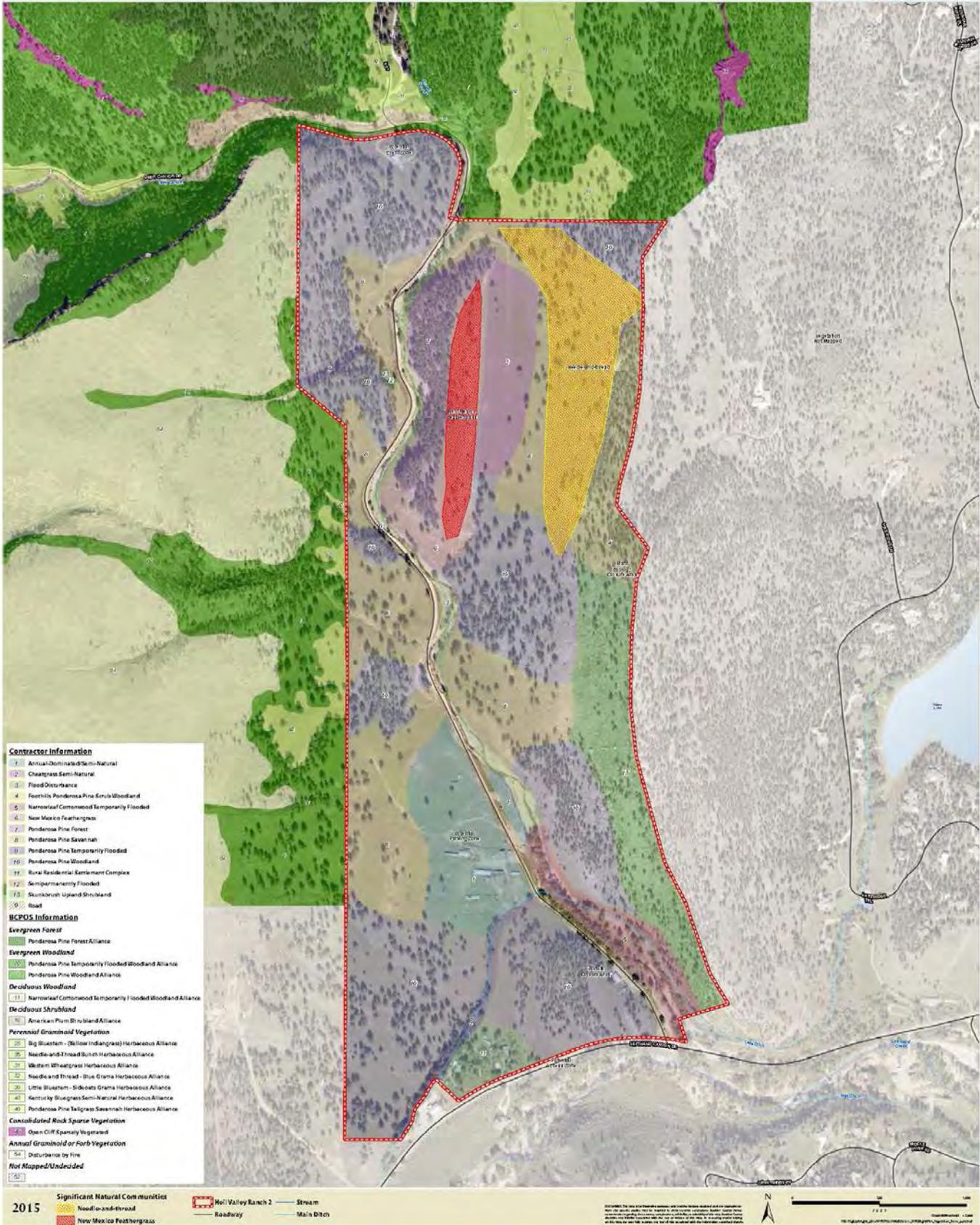


Figure 4: Vegetation

Vegetation Community	Size in Acres	Location
Ponderosa Pine Woodland Alliance	59.7	Throughout property
Ponderosa Pine Tallgrass Savannah Herbaceous Alliance	63.2	West, central, and northeast portions of the property
New Mexico Feathergrass Herbaceous Alliance	8.1	North-central portion of the property
Ponderosa Pine Temporarily Flooded Woodland Alliance	3.6	Along Lake Ditch and small drainage in northwest portion of property
Ponderosa Pine Forest Alliance	7.6	North-central portion of property on east side of Geer Canyon Drive
Narrowleaf Cottonwood Temporarily Flooded Woodland Alliance	5.6	Along southern one-quarter of Geer Canyon Creek
Foothills Ponderosa Pine Scrub Woodland Alliance	8.4	On backside of first hogback in northeast portion of property
Skunkbrush Upland Shrubland Alliance	16.6	On backside of southern two-thirds of first hogback along east property line
Flood Disturbance, Temporarily Flooded	4.6	Along northern three-quarters of Geer Canyon Creek
Annual-Dominated Upland Disturbance Alliance/Semi-natural Herbaceous Alliance	11.9	Around site of old ranch buildings
Rural Residential Settlement Complex	3.2	Around two houses and other buildings north of Lefthand Canyon Drive
Cheatgrass Semi-Natural Herbaceous Alliance	7.2	Small valley in north-central portion of property
Semipermanently Flooded Herbaceous Alliance	0.2	Around Frog Pond in northwest portion of property

Table 1. Vegetation Communities present at Heil 2

Two significant natural communities found on Heil 2 during the Biological Resource Evaluation in 2014 (Appendix B), which occur in sandstones and limestones associated with hogbacks are:

1. New Mexico Feathergrass (*Hesperostipa neomexicana*) Herbaceous Vegetation Community is globally vulnerable and rare within the state.

2. Needle-and-Thread (*Hesperostipa comata*) Colorado Front Range Herbaceous Vegetation Community is globally critically imperiled and state critically imperiled (This community is part of the Ponderosa Pine Tallgrass Savannah Alliance).

The communities present should be protected for the long-term, rare communities should be sustained and, where possible, expanded and threats to native communities should be aggressively managed.

Alliance Management

The New Mexico feathergrass alliance (*Hesperostipa neomexicana*) seems to be directly associated with and dependent upon the geologic substrate underlying the alliance. The Needle and thread alliance (*Hesperostipa comata*) may respond positively to management.

The first step will be to accurately survey and delineate the two alliances on the ground. At that point, plant ecology staff will protect these alliances as trail development occurs by having the routes avoid or minimize their impacts. Once a trail is built plant ecology staff will work with Education and Outreach and Agricultural Resources staff; in the first case to interpret these rare plant alliances and, in the second, to manage grazing, if it becomes possible, to protect these plant alliances. Protection can be further advanced by encouraging visitors to stay on trails to reduce weed spread.

Geer Canyon Creek Restoration

Geer Canyon riparian vegetation was severely damaged by the 2013 flood event. At the point where the creek enters Heil 2, flood waters severely damaged Geer Canyon Drive and destroyed the riparian habitat by washing away much of the soil and plant communities that stabilized the creek. Along with Heil Valley Ranch, the purchase of Heil 2 placed the entirety of the damaged creek within BCPOS management. This single ownership will allow stream restoration to be carried out comprehensively. BCPOS will work with the Boulder County Transportation, the Left Hand Watershed Oversight Group, and the Comprehensive Creek Recovery Program to develop, design, and secure funding, where possible, for a creek recovery program. This process can be slow, but with the flood recovery knowledge gained in recent years, the help of our volunteer community, the expertise of our staff, and the resiliency of natural systems, restoration is possible. As of December 2015, it is anticipated that Boulder County Transportation will be repairing Geer Canyon Drive in 2016. Funding is in place to prepare preliminary creek restoration plans in 2016 as well.

Forestry

Heil 2 has 123 acres of tree-dominated alliances. Most of these are on steep slopes or in areas that were not desirable for grazing livestock. The forest stands to the west of Heil 2 were severely damaged by the 2004 Overland Fire. Forest stands are generally in a stable state and the need for management is limited.

While the Forestry Workgroup feels that the forests on Heil 2 are in a “stable state” management will continue on a small scale. Some of the first forestry activities at Heil 2 will include some infrastructure work such as working with Boulder County Transportation to restore a culvert and crossing of Geer Creek to allow easy vehicular access to the east side of Heil 2 and Heil Valley Ranch. This will allow for management of the southeastern corner of Heil Valley Ranch. The management in this area will consist

of thinning the tree stands. With thinning adjacent to the “stable” stands on Heil 2, pressure to manage the Heil 2 stands will not be as great.

Forests in this area of Colorado are generally understood to exist within a cycle of disturbance. Natural disturbances include pests, fire, wind, and other forces that impact the number and density of trees in an area. Boulder County attempts to manage in a way that mimics this disturbance pattern or regime. Man-made disturbance regimes can include thinning, prescribed fire, and small clearing operations. Heil 2 management will focus on these practices and depend on regular analysis by the Forestry workgroup.

Weeds

Weeds are a significant problem throughout the Front Range of Colorado and Heil 2 is no exception (Figure 5). In order to promote the protection and continuity of native ecosystems, Boulder County seeks to aggressively manage weeds on Boulder County property. BCPOS uses the County Weed Management Plan to provide the general outlines of how weeds are managed across the county. Heil 2 has a number of heavily impacted areas that will be a focus of management efforts including the development of a property-specific plan.

Colorado classifies the most problematic weeds. By law, occurrences of ‘List A’ species must be eradicated. The state encourages the management of List B and C species and, in some parts of the state, these may be identified by counties as being of particular concern and, while there is no legal requirement to treat them, BCPOS targets selected species and strives to reduce the occurrence and prevalence of weeds throughout its properties.

At Heil 2 the most serious weed occurrences occur in the corral area, the northeastern pasture, and the southwestern pasture. The most common weeds in these areas include List B species such as Diffuse knapweed (*Centaurea diffusa*), Mullein (*Verbascum var.*), various species of Thistle, and cheat grass (List C). List A species have not been regularly seen on the property. However, a Myrtle spurge (*Euphorbia myrsinites*) infestation was treated this year and Mediterranean sage (*Salvia aethiopsis*) is being treated on Heil Valley Ranch and may be at the north end of the Heil 2 property.

Since the property was purchased in 2012, BCPOS Weed Management staff has been working to identify ways to address these infestations. This work is on-going and involves both identification and eradication efforts. Weeds can thrive on disturbance and many may have received a big boost in the areas damaged by flood.

Figure 5 shows the distribution of noxious weeds mapped on the property and their removal priority. List A weed species will be eradicated as required by state law. Weed species will be mapped and Weeds Management Staff will work with Plant Ecology staff and Agricultural Resources staff to use Integrated Pest Management (IPM) strategies to address problem areas. Strategies might include hand removal, mechanical removal, pesticides, grazing, and prescribed fire.

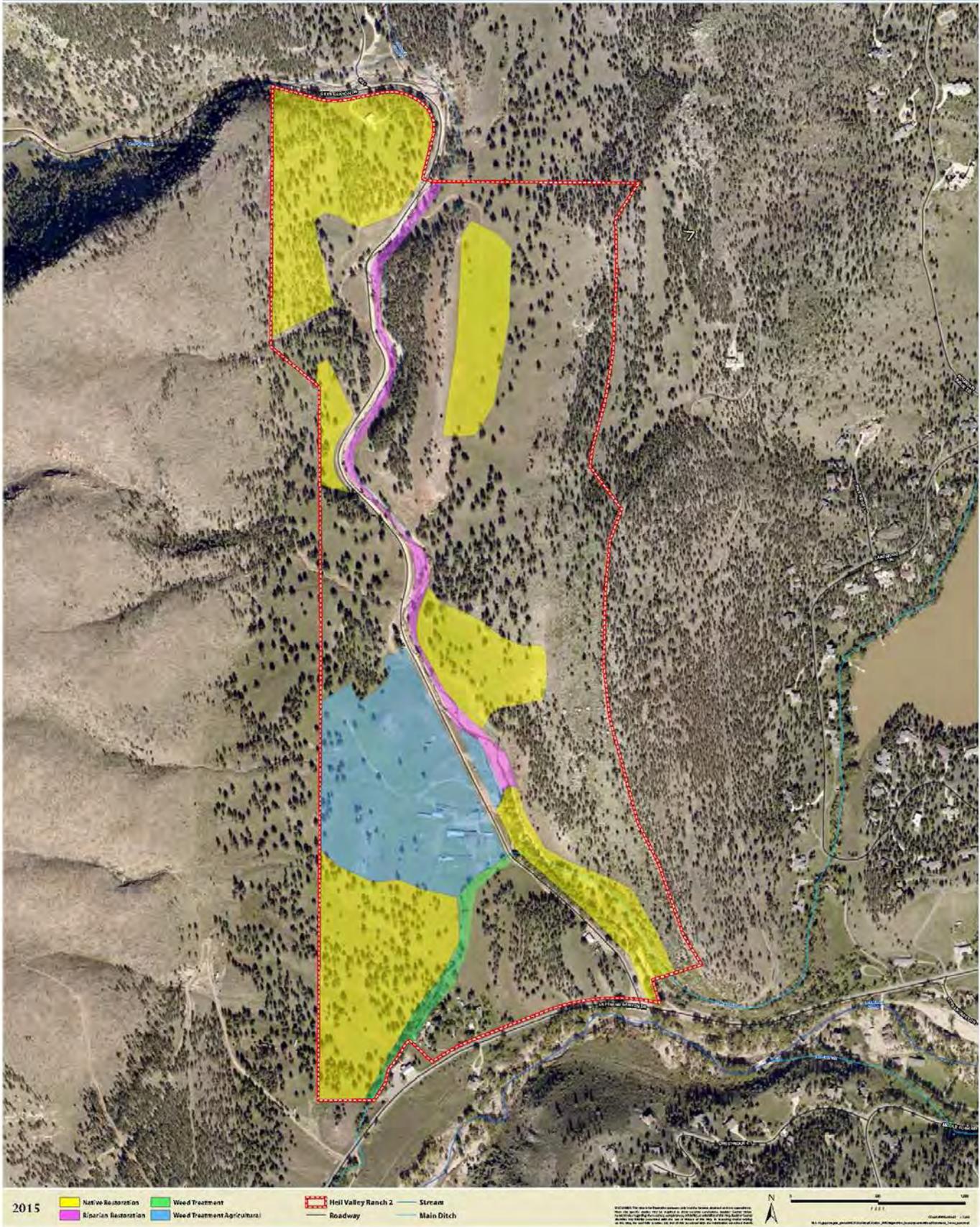


Figure 5: Weeds and Weed Management

Wildlife

Using records and data for Heil Valley Ranch and the ecosystem present, BCPOS staff can predict the wildlife that likely reside in or use Heil 2. In addition, it is possible to identify the areas most valuable to those wildlife species. With this information we can develop management strategies that will reduce negative impacts to wildlife using the property or improve habitat where necessary to benefit wildlife.

Given the habitat on Heil 2, staff estimates that species diversity on the property tops 71 mammals, 167 birds, and 15 amphibians and reptiles(Appendix B). Figure 6 also shows the important corridors and sites for wildlife. These areas are of particular importance and may inform management decisions and are described in more detail below:

1. American elk use the property as winter range, but also as one of a few movement corridors between important habitat areas on either side of Heil 2 (Hoerath 2007). They also use the property as part of their winter range.
2. Several bat species of special concern use the property. Upper Geer Canyon, located northwest of the property, has high bat use and maternity roosts for several bat species of special concern. Species located in Geer Canyon include fringed myotis, big brown bat, western small-footed myotis, and silver-haired bat. A maternity colony is present in Geer Canyon for fringed myotis. Mist-netting on Heil Valley Ranch 2 found fringed myotis and big brown bat. The mist netting was conducted near Frog Pond (Adams 2003). Fringed myotis is a "clutter specialist," favoring denser forests for feeding. Water sources are one of the most important ecological limiting factors for bats (Adams 2003). Further studies may find different bat species using the cliff faces in the southeast of Heil 2.
3. A wildlife movement corridor is present along the southern boundary of the property adjacent to Lefthand Canyon Drive. This includes a highway crossing that links Heil Valley Ranch 2 to lands to the south and Lefthand Creek. Animals documented using this route include bobcat, mule deer, and wild turkey.
4. One of the most likely small-mammal species of special concern to be present on the property is northern rock mouse. It would most likely be found in the exposed rock ledges and shrublands on the backside of the first hogback.
5. The woodlands, shrublands, and rock outcrops of the backside of the first hogback comprise significant avian habitat. Three Boulder County Species of Special Concern were located in this area, including multiple Virginia's warblers and rock wrens, and a lazuli bunting. This is also the most likely habitat for western scrub-jays and bushtits, also species of concern.
6. Heil Valley Ranch 2 is the eastern buffer to the Overland Burn area, located west of the property on the second hogback. Lewis's woodpeckers and red-headed woodpeckers have been documented nesting in the burn area. Rock wrens are also present. Burn areas are unique habitats, providing an abundance of standing dead trees for primary and secondary cavity nesters during the several decades the trees remain standing.

7. Western chorus frogs and tiger salamanders have been present in Frog Pond, while western chorus frogs have also been observed along Geer Canyon Creek.

Wildlife access and movement within and through Heil 2 should be protected by limiting impacts to identified sites and corridors. The wildlife biology work-group will work with the other work-groups at Heil 2 in order to maintain these important areas. Much of the work will consist of monitoring and collaboration between BCPOS staff and dedicated volunteers. Boulder County Parks and Open Space works with the state wildlife management agency, Colorado Parks and Wildlife, for management of individual animals. One of the primary roles of BCPOS is to manage lands to allow wildlife species to flourish in their native habitats. On Heil 2, wildlife staff will work with seasonal staff and volunteers to monitor both populations and corridors

Agricultural Resources

Agriculture was the principal activity at Heil Valley Ranch for decades. Agriculture can still play a role at Heil 2 as a land management tool. The manner in which the Heil family ran its cattle operation on the property had an impact on many of the plant communities. With specific types of grazing management, livestock could return to have a positive impact on managing weed species on the property and on maintaining the open shrubland ecosystem that dominates the property.

The Agricultural Resources team will work closely with Resource Management to identify opportunities for grazing where and when possible. Grazing livestock can be used to reduce weed pressures and to maintain open areas on the property. Using temporary fencing on existing fence posts, livestock can graze small areas for short periods of time. This practice can avoid impacts to visitor use and augment forest and grassland management employed by the Resource Management group.

Fencing is a remnant of the property's ranching heritage. There are both boundary and interior fence systems of varying ages and in varying states of repair. Some fencing, such as the boundary fencing and wood fencing around the corrals, will remain in place for the long term. Fences delineate the boundary and provide infrastructure to properly manage the property and protect our neighbors from public trespass. Fencing around the corral is an important part of the historic context of this area and helps interpret the site for visitors.

Fencing can have a negative impact on wildlife and it can be a safety hazard for visitors. Staff will remove fencing that is not part of the corral area. Outside the corral area fence strands will be removed, but fence posts will remain. In some small areas, southwest of the corrals, fencing may remain, but be altered to a smooth-wire fence to protect wildlife but enable grazing by livestock to take place in the future if prescribed. Keeping other fence-posts up on the property helps maintain the context of ranching on the property and in cases where grazing is seen as appropriate, fence-posts can hold temporary fencing.

Protect and interpret cultural resources

Heil 2 contains a diverse range of cultural resources from the prehistoric era to its long ranching history. The protection and interpretation of some of these cultural resources will involve the cooperation of

multiple BCPOS divisions. The following section identifies the resources, describes how they will be managed, and how visitors will access them.

Corral Area

The corral area served as the center of the Heil family's ranching operation. Located west of Geer Canyon Creek and Geer Canyon Drive the corrals include a ranch office, railroad cars, camper, pole barns, and a number of fenced paddocks for livestock. The corral area is about one acre in size. There are 15 permanent and temporary buildings.

The Heil's corral area is an example of ranching that continues to be an important part of Colorado's economy. The area will be managed to allow public access and interpretation of the ranch facilities. Figure 3 indicates the buildings and structures that will be removed for public safety. The figure also represents trails that will be built to allow for access to the ranch complex for Heil 2 visitors. Fencing that defines the central corral area and is important for the context of the ranching operation will remain in place. Where fencing is removed to promote wildlife movement, fence posts will remain in place to provide historic context of the extensive fence history of the property.

Altona Schoolhouse

The Altona Schoolhouse is a one room school house in the southwest corner of the property. Constructed in 1880, the schoolhouse served children in the Altona community and families living in the the Lefthand Canyon area. It is one of only a few examples of schoolhouses from that time period remaining in Boulder County and in public ownership.

The Altona Schoolhouse restoration and its future interpretation will involve the cooperation of multiple BCPOS divisions. Once restoration of the building is complete, it will provide an opportunity for the public to see a restored one room schoolhouse and experience programs highlighting the county's rural education system. The area around the building will also be managed to promote visitation outside of special programs. Interpretation may include signage and interpretive panels.

Heil Family Houses

There are four houses in the southern part of Heil 2. These houses, three of which are recorded as having been relocated from Boulder, belonged to the various members of the Heil family who lived at Heil Valley Ranch.

East of Geer Canyon Creek is a sandstone sided house. This house was damaged in the 2013 flood. Adjacent to Geer Canyon Drive is the house that was owned and occupied by Bud and Velma Heil. This house is reportedly in good condition. North of Lefthand Canyon Drive, south of the Lake Ditch are two houses. These houses belonged to members of the family at different times.



Figure 6: Wildlife

Grindstone Quarry

The quarries of Heil Valley Ranch are well known. However, Heil 2 has its own quarrying history. On the west aspect of the eastern hogback that forms the eastern boundary of the property is a grindstone quarry. Grindstone quarries provided the sharpening/grinding wheels necessary for sharpening ferrous tools. This quarry was established by the Town of Altona's early resident and postmaster Peter Haldi. The Haldi Ditch, owned by Lefthand Water District, is named after Peter Haldi. The grindstone quarry on Heil 2 is the only remaining example of this type of quarry known to exist in Boulder County.

Peter Haldi's grindstone quarry shall be managed to limit long-term impacts to the site. Access into the site will be restricted. However, trails near the site will include opportunities to interpret the quarry, the stone wall features, and building foundation. Management will not extend to any restoration of the quarry features and impacts to the site access will be closely monitored.

Lime Kiln

Lime kilns turn limestone into lime. Lime continues to be an important material in the construction and agricultural industries. Early settlers used lime as a constituent of mortar for building structures and for fertilizer. The lime kilns are a rare resource in Boulder County and the former Heil Valley Ranch has two (2); the other lime kiln is located along the Lichen Loop near the Geer Canyon Trailhead.

The pedestrian/equestrian trail on the east side of the property offers amazing views and a quiet trail experience, but it will also take visitors close to the lime kiln on Heil 2. Along with various work-groups, Education and Outreach plans to develop materials to interpret the kiln while protecting it from direct access in order to manage the long-term impacts to the structure.

Cultural resources like the lime kiln and the grindstone quarry are extremely fragile. Management will not extend to any restoration of the structure and access to the lime kiln will be prohibited. The value of these resources are in their connection to European settlement, the features themselves are intact and don't require restoration, but extensive visitor contact can both reduce their value and quickly destroy them.

Management Tasks

Below is a table that presents the above text in a set of management tasks to be performed by the various divisions of BCPOS. While each task is discrete, the various roles and responsibilities of the work-groups and divisions responsible may change. Furthermore, completion times may vary based on funding, staff time, and the priorities of the county and its residents.

Project	Objective	Lead Work-group	Support	Timeline	Comments (This won't appear in the plan, it's a place to add thoughts for everyone on the planning team)
Cultural Resources					
	Complete a Class III archaeology survey	Cultural Resources		Short	
	Complete historical and architectural inventory site forms for all buildings and structures	Cultural Resources		Short	
	Develop work plan for cultural resources, buildings, and structures that will remain	Cultural Resources	Recreation and Facilities	Short	
	Deconstruct buildings and structures identified in work-plan	Recreation and Facilities	Cultural Resources & Education and Outreach	Medium	
	Monitor post-deconstruction restoration	Weed Management	Plant Ecology	Medium	
	Stabilize and protect retained buildings and structures	Recreation and Facilities	Cultural Resources & Education and Outreach	Medium	
	Catalogue ranching artifacts	Education and Outreach	Cultural Resources	Long	
	Remove identified ranch implements from property	Recreation and Facilities	Cultural Resources & Education and Outreach	Medium	
	Create plan for school programs at Altona school house	Education and Outreach	Cultural Resources & Recreation and Facilities	Medium	
Recreation and Facilities					
	Work with associated work groups to develop interpretive program for the corral area	Education and Outreach	Recreation and Facilities & Cultural Resources	Medium	
	Complete interpretive trail through corral area	Recreation and Facilities	Cultural Resources & Education and Outreach	Medium	
	Develop educational signage on trails	Education and Outreach	Recreation and Facilities & Cultural Resources	Medium	
	Develop site plan for the Grindstone Quarry	Cultural Resources	Recreation and Facilities	Short	
	Monitor trail development near the Grindstone Quarry	Resource Protection	Recreation and Facilities, Cultural Resources, Resource Management	Short	
	Establish Trails as outlined in Heil 2 Small Area Plan	Recreation and Facilities	Resource Management & Cultural Resources	Short	
	Work with Education and Outreach to interpret resource protection efforts	Education and Outreach	Resource Management	Medium	
	Work with Cultural Resources and Trails to develop signage to protect cultural resources	Education and Outreach	Cultural Resources	Medium	
	Establish signage to maintain trail use divisions as established in Heil 2 Small Area Plan	Recreation and Facilities	Education and Outreach	Short	
	Work with Land Use and Transportation to develop trailhead and parking areas	Recreation and Facilities	Education and Outreach	Short	

	Establish special event accommodation at Dude Ranch building area	Recreation and Facilities	Education and Outreach	Medium	
	Perform regular maintenance checks on Geer Creek crossings, as trails are built.	Recreation and Facilities		Short	
	Work with Transportation and Land Use to establish safe access point to Heil 2 as defined in plan, as trails are built	Recreation and Facilities	Resource Planning	Short	
<i>Resource Management</i>					
	Develop addendum that folds Heil 2 into the larger Heil forest management plans	Forestry		Short/Long	
	Confirm location and extent of plant alliances requiring management oversight	Plant Ecology	Recreation and Facilities	Short	
	Develop plans to protect or propagate alliances	Plant Ecology	Recreation and Facilities	Medium/Long	
	Work with Education and Outreach to interpret restoration activities	Education and Outreach	Plant Ecology & Recreation and Facilities	Long	
	Advocate for funding for Geer Canyon Creek Recovery Planning, Design, and Construction	Resource Planning	Resource Management & Recreation and Facilities	Short/Long	
	Manage impacts from facilities development	Resource Management	Recreation and Facilities	Medium	
	Represent Parks and Open Space interests during redevelopment of Geer Canyon Drive	Resource Planning	Resource Management	Short	
	Work with Resource Management to identify ways to minimize natural resource impacts of trails.	Recreation and Facilities	Resource Management, Resource Planning, Resource Protection	Short	
	Develop weed eradication and management plan	Weed Management	Resource Management	Medium	
	Establish monitoring program for wildlife corridors and monitor for changes in use patterns	Wildlife	Education and Outreach	Short	
	Restoration design for creeks and uplands	Resource Management	Resource Planning	Long	

Comment	Main Points
1	<ul style="list-style-type: none"> • Trails for walking dogs • mbike trails connecting Hall and Heil
2	<ul style="list-style-type: none"> • Maximize trails • Trail connections to Boulder
3	<ul style="list-style-type: none"> • Horse trailer parking near corrals • Ped/Horse trail on east side • Keep bikes and horses separate
4	<ul style="list-style-type: none"> • Separate horses/people from bikes • Altona school for community functions • More parking where corrals are
5	<ul style="list-style-type: none"> • separate horses/people from bikes
6	<ul style="list-style-type: none"> • Create a connection between Left Hand and Geer Canyon Trailhead • Create one or more loops to alleviate conflict
7	<ul style="list-style-type: none"> • use directional loops to reduce conflict • Excited to see school house restored • Please avoid sensitive biota and historic structures
8	<ul style="list-style-type: none"> • Improve dirt road maintenance and use as a trail • However if Joder is completed, a trail should be built
9	<ul style="list-style-type: none"> • Multiple multi-use multi-directional trails
10	<ul style="list-style-type: none"> • Preserve existing structures and interpret • multi-loop/multi-use system • New trailhead
11	<ul style="list-style-type: none"> • multi-loop/multi-use system
12	<ul style="list-style-type: none"> • Leave the area undisturbed • But if disturbance is necessary, a loop trail for pedestrians and parking
13	<ul style="list-style-type: none"> • More trails close to Boulder • Implement Betasso system on current trails • Redesign existing trails to be more interesting
14	<ul style="list-style-type: none"> • Connect Left Hand and Heil
15	<ul style="list-style-type: none"> • Investigate "Autumn Hill" Trail easement for east west trail • Investigate proper crossing of Left Hand Canyon Drive • Consider two trails separating bikes and peds/equ
16	<ul style="list-style-type: none"> • Loop connecting east and west • Clean up corral area
17	<ul style="list-style-type: none"> • Include multiple loops • bike only trails

Comment	Main Points
18	<ul style="list-style-type: none"> • southern end should have equestrian parking • wide trails for passing • allow equestrian use of the road/fire road • Look to separated and loop trails for solutions
19	<ul style="list-style-type: none"> • multi-use/multi-loop trails on east side • Please create small "natural feature" rides for advanced users • use the east ridge for trails • If livestock crossings remain, please install bike crossing
20	<ul style="list-style-type: none"> • regional trail connections • Maximize recreational experience in available space • Loops • Disperse users by creating corridors from trailhead
21	<ul style="list-style-type: none"> • Existing trails on Heil are fine. Why add more?
22	<ul style="list-style-type: none"> • Trail system that maximizes recreational opportunities
23	<ul style="list-style-type: none"> • Separate pedestrian and bike traffic • open some areas to dogs • Connection to Hall
24	<ul style="list-style-type: none"> • Maximize recreational potential • Trail system, not just a connector • New parking is a great idea
25	<ul style="list-style-type: none"> • Please build more trails
26	<ul style="list-style-type: none"> • Lots of multi-use trails, spreads out users and reduces conflict • Protect natural resources with an aggressive weed management program
27	<ul style="list-style-type: none"> • Allow dogs
28	<ul style="list-style-type: none"> • strike a balance between flood mitigation, restoration, historic preservation, recreational access, and environmental protection. Please include the former quarry area into a recreational trail and incorporate some of the historic implements into new trails.
29	<ul style="list-style-type: none"> • More biking trails.
30	<ul style="list-style-type: none"> • more trails and parking. • Not just a connector, but loops
31	<ul style="list-style-type: none"> • We need more trails open to both hikers and bikers. • Link to North Boulder trails • Parking must be expanded

Comment	Main Points
32	<ul style="list-style-type: none">• Create a mountain bike trail system• Use cattle guards instead of gates• Explore alternative conflict management strategies

DRAFT
HEIL VALLEY RANCH 2
BIOLOGICAL RESOURCE EVALUATION

March 6, 2015



Prepared by:

*Dave Hallock, Natural Resource Planner
Boulder County Parks and Open Space Department
5201 St. Vrain Road
Longmont, CO 80503*

**HEIL VALLEY RANCH 2
BIOLOGICAL RESOURCE EVALUATION**

TABLE OF CONTENTS

1.0	PURPOSE.....	1
2.0	GENERAL DESCRIPTION OF THE PROPERTY.....	1
2.1	Location	1
2.2	Property Inventoried	1
2.3	Geographic Setting.....	2
2.4	Climate.....	2
2.5	Geology.....	3
2.6	Soils.....	4
2.7	Hydrology	5
2.7.1	September Flood of 2013.....	6
2.8	Surrounding Land Use and Ownership.....	6
2.9	Land Conservation Context	6
2.9.1	Boulder County Comprehensive Plan.....	6
2.9.2	Colorado Natural Heritage Program	12
3.0	METHODOLOGY	14
3.1	Resource Evaluation	14
3.2	Target Species, Communities, and Features	15
4.0	VEGETATION RESOURCES.....	19
4.1	Historic Ecology	19
4.1.1	Adventive Plants	19
4.1.2	Disturbance Regimes	20
4.2	Description of Vegetation Communities	21
4.2.1	Ponderosa Pine Woodland Alliance.....	22
4.2.2	Ponderosa Pine Tallgrass Savannah Herbaceous Alliance	22
4.2.3	New Mexico Feathergrass Herbaceous Alliance	22
4.2.4	Ponderosa Pine Temporarily Flooded Woodland Alliance	22
4.2.5	Ponderosa Pine Forest Alliance	23
4.2.6	Narrowleaf Cottonwood Temporarily Flooded Woodland Alliance	23
4.2.7	Foothills Ponderosa Pine Scrub Woodland Alliance	23
4.2.8	Skunkbrush Upland Shrubland Alliance.....	23
4.2.9	Flood Disturbance Temporarily Flooded.....	24
4.2.10	Annual-Dominated Disturbance/Semi-Natural Herbaceous Alliance ..	24
4.2.11	Rural Residential Settlement Complex	24
4.2.12	Cheatgrass Semi-Natural Herbaceous Alliance	24
4.2.13	Semipermanently Flooded Herbaceous Alliance.....	24
4.3	Significant Vegetative Resources	24
4.3.1	Colorado Natural Heritage Program PCAs.....	25
4.3.2	Significant Natural Communities on Heil Valley Ranch 2.....	26
5.0	WILDLIFE RESOURCES.....	28
5.1	Historic Ecology	28
5.2	Mammals.....	29
5.2.1	Colorado Parks and Wildlife Species Activity Mapping.....	29
5.2.2	American Elk	30
5.2.3	Mountain Lion and Bobcat	32
5.2.4	Mammal Species of Special Concern	32
5.2.5	Mammal Summary.....	37
5.3	Birds.....	37
5.3.1	Avian Species of Special Concern.....	38
5.3.2	Bird Summary	42
5.4	Amphibians and Reptiles	43
5.4.1	Amphibian and Reptile Species of Special Concern	43

5.4.2	Amphibian and Reptile Summary.....	44
5.5	Butterflies.....	44
5.5.1	Butterfly Species of Concern	45
5.5.2	Butterfly Summary.....	46
6.0	SIGNIFICANT RESOURCES	47
6.1	Significant Resources Present on the Property	47
7.0	BIBLIOGRAPHY.....	50

LIST OF APPENDICES

Appendix 1.....	Figures
Appendix 2.....	Climate
Appendix 3.....	Soils
Appendix 4.....	Land Conservation Context
Appendix 5.....	Vegetation
Appendix 6.....	Wildlife

LIST OF TABLES

Table 1. Climate Data	3
Table 2. Dominant Geologic Units	4
Table 3. Soils	4
Table 4. Vegetation Communities	21
Table 5. CPW Wildlife Ranges and Activity Areas	30
Table 6. Mammal Species of Special Concern	33
Table 7. Avian Species of Special Concern.....	39
Table 8. Amphibian and Reptile Species of Special Concern	43
Table 9. Butterfly Species of Special Concern	45

LIST OF FIGURES (FOUND IN APPENDIX 1)

Figure 1.	Local Setting
Figure 2.	Site Plan
Figure 3.	Topography
Figure 4.	Geology
Figure 5.	Soils
Figure 6.	Vegetation
Figure 7.	Significant Natural Communities
Figure 8.	Significant Resources

HEIL VALLEY RANCH 2

BIOLOGICAL RESOURCE EVALUATION

1.0 PURPOSE

The lands west of Foothills Highway, between Lefthand and St. Vrain Creeks, have long been recognized as significant for their scenic beauty, natural resources, and cultural value. North Foothills Open Space was conceptualized with the initial Boulder County Comprehensive Plan during the 1970s. A "Scenic Area" was designated on the Open Space Map as wishful suggestions for future open space acquisitions.

Boulder County made its first acquisition of land in North Foothills Open Space in 1990 with the purchase of a portion of Trevarton Ranch as well as a conservation easement on an additional part of the ranch. In 1993 and 1994 the County began acquiring portions of Heil Valley Ranch and Hall Ranch. These lands totaled approximately 9,537 acres.

Since then, additional lands have been acquired as open space adjacent to or near North Foothills Open Space, including the remainder of Heil Valley Ranch and Hall Ranch. Heil Valley Ranch 2 is the remainder parcel of Heil Valley Ranch. It was originally retained by the Heil family at the time of the acquisition of Heil Valley Ranch and contained their ranch headquarters and several dwellings.

This Biological Resource Evaluation Update looks at the natural resources present on Heil Valley Ranch 2 and its ecological context in relation to the original North Foothills Open Space and surrounding lands.

2.0 GENERAL DESCRIPTION OF THE PROPERTY

2.1 Location

Heil Valley Ranch 2 lies in north-central Boulder County (Figure 1). It is located directly north of Lefthand Canyon Drive almost a mile west of North Foothills Highway. It is located 4.5 miles north of the City of Boulder, 6.5 miles west of the City of Longmont, and 4.5 miles south of the Town of Lyons.

Heil Valley Ranch 2 is located in portions of Sections 11, 12, 13, and 14, Township 2 North, Range 71 West of the 6th Principal Meridian.

2.2 Property Inventoried

Heil Valley Ranch 2 consists of 210 acres and was acquired in October of 2012. The property had been retained by the Heil family at the time of the acquisition of Heil Valley Ranch. It contains remains of their ranch headquarters, along with three houses (two located in the southwest corner of the property adjacent to the Left Hand Fire District station and one located along the west side of Geer Canyon Road), the old Altona School House and a Quonset hut (located near southwest corner of the property along Lefthand Canyon Drive), and a barn (located in the northwest portion of the property near the

current entrance to Heil Valley Ranch parking lot) A Site Plan (Figure 2) is found in Appendix 1. Several of the leases that were part of the purchase agreement have expired (barn, grazing, and hunting). Active leases include the Bud and Velma Heil Residence lease, which runs as long as either one chooses, and the Ed Heil Residence lease, which expires October 30, 2015.

Additionally, the Left Hand Fire District station has historically been located on the southwest corner of the property along Lefthand Canyon Drive. As part of the agreement with the Heil family, the County created a one-acre lot around the Left Hand Fire District's existing structures, which was deeded to the district after closing. The parcel was created subject to a deed restriction that stipulates that if the fire station is ever closed down, the one-acre lot reverts back to Boulder County.

2.3 Geographic Setting

North Foothills Open Space is located on the extreme eastern edge of the Southern Rocky Mountains ecoregion and the Northern Parks and Rocky Mountain Ranges ecoregional section (Neely *et al.* 2001). The Southern Rocky Mountains form the highest ecoregion in North America. Two mountain belts form the backbone of the Southern Rocky Mountains; the eastern belt includes the Front Range, which encompasses the property. The property lies within the Foothill Shrublands ecoregional subdivision (Chapman *et al.* 2006). Foothill Shrublands is a transition between higher elevation forests and the drier and lower Great Plains ecoregion. It is also known as the Foothills Ecotone (Lower Montane Ecotone) lifezone.

Heil Valley Ranch 2 includes a part of the top of the first hogback along with the steep west side and a portion of Geer Canyon (Figure 3). The high point of approximately 6,200 feet is found near the top of the hogback along the center of the east property line. The low point of approximately 5,638 feet is found where Geer Canyon Creek exits the property near the southeast corner.

2.4 Climate

The topographic relief of the Rocky Mountains dominates the climatic variability of the Southern Rocky Mountain ecoregion (Neely *et al.* 2001). The climate is a temperate semiarid steppe regime. Prevailing west winds and general north-south orientation of the mountain ranges influence the climate. The property is located on the east side of the ecoregion, which is generally drier than the western side. Additionally, the property is influenced by summer monsoonal patterns.

The nearest long term weather station with a climate similar to the property is at Longmont (Longmont 2 ESE, Colorado 55116; Western Regional Climate Center 2012). Selected climate data from 1893 to 2004 is displayed in Table 1. A summary of historic climate information is found in Appendix 2.

The climate is also influenced by more localized events (Boulder County Parks and Open Space 2010). Low pressure systems situated in southern Colorado or south of the state bring moisture from the Gulf of Mexico north along the Front Range. These airflows interact with the local terrain, particularly Rabbit Mountain, which contributes to the creation of the Longmont Anticyclone that brings most of the moisture to the area south of Lefthand Canyon and less to North Foothills Open Space. The air masses heading towards Hall and Heil Ranches go over Rabbit and Steamboat Mountains and lose much of their moisture before getting to the Lyons area.

Table 1. Climate Data

Average Annual Max. Temperature (F)	64.5
Average Annual Min. Temperature (F)	32.7
Average Annual Total Precipitation (in.)	13.53
Average Annual Total Snowfall (in.)	35.9
Average Annual Snow Depth (in.)	0
Warmest Month of the Year	July, followed by August and June
Coldest Month of the Year	January, followed by December and February
Month with the Greatest Precipitation	May, followed by April and June
Month with the Least Precipitation	January, followed by February and December
Month with the Greatest Snowfall	March, followed by February

Hence, the property is situated in two rain shadows. The first is the result of the property being located on the east side of the Front Range: westerly airflows drop most of their moisture on the west side of the Continental Divide, the western boundary of Boulder County. The second rain shadow is sometimes called the Rabbit Mountain Uplift rain shadow. As described in the preceding paragraph, Rabbit Mountain impacts upslope storms coming from the southeast.

One impact of the double rain shadow is a profound influence on the vegetation. The foothills and mountains north of Lefthand Canyon in Boulder County receive less precipitation than areas to the south. This results in a change to the vegetation communities. The area north of Lefthand Canyon, including North Foothills Open Space and all the way into Larimer County, has a greater shrub community component and a reduction in tree density and abundance that is influenced by higher fire frequency.

2.5 Geology

Geology mapped by Braddock *et al.* (1988) includes 9 mapping units as listed in Table 2, mapped in Figure 4 (Appendix 1), and described below.

Sedimentary rocks form the top of the first hogback along the east property line and go under Geer Canyon. These rocks continue west up the second hogback, located west of the property. They date from the Jurassic, Triassic, Permian, and Pennsylvanian Periods, some 138 million to 330 million years ago. The more easily weathered sedimentary rocks, primarily limestone and shale of Forelle Limestone and Lykins Formation - Lower Part, are situated between the first and second hogbacks and form Geer Canyon.

The youngest geologic units date from the Quaternary Period, the last 2 million years. These are more recent deposits in the form of floodplain and terrace gravels. Alluvial stream deposits are found in Geer Canyon. Colluvial and alluvial deposits of sheetwash, debris flow, and concentrated surface flow are associated with flatter sites or the lower portion of slopes, areas of sediment deposition.

Table 2. Dominant Geologic Units

<i>Formation/Type</i>	<i>Map Unit Composition</i>	<i>Location on Property</i>
Alluvium	Quaternary deposits of sand and gravel along streams	Along Geer Canyon Creek
Colluvium and Alluvium	Quaternary deposits of poorly sorted sand and gravel formed by debris flow and sheetwash	Central and west portions of property
Dacite	Paleocene deposits of porphyry containing particles of quartz, plagioclase, and biotite	Northwest and southwest portions of property
Plainview Sandstone Member and Lytle Formation	Lower Cretaceous deposits of sandstone and mudstone	Very top of first hogback along east property line
Morrison Formation	Upper Jurassic deposits of claystone, siltstone, and sandstone	Just below top of first hogback, east portion of property
Sundance Formation/Jelm Formation	Jurassic deposits of sandstone	Just below Morrison Formation, east portion of property
Lykins Formation - Upper part	Triassic and Permian deposits of siltstone and sandstone	Below Sundance/Jelm Formations, east to central portions of property
Forelle Limestone Member	Upper Permian deposits of limestone	North-central portion of property.
Lykins Formation - Lower part	Upper Permian deposits of shale and limestone	North-central portion of property.

2.6 Soils

Soils have been mapped and described by the USDA Natural Resources Conservation Service (2012). There are three soil-mapping units on the Property as listed in Table 3, mapped in Figure 5 (Appendix 1), and described below. Additional soils information can be found in Appendix 3.

Table 3. Soils

<i>Soil Type</i>	<i>Vegetation Type and Location</i>
Colluvial land	Grassland and woodland. Primarily west of Geer Canyon Creek.
Pinata-Rock outcrop complex, 5 to 55 percent slopes	Grassland and woodland. Northwest portion of property.
Sixmile stony loam, 10 to 50 percent slopes	Grassland, forest, shrubland, and woodland. West flank of the first hogback, primarily east of Geer Canyon Creek.

Heil Valley Ranch 2 has soils derived primarily from sedimentary rock and include more clay. The soil texture is characterized by loams and sands, generally having gravelly and stony structure.

Colluvial land is found on mountain slopes, benches, and valleys. The parent material consists of residuum and/or slope alluvium derived from igneous, metamorphic, and sedimentary rock. It is somewhat excessively drained and has a low shrink-swell potential. Runoff is rapid and erosion hazard is high. It has moderate to severe limits for trails (cobbles, runoff).

Pinata-Rock outcrop complex is found on ridges and mountain slopes. The parent material consists of stony sandy clayey colluvium over residuum weathered from sandstone and shale. It is well drained and the shrink-swell potential is moderate. The runoff is medium to rapid and the erosion hazard is high. It has moderate to severe limits for trails (rock outcrops).

Sixmile stony loam is found on ridges, uplands, and hills. The parent material consists of loamy residuum weathered from calcareous shale. It is well drained and the shrink-swell potential is low. Runoff is rapid and the erosion hazard is high. It has moderate to severe limits for trails (slopes).

2.7 Hydrology

Heil Valley Ranch 2 is located in the Missouri River Hydrologic Unit (No. 10), the South Platte Subregion (No. 1019), and the St. Vrain Unit (No. 10190005) (USGS 2014).

All of North Foothills Open Space lies within the St. Vrain Creek drainage basin. Heil Valley Ranch 2 drains into Left Hand Creek, which flows into the St. Vrain Creek in Longmont.

Geer Canyon Creek bisects Heil Valley Ranch 2 from north to south (Figure 2). It originates on the east flanks of a ridge that runs northeast from Fairview Peak, all within approximately 2.5 miles to the west-northwest of the property. Geer Canyon Creek is a perennial creek; it supports a riparian ecosystem. It flows into Lefthand Creek just south of Lefthand Canyon Drive near the southeast corner of the property. Lefthand Canyon Creek flows into the St. Vrain Creek in Longmont.

Three intermittent drainages come off the ridge to the west and run through the west portion of the property until flowing into Geer Canyon Creek. They support a patchy riparian ecosystem, primarily west of the property on Heil Valley Ranch Open Space.

One irrigation ditch is present on the property. Lake Ditch runs through the southern portion of the property (Figure 2). It takes water from Left Hand Creek to locations east of North Foothills Highway.

There is one small pond, commonly called Frog Pond, located on the west side of Geer Canyon Drive in the northern portion of the property (Figure 2). It supports a ring of wetland vegetation. Two check dams are present near the northwest corner of the property.

2.7.1 September Flood of 2013

The heavy rains of September 9-15, 2013, resulted in unprecedented high stream flows and considerable damage to Boulder County, particularly the foothills (Jarrett 2014). The riparian zone of Lefthand Creek saw considerable uprooting of trees and the scouring of the floodplain.

There was considerable damage to portions of North Foothills Open Space, including Heil Valley Ranch 2. Geer Canyon Creek scoured the riparian zone on Heil Valley Ranch 2 and damaged Geer Canyon Drive. Secondary drainages also had heavier than normal flows and there was scattered damage and erosion.

2.8 Surrounding Land Use and Ownership

The surrounding land is dominated by public lands to the north and west and private rural residential to the east and south (Figure 1).

Surrounding land uses of Heil Valley Ranch 2:

North: Heil Valley Ranch Open Space.

East: Rural residential, including Lake of the Pines and Mountain Ridge subdivisions.

South: Rural residential and private land under conservation easement with Boulder County.

West: Heil Valley Ranch Open Space and rural residential land.

2.9 Land Conservation Context

North Foothills Open Space, including Heil Valley Ranch 2, is located at the junction of the Great Plains and the Southern Rocky Mountains (Benedict 1991). The area is on the eastern flank of the Rocky Mountain Front Range. The area is within the foothills lifezone, also referred to as the lower montane (Mutel 1976, Marr 1961). North Foothills Open Space is within a portion of Boulder County that has a lower level of human development than much of the remainder of the county.

Several documents and reports are used to assess the context of North Foothills Open Space and Heil Valley Ranch 2. These have been produced by Boulder County and Colorado Natural Heritage Program. Maps from these reports can be found in Appendix 4.

2.9.1 Boulder County Comprehensive Plan

Several elements of the *Boulder County Comprehensive Plan* are relevant to North Foothills Open Space and Heil Valley Ranch 2 (Boulder County 2014, 2009, 1999).

Open Space Element

The original Boulder County Open Space Map depicted the area west of North Foothills Highway, including Heil Valley Ranch 2, as a Scenic Area and Proposed Open Space. The acquisitions of land and conservation easements in this area have achieved most of what was envisioned.

The Open Space Map depicts the following designations on Heil Valley Ranch 2 (Appendix 4):

- Lefthand Canyon Drive is designated as an Open Corridor - Roadside. It runs adjacent to the property on its south side.
- Lefthand Creek is designated as an Open Corridor - Streamside. It runs just south of Lefthand Canyon Drive.

The Boulder County Comprehensive Plan Goals (2009) and the policies of the Open Space Element (1999) state the following regarding Open Corridors and Scenic Areas:

Goal C.3: Open space shall be used as a means of preserving the rural character of the unincorporated county and as a means of protecting from development those areas which have significant environmental, scenic or cultural value.

Policy OS 3.01: Where necessary to protect water resources and/or riparian habitat the county shall ensure, to the extent possible, that areas adjacent to water bodies, functional irrigation ditches and natural water course areas shall remain free from development...

Policy OS 3.03: To the extent possible, the county shall protect scenic corridors along highways and mountain road systems...

Policy OS 3.04: Areas that are considered as valuable scenic vistas and Natural Landmarks shall be preserved as much as possible in their natural state.

Environmental Resources Element

Boulder County values and strives to preserve, conserve, and restore the unique and distinctive natural features, ecosystems, and landscapes of the county using sound resource management principles and practices at both a site-specific level and on a broader, landscape scale. At the site-specific scale, important environmental resources typically consist of distinct geographic areas where specific resources exist. Designations at the site-specific scale include Critical Wildlife Habitats, Rare Plant Areas, Significant Natural Communities, Wetlands, and Riparian Areas. Environmental resources designated at the landscape-scale are much larger and holistic in approach. At this scale, the designations of Environmental Conservation Areas and High Biodiversity Areas seek to preserve broader ecological processes and functions. Natural Areas and Natural Landmarks designations are intended to encompass and protect unique and distinctive natural features and landscapes in the county.

Following is brief description of the different designations and their context with respect to Heil Valley ranch 2. Maps of the designations can be found in Appendix 5. Following the designation descriptions are the Boulder County Comprehensive Plan Goals and Policies pertaining to Environmental Resources.

Environmental Conservation Areas (see map in Appendix 4)

Environmental Conservation Areas (ECAs) are large and relatively undeveloped areas of the county that possess a high degree of naturalness, contain high quality or unique landscape features, and/or have significant restoration potential, and whose size and quality make them important areas for wide-ranging animals, human-sensitive species, native plant communities, and ecological processes. As stated in the Environmental Resources Element of the *Boulder County Comprehensive Plan* (Boulder County 2014):

"Environmental Conservation Areas encompass the largest remaining relatively natural or restorable forests, shrublands, grasslands, and agricultural landscapes in Boulder County. Even with the current amount of relatively undeveloped public land in the county, and the conservation and preservation efforts of public land managers on these lands, broad shifts in animal and plant communities are occurring as a result of development, habitat fragmentation, climate change, and the exclusion or disruption of natural processes. ECAs are a planning tool developed by the County and its agency partners for analyzing land use and land management decisions in the context of the cumulative effects of development, roads, trails and increased human presence at a landscape-scale on these large and complex ecosystems. This land use decision-making tool is used as a strategy for maintaining the wide-ranging animal species, native plant communities, and natural ecological processes that operate at this landscape scale.

ECAs are a framework for ecosystem management that identifies and designates valuable ecological areas and delineates corridors of connectivity between them regardless of ownership. With this designation, land use and land management decisions within and adjacent to ECAs and their connectors can be made within a framework that seeks to: protect species that may be wide-ranging, ecologically specialized or disturbed by human presence; encourage the return of species lost from the county; prevent additional habitat fragmentation; and limit increases in invasive non-native species in these ecologically-significant areas. Such planning and decision-making processes may include resource management plans, the location and extent of new development, future land and easement purchases for open space purposes, and the location of trails and other public facilities."

One Environmental Conservation Area is designated by the county that covers a portion of Heil Valley Ranch 2. Additionally, Lefthand Creek is designated as a Riparian Habitat Connector.

The northeast portion of Heil Valley Ranch 2 is located within the South St. Vrain/Foothills ECA. This ECA starts on the northwest flank of Table Mountain and continues west to the Peak-to-Peak Highway where it joins the Indian Peaks ECA. This represents a Continental Divide to plains landscape that is relatively undeveloped.

The southern edge of Heil Valley Ranch 2 is located within a Riparian Habitat Connector along Lefthand Creek.

High Biodiversity Areas (see map in Appendix 4)

High Biodiversity Areas (HBAs) are concentration areas of rare environmental resources that represent one of the greatest opportunities for preserving specific aspects of Boulder County's natural heritage. As stated in the Environmental Resources Element of the *Boulder County Comprehensive Plan* (Boulder County 2014):

"High Biodiversity Areas (HBAs) are locales that have a concentration of rare environmental resources. If managed well, they represent the greatest opportunities for preserving specific aspects of Boulder County's natural heritage. The boundaries of HBAs encompass those lands that provide the habitat and ecological processes upon which the resources depend for their continued existence. These areas have been identified and ranked - by the CSU Colorado Natural Heritage Program - as having *outstanding significance* (B1), *very high significance* (B2), or *high significance* (B3)."

The Red Hill South of Lyons HBA (which includes the northeast portion of Heil Valley Ranch 2), achieves the rank of outstanding biodiversity significance due to its concentration of globally critically imperiled to globally imperiled element occurrences that are in excellent or good condition. These elements include foothills communities, several mountain mahogany shrublands, Piedmont grassland communities, rare plants, and rare butterflies.

More detailed information about the elements contained in the High Biodiversity Areas can be found in sections 2.9.2 (Colorado Natural Heritage Program), 4 (Vegetation Resources), and 5 (Wildlife Resources) of this report.

Natural Areas (see map in Appendix 4)

Natural Areas are unique and important sites in the county that are important to the natural heritage. As stated in the Environmental Resources Element of the *Boulder County Comprehensive Plan* (Boulder County 2014):

"Natural Areas are physical or biological areas that are unique and important to the natural heritage of the state and/or the county. Each area either retains or has reestablished its natural character, although it need not be completely undisturbed. It typifies native vegetation and associated biological and geological features and provides habitat for rare and endangered animal or plant species or includes geologic or other natural features of scientific or educational value."

The Red Hill Natural Area contains the northeast portion of Heil Valley Ranch 2.

Riparian Areas (see map in Appendix 4)

Riparian areas are recognized by the presence of linear bands of trees, shrubs, and herbaceous vegetation along a waterway or drainage where the plant communities and soil moisture differ from surrounding upland vegetation and soils. As stated in the Environmental Resources Element of the *Boulder County Comprehensive Plan* (Boulder County 2014):

"Wetlands and Riparian Areas have unique and critical function in the ecosystem. Wetlands are generally described as lands transitional between terrestrial and aquatic systems where the land is covered by shallow water or soils are saturated during the growing season. Wetlands have high biodiversity, are relatively rare, provide unique wildlife habitat, filter water, and buffer floods. Riparian Areas are a unique combination of terrestrial plant communities and aquatic systems associated with flowing water that provide unique habitat and important movement corridors for wildlife."

A riparian area is mapped on Heil Valley Ranch 2 along Lake Ditch and the lower portion of Geer Canyon Creek.

Goals and Policies of the Environmental Resources Element

Goals

B.1 Boulder County shall conserve and preserve environmental resources including its unique or distinctive natural features, biodiversity, and ecosystems

through protection and restoration in recognition of the irreplaceable character of such resources and their importance to the quality of life in Boulder County.

B.2 Boulder County sustains and protects native species, natural ecosystems and the biodiversity of the region by designating High Biodiversity Areas, Natural Areas, Natural Landmarks, Significant Natural Communities, Critical Wildlife Habitats, Species of Special Concern, Wetlands, Riparian Areas, and Rare Plant Areas. Other resources and designations may be identified in the future. These designated areas and species lists also provide a point of reference for continued monitoring of long-term ecological change.

B.3. Boulder County shall promote the viability and integrity of all naturally occurring ecosystems and their native species populations by applying a variety of environmental resource management strategies in a manner that is consistent with current ecological principles and sustainable conservation practices.

B.4 Boulder County recognizes that climate change is having significant impacts on our environmental resources. As the body of climate change science knowledge grows and potential effects are better understood, Boulder County shall incorporate the best scientific information into planning and decision-making to adapt to and offset those impacts.

B.5 Boulder County shall continue to protect air, water and soil resources and quality, as well as restore resources in a degraded condition to enhance overall environmental health. Pollution of air, water, and soil, and pollution caused by noise and light, shall be eliminated or minimized to the greatest extent possible in order to prevent potential harm to life, health and property, and to reduce incremental degradation of the environment.

B.6 Boulder County shall continue to protect prominent natural landmarks and other unique scenic, visual and aesthetic resources in the county.

B.7 Boulder County shall conserve and preserve Environmental Conservation Areas (ECAs) in order to perpetuate native species, biological communities, and ecological processes that function over large geographic areas and require a high degree of connectivity to thrive.

B.8 Boulder County shall protect environmental resources both at the site-specific scale and the landscape scale through a variety of means such as partnerships with private landowners, non-governmental organizations, and other agencies; education and outreach; advocacy at the state and federal level; and other programs consistent with the goals and policies of the Comprehensive Plan.

General Environmental Resource Policies

ER 1.01 Boulder County plans and attendant regulations shall be formulated to insure that land uses avoid where possible and otherwise minimize the destruction or adverse modification of environmental resources. Land use proposals shall be evaluated on a case-by-case basis for their potential impacts to environmental resources identified in the BCCP as well as those resources that may be identified on the site and in the vicinity of the proposal during a county development review process...

ER 1.02 Boulder County shall continue to identify and designate environmental resources that have significance to Boulder County. Such designations, and attendant maps, will be based on criteria that use science, collaboration with experts, and on-the-ground verification to the extent practicable. Boulder County may periodically reevaluate such criteria and designations.

ER 1.03 Scenic vistas shall be preserved as much as possible in their natural state.

ER 1.04 Boulder County shall work with federal, state, municipal and other public or quasi-public entities that have a jurisdictional or property interest in unincorporated lands within or surrounding any designated environmental resources to achieve their protection.

ER 1.05 Boulder County shall work in partnership with private land owners and non-governmental organizations to protect, conserve, and restore designated environmental resources using a variety of tools.

ER 1.06 Boulder County shall use its open space program as one means of achieving its goals for protecting environmental resources.

ER 1.07 Boulder County shall encourage all private landowners to seek assistance from appropriate governmental and non-governmental entities to protect Boulder County's environmental resources.

ER 1.08 Boulder County shall modify plans, policies and regulations as necessary to adapt to climate change in order to reduce species and ecosystem vulnerability and other potential adverse impacts on environmental resources. These measures will guide environmental resource management implementation aimed at protecting biodiversity and ecological resiliency.

Environmental Conservation Area Policies

ER 3.01 Boulder County shall designate and map Environmental Conservation Areas as well as Overland and Stream Habitat (Riparian) Corridors at a landscape scale.

ER 3.02 Boulder County shall encourage the removal of development rights from ECAs through transfer, donation, acquisition, trade, or other incentives.

ER 3.03 Development within ECAs shall be located and designed to minimize the cumulative impacts on the environmental resource values of ECAs.

ER 3.04 Development outside of ECAs shall be located and designed to minimize impacts on and connectivity between ECAs.

ER 3.05 Boulder County shall encourage and participate with the appropriate public entities and private land owners in the development of coordinated management plans to conserve, preserve and restore the environmental resource values of ECAs.

Natural Landmarks and Natural Areas Policies

ER 4.01 Natural Landmarks and Natural Areas identified in the Environmental Resources Element and as may be identified from time to time by the state under the Colorado Natural Areas Act, shall be protected from destruction or harmful alteration.

ER 4.02 Boulder County shall submit any County Natural Area that may be of state-wide importance to the Colorado Natural Areas Program for designation as a State Natural Area.

ER 4.03 Boulder County shall coordinate with local, state, and federal agencies and municipalities, as well as with willing private landowners, to protect natural resource values within Natural Landmarks and Natural Areas. This may include: identification of specific resources of concern including scenic values; recommendations for long-term management; mitigation of existing or foreseen impacts; or protection through acquisition of land interest.

2.9.2 Colorado Natural Heritage Program

In 2006, Boulder County requested that the Colorado Natural Heritage Program (CNHP) survey for critical biological resources of Boulder County. The result, after two years of fieldwork, was the report *Survey of Critical Biological Resources in Boulder County 2007-2008* (Neid *et al.* 2009).

The goal of the project was to systematically identify the locations of rare species and significant natural plant communities in Boulder county, and to identify and prioritize areas of critical habitat (Potential Conservation Areas [PCAs]) for these species and communities. Additional goals of the project were to help assess the biological integrity on specific lands under consideration for conservation action, update data on existing protected open space properties, and provide data for development review purposes through the Boulder County Land use Department.

Results of the survey confirmed that there are many areas with high biological significance in Boulder County. There are several rare plants and animals that depend on these areas for survival. All together, 58 rare or imperiled plant species, 32 rare or imperiled animal species, and 63 plant communities of concern have been documented in Boulder County.

As a result of the survey, areas with the highest biodiversity significance based on rare, threatened, and endangered species and habitats were identified and mapped as Potential Conservation Areas (PCAs; see map in Appendix 5). The foothills of Boulder County, including North Foothills Open Space, harbor the highest concentration of globally rare biodiversity elements. There are two foothills PCAs with outstanding biodiversity significance, Rabbit Mountain and Red Hill South of Lyons (which includes most of Heil Valley Ranch), which achieve the rank of outstanding biodiversity significance due to their concentration of four or more globally critically imperiled to globally imperiled element occurrences that are in excellent or good 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 (*Physaria bellii*).

The area containing North Foothills Open Space is part of a larger regional landscape that Colorado Natural Heritage Program describes as a Network of Conservation Areas

(NCA). NCAs encompass two types of landscape areas, 1) a landscape area containing a series of PCAs that share similar species or natural communities as well as ecological processes, and 2) a mostly intact (maintained as natural vegetation), lightly fragmented landscape that supports wide-ranging species and large scale disturbances. Two converging NCAs contain North Foothills Open Space and one contains all of Heil Valley Ranch 2 (Appendix 5).

The Front Range Foothills-Carter Lake to Boulder NCA contains almost all of North Foothills Open Space and all of Heil Valley Ranch 2. It extends along the foothill hogbacks from Carter Lake in Larimer County south to Fourmile Canyon west of Boulder. It includes a series of hogbacks and valleys formed by the uplift and subsequent erosion of Tertiary and Cretaceous sedimentary rock layers by the mountain building of the current Rocky Mountains. The hogbacks are a series of ridges of resistant rock types and the valleys are formed by more erodible rock layers. This is the transition between the Southern Rocky Mountains and the High Plains. The vegetation is transitional as well and includes plant communities unique to the foothills. Ponderosa pine (*Pinus ponderosa*) savanna extends down the mountain slopes from the west forming a mosaic with mountain mahogany (*Cercocarpus montanus*) shrublands. Deeper, fine-textured soils in valleys support grasslands that typically have needlegrasses (*Hesperostipa* species) with remnant patches of tallgrasses like big bluestem (*Andropogon gerardii*) and little bluestem (*Schizachyrium scoparium*). Found within the hogbacks are isolated pockets of shale barrens, typically along exposures of Niobrara shale, that support globally rare Bell's twinpod, which is endemic to the northern Front Range in Colorado.

In essence, the landscape encompassing North Foothills Open Space and Heil Valley Ranch 2 is one of the most significant in Boulder County and the northern Front Range. It is a continental edge - the meeting of the Great Plains and the Southern Rocky Mountains. The geology, soils, and microclimate result in a unique assemblage of plants and animals, particularly shrublands, grasslands, and butterflies, along with the presence of rare plants on shale barrens and rock outcrops. The landscape contains the largest blocks of minimally fragmented foothills habitat, meeting the year-round and seasonal needs of the vast majority of wide-ranging mammals and nesting birds-of-prey found in Boulder County.

The CNHP report *Survey of Critical Biological Resources in Boulder County 2007-2008* (Neid *et al.* 2009) recommends the following:

"Recognize the importance of larger, contiguous natural communities: While the PCAs identified in this report contain known locations of significant elements of natural diversity, protection of large areas in each vegetation type, especially where these are connected, may ensure that we do not lose species that have not yet been located. Work to protect large blocks of land in each of the major vegetation types in the county, and avoid fragmenting large natural areas unnecessarily with roads, trails, etc. Although large migrating animals like deer and elk are not tracked by CNHP as rare species, they are part of our natural diversity, and their needs for winter range and access to protected corridors to food and water should be taken into consideration. Fragmentation of the landscape also affects smaller animals and plants, opening more edge habitats and introducing exotic species...Locate trails and roads to minimize impacts on native plants and animals..."

3.0 METHODOLOGY

3.1 Resource Evaluation

The gathering of existing information as well as conducting new field research was used for the Heil Valley Ranch 2 Biological Resource Evaluation.

Existing information about the area was gathered, including:

- Colorado Natural Heritage Program (CNHP) Element Occurrences of tracked animal and plant species and plant communities of concern (Colorado Natural Heritage Program 2015a).
- CNHP Potential Conservation Areas. These are larger geographic areas than Element Occurrences that contain significant biological resources (Colorado Natural Heritage Program 2015a, Neid *et al.* 2009).
- Information from the Colorado Parks and Wildlife (CPW) Species Activity Data and Species Activity Mapping (Colorado Parks and Wildlife 2014). Maps produced by CPW indicate the ranges and activity areas of various wildlife species, particularly wide-ranging species and big game animals.
- A study of the distribution and movement of radio-collared elk from the North Boulder Elk Herd, 1997-2005. Heil Valley Ranch, including Heil Valley Ranch 2, are part of the range for this herd (Hoerath 2007).
- Inventories of butterflies on Heil Valley Ranch that began in 2002, documenting the species present, population changes, and searches for species of concern (Chu 2006, 2009, 2010, 2011, 2013; Chu *et al.* 2004, 2005).
- Colorado Parks and Wildlife's Front Range Cougar Project (Alldredge 2014) has trapped and radio-collared mountain lions from North Foothills Open Space. These animals utilize all of North Foothills Open Space, including Heil Valley Ranch 2. The project began in 2007 and is currently active. Boulder County Parks and Open Space has participated in the project.
- A study of bobcat habitat selection in relation to landscape characteristics and human recreation (Lewis and Crooks 2014) through tracking radio-collared animals. Animals were captured and collared on Boulder County Parks and Open Space properties, including North Foothills Open Space, and tracked during 2010-2012. Final reports are being prepared.
- A study of the seasonal variation in wildlife community dynamics in relation to urbanization and human activities on the Front Range that used a broad-scale grid of 40 motion-activated cameras (Lewis and Crooks 2011). Portions of North Foothills Open Space were used for the study.

- Inventories of bats on Heil Valley Ranch that began in 2001, looking at species usage, abundance, diversity and foraging patterns in relation to forest mosaics, roosting behavior, and presence of West Nile virus (Adams 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2010, 2013, 2014; Adams and Craven 2011, 2012; Willey and Adams 2009).
- Information from Boulder County Parks and Open Space Department staff and data bases.
- Phase I Environmental Assessment conducted at the time of the land acquisition.

Fieldwork was conducted on May 2, June 21, and July 12, 2013, and May 20 and June 5, 2014. Fieldwork focused on locating and mapping target species, communities, and features, as identified in Section 3.2 of this report.

The methods used in the fieldwork vary according to the elements that were being targeted. In most cases, the appropriate habitats were visually searched in a systematic fashion that would attempt to cover the area as thoroughly as possible in a given time. Visual observations, and where appropriate identification by sounds, songs, calls, tracks, and droppings, were used to identify amphibians, reptiles, mammals, birds, insects, plants, and plant communities.

Fieldwork focused on locating target species and communities of concern, as well as mapping general attributes. Locations of species were mapped using a global positioning system; communities were mapped using a global positioning system and aerial photo interpretation.

3.2 Target Species, Communities, and Features

Fieldwork focused on finding and mapping specific animals, plants, and plant communities, as well as other features on the property. These are referred to as “targets.”

Two information sources were used to develop a list of target animal, plant, and plant community types. The first is the species of concern list for both animals and plants from the Environmental Resources Element of the Boulder County Comprehensive Plan (Boulder County 2014). This is a list of species that are of concern in Boulder County due to local, state, and global factors. The second is the Colorado Natural Heritage Program’s Biodiversity Tracking and Conservation System (Colorado Natural Heritage Program 2015b). The system maintains a list of species and communities that are rare and/or imperiled in Colorado. This list includes federal and state threatened and endangered species, as well as state species of concern.

These information sources were then modified based on the location and habitat found on the property to come up with a final list of target species. Lists were developed for amphibians, birds, butterflies, rare plants, and plant communities. These were:

Target Amphibians	
Tiger Salamander (<i>Ambystoma tigrinum</i>)	Chorus Frog (<i>Pseudacris triseriata</i>)
Plains Spadefoot Toad (<i>Spea bombifrons</i>)	Northern Leopard Frog (<i>Rana pipiens</i>)

Target Avian Species	
Golden Eagle (<i>Aquila chrysaetos</i>)	Bushtit (<i>Psaltriparus minimus</i>)
Northern Goshawk (<i>Accipiter gentilis</i>)	Pygmy Nuthatch (<i>Sitta pygmaea</i>)
Peregrine Falcon (<i>Falco peregrinus</i>)	Rock Wren (<i>Salpinctes obsoletus</i>)
Prairie Falcon (<i>Falco mexicanus</i>)	American Dipper (<i>Cinclus mexicanus</i>)
Flammulated Owl (<i>Otus flammeolus</i>)	Golden-crowned Kinglet (<i>Regulus satrapa</i>)
Long-eared Owl (<i>Asio otus</i>)	Veery (<i>Catharus fuscescens</i>)
Belted Kingfisher (<i>Megaceryle alcyon</i>)	Northern Mockingbird (<i>Mimus polyglottos</i>)
Lewis's Woodpecker (<i>Melanerpes lewis</i>)	Brown Thrasher (<i>Toxostoma rufum</i>)
Red-headed Woodpecker (<i>Melanerpes erythrocephalus</i>)	Sage Thrasher (<i>Oreoscoptes montanus</i>)
American Three-toed Woodpecker (<i>Picoides dorsalis</i>)	Cedar Waxwing (<i>Bombycilla cedrorum</i>)
Northern Flicker (<i>Colaptes auratus</i>)	Virginia's Warbler (<i>Oreothlypis virginiae</i>)
Olive-sided Flycatcher (<i>Contopus cooperi</i>)	American Redstart (<i>Setophaga ruticilla</i>)
Willow Flycatcher (<i>Empidonax traillii</i>)	Ovenbird (<i>Seiurus aurocapilla</i>)
Loggerhead Shrike (<i>Lanius ludovicianus</i>)	MacGillivray's Warbler (<i>Oporornis tolmiei</i>)
Plumbeous Vireo (<i>Vireo plumbeus</i>)	Brewer's Sparrow (<i>Spizella breweri</i>)
Western Scrub-Jay (<i>Aphelcoma californica</i>)	Pine Siskin (<i>Spinus pinus</i>)

Target Butterfly Species	
Moss' Elfin (<i>Callophrys mossii</i>)	Rhesus Skipper (<i>Polites rhesus</i>)
Hops Feeding Azure (<i>Celastrina humulus</i>)	Cross-line Skipper (<i>Polites origenes</i>)
Colorado Blue (<i>Euphilotes rita coloradensis</i>)	Arogos Skipper (<i>Atrytone aragos</i>)
Regal Fritillary (<i>Speyeria idalia</i>)	Snow's Skipper (<i>Paratrytone snowi</i>)
Mottled Duskywing (<i>Erynnis martialis</i>)	Dusted Skipper (<i>Atrytonopsis hianna</i>)
Ottoe Skipper (<i>Hesperia ottoe</i>)	Simius Roadside Skipper (<i>Amblyscirtes simius</i>)

Target Rare Plants	
Fern and Fern Allies	
Fendler's False Cloak-fern (<i>Argyrochosma fendleri</i>)	Wright's Cliffbrake (<i>Pellaea wrightiana</i>)
Reflected Moonwort (<i>Botrychium echo</i>)	Rocky Mountain Polypody (<i>Polypodium saximontanum</i>)
Western Moonwort (<i>Botrychium hesperium</i>)	Weatherby's Spike-moss (<i>Selaginella weatherbiana</i>)
Monocots	
Forked Threeawn (<i>Aristida basiramea</i>)	White Adder's-Mouth Orchid (<i>Malaxis brachypoda</i>)
Crawe's Sedge (<i>Carex crawei</i>)	Spiral Ditchgrass (<i>Ruppia cirrhosa</i>)
Rocky Mountain Sedge (<i>Carex</i>)	False Melic (<i>Schizachne purpurascens</i>)

<i>saximontana</i>)	
Sprengel's Sedge (<i>Carex sprengelii</i>)	Blue Ridge Carrionflower (<i>Smilax lasioneura</i>)
Torrey Sedge (<i>Carex torreyi</i>)	Ute Ladies'-Tresses (<i>Spiranthes diluvialis</i>)
Dicots	
Colorado Aletes (<i>Aletes humulis</i>)	Twinpod Hybrid (<i>Physaria bellii</i> x <i>vitulifera</i>)
Dwarf Leadplant (<i>Amorpha nana</i>)	Silkyleaf Cinquefoil (<i>Potentilla ambigens</i>)
Narrow-leaved Milkweed (<i>Asclepias stenophylla</i>)	Rock Cinquefoil (<i>Potentilla rupincola</i>)
Fireberry (<i>Crataegus chrysocarpa</i>)	Whiteveined Wintergreen (<i>Pyrola picta</i>)
Mountain Ball Cactus (<i>Pediocactus simpsonii</i>)	Prairie Violet (<i>Viola pedatifida</i>)
Bell's Twinpod (<i>Physaria bellii</i>)	

Target Plant Communities	
Scientific Name	Common Name
Big Bluestem (<i>Andropogon gerardii</i>) - Little Bluestem (<i>Schizachyrium scoparium</i>) Western Great Plains Herbaceous Vegetation	Xeric Tallgrass Prairie
Big Bluestem (<i>Andropogon gerardii</i>) - Indiangrass (<i>Sorghastrum nutans</i>) Western Great Plains Herbaceous Vegetation	Mesic Tallgrass Prairie, Forest Openings
Blue Grama (<i>Bouteloua gracilis</i> [<i>Chondrosium gracile</i>]) - Buffalograss (<i>Buchloe dactyloides</i>) Herbaceous Vegetation	Shortgrass Prairie
Hackberry (<i>Celtis laevigata</i> var. <i>reticulata</i>) / Bluebunch Wheatgrass (<i>Pseudoroegneria spicata</i>) Woodland	Hackberry
Mountain Mahogany (<i>Cercocarpus montanus</i>) / Scribner's Needlegrass (<i>Achnatherum scribneri</i>) Shrubland	Foothills Shrubland
Mountain Mahogany (<i>Cercocarpus montanus</i>) / Needle-and-Thread (<i>Hesperostipa comata</i>) Shrubland	Mixed Foothill Shrublands, Forest Openings
Mountain Mahogany (<i>Cercocarpus montanus</i>) / New Mexico Feathergrass (<i>Hesperostipa neomexicana</i>) Shrubland	Foothills Shrubland
Mountain Mahogany (<i>Cercocarpus montanus</i>) - Skunkbrush (<i>Rhus trilobata</i>) / Big Bluestem (<i>Andropogon gerardii</i>) Shrubland	Mountain Mahogany - Skunkbrush / Big Bluestem Shrubland
Hazelnut (<i>Corylus cornuta</i>) Shrubland	Lower Montane Forests
Needle-and-Thread (<i>Hesperostipa comata</i>) - Indian Ricegrass (<i>Achnatherum hymenoides</i>) Herbaceous Vegetation	
Needle-and Thread (<i>Hesperostipa comata</i>) - Blue Grama (<i>Bouteloua gracilis</i> [<i>Chondrosium gracile</i>]) Colorado Front Range Herbaceous Vegetation	
Needle-and-Thread (<i>Hesperostipa comata</i>) Colorado Front Range Herbaceous Vegetation	Great Plains Mixed Grass Prairie
New Mexico Feathergrass (<i>Hesperostipa</i>)	Great Plains Mixed Grass

<i>neomexicana</i>) Herbaceous Vegetation	Prairie
Mountain Muhly (<i>Muhlenbergia montana</i>) Herbaceous Vegetation	Mountain Muhly Herbaceous Vegetation, Forest Openings
Mountain Muhly (<i>Muhlenbergia montana</i>) - Needle-and-Thread (<i>Hesperostipa comata</i>) Herbaceous Vegetation	Montane Grasslands, Forest Openings
Ponderosa Pine (<i>Pinus ponderosa</i>) / Sun Sedge (<i>Carex inops</i> ssp. <i>heliophila</i>) Woodland	Foothills Ponderosa Pine Savannas
Ponderosa Pine (<i>Pinus ponderosa</i>) / Mountain Mahogany (<i>Cercocarpus montanus</i>) / Big Bluestem (<i>Andropogon gerardii</i>) Wooded Herbaceous Vegetation	Foothills Ponderosa Pine Scrub Woodlands
Ponderosa Pine (<i>Pinus ponderosa</i>) / Mountain Muhly (<i>Muhlenbergia montana</i>) Woodland	Foothills Ponderosa Pine Savannas
Ponderosa Pine (<i>Pinus ponderosa</i>) / Bitterbrush (<i>Purshia tridentata</i>) Woodland	Foothills Ponderosa Pine Scrub Woodlands
Ponderosa Pine (<i>Pinus ponderosa</i>) / Little Bluestem (<i>Schizachyrium scoparium</i>) Woodland	Ponderosa Pine / Little Bluestem Woodland
American Plum (<i>Prunus americana</i>) Shrubland	Foothills Riparian Shrubland
Bitterbrush (<i>Purshia tridentata</i>) / Mountain Muhly (<i>Muhlenbergia montana</i>) Shrubland	Mixed Foothills Shrubland
Skunkbrush (<i>Rhus trilobata</i>) Intermittently Flooded Shrubland	Skunkbrush Riparian Shrubland
Little Bluestem (<i>Schizachyrium scoparium</i>) / Sideoats Grama (<i>Bouteloua curtipendula</i>) Western Great Plains Herbaceous Vegetation	Great Plains Mixed Grass Prairies (Sandstone/Gravel Breaks)

Several other natural resource features were tracked and mapped on the property because of their biological interest and importance. These were:

- Old-growth forests and woodlands
- Other high quality native grasslands
- All shrublands
- Sightings of black bear, mountain lion, and bobcat
- Black-tailed prairie dog colonies
- Riparian areas and wetlands
- Springs and other bodies of water
- Other hawks and owls

4.0 VEGETATION RESOURCES

4.1 Historic Ecology

The vegetation in the Colorado Front Range has long been affected by human activities. Artifacts found in excavations in the mountains of Boulder County suggest that Paleoindian hunters traveled and camped there over 11,000 years ago (Stone 1999). It is probable that early occupants of the Front Range influenced the disturbance regime by setting fires (Wright 1978, Higgins 1986). Also, the gathering of plants for food and other resources may have altered the species composition of some locations.

The vegetation of the property has been influenced by Euro-American settlement, particularly after the gold rush of 1859. For the most part, North Foothills Open Space was outside the Colorado mineral belt and only saw scant gold and silver prospecting and mining. But due to close proximity to the gold belt and growing human settlements near the foothills, such as Boulder, the lands in the vicinity of Lyons were homesteaded for farming, ranching, timber, and sandstone quarries to provide needed resources to the towns. It is noted that settlement of the North Foothills Open Space area occurred in the 1890-1900 period, a full ten years later than lands to the east at Dowe Flats and Rabbit Mountain (Boulder County Parks and Open Space 1996), which may attest to the ruggedness of the area.

The increased human settlement and use of the North Foothills Open Space area influenced the composition and pattern of vegetation through the introduction of non-native plants, the movement of water through irrigation ditches and location of impoundments, the leveling of land for farming, and the alteration of historic disturbance regimes, particularly grazing and fire.

4.1.1 Adventive Plants

The movement of people and livestock west brought non-native plants into Boulder County (Weber 1995). Sometimes the transplanting was with purpose; often it was inadvertent as the seed was mixed with luggage or livestock. Livestock grazing and land cultivation have been common on the lands comprising North Foothills Open Space since first being settled. Non-native plants, including several types of hay grass that were promoted by Federal conservation programs in the 20th century, were actively planted throughout much of Boulder County as good forage crops for cattle and horses as well as land reclamation.

Non-native plants are present on North Foothills Open Space. The most widespread noxious weeds are tumble knapweed (*Acosta diffusa*), cheatgrass (*Anisantha tectorum*), Canada thistle (*Breea arvensis*), musk thistle (*Carduus nutans*), bindweed (*Convolvulus arvensis*), and Dalmatian toadflax (*Linaria genistifolia*). Other common non-native plants include Japanese brome (*Bromus japonicus*), prickly lettuce (*Lactuca serriola*), Canada bluegrass (*Poa compressa*), Kentucky bluegrass (*Poa pratensis*), sleepy catchfly (*Silene antirrhina*), salsify (*Tragopogon dubius*), and woolly mullein (*Verbascum thapsus*).

4.1.2 Disturbance Regimes

Fire ecologists are currently recognizing three periods for describing fire history of the Front Range (Veblen et al. 1996). The first is the Native American period, which is generally considered the pre-1850s period. Fires were a regular part of the landscape. The time interval between fire events generally increased with increasing elevation, or a change in aspect from south to north facing. Also, the type of fire generally changes from lower-intensity ground fire to higher-intensity crown fire with increasing elevation. Recent research in the Front Range places a mean fire-return interval for the Native American period between 5 to 30 years for the Lower Montane and Lower Ecotone vegetation zones (Kaufmann *et al.* 2006, Sheriff 2004).

The second period is the non-Native American settlement period from 1850s-1910. This was a time of increased timber cutting and fire impacts to local forests. The mining booms of this period resulted in heavy demands on the timber resources for fuel, mine props, and town construction (Fritz 1933, Kemp 1960). Also during this period catastrophic fires had an equal, if not greater, impact than logging on the forests of the Front Range (Tice 1872, Fossett 1880, Fritz 1933, Wolle 1949, Kemp 1960). Many of these fires were intentionally set by humans so as to better expose the rocks to the observation by prospectors. Though this practice was outlawed in most mining districts, in 1871 in Boulder County there were 51 indictments for illegal fires (Tice 1872). During this period in Boulder County, mean fire return intervals were 5-7 years in the foothills and 7-9 years in the montane (Veblen and Kitzberger 1994).

The post-1910 period is viewed as the time of fire suppression. It began in earnest after the devastating fires of 1910 in the northern Rockies (Plummer 1912) and the subsequent designation of the Forest Service's 10 A.M. policy of fire suppression which attempted to put all wildfires out by 10 A.M. of the next day (Pyne 1982). Data taken from fire scarred trees on Heil Valley Ranch found evidence of numerous fires during the Native American and non-Native American settlement periods and no fires after 1916 (Veblen *et al.* 1996).

Heil Valley Ranch 2 is found within the Lower Ecotone vegetation zone (Kaufmann *et al.* 2006). The Lower Ecotone vegetation zone has seen changes in vegetative structure due to the post-1910 period of fire suppression (Decker 2007, Kaufmann *et al.* 2006, Veblen and Donnegan 2005). The stands of ponderosa pine (*Pinus ponderosa*) present in these vegetation zones were historically mostly open and were affected primarily by low- to moderate-severity fires that burned with sufficient frequency to prevent the survival of most young trees, which led to the establishment of open stands of mature trees. Patches of shrubland, particularly mountain-mahogany (*Cercocarpus montanus*), in the Lower Ecotone vegetation zone, could have fueled locally severe fire behavior, killing all the trees within and near the shrub patch.

The exclusion of fire for long periods has resulted in several changes. First, there has been an increase in tree density, primarily of ponderosa pine and Rocky Mountain juniper (*Sabina scopulorum*). Other factors such as grazing and soil disturbance associated with human activities, likely contributed to increased seedling establishment. Also, the increase in tree density has not occurred in all locations as it is likely that some of the sites in the Lower Ecotone vegetative zone are too dry to support an increase in trees. Second, the exclusion of fire in shrublands has led to the development of dense communities dominated by old shrubs with substantial amounts of standing dead organic matter. One result of long-term fire exclusion is that new fires will be of greater intensity due to increased fuels with longer periods of recovery.

4.2 Description of Vegetation Communities

Heil Valley Ranch 2 was surveyed on May 2, June 21, and July 12, 2013, and May 20 and June 5, 2014. Fieldwork focused on describing the presence and distribution of plant communities and the common plant species found in these communities. Plant nomenclature follows Weber and Wittmann (2012). This list is intended to be descriptive, not comprehensive. Plant communities are described in terms of vegetation communities and categorized to the alliance level.

There are twelve primary vegetation communities found on the property. These communities are summarized in Table 4 below, displayed on the Vegetation Map (Figure 6 in Appendix 1), and described individually in the text that follows.

Table 4. Vegetation Communities

<i>Vegetation Community (and polygon #s from Figure 6)</i>	<i>Size in Acres</i>	<i>Location</i>
Ponderosa Pine Woodland Alliance (1-10)	59.7	Throughout property.
Ponderosa Pine Tallgrass Savannah Herbaceous Alliance (11-16)	63.2	West, central, and northeast portions of the property.
New Mexico Feathergrass Herbaceous Alliance (17)	8.1	North-central portion of the property.
Ponderosa Pine Temporarily Flooded Woodland Alliance (18-19)	3.6	Along Lake Ditch and small drainage in northwest portion of property.
Ponderosa Pine Forest Alliance (20)	7.6	North-central portion of property on east side of Geer Canyon Drive
Narrowleaf Cottonwood Temporarily Flooded Woodland Alliance (21)	5.6	Along southern one-quarter of Geer Canyon Creek.
Foothills Ponderosa Pine Scrub Woodland Alliance (22)	8.4	On backside of first hogback in northeast portion of property.
Skunkbrush Upland Shrubland Alliance (23)	16.6	On backside of southern two-thirds of first hogback along east property line.
Flood Disturbance Temporarily Flooded (24)	4.6	Along northern three-quarters of Geer Canyon Creek
Annual-Dominated Upland Disturbance Alliance/Semi-Natural Herbaceous Alliance (25-26)	11.9	Around site of old Ranch Headquarters.
Rural Residential Settlement Complex (27)	3.2	Around two houses and other buildings north of Lefthand Canyon Drive.
Cheatgrass Semi-Natural Herbaceous Alliance (28)	7.2	Small valley in north-central portion of property.
Semipermanently Flooded Herbaceous Alliance (29)	.2	Around Frog Pond in northwest portion of property.

4.2.1 Ponderosa Pine Woodland Alliance

This and the next alliance have the greatest coverage on the property. It is found on all aspects, except steep west-facing. There is a tree overstory and a herbaceous understory with scattered shrubs. Stands that are closer to the Ranch Headquarters have an understory dominated by nonnative and annual grasses and forbs.

The overstory is dominated by ponderosa pine, along with Rocky Mountain juniper and a few Douglas-fir (*Psuedotsuga menziesii*). Characteristic grasses include needle-and-thread (*Hesperostipa commata*), Nelson needlegrass (*Achnatherum nelsonii*), three-awn (*Aristida purpurea*), blue grama (*Chondrosium gracile*), Scribner needlegrass (*Achnatherum scribneri*), western wheatgrass (*Pascopyrum smithii*), Kentucky bluegrass, Japanese brome, Canada bluegrass, and cheatgrass. Characteristic forbs and subshrubs include fringed sage (*Artemisia frigida*), hairy golden-aster (*Heterotheca villosa*), snakeweed (*Gutierrezia sarothrae*), prickly pear (*Opuntia polyacantha*), twistspine prickly pear (*Opuntia macrorhiza*), yucca (*Yucca glauca*), ambrosia (*Ambrosia psilostachya*), alyssum (*Alussum parviflorum*), and white sage (*Artemisia ludoviciana*). Scattered shrubs in the understory include wax currant (*Ribes cereum*), skunkbrush (*Rhus trilobata*), mountain-mahogany (*Cercocarpus montanus*), and buckbrush (*Ceanothus fendleri*).

4.2.2 Ponderosa Pine Tallgrass Savannah Herbaceous Alliance

This and the previous alliance have the greatest coverage on the property. It is found on all aspects, except steep west-facing. There is a widely scattered tree overstory and a herbaceous understory with scattered shrubs. Stands that are closer to the Ranch Headquarters have an understory dominated by nonnative and annual grasses and forbs.

The overstory is dominated by widely-spaced ponderosa pine, along with scattered Rocky Mountain juniper. Characteristic grasses include needle-and-thread, New Mexico feathergrass (*Hesperostipa neomexicana*) Nelson needlegrass, three-awn, blue grama, Scribner needlegrass, western wheatgrass, Kentucky bluegrass, Japanese brome, Canada bluegrass, and cheatgrass. Characteristic forbs and subshrubs include fringed sage, hairy golden-aster, snakeweed, prickly pear, twistspine prickly pear, yucca, ambrosia, alyssum, and white sage. Scattered shrubs in the understory include wax currant, skunkbrush, and buckbrush.

4.2.3 New Mexico Feathergrass Herbaceous Alliance

This alliance is found on a small ridge, an outcrop of Forelle Limestone, in the north-central portion of the property. New Mexico feathergrass dominates the site. There are scattered ponderosa pine. Other characteristic grasses include needle-and-thread, Nelson needlegrass, and western wheatgrass.

4.2.4 Ponderosa Pine Temporarily Flooded Woodland Alliance

This alliance is found along Lake Ditch and at the bottom of a small drainage that comes off the second hogback in the northwest portion of the property. It has a conifer and deciduous tree overstory and shrub understory. It is discontinuous along Lake Ditch.

The overstory is dominated by ponderosa pine, peach-leaved willow (*Salix amygdaliodes*), and narrowleaf cottonwood (*Populus angustifolia*). Shrubs in the understory include alder (*Alnus incana* subsp. *tenuifolia*), chokecherry (*Padus*

virginiana), thimbleberry (*Rubacer parviflorum*), snowberry (*Symphoricarpus occidentalis*), red raspberry (*Rubus idaeus*), and wild rose (*Rosa woodsii*).

4.2.5 Ponderosa Pine Forest Alliance

This alliance is found on a west-facing aspect just east of Geer Canyon Creek in the north-central portion of the property. It has a relatively dense overstory stand with a herbaceous understory and scattered shrubs.

The overstory is dominated by ponderosa pine, along with lesser amounts of Douglas-fir and Rocky Mountain juniper. Characteristic grasses include needle-and-thread, western wheatgrass, Kentucky bluegrass, Canada bluegrass, and cheatgrass. Characteristic forbs and subshrubs include fringed sage, hairy golden-aster, Oregon grape (*Mahonia repens*), and white sage. Scattered shrubs in the understory include wax currant, skunkbrush, mountain-mahogany, common juniper (*Juniperus communis*), and buckbrush.

4.2.6 Narrowleaf Cottonwood Temporarily Flooded Woodland Alliance

This alliance is found along the lower portion of Geer Canyon Creek. The overstory is comprised of deciduous trees. There is little understory, much of this due to historic grazing practices. Additionally, the heavy rains and flooding of September 2013 impacted this riparian zone.

The overstory is dominated by narrowleaf cottonwood, peach-leaved willow, and box-elder (*Negundo aceroides* subsp. *interius*), along with scattered plains cottonwood (*Populus deltoides*). Scattered alder are present.

4.2.7 Foothills Ponderosa Pine Scrub Woodland Alliance

This alliance is found on the backside of the first hogback in the northeast portion of the property. It has a tree overstory and shrub understory. It is similar to ponderosa pine woodland and forest alliances, but has a denser shrub understory. It is present on a rocky substrate.

The overstory is dominated by widely-spaced ponderosa pine, along with scattered Rocky Mountain juniper. Mountain-mahogany is the dominant shrub in the understory. Skunkbrush, ninebark, and snowberry are also present in the shrub layer. Characteristic grasses include needle-and-thread, Nelson needlegrass, Canada bluegrass, and cheatgrass. Characteristic forbs and subshrubs include fringed sage, hairy golden-aster, snakeweed, and white sage.

4.2.8 Skunkbrush Upland Shrubland Alliance

This alliance is found on the backside of the first hogback in the southeast portion of the property. It has a dense shrub understory with scattered pines in the overstory. It is mixed with rock outcrops.

The dominant shrub is skunkbrush. Mountain-mahogany, ninebark, and snowberry are also present in the shrub layer. Characteristic grasses include needle-and-thread, Nelson needlegrass, Canada bluegrass, and cheatgrass. Characteristic forbs and subshrubs include fringed sage, hairy golden-aster, snakeweed, and white sage.

4.2.9 Flood Disturbance Temporarily Flooded

The northern three-quarters of Geer Canyon Creek were heavily impacted by the rain and floods of September 2013. Even before the flooding event, it was a very discontinuous riparian ecosystem, with scattered ponderosa pine, narrowleaf cottonwood, and shrubs. The flood brought large amounts of sediment and displaced some of the vegetation.

4.2.10 Annual-Dominated Disturbance/Semi-Natural Herbaceous Alliance

This alliance is found in the area within and around the ranch headquarters. This area received intensive use, not only from livestock, but also from structures and equipment storage. This area received the most intense human use in recent decades on Heil Valley Ranch.

The ground cover is dominated by plants that can persist in areas of high disturbance, including nonnative grasses and annual forbs. Cheatgrass, Kentucky bluegrass, Japanese brome, ambrosia, alyssum, and other plants more tolerant of disturbed sites. Native plants are also present in scattered locations.

4.2.11 Rural Residential Settlement Complex

This community is found around the residences and outbuildings located north of Lefthand Canyon Drive in the south-central portion of the property. It is a mix of native and nonnative plants, including ornamentals planted by people that lived on the site. The overstory is a mix of ponderosa pine, narrowleaf cottonwood, plains cottonwood, and Siberian elm (*Ulmus pumila*).

4.2.12 Cheatgrass Semi-Natural Herbaceous Alliance

This alliance is found in a valley west of the backside of the first hogback in the north-central portion of the property. It is dominated by nonnative grasses and forbs, likely related to prior grazing pressure.

Characteristic grasses include cheatgrass, Japanese brome, Canada bluegrass, three-awn, and western wheatgrass. Needle-and-thread and New Mexical feathergrass are present on the edges. Characteristic forbs and subshrubs include fringed sage, hairy golden-aster, snakeweed, ambrosia, alyssum, and white sage.

4.2.13 Semipermanently Flooded Herbaceous Alliance

This alliance is found ringing a small pond located in the northwest portion of the property just west of Geer Canyon Drive. This site was heavily impacted by the rains and floods of 2013 with the deposition of silt. There is a ring of emergent plants, including several types of sedge (*Carex* species) and rush (*Juncus* species).

4.3 Significant Vegetative Resources

Significant vegetative resources are present on the property, highlighting the uniqueness of this portion of Boulder County. The CNHP report *Survey of Critical Biological Resources in Boulder County 2007-2008* (Neid *et al.* 2009) was generally discussed in Section 2.9.2 of this report. The following subsections will first look at the Potential Conservation Area (PCA) that includes the property, and the natural community and rare plant elements comprising the PCA. Next will be information about the significant natural plant communities found on the property.

4.3.1 Colorado Natural Heritage Program PCAs

In 2006, Boulder County requested that the Colorado Natural Heritage Program (CNHP) survey for critical biological resources of Boulder County. The result, after two years of fieldwork, was the report *Survey of Critical Biological Resources in Boulder County 2007-2008* (Neid *et al.* 2009). This is generally described in Section 2.9.2 of this report. A map of documented Network of Conservation Areas (NCAs) and Potential Conservation Areas (PCAs) is found in Appendix 4.

As stated in the CNHP report:

"PCAs are designed to identify a land area that can provide the habitat and ecological processes upon which a particular element occurrence, or suite of element occurrences, depends for its continued existence. The best available knowledge about each species' life history is used in conjunction with information about topographic, geomorphic, and hydrologic features; vegetative cover; and current and potential land uses. In developing the boundaries of a PCA, CNHP scientists consider a number of factors that include, but are not limited to:

- ecological processes necessary to maintain or improve existing conditions;
- species movement and migration corridors;
- maintenance of surface water quality within the PCA and the surrounding watershed;
- maintenance of the hydrologic integrity of the groundwater;
- land intended to buffer the PCA against future changes in the use of surrounding lands;
- exclusion or control of invasive exotic species;
- land necessary for management or monitoring activities.

The boundaries designate ecologically significant areas in which land managers may wish to consider how specific activities or land use changes within or near the PCA affect the natural heritage resources and sensitive species on which the PCA is based."

CNHP identified seven PCAs that cover portions of North Foothills Open Space. Heil Valley Ranch 2 is contained within Red Hill South of Lyons PCA. A detailed description and map of the PCA is found in Appendix 5B. A description of the CNHP element and PCA ranking systems is found in Appendix 5A. Following is a description of the Red Hill South of Lyons PCA.

Red Hill South of Lyons PCA

This site is part of the Front Range Hogback system and exemplifies the foothills transition zone. This PCA merits an outstanding biodiversity significance rank (B1; see Appendix 5A for additional information about the CNHP ranking system) due to its concentration of globally rare communities and invertebrates in excellent and good condition. The CNHP natural community and vascular plant element occurrences in the Red Hill south of Lyons PCA are:

- An excellent to good (AB-ranked) occurrence of the globally imperiled (G2/S2) ponderosa pine / mountain mahogany / big bluestem (*Pinus ponderosa* / *Cercocarpus montanus* / *Andropogon gerardii*) savannah;

- Two good (B-ranked) examples of the globally imperiled (G2/S2) mountain mahogany / needle-and-thread (*Cercocarpus montanus* / *Hesperostipa comata*) shrubland;
- An excellent to good (AB-ranked) occurrence of the globally imperiled to vulnerable (G2G3/S2S3) mountain mahogany / New Mexico feathergrass (*Cercocarpus montanus* / *Hesperostipa neomexicana*) shrubland;
- A good (B-ranked) occurrence of the globally critically imperiled (G1G2/S1S2) needle-and-thread (*Hesperostipa comata*) Great Plains mixed grass prairie;
- A good (B-ranked) occurrence of the globally imperiled (G2/S2) foothills narrowleaf cottonwood / bluestem willow (*Populus angustifolia* / *Salix irrorata*) riparian woodland;
- A good to fair (BC-ranked) occurrence of the globally vulnerable (G3/S3) mountain mahogany / Scribner's needlegrass (*Cercocarpus montanus* / *Achnatherum scribneri*) shrubland;
- A good (B-ranked) occurrence of the globally vulnerable (G3/S3) New Mexico feathergrass (*Hesperostipa neomexicana*) Great Plains mixed grass prairie;
- A good (B-ranked) occurrence of the globally imperiled to vulnerable (G2G3/S2S3) plant species Bell's twinpod (*Physaria bellii*);
- A fair (C-ranked) occurrence of the state imperiled (S2) plant species Eaton's lip fern (*Cheilanthes eatonii*).

4.3.2 Significant Natural Communities on Heil Valley Ranch 2

Boulder County Significant Natural Communities are of special status and warrant protection in order to prevent population or habitat loss. The majority of communities are recognized by the Colorado Natural Heritage Program (CNHP). Significant Natural Communities are generally ranked by CNHP as critically imperiled, imperiled, or vulnerable to extirpation globally (G1-G3) or statewide (S1-S3). A more detailed description of the Boulder County criteria for designating Significant Natural Communities, as well as the CNHP ranking systems, can be found in Appendix 5A.

The vast majority of Significant Natural Communities on North Foothills Open Space are associated with the foothill hogbacks. The hogbacks influence the vegetation of Heil Valley Ranch 2. The report *Survey of Critical Biological Resources in Boulder County 2007-2008* (Neid *et al.* 2009) describes the relationships of several common Significant Natural Communities with the hogbacks:

"The foothills transition zone on the Colorado Front Range is among the rarest and most threatened areas in Colorado. The biological diversity of this zone is highlighted in two of the three B1-ranked PCAs in Boulder County, Rabbit Mountain and Red Hill South of Lyons. These are also contained within the Front Range Foothills-Carter Lake to Boulder NCA, which is comprised by the series of hogbacks that extend from Loveland in Larimer County south to Boulder. Mountain mahogany plant associations that include mountain mahogany / needle-and-thread (*Cercocarpus montanus* / *Hesperostipa comata*) shrublands (G2/S2) that tends to occupy toeslopes on Quaternary deposits and colluvium; mountain mahogany / New Mexico feathergrass (*Cercocarpus montanus* / *Hesperostipa neomexicana*) shrublands (G2G3/S2S3), which tend to occur near outcrops of Ingelside Formation; and mountain mahogany / Griffith's wheatgrass (*Cercocarpus montanus* / *Elymus lanceolatus* ssp. *lanceolatus*) shrublands (GU/SU), which occupy high slopes immediately below the hogback ridgeline. Ponderosa pine savannas often occupy the ridgelines and are defined by ponderosa pine / mountain mahogany / big bluestem (*Pinus ponderosa* / *Cercocarpus montanus* / *Andropogon gerardii*) wooded herbaceous vegetation

(G2/S2?). The vegetation structure of these landforms is diverse and this is habitat for a wide range of birds and animals. A primary trend in this system is conversion to ponderosa pine savanna and woodland."

Significant Natural Plant Communities found on Heil Valley Ranch 2 are displayed on Figure 7 (Appendix 1). Following are descriptions of the Significant Natural Communities.

1. New Mexico Feathergrass (*Hesperostipa neomexicana*) Herbaceous Vegetation (Global Vulnerable - G3; State Rare - S3; Boulder County Significant Natural Community - Criteria 5): It is found on an outcrop of Forelle Limestone. Needle-and-thread is also present.

2. Needle-and-Thread (*Hesperostipa comata*) Colorado Front Range Herbaceous Vegetation (Globally Critically Imperiled to Imperiled - G1G2; State Critically Imperiled to Imperiled - S1S2; Boulder County Significant Natural Community - Criteria 1): This grassland is part of a Ponderosa Pine Tallgrass Savannah Herbaceous Vegetation.

5.0 WILDLIFE RESOURCES

5.1 Historic Ecology

Since Euro-American settlement of Boulder County, several animal species, some of them major faunal components of the pre-settlement landscape, have been lost. Others have been reduced in number. Still others have been introduced or have prospered from the increasing presence of humans.

Bison (*Bison bison*) were once very common on the plains and also present in the mountains of Colorado and Boulder County (Long 1988, Armstrong *et al.* 2011). They have since been locally extirpated. By 1829 trappers' journals were already noting declines as market hunting entered the region (Roe 1970). The last native bison in eastern Colorado was killed near Springfield, Baca County, in 1889 (Armstrong 1972). Bison remains ranging from about 200 to more than 2,000 years old were found at Buchanan Pass Glacier as well as two smaller ice patches in the Indian Peaks west of Boulder (Lee *et al.* 2006). It is likely that bison used North Foothills Open Space, including Heil Valley Ranch 2, but the extent of such use is unclear.

Pronghorn (*Antilocapra americana*) were also present in presettlement times and were found in the foothills and montane lifezones, as well as the plains. Hunting of antelope occurred in the Estes Valley as settlement of the region began (Estes 1939). The naming of Antelope Park on Hall Ranch Open Space is likely related to their presence. Antelope met the same fate as bison in Boulder County. One of the last major hunts by native peoples for antelope in the county occurred in the early 1860s (Kindig 1987). Again, the numbers and use patterns on North Foothills Open Space, including Heil Valley Ranch 2, are unknown.

Other ungulates were eliminated from the county or greatly reduced in number, but through reintroduction and/or the establishment of hunting restrictions, have repopulated. American elk (*Cervus canadensis*) were historically common on the plains and mountain of the county. They were virtually eliminated from the county and reintroduced from 1913-1917 with animals brought in from the Yellowstone National Park region (Thomas and Toweill 1982). Their current numbers in Boulder County are probably between 2,000 and 3,000 (estimate from Colorado Parks and Wildlife). They are currently an important component of the fauna of North Foothills Open Space and Heil Valley Ranch 2 and are further discussed in Section 5.2 of this report.

Bighorn sheep (*Ovis canadensis*) were present and likely plentiful in the county in presettlement times (Bucholtz 1983). They were eliminated in the county due to overhunting sometime in the early part of the 20th century. The last few sheep of the Mt. Audubon area were taken by "Stapp of Stapp's Lake" (Wheeler 1932). They were reintroduced into the North St. Vrain canyon, where a small population currently exists. They use the west portion of Hall Ranch.

Some carnivores that probably utilized the property were eliminated from the landscape. Generally, those that have been extirpated were perceived as threats or competed for resources with humans. These included gray wolf (*Canis lupus*), grizzly bear (*Ursus arctos*), and black-footed ferret (*Mustela nigripes*). Wolverine (*Gulo gulo*) has not been confirmed in the county for a long time. Canada lynx (*Lynx canadensis*) were extirpated

from the county, but have recently been reintroduced into Colorado; individuals have been tracked passing through the county.

For other groups of animals, the impact of Euro-American settlement can be seen in community shifts. Avian populations have seen community shifts toward those species that can take advantage of greater human influences to the landscape along with the decline of other species. Mid-sized mammals, such as the introduced house cat, domestic dog, and fox squirrel (*Sciurus niger*), and some native animals such as northern raccoon (*Procyon lotor*), are increasing in number as they take advantage of current landscape changes, and have the potential of causing significant adverse effects to many native animals.

5.2 Mammals

The foothills lifezone and its ecotone with the plains is considered a rich habitat for mammals (Mutel 1976). The mix between grasslands, shrublands, woodlands, forests, cliffs and rock outcrops provides an abundance of food, cover, and denning sites. The concentration of mammals in the foothills is heightened during the winter when snow and harsh weather move animals down from higher elevations.

Approximately 71 species of mammal could call North Foothills Open Space and Heil Valley Ranch 2 home (Appendix 6A). The most common mammal is probably the deer mouse (*Peromyscus maniculatus*), though it is seldom seen. Other common ground dwelling rodents include least chipmunk (*Neotamias dorsalis*), Colorado chipmunk (*Neotamias quadrivittatus*), and golden-mantled ground squirrel (*Callospermophilus lateralis*). Coyote (*Canis latrans*) and red fox (*Vulpes vulpes*) are the most commonly seen carnivores, being habitat generalists. Abert's squirrels (*Sciurus aberti*) are characteristic of ponderosa pine woodlands, while rock squirrels (*Otospermophilus variegatus*) are restricted to cliffs and talus slopes.

Mule deer (*Odocoileus hemionus*) is the most commonly seen ungulate. American elk (*Cervus canadensis*) may be just as common numerically during the winter on portions of Heil Valley Ranch.

Following are more detailed accounts of mammal species of interest and concern.

5.2.1 Colorado Parks and Wildlife Species Activity Mapping

Maps produced by CPW indicate the ranges and activity areas of various wildlife species, particularly wide-ranging species and big game animals. A number of the species congregate in herds, where specific geographic areas may be important for a large number of animals. The maps, where applicable, depict overall, winter and summer ranges, and other activity areas of importance, including concentration and production areas and migration corridors. The CPW database was searched for species with mapped ranges and activity areas occurring on or near North Foothills Open Space and Heil Valley Ranch 2 with the selected results displayed in Table 5 (Colorado Parks and Wildlife 2014). This information and the sections that follow on individual mammal species is supplemented with the findings of fieldwork and studies conducted by BCPOS staff and consultants.

Table 5. CPW Wildlife Ranges and Activity Areas

<i>Wildlife Species</i>	<i>Habitat</i>
Range and Activity Areas are stated relative to presence on Heil Valley Ranch and Heil Valley Ranch 2.	
Black Bear (<i>Ursus americanus</i>)	<u>Overall Range</u> : all of Heil Valley Ranch and Heil Valley Ranch 2 <u>Summer Concentration Area</u> : central portion of Heil Valley Ranch and most of Heil Valley Ranch 2 <u>Fall Concentration Area</u> : central portion of Heil Valley Ranch and west to northwest portion of Heil Valley Ranch 2
Mountain Lion (<i>Felis concolor</i>)	<u>Overall Range</u> : all of Heil Valley Ranch and Heil Valley Ranch 2
American Elk (<i>Cervus elaphus</i>)	<u>Overall Range and Winter Range</u> : all of Heil Valley Ranch and Heil Valley Ranch 2 <u>Winter Concentration Area and Severe Winter Range</u> : upper Geer Canyon and east portion of Heil Valley Ranch <u>Production Area</u> : upper Geer Canyon on Heil Valley Ranch
Mule Deer (<i>Odocoileus hemionus</i>)	<u>Overall Range, Summer Range and Winter Range</u> : all of Heil Valley Ranch and Heil Valley Ranch 2 <u>Concentration Area</u> : all of Heil Valley Ranch and Heil Valley Ranch 2 <u>Winter Concentration Area</u> : most of Heil Valley Ranch and all of Heil Valley Ranch 2 <u>Severe Winter Range</u> : east 1/3rd of Heil Valley Ranch and all of Heil Valley Ranch 2 <u>Highway Crossing</u> : all of North Foothills Highway, South St. Vrain Highway, and Lefthand Canyon Dr. near NFOS and the new properties

5.2.2 American Elk

In order to learn more about the movements, range, and herd size of elk that utilize Heil Valley Ranch, an intensive radiotelemetry study was conducted by Boulder County Parks and Open Space and Colorado Parks and Wildlife (Hoerath 2007). Between February 1997 through December of 2005, a total of 15 elk were captured (between 3 and 10 elk had collars at any one time) and tracked yearly, being located at a minimum every 2 weeks (weekly during the summer).

The broad findings of the study showed that this herd of elk, called the North Boulder herd, range from several miles east of North Foothills Highway all the way to the Indian Peaks Wilderness above Brainard Lake and Beaver Reservoir. Average herd size is estimated to be approximately 181 elk. The size of the herd appears to be stable, with primary causes of mortality being hunting (including depredation hunts in spring and summer), vehicle collisions, and the natural causes of predation (mountain lions), maladies, and old age.

Summer Range

Summer range was located primarily west of the Peak-to-Peak Highway. Two summer concentration areas centered around Brainard Lake and Beaver Creek drainage supported the vast majority of summering cows. It is noted that two of the collared elk stayed on or in the vicinity of Heil Valley Ranch and Rabbit Mountain during the summer; one was an older cow, while the other moved with a small group (less than 10) to Rabbit Mountain, but came back to Heil Valley Ranch for the rut.

Winter Range

Winter range was primarily located on the east side of Heil Valley Ranch, along with other open space properties located along and east of North Foothills Highway. There is also some winter use of Rabbit Mountain. This area is considered good winter habitat due to a mosaic of grasslands, which are generally snow-free, and forested areas used for thermal and hiding cover.

Calving

Elk locations during the calving period (generally the later part of May through the end of June) were primarily in the lower elevation portions of the Beaver Creek and Brainard Lake summer ranges. Some elk were still present on Heil Valley Ranch, along with other open space properties located along and east of North Foothills Highway.

Migration

Migration to and from winter and summer range differs in character between spring and fall movements. The movement is approximately 20 miles between the center of Heil Valley Ranch and the krummholz habitat above Lefthand Reservoir. Spring migration, generally occurring in late May, appears very concise, with animals moving from lower elevations to areas west of the Peak-to-Peak Highway in a few days. Fall migration begins in September, with most animals returning to the Heil Valley Ranch area by early October. Fall rutting may occur along the way or in the Heil Valley Ranch area.

Important Elk Activity and Movement Locations

There are several areas relative to Heil Valley Ranch 2 that merit further discussion due to their importance. These are areas that may be seasonally or locally used or traversed.

- **Winter Concentration Area and Severe Winter Range:** Heil Valley Ranch, open space lands along North Foothills Highway, and Heil Valley Ranch 2 provide the vast majority of important winter range for the North Boulder Elk Herd. Members of the elk herd are present for 6 to 8 months, spanning fall through spring, and some individuals stay year-round. The area along and east of the first hogback, as well as Upper Geer Canyon, are some of the most significant sites during winter for this herd.
- **Upper Geer Canyon:** Located west to northwest of Heil Valley Ranch 2, this area functions as Severe Winter Range and is a Winter Concentration area. Rutting and calving activities also occur in this area. This is also a staging area for all herd movements exiting and entering Heil Valley Ranch on its west side as virtually all migration goes through a pass located just to the west.
- **Hanging Meadow:** Located approximately one mile northeast of Heil Valley Ranch 2, this is a perched grassland that acts as a transition stop between Geer Canyon, elk range that is east of North Foothills Highway, and movement along the first hogback.

- **Movement:** There are movements by elk within North Foothills Open Space as well as movements outside to habitats east and west. Within Heil Valley Ranch, the open space properties along North Foothills Highway, and Heil Valley Ranch 2, a primary movement corridor is along and below the ridge of the first hogback. Since the trail system opened in 2001, the center of Heil Valley Ranch has seen less use by elk. But areas on either side of the trail system are used. Elk can travel almost 5 miles from the northeast portion of Heil Valley Ranch, including Loukonen and Cemex, to the upper portions of Geer Canyon in the southwest portion of Heil Valley Ranch.

The most common travel route is along or near the ridge of the first hogback. It spans north-south from near the Town of Lyons to Heil Valley Ranch 2. It connects a number of the activity locations on or near the hogback, including Hanging Meadow. From the east side of the ridge, groups of elk are able to stage their movement across North Foothills Highway. Groups of elk will also come off the ridge south of Hanging Meadow and make their way southwest to Upper Geer Canyon.

Heil Valley Ranch 2 is used as one of the movement corridors between the first hogback and Upper Geer Canyon. There is a break in the hogback near the northeast corner of Heil Valley Ranch 2 where the terrain is more suitable for movement up and down the backside of the hogback. Observations, tracks, and droppings suggest use of this opening in the hogback. Elk will cross Heil Valley Ranch 2. To the west, elk will use two main saddles along the top of the Overland Burn Ridge (second hogback) to move between Heil Valley Ranch 2 and Upper Geer Canyon.

It is noted that use of Heil Valley Ranch 2 by humans and elk has been changing. Use by the Heil family and their cattle of Heil Valley Ranch 2 has recently ceased. Since then, BCPOS staff observations suggest an increase in the use of the property by elk during the winter.

5.2.3 Mountain Lion and Bobcat

Heil Valley Ranch 2 is located within the active ranges of both mountain lions and bobcats (Alldredge 2014; Lewis and Crooks 2014). Several home ranges of female and male mountain lions can overlap on the property. A smaller number of bobcat home-ranges overlap the property.

One highway crossing location for bobcat and other animals to and from Heil Valley Ranch 2 has been noted by BCPOS staff. It is a crossing of Lefthand Canyon Drive and is located approximately halfway between Geer Canyon Drive and the complex of homes and outbuildings along Lefthand Canyon Drive on Heil Valley Ranch 2. Mule deer and wild turkey have also been observed using this crossing.

5.2.4 Mammal Species of Special Concern

Table 6 below is a list of potential federal and state listed species, state “Species of Concern,” imperiled species from the Colorado Natural Heritage Program’s (CNHP) online database (Colorado Natural Heritage Program 2015b), and Boulder County Wildlife Species of Special Concern (Boulder County 2014) that are potentially found on the property (see Appendix 5A for further definitions of federal, state, Boulder County, and CNHP definitions).

Table 6. Mammal Species of Special Concern

Common Name	Federal Status (1)	State Status (2)	CNHP (3)	Boulder County (4)
Thirteen-lined Ground Squirrel				5
Black-tailed Prairie Dog		SC	S3	2,3,6,9
American Beaver				5,6
Olive-backed Pocket Mouse			S3	5,10
Plains Pocket Mouse				5,10
Northern Pocket Gopher				10
Prebles Meadow Jumping Mouse	LT	ST	S1	1,2,5
Meadow Vole				5
Northern Rock Mouse				5
North American Porcupine				3
White-tailed Jackrabbit				5,10
Merriam's Shrew				5,10
Dwarf Shrew			S2	10
American Water Shrew				5
Least Shrew				5
Brazilian (Mexican) Free-tailed Bat			S1	4,8,9
Western Small-footed Myotis				5
Long-eared Myotis				4
Little Brown Myotis				5,9
Fringed Myotis			S3	2,4,5,8,9
Long-legged Myotis				5,8
Hoary Bat				4,8
Silver-haired Bat				5
Tricolored Bat				9
Big Brown Bat				9
Townsend's Big-eared Bat		SC	S2	2,3,4,9
Gray Fox				5,10
American Marten				2,5
Ringtail				4,10
American Mink				10
American Badger				3
Northern River Otter		LT		1,2,4
Rocky Mountain Bighorn Sheep				2,9
1. Federal Status Codes: FE = Federally Endangered; FT = Federally Threatened				
2. State Status Codes: SE = State Endangered; ST = State Threatened; SC = State Species of Concern (not a statutory category)				
3. Colorado Natural Heritage Program (CNHP) State Status Codes: S1 = Critically imperiled in state; S2 = Imperiled in state; S3 = Rare in state				
4. Boulder County Species of Special Concern Criteria: 1 = Federal or State status; 2 = Federal or State sensitive; 3 = population decline; 4 = naturally rare; 5 = isolated or restricted; 6 = large effect on ecosystem; 7 = extirpated; 8 = global concern; 9 = vulnerable; 10 = undetermined.				
For further explanations of federal, state, CNHP, and Boulder County status codes, refer to Appendix 5A.				

Thirteen-lined ground squirrels (*Ictidomys tridecemlineatus*) are typical of grasslands of short- and midgrasses (Armstrong *et al.* 2011). Their distribution in Boulder County is primarily on the eastern plains. The probability of occurrence on the property is low.

Black-tailed prairie dogs (*Cynomys ludovicianus*) are residents of the prairie on the eastern plains (Armstrong *et al.* 2011). They also extend into grasslands in the foothills. Several colonies are present on North Foothills Open Space. In the past, a small colony was active on Heil Valley Ranch 2 but is no longer present.

American beaver (*Castor canadensis*) occur along streams and rivers with suitable flow and food (Armstrong *et al.* 2011). On North Foothills Open Space one active lodge was present on Hall Ranch 2 on the South St. Vrain Creek, until the floods of September 2013. No beaver are present on Heil Valley Ranch 2, and it is doubtful that Geer Canyon Creek could support them.

The **Olive-backed pocket mouse** (*Perognathus fasciatus*) is an animal of mixed-prairie and shrub-steppe. In eastern Colorado they are restricted to grasslands along the western margin of the plains (Armstrong *et al.* 2011). The probability of occurrence on the property is low.

Plains pocket mice (*Perognathus flavescens*) occur in grasslands of sandy to sandy loam soils with mid-grass vegetation (Armstrong *et al.* 2011). The probability of occurrence on the property is low.

Northern pocket gophers (*Thomomys talpoides*) occur in grasslands and shrublands above 5,000 feet (Armstrong *et al.* 2011). The probability of occurrence on the properties is high.

Prebles meadow jumping mice (*Zapus hudsonius preblei*) occurs in heavy vegetation along watercourses (Armstrong *et al.* 2011). It is a federal and Colorado threatened species. They have not been documented on North Foothills Open Space nor the open space properties along North Foothills Highway, though several drainages on these properties closer to Lyons are mapped as occupied range (Colorado Parks and Wildlife 2014). The probability of occurrence on Heil Valley Ranch 2 is low.

Meadow voles (*Microtus pennsylvanicus*) are associated with moist habitats. In the foothills they are most common in marshy wetlands adjacent to riparian corridors (Armstrong *et al.* 2011). The probability of occurrence on the property is low.

Northern rock mice (*Peromyscus nasutus*) are restricted in geographic range in Colorado to the foothills of the Sangre de Cristos and the Front Range (Armstrong *et al.* 2011). They live in rocky canyons, cliffs, and exposed hogbacks that provide numerous cracks, fissures and overhanging ledges. They are also associated with shrublands. The probability of occurrence on the property is high.

North American porcupines (*Erethizon dorsatum*) are most common in forested regions, especially in mountainous areas with coniferous trees (Armstrong *et al.* 2011). The probability of occurrence on the property is high.

White-tailed jackrabbits (*Lepus townsendii*) are a species of open country: prairie, open parkland, and alpine tundra (Armstrong *et al.* 2011). Their populations on the plains

have apparently declined due to habitat changes that favor black-tailed jackrabbits. The probability of occurrence on the property is low.

Merriam's shrew (*Sorex merriami*) are distributed in Colorado over much of the lower foothills and mountains (Armstrong *et al.* 2011). They have been infrequently found. The probability of occurrence on the properties is low.

Dwarf shrews (*Sorex nanus*) may be present on the property in the coniferous forests. They are known in Colorado above 5,500' elevation, and are the state's smallest bodied mammal (Armstrong *et al.* 2011). The probability of occurrence on the property is low.

American water shrews (*Sorex palustris*) are found in mountainous areas from 6,000-10,000 feet and are restricted to riparian ecosystems (Armstrong *et al.* 2011). The probability of occurrence on the property is low.

Least shrews (*Cryptotis parva*) meet their western range limit on the Colorado Piedmont from Denver to Fort Collins (Armstrong *et al.* 2011). They use a wide variety of habitats. The probability of occurrence on the property is low.

Brazilian (Mexican) free-tailed bats (*Tadarida brasiliensis*) occur at low elevations, including foothill woodlands, arid grasslands, and semidesert shrublands (Armstrong *et al.* 2011). They generally roost in caves, mines, rock fissures, or buildings. They have recently been found on Heil Valley Ranch in Plumely Canyon and on Hall Ranch 2 (Adams 2014). The probability of occurrence on the property is moderate.

Western small-footed myotis (*Myotis ciliolabrum*) is found in Colorado below 8,500 feet (Armstrong *et al.* 2011). It is generally found in broken terrain of canyons and foothills and roosts in rock crevices, caves, dwellings, among rocks, and under bark. They have been found on Heil Valley Ranch, including a maternity roost in Geer Canyon (Adams 2004). The probability of occurrence on the property is high.

Long-eared myotis (*Myotis evotis*) inhabits ponderosa pine forests in Colorado (Armstrong *et al.* 2011). They have been found on Heil Valley Ranch, including a maternity roost (Adams 2002). The probability of occurrence on the property is high.

Little brown myotis (*Myotis lucifugus*) is common in wooded areas at elevations of 5,000-12,100 feet (Armstrong *et al.* 2011). They have been found on Heil Valley Ranch, including a maternity roost (Adams 2002). The probability of occurrence on the property is high.

Fringed myotis (*Myotis thysanodes*) is an animal of coniferous woodlands and shrublands at elevations up to 7,500 feet (Armstrong *et al.* 2011). They have been found on Heil Valley Ranch, including a maternity colony in a rock outcrop in Geer Canyon (Adams 2002). They have also been found in the northern portion of Heil Valley Ranch 2 (Adams 2003).

Long-legged myotis (*Myotis volans*) occupies montane forests, subalpine forests, and other habitats to over 12,400 feet. They roost in trees and other sites (Armstrong *et al.* 2011). They have been found on Heil Valley Ranch (Adams 2003). The probability of occurrence on the property is moderate.

Hoary bats (*Lasiurus cinereus*) probably occur throughout Colorado in suitable habitat, from the plains to about 10,200 feet (Armstrong *et al.* 2011). They use a variety of trees

as roost sites. They have been found on Heil Valley Ranch (Adams 2002). The probability of occurrence on the property is moderate.

Silver-haired bats (*Lasiorycteris noctivagans*) probably occur statewide at elevations of 4,500-9,500 feet. Most records are from along the mountain on either side of the Continental Divide (Armstrong *et al.* 2011). They have been found in Geer Canyon on Heil Valley Ranch (Adams 2002). The probability of occurrence on the property is high.

Tricolored bats (*Perimyotis subflavus*) is common in the eastern United States but considered rare in Colorado and their ecology is not well-known (Armstrong *et al.* 2011). However, definitive sonar calls have been recently been detected at Hall Ranch 2, suggesting the possibility of a colony (Adams 2013, 2014). The probability of occurrence on the property is moderate.

Big brown bats (*Eptesicus fuscus*) are found in almost every habitat in Boulder County and are common in urban areas. They are one of the most common bats in North America and occur throughout Colorado to elevations as high as 12,500 feet (Armstrong *et al.* 2011). They have been found on Heil Valley Ranch, including a maternity roost in Geer Canyon (Adams 2002). They have also been found in the northern portion of Heil Valley Ranch 2 (Adams 2003).

Townsend's big-eared bats (*Corynorhinus townsendii*) can occur in open montane forests. They are frequently associated with caves and abandoned mines for day roosts and hibernacula but will also use abandoned buildings and crevices on rock cliffs for refuge (Armstrong *et al.* 2011). They have been found on Heil Valley Ranch and a maternity colony was found in the South St. Vrain Canyon in 2001 (Adams 2007). The probability of occurrence on the property is moderate to high.

Gray foxes (*Urocyon cinereoargenteus*) are widely distributed along the foothills of the East Slope of the Front Range (Armstrong *et al.* 2011). In Boulder County, their habitat is usually rough broken terrain and shrublands of the lower montane. The probability of occurrence on the property is high.

American marten (*Martes americana*) is an inhabitant of subalpine spruce-fir and lodgepole pine forests and occasionally montane forests (Armstrong *et al.* 2011). It is generally associated with older growth stands. They have been found on Heil Valley Ranch. The probability of occurrence on the property is low.

Ringtails (*Bassariscus astutus*) inhabit rocky canyon country and foothills, including montane shrublands (Armstrong *et al.* 2011). Little is known of their occurrence in Boulder County. The probability of occurrence on the property is low.

American mink (*Mustela vison*) are obligate riparian animals, never being found far from streams, wetlands, or other surface waters (Armstrong *et al.* 2011). It is unknown if any inhabit Lefthand Canyon and its drainages. The probability of occurrence on the property is low.

American badger (*Taxidea taxus*) occurs in practically all habitat types in Colorado. They prefer open habitats and avoid densely wooded areas (Armstrong *et al.* 2011). The probability of occurrence on the property is moderate.

American river otters (*Lontra canadensis*) inhabit riparian areas that traverse ecosystems ranging from semidesert shrublands to montane and subalpine forests (Armstrong *et al.* 2011). They were extirpated from Colorado. Efforts to restore them to

the waters of the state began in the 1970s, with mixed results. Their current status in Boulder County is unknown. The probability of occurrence on the property is low.

Rocky Mountain bighorn sheep (*Ovis canadensis*) prefer mountainous areas of open habitat with grass, low shrubs, rock cover, and topographic relief (Armstrong *et al.* 2011). They were extirpated from Boulder County in the early 20th century. A small group was reintroduced into the North St. Vrain Canyon in 1980, where they persist today. They use the west portion of Hall Ranch as part of their range, as well as locations within the South St. Vrain Canyon. They are occasionally seen in other parts of the county. The probability of occurrence on the property is low.

5.2.5 Mammal Summary

The highlights of known mammal activity on or near Heil Valley Ranch 2 include the following:

1. American elk use the property for migration between Hanging Meadow, located along the first hogback approximately 1 mile to the northeast, and Upper Geer Canyon, located to the northwest (Hoerath 2007). They also use the property as part of their winter range.
2. Several bat species of special concern use the property. Geer Canyon, located northwest of the property, has high bat use and maternity roosts for several bat species of special concern. Species located in Geer Canyon include fringed myotis, big brown bat, western small-footed myotis, and silver-haired bat. A maternity colony is present in Geer Canyon for fringed myotis. Mist-netting on Heil Valley Ranch 2 found fringed myotis and big brown bat. The mist netting was conducted near Frog Pond (Adams 2003). Fringed myotis is a "clutter specialist," favoring denser forests for feeding. Water sources are one of the most important ecological limiting factors for bats (Adams 2003).
3. A wildlife movement corridor is present along the southern boundary of the property adjacent to Lefthand Canyon Drive. This is a highway crossing that links Heil Valley Ranch 2 to lands to the south and Lefthand Creek. Animals documented using this route include bobcat, mule deer, and wild turkey.
4. One of the most likely small-mammal species of special concern to be present on the property is northern rock mouse. It would most likely be found in the exposed rock ledges and shrublands on the backside of the first hogback.

5.3 Birds

Approximately 167 bird species could call the property home (Appendix 6A). Given the transitory nature of birds, this number could be higher and species not listed could be encountered. During the breeding season the avian community is dominated by neotropical migrants that are insectivores or omnivores, feed in the foliage of shrubs or trees, gather their food by gleaning or foraging, and nest in a shrub or tree.

Some of the more common species are generalists that can utilize the resources of several habitats. These include mourning dove (*Zenaida macroura*), broad-tailed hummingbird (*Selasphorus platycercus*), black-billed magpie (*Pica pica*), house wren (*Troglodytes aedon*), and American robin (*Turdus migratorius*). Common species of shrublands include blue-gray gnatcatcher (*Polioptila caerulea*), yellow-breasted chat (*Icteria virens*), spotted towhee (*Pipilo maculatus*), and lazuli bunting (*Passerina amoena*). Coniferous

woodlands and forests are dominated by Steller's jay (*Cyanocitta stelleri*), mountain chickadee (*Poecile gambeli*), Virginia's warbler (*Vermivora virginiae*), yellow-rumped warbler (*Dendroica coronata*), chipping sparrow (*Spizella passerina*), and dark-eyed junco (*Junco hyemalis*). Common species of riparian areas include warbling vireo (*Vireo gilvus*), black-capped chickadee (*Poecile atricapillus*), yellow warbler (*Dendroica petechia*), and song sparrow (*Melospiza melodia*). The most common nesting species in grasslands is vesper sparrow (*Pooecetes gramineus*). Wild turkey (*Melegris gallapavo*) roam throughout.

5.3.1 Avian Species of Special Concern

Table 7 is a list of potential federal and state listed species, state “Species of Concern,” imperiled species from the Colorado Natural Heritage Program’s (CNHP) online database (Colorado Natural Heritage Program 2015b), and Boulder County Wildlife Species of Special Concern (Boulder County 2014) that are potentially found on the property (see Appendix 5A for further definitions of federal, state, CNHP, and Boulder County definitions).

There is not suitable nesting habitat on the property for **Great blue heron** (*Ardea herodias*), **black-crowned night-heron** (*Nycticorax nycticorax*), **bald eagle** (*Haliaeetus leucocephalus*), **northern harrier** (*Circus cyaneus*), **ferruginous hawk** (*Buteo regalis*), **horned lark** (*Eremophila alpestris*), **bank swallow** (*Riparia riparia*), **Wilson's warbler** (*Wilsonia pusilla*), **Cassin's sparrow** (*Aimophia cassinii*), **lark bunting** (*Calamospiza melanocorys*), **grasshopper sparrow** (*Ammodramus savannarum*), and **fox sparrow** (*Passerella iliaca*). They may occasionally be present during migration or while searching for food.

Northern goshawks (*Accipiter gentilis*) prefer montane and subalpine forests and have been found nesting on Heil Valley Ranch. The probability of occurrence on the property is moderate to high.

Golden eagles (*Aquila chrysaetos*) are generally cliff-nesting raptors. They are known to nest on Heil Valley Ranch and in Lefhand Canyon. The probability of occurrence on the property is high, primarily searching for food.

Prairie falcons (*Falco mexicanus*) are cliff-nesting raptors, reaching their highest abundance in the foothills and canyons. They are known to nest on Heil Valley Ranch. The probability of occurrence on the property is high, primarily searching for food.

American peregrine falcons (*Falco peregrinus*) are cliff-nesting raptors, reaching their highest abundance in the foothills and canyons. They are known to nest in South St. Vrain Canyon. The probability of occurrence on the property is high, primarily searching for food.

Band-tailed pigeons (*Patagioenas fasciata*) favor nesting in ponderosa pine and other types of coniferous and mixed forest, though little is known about the extent of their breeding population in Boulder County. The probability of occurrence on the property is moderate.

Table 7. Avian Species of Special Concern

Common Name	Federal Status (1)	State Status (2)	CNHP (3)	Boulder County (4)
Great Blue Heron				5
Black-crowned Night-Heron				5
Bald Eagle		ST	S1B,S3N	1,2,5
Northern Harrier				2,3,4,5
Northern Goshawk				2,5
Ferruginous Hawk		SC	S3B,S4N	2,3,5
Golden Eagle				2,5
Prairie Falcon			S4B,S4N	2,5
Peregrine Falcon		SC	S2B	2,4,5
Band-tailed Pigeon				10
Flammulated Owl				2,5
Long-eared Owl				3
Belted Kingfisher				3
Lewis's Woodpecker			S4	2,3,5
Red-headed Woodpecker				3,5,10
Three-toed Woodpecker				2,5
Northern Flicker				3
Olive-sided Flycatcher				2,5
Willow Flycatcher			S4	1,2,3,5
Loggerhead Shrike				2,3,5
Plumbeous Vireo				3,5
Western Scrub-Jay				5
Horned Lark				3
Bank Swallow				3
Bushtit				5
Rock Wren				3
American Dipper				5
Golden-crowned Kinglet				5
Veery			S3B	2,4,5
Northern Mockingbird				4,5
Sage Thrasher				4,5
Cedar Waxwing				4,5
Virginia's Warbler				8
American Redstart				4
Ovenbird			S2B	4
Wilson's Warbler				3,5
Cassin's Sparrow			S4B	2,3
Lark Bunting				2,3
Grasshopper Sparrow				2,3,5
Fox Sparrow				5

Lazuli Bunting				3
Pine Siskin				3
1. Federal Status Codes: FE = Federally Endangered; FT = Federally Threatened				
2. State Status Codes: SE = State Endangered; ST = State Threatened; SC = State Species of Concern (not a statutory category)				
3. Colorado Natural Heritage Program (CNHP) Status Codes: S1 = Critically imperiled in state; S2 = Imperiled in state; S3 = Rare in state; S4 = Secure, Rare in Parts of Range; B = Breeding; N = Nonbreeding.				
4. Boulder County Species of Special Concern Criteria: 1 = Federal or State status; 2 = Federal or State sensitive; 3 = population decline; 4 = naturally rare; 5 = isolated or restricted; 6 = large effect on ecosystem; 7 = extirpated; 8 = global concern; 9 = vulnerable; 10 = undetermined.				
For further explanations of federal, state, CNHP, and BCNA status codes, refer to Appendix 4B.				

Flammulated owls (*Otus flammeolus*) favor open ponderosa pine woodlands for nesting and hunting for food. They have been detected on North Foothills Open Space. The probability of occurrence on the property is high.

Long-eared owls (*Asio otus*) breed in deciduous and coniferous forests, generally near water. They are known to nest on Heil Valley Ranch about .5 mile to the north of Heil Valley Ranch 2. The probability of occurrence on the property is high.

Belted kingfishers (*Ceryle alcyon*) are denizens of streams and riparian habitat. They are known to be present along Lefthand Creek and could likely utilize Geer Canyon Creek, particularly the southern portion on Heil Valley Ranch 2, which contains the best quality riparian habitat on the property. The probability of occurrence on the property is high.

Lewis's woodpeckers (*Asyndesmus lewis*) prefer open pine forests, burnt-over areas, and riparian forests for habitat. They specialize in flycatching their food and need open habitat. They have been documented nesting in the Overland burn area on the second hogback, just west of the property. The probability of occurrence on the property is high.

Red-headed woodpeckers (*Melanerpes erythrocephalus*) prefer open woodlands, riparian forests, and burnt-over areas. They specialize in gleaning insects from the ground and hawking them in the air. They have been documented nesting in the Overland burn area on the second hogback, just west of the property. The probability of occurrence on the property is high.

American three-toed woodpeckers (*Picoides dorsalis*) are generally considered a species of subalpine forests, but are also present at lower elevations in forests generally with large-diameter trees and/or with bark beetles. They also favor recent burnt-over areas. They have been documented in the western portion of Heil Valley Ranch. The probability of occurrence on the property is moderate.

Northern Flickers (*Colaptes auratus*) are considered declining in some parts of the country. They tend to be an edge species, nesting in tree cavities while feeding on the ground in grasslands. They have been documented nesting on Heil Valley Ranch. The probability of occurrence on the property is high.

Olive-sided flycatchers (*Contopus cooperi*) are considered a restricted species in Boulder County. They commonly breed in the solitude of the forests where their breeding habitat has three basic components: snags, conifers, and openings. They have

been documented on Heil Valley Ranch. The probability of occurrence on the property is high.

Willow flycatchers (*Empidonax traillii*) breed primarily in patches of willow and alder along foothill streams. Once a fairly common breeder in Boulder County, they have not been documented as breeding for several decades. The probability of occurrence on the property is low.

Loggerhead shrikes (*Lanius ludovicianus*) favor open country with scattered trees and shrubs for nesting. Abandoned farmyards and riparian areas are common nesting sites. There are few recently documented nesting sites in Boulder County. The probability of occurrence on the property is low for nesting and moderate during migration.

Plumbeous vireos (*Vireo plumbeus*) favor ponderosa pine woodlands for nesting habitat in Boulder County. They are known to nest on Heil Valley Ranch. The probability of occurrence on the property is high.

Western Scrub-Jays (*Aphelocoma coerulescens*) favor shrublands for nesting habitat, particularly scrub oak, which is not present in Boulder County. Their breeding range extends up the Front Range, but their numbers diminish north of about Castle Rock, the approximate northern extent of scrub oak. They are known to nest on Heil Valley Ranch. The probability of occurrence on the property is high.

Bushtits (*Psaltriparus minimus*) favor shrublands for nesting in Boulder County. They are another species not common in the northern Front Range as their main habitat, piñon/juniper woodlands, is not present. They are known to nest on Heil Valley Ranch. The probability of occurrence on the property is high.

Rock wrens (*Salpinctes obsoletus*) are considered a restricted breeder in Boulder County, generally only found around rock outcrops with sparse vegetation. They are present on Heil Valley Ranch on the backside of hogbacks and in burn areas. They were present at three locations on Heil Valley ranch 2, two of these on the backside of the first hogback. They were also observed in the Overland fire burn area to the west of the property.

American dippers (*Cinclus mexicanus*) spend their lives along fast-moving streams. They are present along Lefthand Creek. Though Geer Canyon Creek is suboptimal habitat, they could be present. The probability of occurrence on the property is moderate to high.

Golden-crowned kinglets (*Regulus satrapa*) are considered a restricted species in Boulder County. They favor coniferous forests with old-growth characteristics. They have been observed at scattered locations on Heil Valley Ranch. Nesting habitat on the property is suboptimal. Their presence would most likely occur during migration or winter. The probability of occurrence on the property is moderate.

Veeries (*Catharus fuscescens*) favor damp habitats with thick understories for nesting. While they are occasionally found in the foothills of Boulder County, there are few breeding records. Habitat is suboptimal on the property for nesting, but they could be seen during migration. Probability of occurrence on the property is low.

Northern mockingbirds (*Mimus polyglottos*) generally find suitable habitat in windbreaks and shrubs on the eastern plains, but may also be present in foothill shrublands. They have been found on Heil Valley Ranch. The probability of occurrence on the property is moderate.

Sage thrashers (*Oreoscoptes montanus*) favor sagebrush dominated rangelands in the San Luis Valley, North Park and, northwest Colorado. They are occasionally found in shrublands in the foothills, and have been found on Heil Valley Ranch. The probability of occurrence on the property is low.

Cedar waxwings (*Bombycilla cedrorum*) prefer riparian deciduous habitat for breeding. They are rare nesters in Boulder County and would more likely be seen during migration. The probability of occurrence on the property is low.

Virginia's warblers (*Vermivora virginiae*) prefer foothill shrublands, ponderosa pine woodlands (often with a shrub understory), and riparian woodlands for nesting. They have been documented on Heil Valley Ranch. They were detected in three locations on Heil Valley Ranch 2, including two in the shrublands on the backside of the first hogback.

American redstarts (*Septophaga ruticilla*) favor open, moist, deciduous woodlands with good undergrowth for nesting. They are rare breeders in Colorado and naturally rare in Boulder County. The probability of occurrence on the property is low.

Ovenbirds (*Seiurus aurocapillus*) favor large blocks of closed-canopy deciduous forests, including tall oaks, for nesting. They are rare breeders in Colorado and naturally rare in Boulder County. The probability of occurrence on the property is low.

Brewer's sparrows (*Spizella breweri*) favor sagebrush shrublands for nesting throughout its range in Colorado, but other types of shrublands are sometimes chosen. They have been documented on Hall Ranch 2. The probability of occurrence on the property is low.

Lazuli buntings (*Passerina amoena*) favor foothills shrublands for nesting. They have been documented nesting on Heil Valley Ranch. One was located on Heil Valley Ranch 2 in the shrublands on the backside of the first hogback.

Pine siskin (*Spinus pinus*) is considered declining in some parts of the country. They inhabit conifer forests, generally with closed canopies. They have been documented on Heil Valley Ranch. The probability of occurrence on the property is moderate.

Several other avian species have been documented on the property and merit notice. A **sharp-shinned hawk** (*Accipiter striatus*) has nested in the dense conifer forest located just east of Geer Canyon Drive in the northern portion of the property. **Wild turkeys** (*Melegris gallapavo*) are present throughout Heil Valley Ranch and Heil Valley Ranch 2. A group of turkeys concentrate winter use on Heil Valley Ranch 2. The birds have been fed by residents of the subdivisions to the east, as well as the Heils when they were present. A **northern pygmy-owl** (*Glaucidium gnoma*) has been heard calling near the northwest corner of Heil Valley Ranch 2.

5.3.2 Bird Summary

The highlights of known avian activity on or near Heil Valley Ranch 2 include the following:

1. The woodlands, shrublands, and rock outcrops of the backside of the first hogback is significant avian habitat. Three Boulder County Species of Special Concern were located in this area, including multiple Virginia's warblers and rock wrens,

and a lazuli bunting. This is also the most likely habitat for western scrub-jays and bushtits, also species of concern.

2. Heil Valley Ranch 2 is the eastern buffer to the Overland Burn area, located west of the property on the second hogback. Lewis's woodpeckers and red-headed woodpeckers have been documented nesting in the burn area. Rock wrens are also present. Burn areas are unique habitats, providing an abundance of standing dead trees for primary and secondary cavity nesters during the several decades the trees remain standing.

5.4 Amphibians and Reptiles

Fifteen amphibian and reptile species could reside on the property (Appendix 6A). Three species of amphibian and one species of reptile have been observed. The most common amphibian is likely the chorus frog (*Pseudacris triseriata*). Common reptiles are plateau lizard (*Sceloporus undulatus*) and western terrestrial garter snake (*Thamnophis elegans*).

5.4.1 Amphibian and Reptile Species of Special Concern

Table 8 below is a list of potential federal and state listed species, state “Species of Concern,” imperiled species from the Colorado Natural Heritage Program’s (CNHP) online database (Colorado Natural Heritage Program 2015b), and Boulder County Wildlife Species of Concern (Boulder County 2014) that are potentially found on the property (see Appendix 5A for further definitions of federal, state, CNHP, and Boulder County definitions).

Table 8. Amphibian and Reptile Species of Special Concern

Common Name	Federal Status (1)	State Status (2)	CNHP (3)	Boulder County (4)
Amphibians				
Tiger Salamander				9
Western Chorus Frog				9
Northern Leopard Frog		SC	S3	2
Reptiles				
Milk Snake				4,9
Common Garter Snake			SC	2,3
1. Federal Status Codes: FE = Federally Endangered; FT = Federally Threatened				
2. State Status Codes: SE = State Endangered; ST = State Threatened; SC = State Species of Concern (not a statutory category)				
3. Colorado Natural Heritage Program (CNHP) Status Codes: S1 = Critically imperiled in state; S2 = Imperiled in state; S3 = Rare in state				
4. Boulder County Species of Special Concern Criteria: 1 = Federal or State status; 2 = Federal or State sensitive; 3 = population decline; 4 = naturally rare; 5 = isolated or restricted; 6 = large effect on ecosystem; 7 = extirpated; 8 = global concern; 9 = vulnerable; 10 = undetermined.				
For further explanations of federal, state and CNHP status codes, refer to Appendix 4B.				

Tiger Salamanders (*Ambystoma tigrinum*) occur throughout Colorado up to about 12,000 feet and favor ponds where there are no trout (Hammerson 1999). They may wander far from water. They are known to occur on Heil Valley Ranch and have been observed at "Frog Pond" on Heil Valley Ranch 2 (Chu 2013).

Western chorus frogs (*Pseudacris triseriata*) occur along the edges of bodies of water and also range into wet meadows in the mountains of Colorado (Hammerson 1999). They are known to occur on Heil Valley Ranch. They have also been documented on Heil Valley Ranch 2 at "Frog Pond" and in Geer Canyon Creek.

The **northern leopard frog** (*Rana pipiens*) may occur near wet meadows and the banks and shallows of marshes, ponds, lakes, reservoirs, streams, irrigation ditches, stock ponds, and stock tanks, as well as playas with fairly regular water. They may wander far from permanent water, particularly during wet weather (Hammerson 1999). They have been documented on Hall 2. The probability of occurrence on the property is low to moderate.

Milk snakes (*Lampropeltis triangulum*) occur in a wide variety of habitats in Colorado, including shrubby hillsides, canyons, and ponderosa pine in the foothills (Hammerson 1999). They are considered naturally rare in Boulder County, though their habit of staying well-hidden during the day while being active at night, may contribute to this perception. They have been observed on Heil Valley Ranch (Chu 2013). The probability of occurrence on the property is moderate.

Common garter snakes (*Thamnophis sirtalis*) are found below 6,000 feet along the eastern base of the Front Range and extending east along the South Platte River drainage (Hammerson 1999). They inhabit marshes, ponds, and the edges of streams. The probability of occurrence on the property is low.

5.4.2 Amphibian and Reptile Summary

The highlights of known amphibian and reptile activity on or near Heil Valley Ranch 2 include the following:

1. Western chorus frogs and tiger salamanders have been present in Frog Pond Geer, while western chorus frogs have also been observed along Geer Canyon Creek.

5.5 Butterflies

Regular inventories of butterflies on Heil Valley Ranch began in 2002, documenting the species present, population changes, and searches for species of concern (Chu 2006, 2009, 2010, 2011, 2013; Chu *et al.* 2004, 2005). The Colorado Natural Heritage Program also surveyed for butterflies during their fieldwork for the initial planning of North Foothills Open Space (Kettler *et al.* 1996) and their more recent inventory of Boulder County (Neid *et al.* 2009). None of the surveys have been specific to Heil Valley Ranch 2, though the Frog Pond area has received some attention (Chu 2013).

Some of the more common butterfly species of Heil Valley Ranch, which are likely to be present on Heil Valley Ranch 2, include pale swallowtail (*Papilio eurymedon*), western pine elfin (*Callophrys erphon*), silvery blue (*Glaucopsyche lygdamus*), Rocky Mountain dotted-blue (*Euphilotes ancilla*), Boisduval's blue (*Plebejus icarioides*), Aphrodite fritillary (*Speyeria aphrodite*), hoary comma (*Polytonia gracilis*), mourning cloak (*Nymphalis antiopa*), ochre (common) ringlet (*Coenonympha tullia ochracea*), and Persius duskywing (*Erynnis persius*).

5.5.1 Butterfly Species of Concern

Table 9 below is a list of potential federal and state listed species, state “Species of Concern,” imperiled species from the Colorado Natural Heritage Program’s (CNHP) online database (Colorado Natural Heritage Program 2015b), and Boulder County Wildlife Species of Concern (Boulder County 2014) that are potentially found on the property (see Appendix 5A for further definitions of federal, state, CNHP, and Boulder County definitions).

Table 9. Butterfly Species of Special Concern

Common Name	Federal Status (1)	State Status (2)	CNHP (3)	Boulder County (4)
Moss' Elfin			S2,S3	4,5
Hops Feeding Azure			S2	4,5,9
Colorado Blue			S2	4,10
Regal Fritillary			S1	2,3,5
Mottled Duskywing			S2,S3	4,5
Ottoo Skipper			S2	2,4,5
Rhesus Skipper			S2,S3	3,4
Cross-line Skipper			S3	4,5
Arogos Skipper			S2	4,5
Snow's Skipper			S3	3,5
Dusted Skipper			S2	4,5
Simius Roadside Skipper			S3	3,5
1. Federal Status Codes: FE = Federally Endangered; FT = Federally Threatened				
2. State Status Codes: SE = State Endangered; ST = State Threatened; SC = State Species of Concern (not a statutory category)				
3. Colorado Natural Heritage Program (CNHP) Status Codes: S1 = Critically imperiled in state; S2 = Imperiled in state; S3 = Rare in state; S4 = Secure, Rare in Parts of Range; B = Breeding; N = Nonbreeding.				
4. Boulder County Species of Special Concern Criteria: 1 = Federal or State status; 2 = Federal or State sensitive; 3 = population decline; 4 = naturally rare; 5 = isolated or restricted; 6 = large effect on ecosystem; 7 = extirpated; 8 = global concern; 9 = vulnerable; 10 = undetermined.				
For further explanations of federal, state, CNHP, and BCNA status codes, refer to Appendix 4B.				

Moss' elfin (*Callophrys mossii*) is found in rocky situations in the mountains with the foodplant stonecrop (Glassberg 2001). They have been observed at Hall 2 (Chu 2013). The probability of occurrence on the property is moderate to high.

Hops feeding azure (*Celastrina humulus*) is found on the edges of canyon bottoms and steep rock slopes, generally in association with the foodplant hops. They have been documented on Heil Valley Ranch (Chu 2010; Kettler *et al.* 1996). The probability of occurrence on the property is moderate.

Colorado blue (*Euphilotes rita coloradensis*) is found on prairies, foothills, and plateaus, generally in association with the foodplant buckwheat (Glassberg 2001). The probability of occurrence on the property is low to moderate.

Regal fritillary (*Speyeria idalia*) is found in tallgrass prairie, wet field and meadows, and occasionally shorgrass prairie, generally in association with the foodplant violets (Glassberg 2001). The probability of occurrence on the property is low.

Mottled duskywing (*Erynnis martialis*) is found in open wooded areas with sites for hilltopping, often in association with the foodplant ceanothus (Glassberg 2001). The probability of occurrence on the property is moderate.

Ottoo skipper (*Hesperia ottoe*) is found in tallgrass and shortgrass prairies, especially along ridgetops (Glassberg 2001). They have been documented on Heil Valley Ranch (Kettler *et al.* 1996). The probability of occurrence on the property is low to moderate.

Rhesus skipper (*Polites rhesus*) is found on high-elevation shortgrass prairie, generally in association with the foodplant blue grama (Glassberg 2001). The probability of occurrence on the property is low.

Cross-line skipper (*Polites origenes*) is found in low-elevation grassy meadows and fields (Glassberg 2001). The probability of occurrence on the property is low.

Arogos skipper (*Atrytone aragos*) is found in tallgrass and mixed-grass prairies, generally with the foodplants bluestem grasses (Glassberg 2001). They have been documented on Heil Valley Ranch (Chu 2010; Kettler *et al.* 1996). The probability of occurrence on the property is moderate.

Snow's skipper (*Paratrytone snowi*) is found in moist openings in pine forests (Glassberg 2001). The probability of occurrence on the property is low to moderate.

Dusted skipper (*Atrytonopsis hianna*) is found on prairies and openings in pine woodlands with bluestem grasses (Glassberg 2001). The probability of occurrence on the property is low.

Simius roadside skipper (*Amblyscirtes simius*) is found in shortgrass prairie with the foodplant blue grama (Glassberg 2001). The probability of occurrence on the property is low.

5.5.2 Butterfly Summary

The highlights of known butterfly activity on or near Heil Valley Ranch 2 include the following:

1. Several of the species of concern are known from Heil Valley Ranch - Moss' elfin, hops feeding azure, Ottoo skipper, cross-line skipper, and Arogos skipper. The major foodplants for a number of the species of concern, particularly the bluestem grasses of tallgrass prairie, blue grama, and hops, are not common or have yet to be found on Heil Valley Ranch 2, limiting the potential presence of the associated butterflies.

6.0 SIGNIFICANT RESOURCES

6.1 Significant Resources Present on the Property

Contextually, Heil Valley Ranch 2 is located within the Front Range hogback system and encompasses the valley between the first and second hogbacks. Historically, the property received some of the most intense use of the Heil family ranching operation. Currently, the primary access road to Heil Valley Ranch Open Space bisects Heil Valley Ranch 2 from south to north. Some of the most important ecological features of the area containing Heil Valley Ranch 2 are found on its east and west sides.

The eastern boundary of the property is the backside of the first hogback. It is probably the most significant site on the property as it provides structural and habitat diversity for small mammals, reptiles, and birds and helps define the movement of large mammals.

The slope of the second hogback is located just west of Heil Valley Ranch 2. Much of it burned during the Overland Fire. It contains a unique vegetative community, a post-fire stand of standing and fallen dead trees that present a unique opportunity for animals that require such site features. For primary and secondary cavity nesting birds, this is an area that will provide abundant resources for shelter over several decades. Several species of concern now reside in the burn area, including Lewis's woodpecker and Red-headed woodpecker, both cavity nesting birds. The upper rock outcrop appears to be an important area for mountain lion, black bear, coyote and red fox, based on animal signs and sightings. Heil Valley Ranch 2 buffers this area.

With this context in mind, several significant biological resources are present on Heil Valley Ranch 2. These are described below and displayed on Figure 8 (found in Appendix 1). The number of each resource listed below corresponds with significant resource numbers found on Figure 8.

1. Backside of First Hogback: This site is important wildlife habitat due to structural diversity of the landscape and vegetation. Some of the elements present include:

- **Shrublands:** Shrublands dominated by mountain mahogany and skunkbrush are present on this steep hillside. The shrublands of North Foothills Open Space are significant due to their overall size and extent - no other place in Boulder County contains shrublands of this magnitude. At this site, the shrublands are mixed with ponderosa pine and junipers along with cliffs and rock outcrops, which adds to the structural diversity. Animals that reside or breed in shrublands likely reach their highest densities in this part of the county. Shrubland loving avian species of concern that were documented on the backside of the first hogback were Virginia's warbler (multiple sites) and Lazuli bunting.
- **Cliffs and Rock Outcrops:** These features are an integral part of the backside of the hogback. The uplifting of sedimentary rocks results in a gently sloped front side, which then drops off on the backside exposing the rock strata. The exposed cliffs and rock outcrops provide good habitat for many types of small mammals and reptiles. Multiple rock wrens, a species of concern, were documented in this area.

- **Elk Movement:** The cliffs also influence movement of large mammals. The elk herd using Heil Valley Ranch will move north-south along the top of the hogback on the gentler east slope, but will move east-west between the hogback and upper Geer Canyon where there is a break in the hogback in the northeast portion of Heil Valley Ranch 2. It is likely that other large mammals, such as black bear and mule deer, will also move through this break in the rocks. A further description of elk use of this area is found in Section 5.2.2 of this report.
- **Raptor Movement and Hunting:** Observations of raptors, including golden eagles, prairie falcons, red-tailed hawks, and American kestrels, indicate that the top of the hogback is an important area for their movement and hunting for food. The height of the uplifted sedimentary rock creates local air currents and thermals that make the north-south hogback ridge an important area for raptor movement. There are also abundant food resources in the cliffs and rock outcrops in the form of small mammals, reptiles, and birds. Large cliffs can be suitable for raptor nesting, which occurs in several locations on North Foothills Open Space, as well as Lefthand Canyon. The cliffs on the backside of the hogback on Heil Valley Ranch 2 may not be extensive enough to be suitable for nesting, but should be monitored.

2. New Mexico Feathergrass Grassland: This is an important plant community that is globally vulnerable and rare in Colorado. This is a narrow stand that follows an outcrop of Forelle Limestone. Needle-and-thread is also present as are scattered ponderosa pine. The presence of this native grassland stands out on the property as so much of Heil Valley Ranch 2 was heavily grazed and converted to nonnative grasses and annual forbs. Further descriptions of this site are found in Sections 4.2.3 and 4.3.2 of this report.

3. Needle-and-Thread Grassland: This grassland type is critically imperiled to imperiled globally and critically imperiled in Colorado. Other characteristic grasses include New Mexico feathergrass, Nelson needlegrass, three-awn, blue grama, Scribner needlegrass, and western wheatgrass. Due to past grazing on Heil Valley Ranch 2, there is also considerable Kentucky bluegrass, Japanese brome, Canada bluegrass, and cheatgrass. Scattered ponderosa pine and Rocky Mountain juniper are also present. Further descriptions of this site are found in Sections 4.2.2 and 4.3.2 of this report.

4. Frog Pond: On the west side of Geer Canyon Drive in the northwest portion of the property is a small semipermanently flooded pond commonly called Frog Pond. Frog Pond was impacted by the 2013 flood, bringing silt into the pond. It will need time to recover. Some of the elements present include:

- Two amphibian species of special concern, tiger salamander and western chorus frog, have been documented at the pond.
- Several bat species of special concern use the pond for water. Geer Canyon, located northwest of the pond, has high bat use and maternity colonies or roosts for several bat species of special concern. Mist-netting on Heil Valley Ranch 2 found fringed myotis and big brown bat. The mist netting was conducted near Frog Pond (Adams 2003). Fringed myotis is a "clutter specialist," favoring denser forests for feeding. Water sources are one of the most important ecological limiting factors for bats (Adams 2003).
- The pond, perimeter wetland, and wet ground are also known as a concentration area for butterflies and dragonflies (Chu 2013).

5. Wildlife Movement Corridors: Two wildlife movement corridors have become evident on Heil Valley Ranch 2:

- Heil Valley Ranch 2 is used by elk as one of the movement corridors between the first hogback and Upper Geer Canyon. There is a break in the hogback near the northeast corner of Heil Valley Ranch 2 where the terrain is more suitable for movement up and down the backside of the hogback. Observations, tracks, and droppings suggest use of this opening in the hogback. Elk will cross Heil Valley Ranch 2. To the west, elk will use two main saddles along the top of the Overland Burn Ridge (second hogback) to move between Heil Valley Ranch 2 and Upper Geer Canyon.
- One highway crossing location for bobcat and other animals to and from Heil Valley Ranch 2 has been noted by BCPOS staff. It is a crossing of Lefthand Canyon Drive and is located approximately halfway between Geer Canyon Drive and the complex of homes and outbuildings along Lefthand Canyon Drive on Heil Valley Ranch 2. Mule deer and wild turkey have also been observed using this crossing.

6. Riparian Corridors: The riparian areas along Lake Ditch and Geer Canyon Creek are noted due to the high values of riparian habitat. Geer Canyon Creek was heavily impacted by the 2013 floods, but will recover over time. The lower portion of Geer Canyon Creek, where Lake Ditch runs parallel, has the highest value at this time. Chorus frogs were present, before the flood, in the upper portion of Geer Canyon opposite Frog Pond.

The stand of ponderosa pine forest in the north-central portion of the property needs mention (Polygon 20 in Figure 6). Heil Valley Ranch 2 is mostly open grassland or woodland. This is the only patch of denser forest and is located on the east side of Geer Canyon Drive across from Frog Pond. It acts as a buffer (visual cover) between the road and the hogback to the east, which contains the main movement corridor through the first hogback. Also, since the slope of the second hogback burned, this patch of forest likely takes on increased importance for hiding and thermal cover for wildlife. A sharp-shinned hawk has nested in this patch of forest. Clutter specialist bat species are known to get water at Frog Pond and likely feed in this patch of forest.

7.0 BIBLIOGRAPHY

- Adams, R. A. 2002. 2002 final report: census and radio telemetry of bats at Heil Valley Ranch. Prepared for Boulder County Parks and Open Space.
- Adams, R. A. 2003. Continued study of bat abundance and distribution at Heil Valley Ranch and the effects of forest thinning on bat foraging activities in foothills ecosystems, final report 2003. Prepared for Boulder County Parks and Open Space.
- Adams, R. A. 2004. Bat species abundance and distribution, the effects of forest thinning and burning on bat foraging activity, incidence of West Nile virus infection in bats, at Heil Valley Ranch, 2004. Prepared for Boulder County Parks and Open Space.
- Adams, R. A. 2005. Bat species abundance and distribution, the effects of forest thinning and burning on bat foraging activity, incidence of West Nile virus in bats, and calcium water hole experiments at Heil Valley Ranch, 2005. Prepared for Boulder County Parks and Open Space.
- Adams, R. A. 2006. Bat species abundance and distribution, the effects of forest thinning and burning on bat foraging activity, incidence of West Nile virus in bats, and calcium water hole experiments at Heil Valley Ranch, 2006. Prepared for Boulder County Parks and Open Space.
- Adams, R. A. 2007. Bat species abundance and distribution, the effects of forest thinning and burning on bat foraging activity, incidence of West Nile virus in bats, and water hole experiments at Heil Valley Ranch, 2007. Prepared for Boulder County Parks and Open Space.
- Adams, R. A. 2008. Bat species abundance and distribution, incidence of West Nile virus in bats, and water hole experiments at Heil Valley Ranch, report 2008. Prepared for Boulder County Parks and Open Space.
- Adams, R. A. 2010. Quantifying bat species usage, abundance, diversity and foraging patterns in relation to mastication forest mosaics at Heil Valley Ranch, report 2010. Prepared for Boulder County Parks and Open Space.
- Adams, R. A., and K. Craven. 2011. Quantifying bat species usage, abundance, diversity and foraging patterns in relation to mastication forest mosaics at Heil Valley Ranch, report 2011. Prepared for Boulder County Parks and Open Space.
- Adams, R. A., and K. Craven. 2012. Modeling of the effects on bats of forest structure changes caused by fire and human manipulation. Prepared for Boulder County Parks and Open Space.
- Adams, R. A. 2013. Modeling of the effects on bats of forest structure changes caused by fire and human manipulation. Prepared for Boulder County Parks and Open Space.
- Adams, R. A. 2014. Report on continued research on the effects on bats of forest structure changes caused by fire and human manipulations, dietary and heavy metal

- contamination analysis and bats at Hall II. Prepared for Boulder County Parks and Open Space.
- Allredge, M. W. 2014. Cougar demographics and human interactions along the urban-exurban Front-Range of Colorado. Wildlife Research Report, Colorado Parks and Wildlife.
- Andrews, Robert, and Robert Righter. 1992. Colorado Birds: A Reference to Their Distribution and Habitat. Denver Museum of Natural History.
- Armstrong, D. M. 1972. Distribution of Mammals in Colorado. Monograph of the University of Kansas Museum of Natural History No. 3. University of Kansas Printing Service, Lawrence.
- Armstrong, David M, James P. Fitzgerald, and Carron A. Meaney. 2011. Mammals of Colorado Second Edition. Denver Museum of Nature and Science and University Press of Colorado.
- Benedict, Audrey D. 1991. A Sierra Club Naturalists Guide to the Southern Rocky Mountains. Sierra Club Books, San Francisco.
- Boulder County. 1999. Boulder County Comprehensive Plan Second Edition. May 27, 1999.
- Boulder County. 2009. Boulder County Comprehensive Plan Goals Update. December 16, 2009.
- Boulder County. 2014. Boulder County Environmental Resources Element of the Boulder County Comprehensive Plan.
- Boulder County Parks and Open Space. 1996. North Foothills Open Space Management Plan. Volume I - Resource Evaluation; Volume II - Management Direction and Visitor Use Plan.
- Boulder County Parks and Open Space. 2010. Boulder County Parks and Open Space Forest Management Policy. Approved May 25, 2010.
- Braddock, William A., Rodney G. Houston, Roger B. Colton, and James C. Cole. 1988. Geologic Map of the Lyons Quadrangle, Boulder County, Colorado. U.S. Geological Survey Map GQ-1629.
- Buchholtz, C. 1983. Rocky Mountain National Park: A History. Colorado Associated University Press, Boulder.
- Chapman, S.S., Griffith, G.E., Omernik, J.M., Price, A.B., Freeouf, J., and Schrupp, D.L., 2006. Ecoregions of Colorado (color poster with map, descriptive text, summary tables, and photographs): Reston, Virginia, U.S. Geological Survey (map scale 1:1,200,000).
- Chronic, Halka and Felicie Williams. 2002. Roadside Geology of Colorado. Mountain Press Publishing.

- Chu, Janet. 2006. Butterfly inventory and research on open space properties - small grants program 2006. Prepared for Boulder County Parks and Open Space.
- Chu, Janet. 2009. Inventories of Butterflies in Boulder County - 2009 Report. Prepared for Boulder County Parks and Open Space.
- Chu, Janet. 2010. Butterfly inventories in Boulder County Open Space properties - 2010. Prepared for Boulder County Parks and Open Space.
- Chu, Janet. 2011. Butterflies – A continuing study of species and populations in Boulder County Open Space properties - 2011 inventory and 2007-2011 analysis. Prepared for Boulder County Parks and Open Space and Boulder County Nature Association.
- Chu, Janet. 2013. Butterflies, birds and blossoming plants...a continuing study of populations on Boulder County Parks and Open Space with a look at herptiles.
- Chu, Janet, Cathy Cook and Donn Cook. 2005. An inventory of butterflies on open space properties - small grants program 2005. Prepared for Boulder County Parks and Open Space.
- Chu, Janet, Catherine Cook and Donn Cook. 2004. An inventory of butterflies - Heil Valley Ranch Open Space 2002-2004 and Caribou Ranch Open Space 2004. Prepared for Boulder County Parks and Open Space.
- Colorado Natural Heritage Program. 2015a. State-wide Potential Conservation Areas, Elements and Network of Conservation Areas (Last Updated August 2014), Arc View Shapefile. [Online]. Available: <http://www.cnhp.colostate.edu/gis/html> [Accessed: January 4, 2015].
- Colorado Natural Heritage Program. 2015b. Statewide List of Tracked Species and Communities (Last Updated August 2014). [Online] Available: <http://www.cnhp.colostate.edu/list.html> [Accessed: January 4, 2015].
- Colorado Parks and Wildlife. 2014. Colorado Parks and Wildlife Species Activity Data and Species Activity Mapping. [Online] Available: <http://www.arcgis.com/home/group.html?owner=rsacp&e=Colorado Parks and Wildlife - Species Activity Data> [Accessed: October 7, 2014].
- Decker, Karin. 2007. Rocky Mountain lower montane-foothill shrubland ecological system - ecological integrity assessment. Colorado Natural Heritage Program. Fort Collins, CO.
- Estes, M. 1939. The memoirs of Estes Park. *The Colorado Magazine* 16:5.
- Fossett, F. 1880. Colorado - Its Gold and Silver Mines, Farms and Stock Ranges, and Health and Pleasure Resorts. C.G. Crawford, New York.
- Fritz, P. 1933. Mining districts of Boulder County, Colorado. Ph.D., Thesis. University of Colorado, Boulder.
- Glassberg, Jeffrey. 2001. *Butterflies through Binoculars: The West*. A Field Guide to the Butterflies of Western North America. Oxford University Press.

- Hammerson, Geoffrey A. 1999. *Amphibians and Reptiles in Colorado*. Second Edition. University Press of Colorado and Colorado Division of Wildlife.
- Harrold, Tom, and Barbara Mieras. 1995. Reconnaissance report on geologic conditions relevant to management of Hall and Heil properties. Prepared for Boulder County Parks and Open Space.
- Higgins, K. 1986. Interpretation and compendium of historical fire accounts in the northern Great Plains. Resource Publication No. 161. U.S. Department of the Interior, Fish and Wildlife Service.
- Hoerath, J. David. 2007. Seasonal ranges, movements, and the effects of passive recreation of elk in northern Boulder County: final report. Unpublished report prepared by Boulder County Parks and Open Space, January 31, 2007.
- Jarrett, Robert. 2014. Peak discharges for the September 2013 flood in selected foothill region streams, South Platte River Basin, Colorado. Applied Weather Associated.
- Kaufmann, Merrill R., Thomas T. Veblen, and William H. Romme. 2006. Historical fire regimes in ponderosa pine forests of the Colorado Front Range, and recommendations for ecological restoration and fuels management. Front Range Fuels Treatment Partnership Roundtable, findings of the Ecology Workgroup. Colorado Forest Restoration Institute, Colorado State University, and The Nature Conservancy.
- Kemp, D. 1960. *Silver, Gold and Black Iron: A story of the Grand Island Mining District of Boulder County, Colorado*. Sage Swallow, Denver.
- Kettler, S., S. Simonson, P. Pineda, and R. Brune. 1996. Significant natural heritage resources of the Hall Ranch, Heil Ranch, and The Trevarton Open Space and their conservation. Colorado Natural Heritage Program, Colorado State University. Fort Collins.
- Kindig, J. M. 1987. An evaluation of an ethnohistoric account of a Plains Indian communal hunt in the Boulder Valley, 1862. *Southwestern Lore* 53:4.
- Kingery, Hugh E. 1998. *Colorado Breeding Bird Atlas*. Colorado Bird Atlas Partnership.
- Lee, C. M., J. B. Benedict, and J. B. Lee. 2006. Ice patches and remnant glaciers: paleontological and archeological possibilities in the Colorado high country. *Southwestern Lore* 72:26-41.
- Lewis, Jesse, and Kevin Crooks. 2011. Report on research for seasonal variation in wildlife community dynamics in relation to urbanization and human activities on the Front Range. Colorado State University. Prepared for Boulder County Parks and Open Space.
- Lewis, Jesse, and Kevin Crooks. 2014. Report on research for bobcat habitat selection in relation to landscape characteristics and human recreation. Colorado State University. Prepared for Boulder County Parks and Open Space.
- Long, S. 1988. From Pittsburgh to the Rocky Mountains: Major Stephen Long's Expedition, 1819-1820. M. Benson, editor. Fulcrum Inc., Golden, CO.

- Marr, John W. 1961. Ecosystems of the East Slope of the Front Range in Colorado. *University of Colorado Studies*, Series in Biology No. 6.
- Mutel, Cornelia Fleischer. 1976. From Grassland to Glacier: An Ecology of Boulder County, Colorado. Johnson Publishing Company, Boulder, Colorado.
- Neid, S., J. Lemly, K. Decker, and D. Culver. 2009. Survey of Critical Biological Resources in Boulder County, Colorado 2007-2008. Prepared for Boulder County Parks and Open Space. Colorado Natural Heritage Program, February 16, 2009.
- Neely, B., P. Comer, C. Moritz, M. Lammert, R. Rondeau, C. Pague, G. Bell, H. Copeland, J. Humke, S. Spackman, T. Schulz, D. Theobald, and L. Valutis. 2001. Southern Rocky Mountains: An Ecoregional Assessment and Conservation Blueprint. Prepared by The Nature Conservancy with support from the U.S. Forest Service, Rocky Mountain Region, Colorado Division of Wildlife, and Bureau of Land Management. Available for download from <http://conserveonline.org>.
- Plummer, F. 1912. Forest fires: their causes, extent and effects, with a summary of recorded loss and destruction. U.S. Forest Service Bulletin No. 117.
- Pyne, S. 1982. Fire in America: A Cultural History of Wildland and Rural Fire. Princeton University Press, New Jersey.
- Roe, F. G. 1970. The North American Buffalo: A critical Study of the Species in its Wild State, 2nd Edition. University of Toronto Press, Toronto.
- Sherriff, R. 2004. The historic range of variability of ponderosa pine in the Northern Colorado Front Range: Paste fire types and fire effects. Ph. D. thesis, University of Colorado, Boulder.
- Spackman, S., B. Jennings, J. Coles, C. Dawson, M. Minton, A. Kratz, and C. Spurrier. 1997. Colorado Rare Plant Field Guide. Prepared for the Bureau of Land Management, the U.S. Forest Service and the U.S. Fish and Wildlife Service by the Colorado Natural Heritage Program.
- Stone, T. 1999. The Prehistory of Colorado and Adjacent Areas. The University of Utah Press, Salt Lake City.
- Thomas, J., and D. Toweill (editors). 1982. Elk of North America: Ecology and Management. Wildlife Management Institute. Stackpole Books, Harrison, PA.
- Tice, J. 1872. Over the Plains and on the Mountains. Industrial Age Printing, St. Louis.
- TNC. 1998. Standardized National Vegetation Classification System. Prepared for U.S. Department of Interior National Biological Survey and National Park Service by The Nature Conservancy. [Online]. Available: <http://usnvc.org/about/history/>.
- USDA Forest Service. 1997. Revision of the Land and Resource Management Plan. Arapaho and Roosevelt National Forests and Pawnee National Grassland. Fort Collins, CO.
- USDA Natural Resources Conservation Service. 2012. Web Soil Survey. [Online]. Available: <http://websoilsurvey.nrcs.usda.gov/app/websoilsurvey>. [Accessed: December 18, 2012].

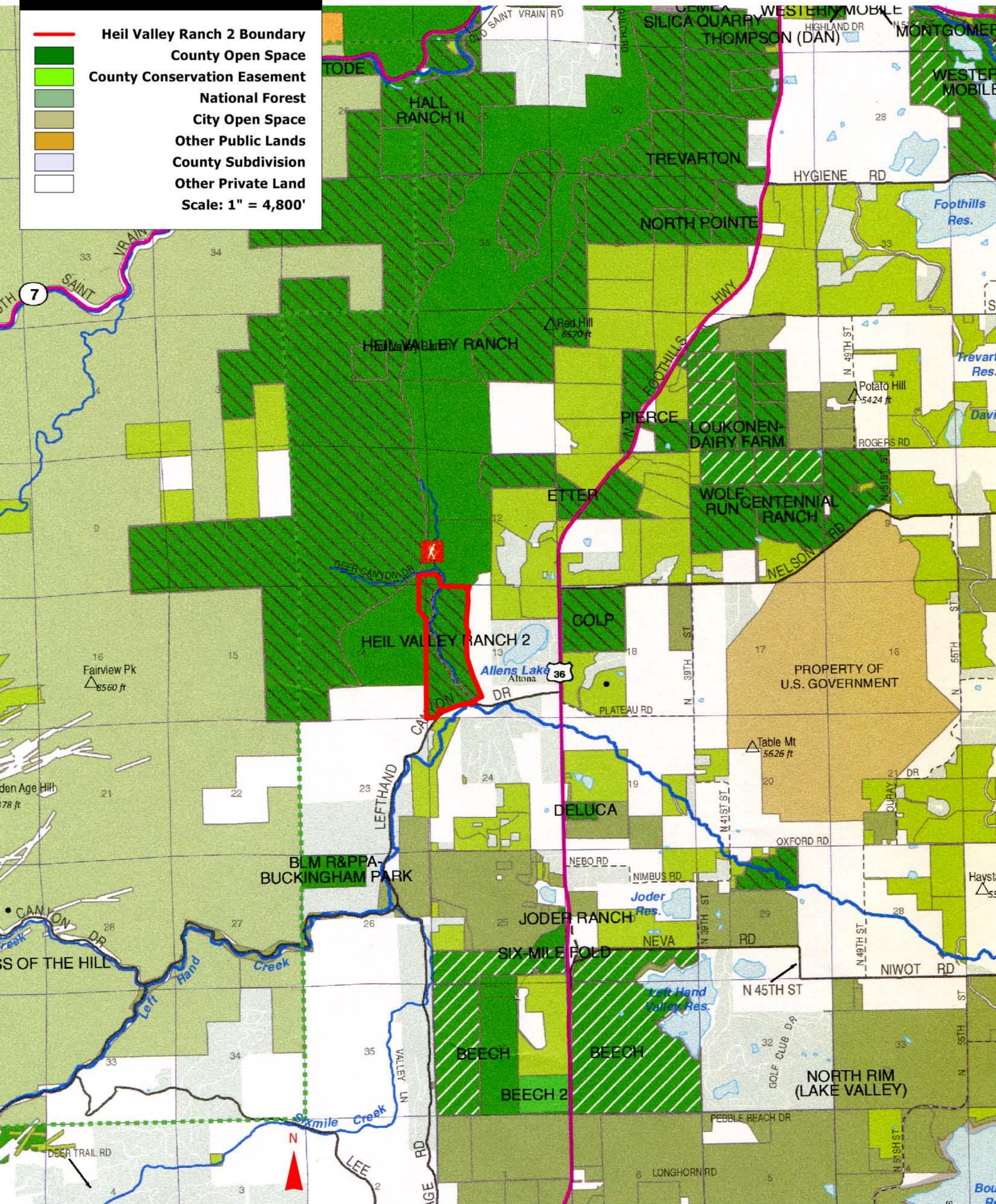
- USGS. 2014. Water Resources of the United States. [Online] Available: <http://water.usgs.gov/GIS/huc.html> [Accessed: December 4, 2014].
- Veblen, T.T., and T. Kitzberger. 1994. Preliminary report on: fire ecology in the wildland/urban interface of Bopulder County. Department of Geography, University of Colorado. Report submitted to City of Boulder Open Space Department.
- Veblen, T., T. Kitzberger and J. Donnegan. 1996. Fire ecology in the wildland/urban interface of Boulder County. Report to the City of Boulder Open Space Department.
- Veblen, T., T. Kitzberger, and J. Donnegan. 2000. Climatic and human influences on fire regimes in ponderosa pine forests in the Colorado Front Range. *Ecological Applications* 10:1178.
- Veblen, T. T., and J. A. Donnegan. 2005. Historical Range of Variability for Forest Vegetation of the National Forests of the Colorado Front Range. Prepared for the USDA Forest Service, Agreement No. 1102-0001-99-033 with the University of Colorado.
- Weber, W. 1995. Checklist of vascular plants of Boulder County, Colorado. Natural History Inventory of Colorado No. 16, Univ. of Colo. Museum, Boulder.
- Weber, William A., and Ronald C. Wittmann. 2012. Colorado Flora: Eastern Slope. Fourth Addition. University Press of Colorado.
- Wheeler, Herbert N. 1932. The memoirs of Herbert Newell Wheeler (unpublished manuscript). Carnegie Branch Library, Boulder Historical Society, Boulder.
- Western Regional Climate Center. 2012. [Online]. Available: <http://www.wrcc.dri.edu/>. [Accessed: December 14, 2012].
- Wiley, M., and R. A. Adams. 2009. The effects of elevation and associated environmental conditions on the roosting behavior of five species of Myotis bats and continued analysis of bat species abundance and reproduction at Heil Valley Ranch and Caribou Ranch. Prepared for Boulder County Parks and Open Space.
- Wolle, M. 1949. Stampede to Timberline. Sage, Denver.
- Wright, H. 1978. The effect of fire on vegetation in ponderosa pine forests. Texas Tech. Univ. Range and Wildlife Info. Series No. 2. College of Agric. Sci. Pub. No. T-9-199.

APPENDIX 1

FIGURES

FIGURE 1. LOCAL SETTING

- Heil Valley Ranch 2 Boundary
 - County Open Space
 - County Conservation Easement
 - National Forest
 - City Open Space
 - Other Public Lands
 - County Subdivision
 - Other Private Land
- Scale: 1" = 4,800'



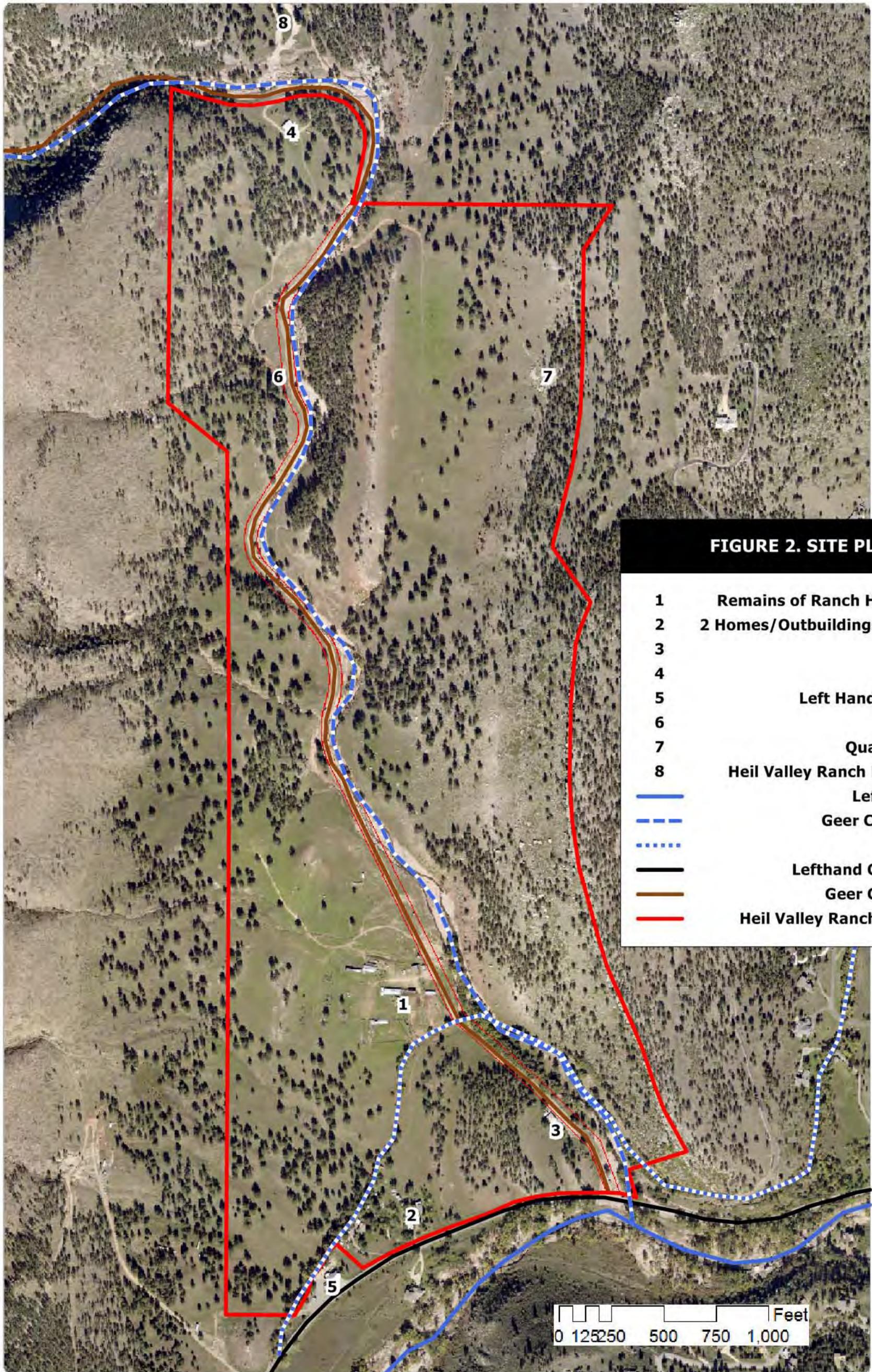


FIGURE 2. SITE PLAN

- 1 Remains of Ranch Headquarters
- 2 2 Homes/Outbuildings/Old School House
- 3 House
- 4 Barn
- 5 Left Hand Fire Station
- 6 Frog Pond
- 7 Quarry Remains
- 8 Heil Valley Ranch Parking Area
- Lefthand Creek
- - - Geer Canyon Creek
- ... Lake Ditch
- Lefthand Canyon Drive
- Geer Canyon Drive
- Heil Valley Ranch 2 Boundary

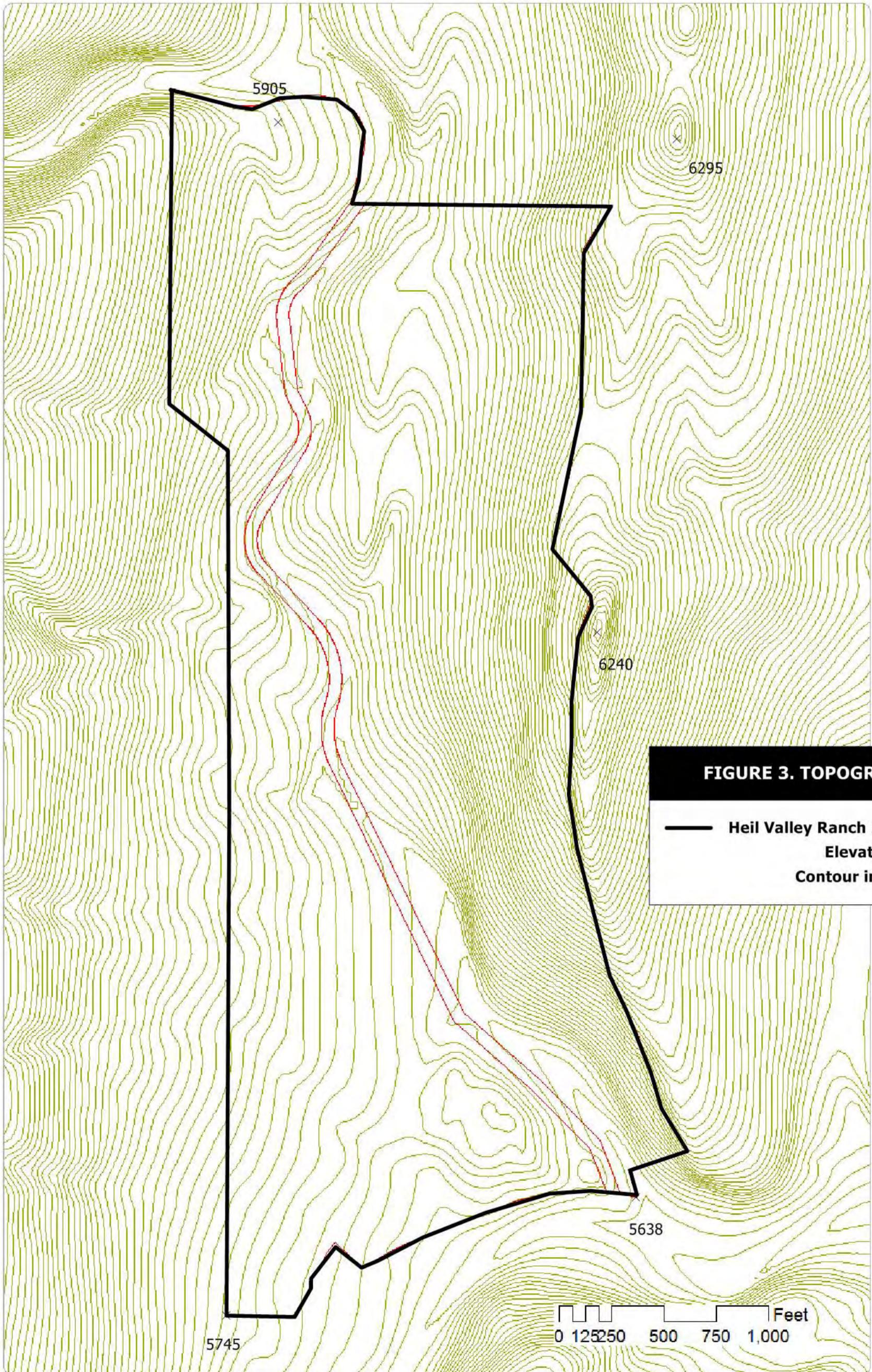


FIGURE 3. TOPOGRAPHY

— Heil Valley Ranch 2 Boundary
Elevations in feet
Contour intervals 10'

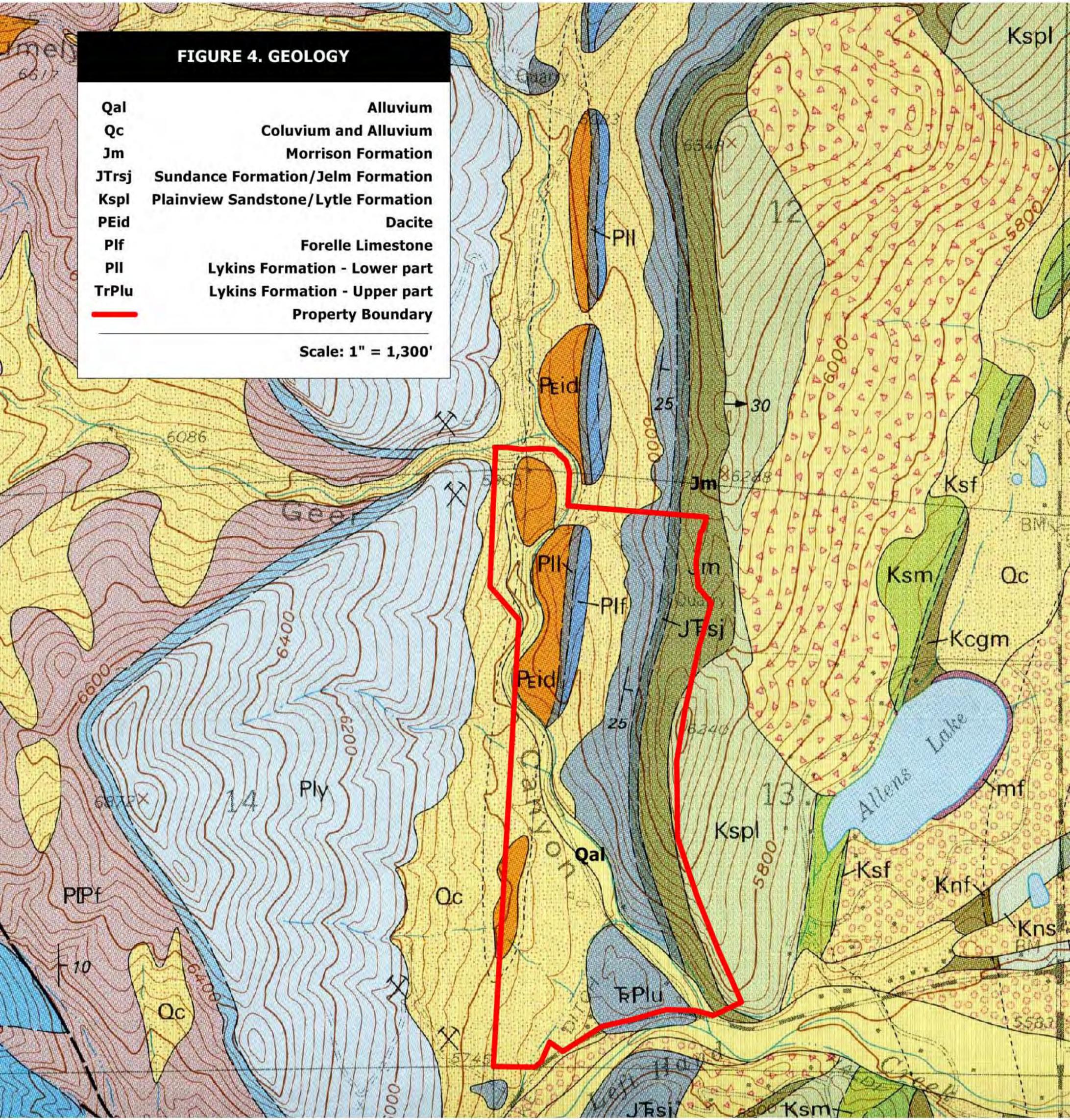


FIGURE 4. GEOLOGY

Qal	Alluvium
Qc	Coluvium and Alluvium
Jm	Morrison Formation
JTrsj	Sundance Formation/Jelm Formation
Kspl	Plainview Sandstone/Lytle Formation
PEid	Dacite
Pif	Forelle Limestone
PII	Lykins Formation - Lower part
TrPlu	Lykins Formation - Upper part
	Property Boundary

Scale: 1" = 1,300'

Base Map Source: Braddock, William A., Rodney G. Houston, Roger B. Colton, and James C. Cole. 1988. Geologic Map of the Lyons Quadrangle, Boulder County, Colorado. U.S. Geological Survey Map GQ-1629.



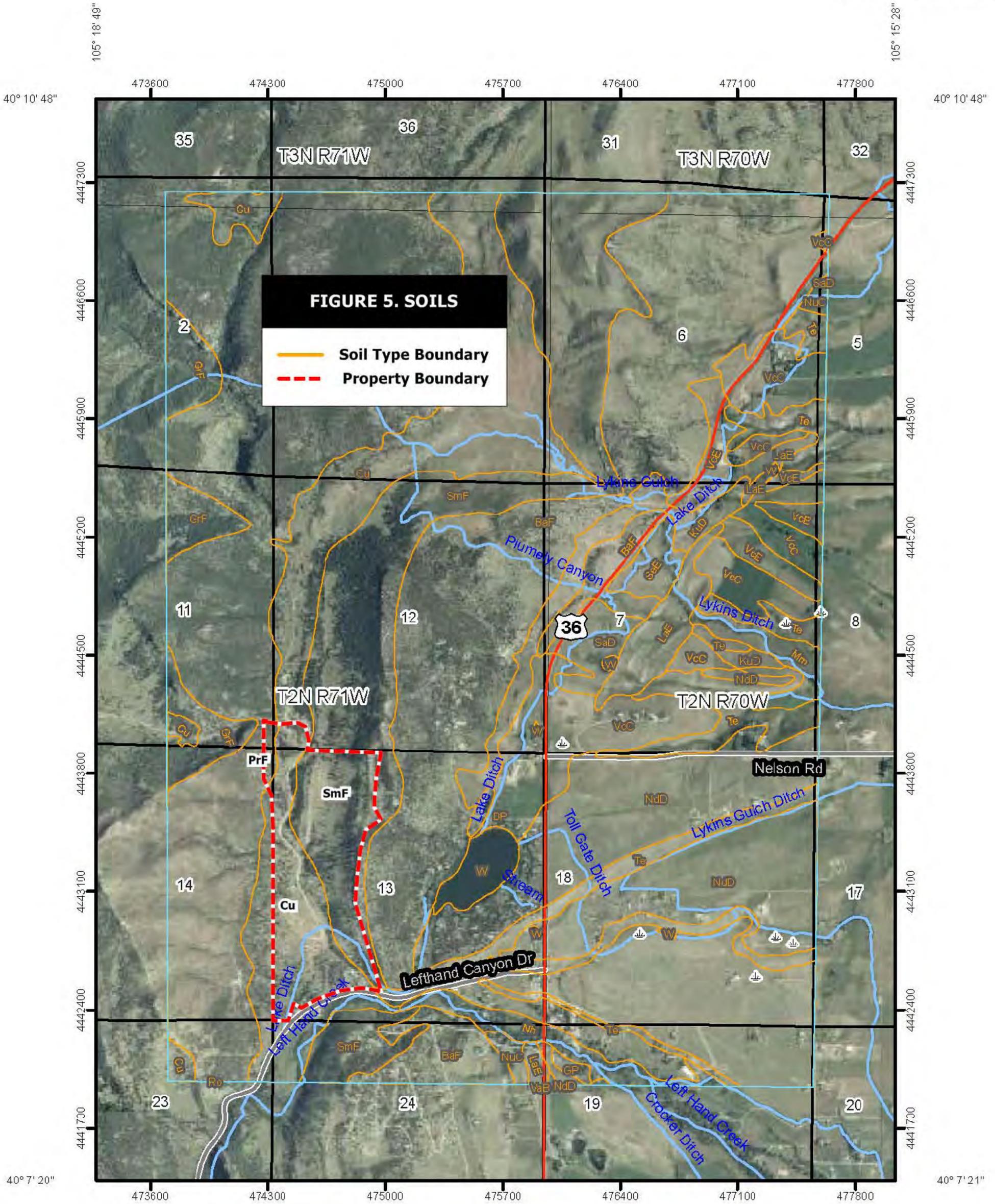
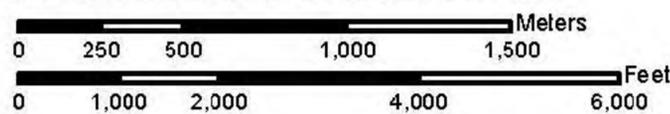


FIGURE 5. SOILS

- Soil Type Boundary
- - - Property Boundary

Map Scale: 1:30,600 if printed on A size (8.5" x 11") sheet.



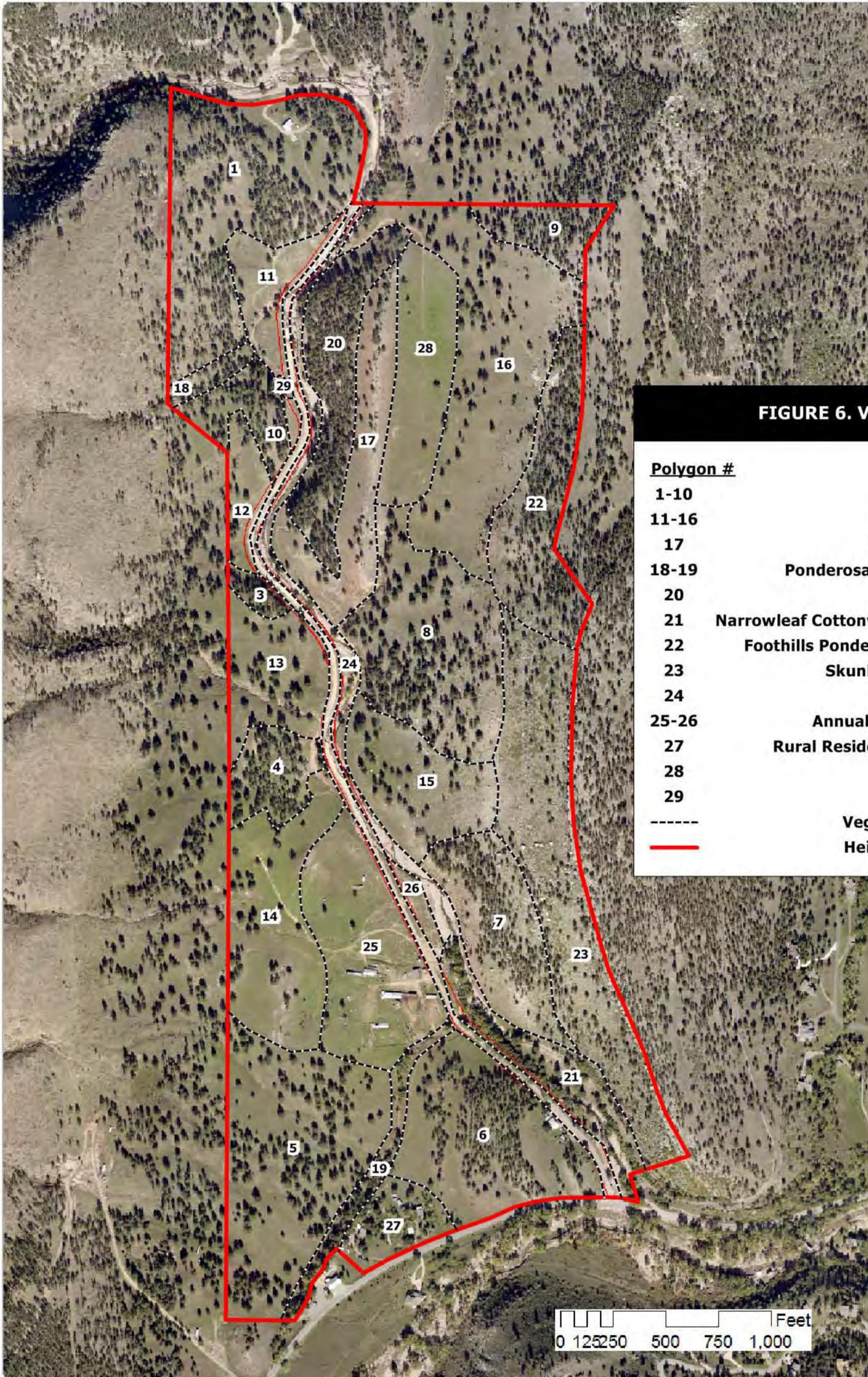


FIGURE 6. VEGETATION

<u>Polygon #</u>	<u>Vegetation Community</u>
1-10	Ponderosa Pine Woodland
11-16	Ponderosa Pine Savannah
17	New Mexico Feathergrass
18-19	Ponderosa Pine Temporarily Flooded
20	Ponderosa Pine Forest
21	Narrowleaf Cottonwood Temporarily Flooded
22	Foothills Ponderosa Pine Scrub Woodland
23	Skunkbrush Upland Shrubland
24	Flood Disturbance
25-26	Annual-Dominated/Semi-Natural
27	Rural Residential Settlement Complex
28	Cheatgrass Semi-Natural
29	Semipermanently Flooded
-----	Vegetation Alliance Boundary
—————	Heil Valley Ranch 2 Boundary

0 125 250 500 750 1,000 Feet



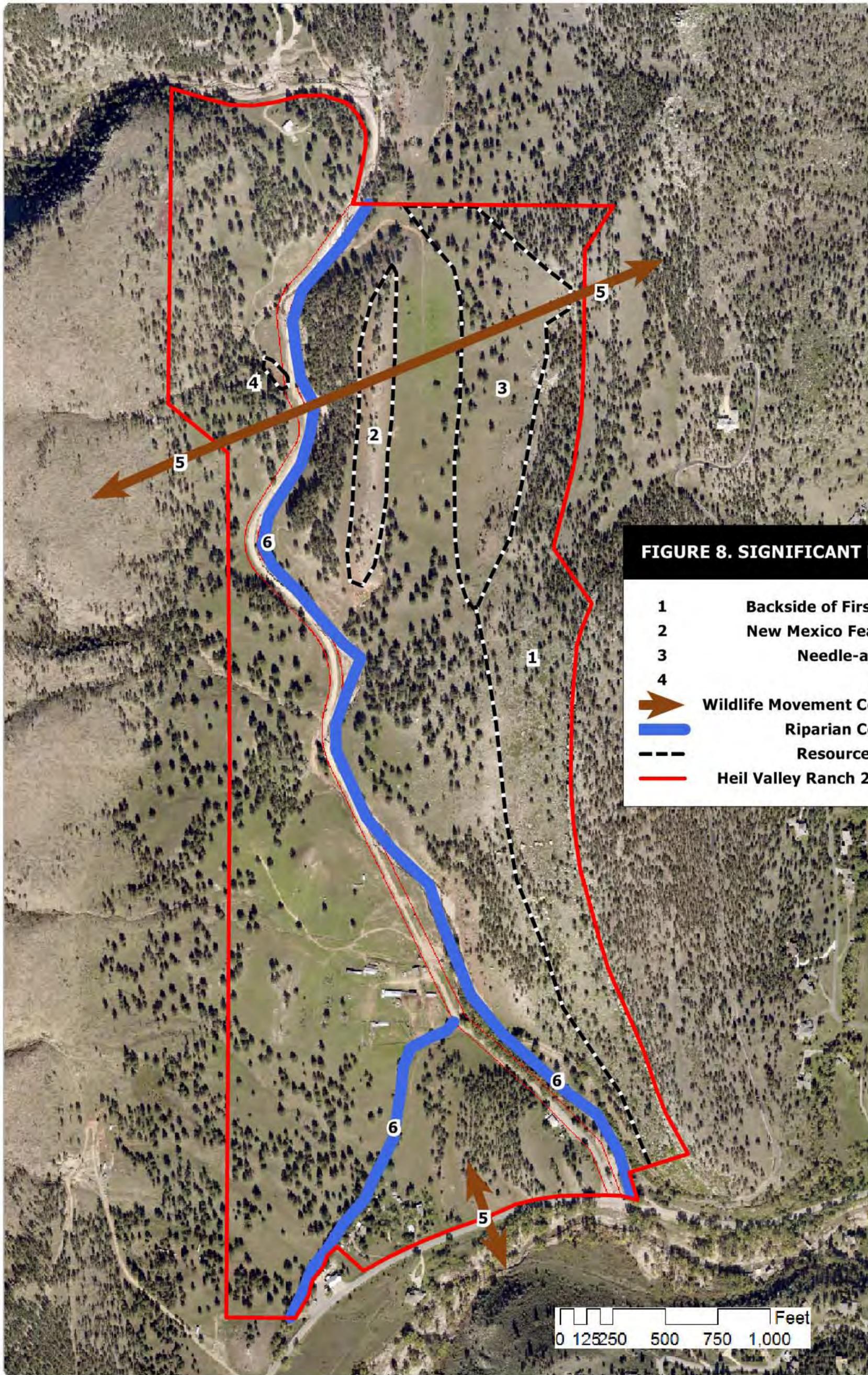


FIGURE 8. SIGNIFICANT RESOURCES

1	Backside of First Hogback
2	New Mexico Feathergrass
3	Needle-and-Thread
4	Frog Pond
	Wildlife Movement Corridor (5)
	Riparian Corridor (6)
	Resource Boundary
	Heil Valley Ranch 2 Boundary



FIGURE 7. SIGNIFICANT NATURAL COMMUNITIES

- 1 New Mexico Feathergrass
- 2 Needle-and-Thread
- SNC Boundary
- Heil Valley Ranch 2 Boundary



APPENDIX 2

CLIMATE

Appendix B

LONGMONT 2 ESE, COLORADO (055116)**Period of Record Monthly Climate Summary****Period of Record : 1/ 1/1893 to 11/30/2004**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	42.6	46.0	52.8	62.3	71.6	82.1	88.4	86.6	78.3	66.6	52.3	44.1	64.5
Average Min. Temperature (F)	11.6	15.9	22.8	32.0	41.7	49.6	54.7	53.0	43.7	32.7	21.6	13.6	32.7
Average Total Precipitation (in.)	0.35	0.45	0.99	1.74	2.45	1.70	1.38	1.21	1.21	0.96	0.63	0.46	13.53
Average Total SnowFall (in.)	4.8	5.5	7.1	4.9	0.7	0.0	0.0	0.0	0.5	1.8	5.3	5.3	35.9
Average Snow Depth (in.)	1	1	1	0	0	0	0	0	0	0	0	1	0

Percent of possible observations for period of record.

Max. Temp.: 99.7% Min. Temp.: 99.6% Precipitation: 99.6% Snowfall: 97.5% Snow Depth: 91.3%

Check [Station Metadata](#) or [Metadata graphics](#) for more detail about data completeness.*Western Regional Climate Center, wrcc@dri.edu*

APPENDIX 3

SOILS

Map Unit Description (Brief, Generated)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this report, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

The Map Unit Description (Brief, Generated) report displays a generated description of the major soils that occur in a map unit. Descriptions of non-soil (miscellaneous areas) and minor map unit components are not included. This description is generated from the underlying soil attribute data.

Additional information about the map units described in this report is available in other Soil Data Mart reports, which give properties of the soils and the limitations, capabilities, and potentials for many uses. Also, the narratives that accompany the Soil Data Mart reports define some of the properties included in the map unit descriptions.

Report—Map Unit Description (Brief, Generated)

Boulder County Area, Colorado

Map Unit: BaF—Baller stony sandy loam, 9 to 35 percent slopes

Component: Baller (85%)

The Baller component makes up 85 percent of the map unit. Slopes are 9 to 35 percent. This component is on ridges. The parent material consists of loamy residuum weathered from sandstone. Depth to a root restrictive layer, bedrock, lithic, is 10 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R049BY204CO Shallow Foothill ecological site. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria.

Component: Rock outcrop (10%)

Generated brief soil descriptions are created for major components. The Rock outcrop soil is a minor component.

Component: Hargreave (2%)

Generated brief soil descriptions are created for major components. The Hargreave soil is a minor component.

Component: Paoli (2%)

Generated brief soil descriptions are created for major components. The Paoli soil is a minor component.

Component: Aquic Haplustolls (1%)

Generated brief soil descriptions are created for major components. The Aquic Haplustolls soil is a minor component.

Map Unit: BP—Borrow pits

Component: Borrow pits (100%)

Generated brief soil descriptions are created for major soil components. The Borrow pits is a miscellaneous area.

Map Unit: Cu—Colluvial land

Component: Colluvial land (80%)

Generated brief soil descriptions are created for major soil components. The Colluvial land is a miscellaneous area.

Component: Haverson (10%)

Generated brief soil descriptions are created for major components. The Haverson soil is a minor component.

Component: Kim (7%)

Generated brief soil descriptions are created for major components. The Kim soil is a minor component.

Component: Otero (3%)

Generated brief soil descriptions are created for major components. The Otero soil is a minor component.

Map Unit: GP—Gravel pits and mine dumps

Component: Gravel pits and mine dumps (94%)

Generated brief soil descriptions are created for major soil components. The Gravel pits and mine dumps is a miscellaneous area.

Component: Aquents (6%)

Generated brief soil descriptions are created for major components. The Aquents soil is a minor component.

Map Unit: GrF—Goldvale-Rock outcrop complex, 9 to 55 percent slopes

Component: Goldvale (55%)

The Goldvale component makes up 55 percent of the map unit. Slopes are 9 to 55 percent. This component is on mountain slopes. The parent material consists of loamy alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is moderate. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R049XY220CO Ponderosa Loam ecological site. Nonirrigated land capability classification is 7e. This soil does not meet hydric criteria.

Component: Rock outcrop (30%)

Generated brief soil descriptions are created for major soil components. The Rock outcrop is a miscellaneous area.

Component: Juget (10%)

Generated brief soil descriptions are created for major components. The Juget soil is a minor component.

Component: Valmont (5%)

Generated brief soil descriptions are created for major components. The Valmont soil is a minor component.

Map Unit: KuD—Kutch clay loam, 3 to 9 percent slopes

Component: Kutch (85%)

The Kutch component makes up 85 percent of the map unit. Slopes are 3 to 9 percent. This component is on uplands, valley sides. The parent material consists of clayey residuum weathered from sedimentary rock. Depth to a root restrictive layer, bedrock, paralithic, is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is low. Shrink-swell potential is high. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 3 percent. This component is in the R049BY208CO Clayey Foothill ecological site. Nonirrigated land capability classification is 4e. Irrigated land capability classification is 4e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 10 percent.

Component: Renohill (6%)

Generated brief soil descriptions are created for major components. The Renohill soil is a minor component.

Component: Nunn (4%)

Generated brief soil descriptions are created for major components. The Nunn soil is a minor component.

Component: Samsil (2%)

Generated brief soil descriptions are created for major components. The Samsil soil is a minor component.

Component: Shingle (2%)

Generated brief soil descriptions are created for major components. The Shingle soil is a minor component.

Component: Mollic Haplaquepts (1%)

Generated brief soil descriptions are created for major components. The Mollic Haplaquepts soil is a minor component.

Map Unit: LaE—Laporte very fine sandy loam, 5 to 20 percent slopes

Component: Laporte (85%)

The Laporte component makes up 85 percent of the map unit. Slopes are 5 to 20 percent. This component is on ridges. The parent material consists of calcareous loamy residuum weathered from limestone and shale. Depth to a root restrictive layer, bedrock, paralithic, is 10 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 3 percent. This component is in the R049BY204CO Shallow Foothill ecological site. Nonirrigated land capability classification is 6s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 40 percent.

Component: Fluvaquentic Haplustolls (6%)

Generated brief soil descriptions are created for major components. The Fluvaquentic Haplustolls soil is a minor component.

Component: Manvel (5%)

Generated brief soil descriptions are created for major components. The Manvel soil is a minor component.

Component: Rock outcrop (4%)

Generated brief soil descriptions are created for major components. The Rock outcrop soil is a minor component.

Map Unit: Mm—McClave clay loam

Component: McClave (85%)

The McClave component makes up 85 percent of the map unit. Slopes are 0 to 1 percent. This component is on flood plains, terraces. The parent material consists of loamy alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is high. Shrink-swell potential is low. This soil is occasionally flooded. It is not ponded. A seasonal zone of water saturation is at 27 inches during March, April, May, June, July, August, September. Organic matter content in the surface horizon is about 3 percent. This component is in the R067XB035CO Salt Meadow ecological site. Nonirrigated land capability classification is 3w. Irrigated land capability classification is 3w. This soil does not meet hydric criteria.

Component: Calkins (11%)

Generated brief soil descriptions are created for major components. The Calkins soil is a minor component.

Component: Aquolls (4%)

Generated brief soil descriptions are created for major components. The Aquolls soil is a minor component.

Map Unit: NdD—Nederland very cobbly sandy loam, 1 to 12 percent slopes

Component: Nederland (80%)

The Nederland component makes up 80 percent of the map unit. Slopes are 1 to 12 percent. This component is on terraces, alluvial fans. The parent material consists of cobbly loamy alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 3 percent. This component is in the R048AY346CO Cobbly Foothills ecological site. Nonirrigated land capability classification is 6s. This soil does not meet hydric criteria.

Component: Valmont (20%)

Generated brief soil descriptions are created for major components. The Valmont soil is a minor component.

Map Unit: Nh—Niwot soils

Component: Niwot (85%)

The Niwot component makes up 85 percent of the map unit. Slopes are 0 to 1 percent. This component is on flood plains, terraces. The parent material consists of loamy over sandy and gravelly alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is occasionally flooded. It is not ponded. A seasonal zone of water saturation is at 27 inches during March, April, May, June. Organic matter content in the surface horizon is about 4 percent. This component is in the R067XB038CO Wet Meadow ecological site. Nonirrigated land capability classification is 5w. Irrigated land capability classification is 4w. This soil does not meet hydric criteria.

Component: Loveland (10%)

Generated brief soil descriptions are created for major components. The Loveland soil is a minor component.

Component: Nunn (4%)

Generated brief soil descriptions are created for major components. The Nunn soil is a minor component.

Component: Aquolls (1%)

Generated brief soil descriptions are created for major components. The Aquolls soil is a minor component.

Map Unit: NuC—Nunn clay loam, 3 to 5 percent slopes

Component: Nunn (85%)

The Nunn component makes up 85 percent of the map unit. Slopes are 3 to 5 percent. This component is on terraces, valley sides. The parent material consists of loamy alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 3 percent. This component is in the R067XB042CO Clayey ecological site. Nonirrigated land capability classification is 3e. Irrigated land capability classification is 3e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 10 percent.

Component: Renohill (8%)

Generated brief soil descriptions are created for major components. The Renohill soil is a minor component.

Component: Kim (3%)

Generated brief soil descriptions are created for major components. The Kim soil is a minor component.

Component: Ulm (3%)

Generated brief soil descriptions are created for major components. The Ulm soil is a minor component.

Component: Mollic Halaquepts (1%)

Generated brief soil descriptions are created for major components. The Mollic Halaquepts soil is a minor component.

Map Unit: PrF—Pinata-Rock outcrop complex, 5 to 55 percent slopes

Component: Pinata (45%)

The Pinata component makes up 45 percent of the map unit. Slopes are 5 to 55 percent. This component is on ridges, mountain slopes. The parent material consists of stony sandy clayey colluvium over residuum weathered from sandstone and shale. Depth to a root restrictive layer, bedrock, lithic, is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is very low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 0 percent. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria.

Component: Rock outcrop (35%)

Generated brief soil descriptions are created for major soil components. The Rock outcrop is a miscellaneous area.

Component: Hargreave (8%)

Generated brief soil descriptions are created for major components. The Hargreave soil is a minor component.

Component: Terry (7%)

Generated brief soil descriptions are created for major components. The Terry soil is a minor component.

Component: Baller (3%)

Generated brief soil descriptions are created for major components. The Baller soil is a minor component.

Component: Peyton (2%)

Generated brief soil descriptions are created for major components. The Peyton soil is a minor component.

Map Unit: Ro—Rock outcrop

Component: Rock outcrop (100%)

Generated brief soil descriptions are created for major soil components. The Rock outcrop is a miscellaneous area.

Map Unit: SaD—Samsil clay, 3 to 12 percent slopes

Component: Samsil (85%)

The Samsil component makes up 85 percent of the map unit. Slopes are 3 to 12 percent. This component is on hills, ridges. The parent material consists of residuum weathered from clayey shale. Depth to a root restrictive layer, bedrock, paralithic, is 10 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is very low. Shrink-swell potential is high. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R049BY212CO Shaly Foothill ecological site. Nonirrigated land capability classification is 6s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 6 percent. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Component: Renohill (10%)

Generated brief soil descriptions are created for major components. The Renohill soil is a minor component.

Component: Shingle (5%)

Generated brief soil descriptions are created for major components. The Shingle soil is a minor component.

Map Unit: SeE—Samsil-Shingle complex, 5 to 25 percent slopes

Component: Samsil (40%)

The Samsil component makes up 40 percent of the map unit. Slopes are 5 to 25 percent. This component is on hills, uplands, ridges. The parent material consists of residuum weathered from clayey shale. Depth to a root restrictive layer, bedrock, paralithic, is 10 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is very low. Shrink-swell potential is high. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R049BY212CO Shaly Foothill ecological site. Nonirrigated land capability classification is 6e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 6 percent. The soil has a slightly sodic horizon within 30 inches of the soil surface.

Component: Shingle (40%)

The Shingle component makes up 40 percent of the map unit. Slopes are 5 to 25 percent. This component is on ridges, hills. The parent material consists of loamy residuum weathered from sandstone and shale. Depth to a root restrictive layer, bedrock, paralithic, is 10 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R049BY212CO Shaly Foothill ecological site. Nonirrigated land capability classification is 6s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 10 percent.

Component: Renohill (6%)

Generated brief soil descriptions are created for major components. The Renohill soil is a minor component.

Component: Kutch (5%)

Generated brief soil descriptions are created for major components. The Kutch soil is a minor component.

Component: Gaynor (3%)

Generated brief soil descriptions are created for major components. The Gaynor soil is a minor component.

Component: Typic Haplaquepts (1%)

Generated brief soil descriptions are created for major components. The Typic Haplaquepts soil is a minor component.

Map Unit: SmF—Sixmile stony loam, 10 to 50 percent slopes

Component: Sixmile (80%)

The Sixmile component makes up 80 percent of the map unit. Slopes are 10 to 50 percent. This component is on ridges, uplands, hills. The parent material consists of loamy residuum weathered from calcareous shale. Depth to a root restrictive layer, bedrock, paralithic, is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R049XY206CO Rocky Foothill ecological site. Nonirrigated land capability classification is 7e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 8 percent.

Component: Hargreave (10%)

Generated brief soil descriptions are created for major components. The Hargreave soil is a minor component.

Component: Rock outcrop (10%)

Generated brief soil descriptions are created for major components. The Rock outcrop soil is a minor component.

Map Unit: Te—Terrace escarpments**Component:** Terrace escarpments (100%)

The Terrace escarpments component makes up 100 percent of the map unit. Slopes are 12 to 60 percent. This component is on paleoterraces, fan remnants. The parent material consists of cobbly and stony colluvium over sandstone and shale. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is excessively drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 3 percent.

Map Unit: VaB—Valmont clay loam, 1 to 3 percent slopes**Component:** Valmont (85%)

The Valmont component makes up 85 percent of the map unit. Slopes are 1 to 3 percent. This component is on terraces, fan remnants. The parent material consists of gravelly and cobbly loamy alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 3 percent. This component is in the R049BY208CO Clayey Foothill ecological site. Nonirrigated land capability classification is 3s. Irrigated land capability classification is 2e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 8 percent.

Component: Nunn (8%)

Generated brief soil descriptions are created for major components. The Nunn soil is a minor component.

Component: Fluventic Haplaquolls (4%)

Generated brief soil descriptions are created for major components. The Fluventic Haplaquolls soil is a minor component.

Component: Heldt (3%)

Generated brief soil descriptions are created for major components. The Heldt soil is a minor component.

Map Unit: VcC—Valmont cobbly clay loam, 1 to 5 percent slopes

Component: Valmont (100%)

The Valmont component makes up 100 percent of the map unit. Slopes are 1 to 5 percent. This component is on terraces, fan remnants. The parent material consists of gravelly and cobbly loamy alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 3 percent. This component is in the R048AY346CO Cobbly Foothills ecological site. Nonirrigated land capability classification is 3e. Irrigated land capability classification is 3e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 8 percent.

Map Unit: VcE—Valmont cobbly clay loam, 5 to 25 percent slopes

Component: Valmont (90%)

The Valmont component makes up 90 percent of the map unit. Slopes are 5 to 10 percent. This component is on terraces, fan remnants. The parent material consists of gravelly and cobbly loamy alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches is low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 3 percent. This component is in the R048AY346CO Cobbly Foothills ecological site. Nonirrigated land capability classification is 4e. Irrigated land capability classification is 4e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 8 percent.

Component: Dacono (9%)

Generated brief soil descriptions are created for major components. The Dacono soil is a minor component.

Component: Fluventic Haplaquolls (1%)

Generated brief soil descriptions are created for major components. The Fluventic Haplaquolls soil is a minor component.

Map Unit: W—Water

Component: Water (95%)

Generated brief soil descriptions are created for major soil components. The Water is a miscellaneous area.

Component: Aquolls (5%)

Generated brief soil descriptions are created for major components. The Aquolls soil is a minor component.

Data Source Information

Soil Survey Area: Boulder County Area, Colorado

Survey Area Data: Version 9, May 1, 2009

MAP LEGEND**Area of Interest (AOI)**
 Area of Interest (AOI)
Soils
 Soil Map Units
Soil Ratings

	Clayey
	Clayey Foothill
	Cobbly Foothills
	Ponderosa Loam
	Rocky Foothill
	Salt Meadow
	Shallow Foothill
	Shaly Foothill
	Wet Meadow
	Not rated or not available

Political Features

	Cities
	PLSS Township and Range
	PLSS Section

Water Features
 Streams and Canals
Transportation

	Rails
	Interstate Highways
	US Routes
	Major Roads

MAP INFORMATION

Map Scale: 1:30,600 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
Coordinate System: UTM Zone 13N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Boulder County Area, Colorado
Survey Area Data: Version 9, May 1, 2009

Date(s) aerial images were photographed: 8/6/2005

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Ecological Site Name: NRCS Rangeland Site

Ecological Site Name: NRCS Rangeland Site— Summary by Map Unit — Boulder County Area, Colorado (CO643)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BaF	Baller stony sandy loam, 9 to 35 percent slopes	Shallow Foothill	902.9	17.7%
BP	Borrow pits		5.2	0.1%
Cu	Colluvial land		578.5	11.4%
GP	Gravel pits and mine dumps		5.5	0.1%
GrF	Goldvale-Rock outcrop complex, 9 to 55 percent slopes	Ponderosa Loam	111.9	2.2%
KuD	Kutch clay loam, 3 to 9 percent slopes	Clayey Foothill	91.5	1.8%
LaE	Laporte very fine sandy loam, 5 to 20 percent slopes	Shallow Foothill	68.3	1.3%
Mm	McClave clay loam	Salt Meadow	38.3	0.8%
NdD	Nederland very cobbly sandy loam, 1 to 12 percent slopes	Cobbly Foothills	803.2	15.8%
Nh	Niwot soils	Wet Meadow	51.9	1.0%
NuC	Nunn clay loam, 3 to 5 percent slopes	Clayey	15.0	0.3%
PrF	Pinata-Rock outcrop complex, 5 to 55 percent slopes		1,051.6	20.6%
Ro	Rock outcrop		0.3	0.0%
SaD	Samsil clay, 3 to 12 percent slopes	Shaly Foothill	41.6	0.8%
SeE	Samsil-Shingle complex, 5 to 25 percent slopes	Shaly Foothill	29.3	0.6%
SmF	Sixmile stony loam, 10 to 50 percent slopes	Rocky Foothill	623.8	12.3%
Te	Terrace escarpments		240.5	4.7%
VaB	Valmont clay loam, 1 to 3 percent slopes	Clayey Foothill	0.7	0.0%
VcC	Valmont cobbly clay loam, 1 to 5 percent slopes	Cobbly Foothills	303.2	6.0%
VcE	Valmont cobbly clay loam, 5 to 25 percent slopes	Cobbly Foothills	89.2	1.8%
W	Water		39.9	0.8%
Totals for Area of Interest			5,092.5	100.0%

Description

An ecological site name provides a general description of a particular ecological site. For example, "Loamy Upland" is the name of a rangeland ecological site. An "ecological site" is the product of all the environmental factors responsible for its development. It has characteristic soils that have developed over time; a characteristic hydrology, particularly infiltration and runoff, that has developed over time; and a characteristic plant community (kind and amount of vegetation). The vegetation, soils, and hydrology are all interrelated. Each is influenced by the others and influences the development of the others. For example, the hydrology of the site is influenced by development of the soil and plant community. The plant community on an ecological site is typified by an association of species that differs from that of other ecological sites in the kind and/or proportion of species or in total production. Descriptions of ecological sites are provided in the Field Office Technical Guide, which is available in local offices of the Natural Resources Conservation Service. Descriptions of those displayed in this map and summary table may also be accessed through the Ecological Site Assessment tab in Web Soil Survey.

Ecological sites and their respective unique set of characteristics are uniquely identified by the Ecological Site ID. The same Ecological Site Name may be assigned to multiple Ecological Site IDs. If you wish to display a map of unique ecological sites, it is recommended that you select the Ecological Site ID attribute from the choice list.

Rating Options

Class: NRCS Rangeland Site

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

APPENDIX 4

CONTEXT

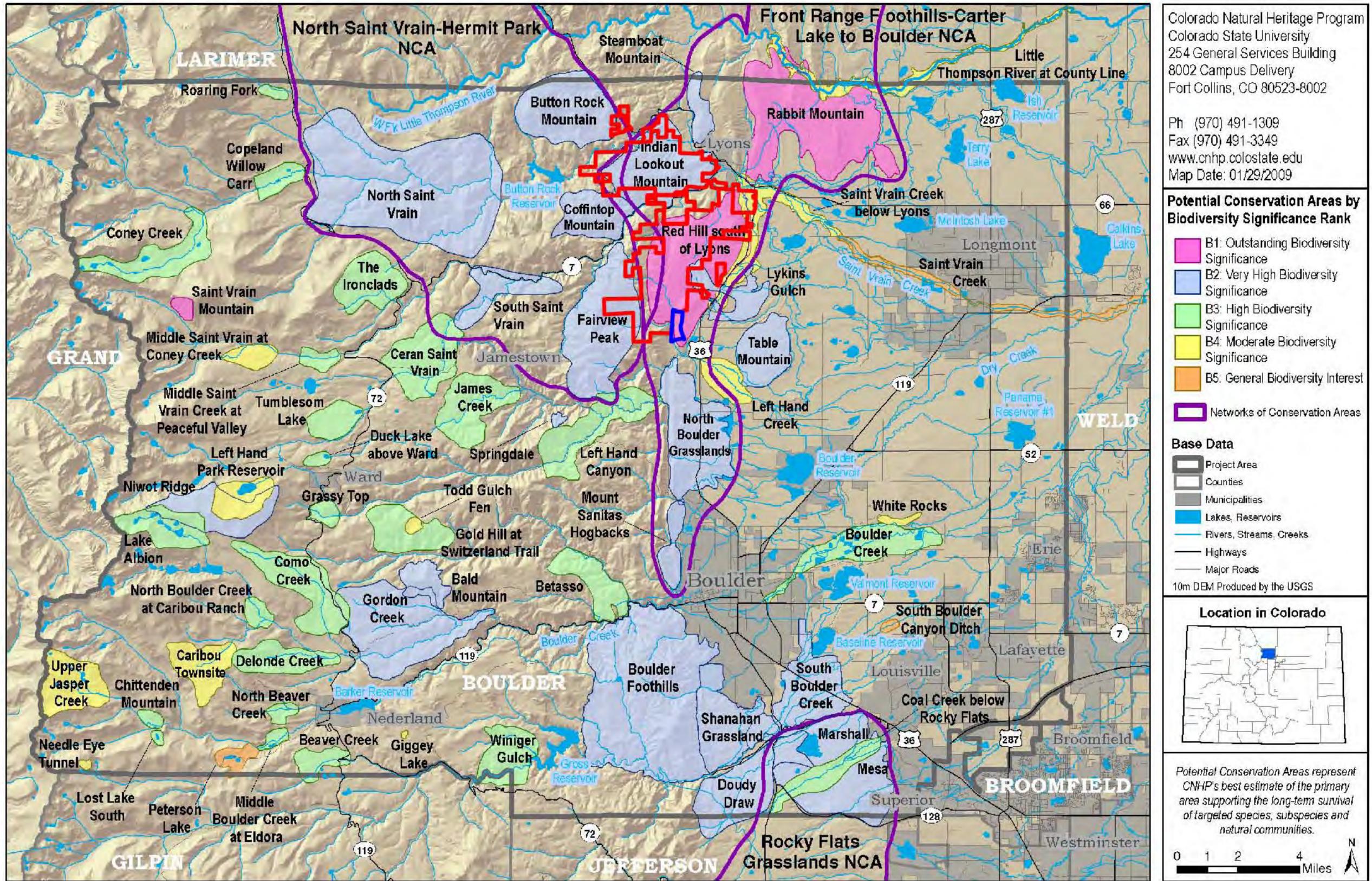
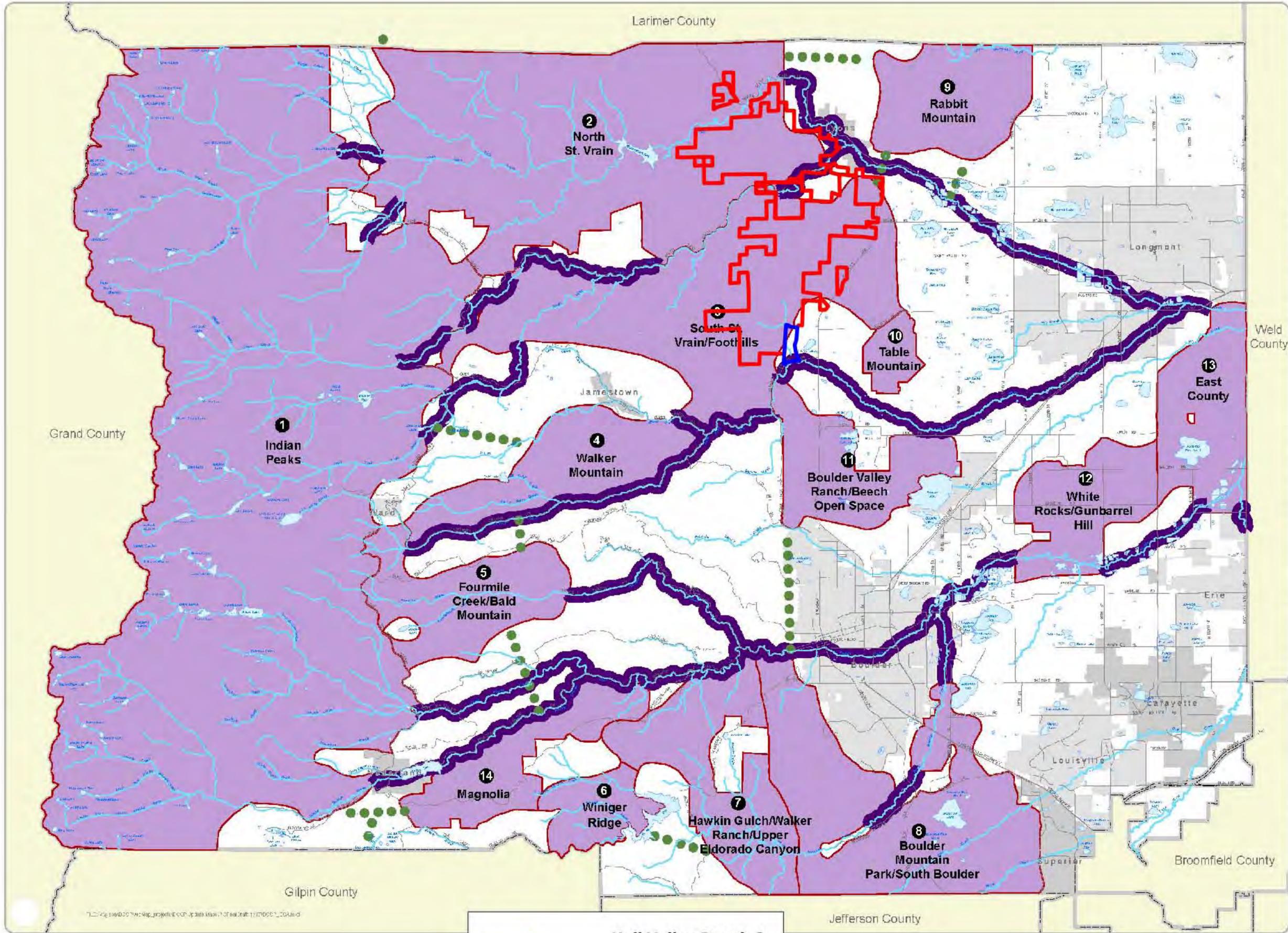


Figure 14. CNHP Potential Conservation Areas and Networks of Conservation Areas in Boulder County

— Heil Valley Ranch 2
— North Foothills Open Space



Environmental Conservation Areas

 Boulder County
Comprehensive Plan
2013 Update

Environmental Conservation Areas

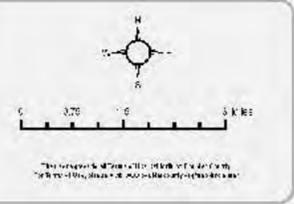
 1
Areas of the County that possess a relatively low amount of fragmentation, contain high quality natural resources or habitats, are designated at a sufficient size to provide ecological benefit, and/or have significant potential for restoration

Overland Habitat Connectors

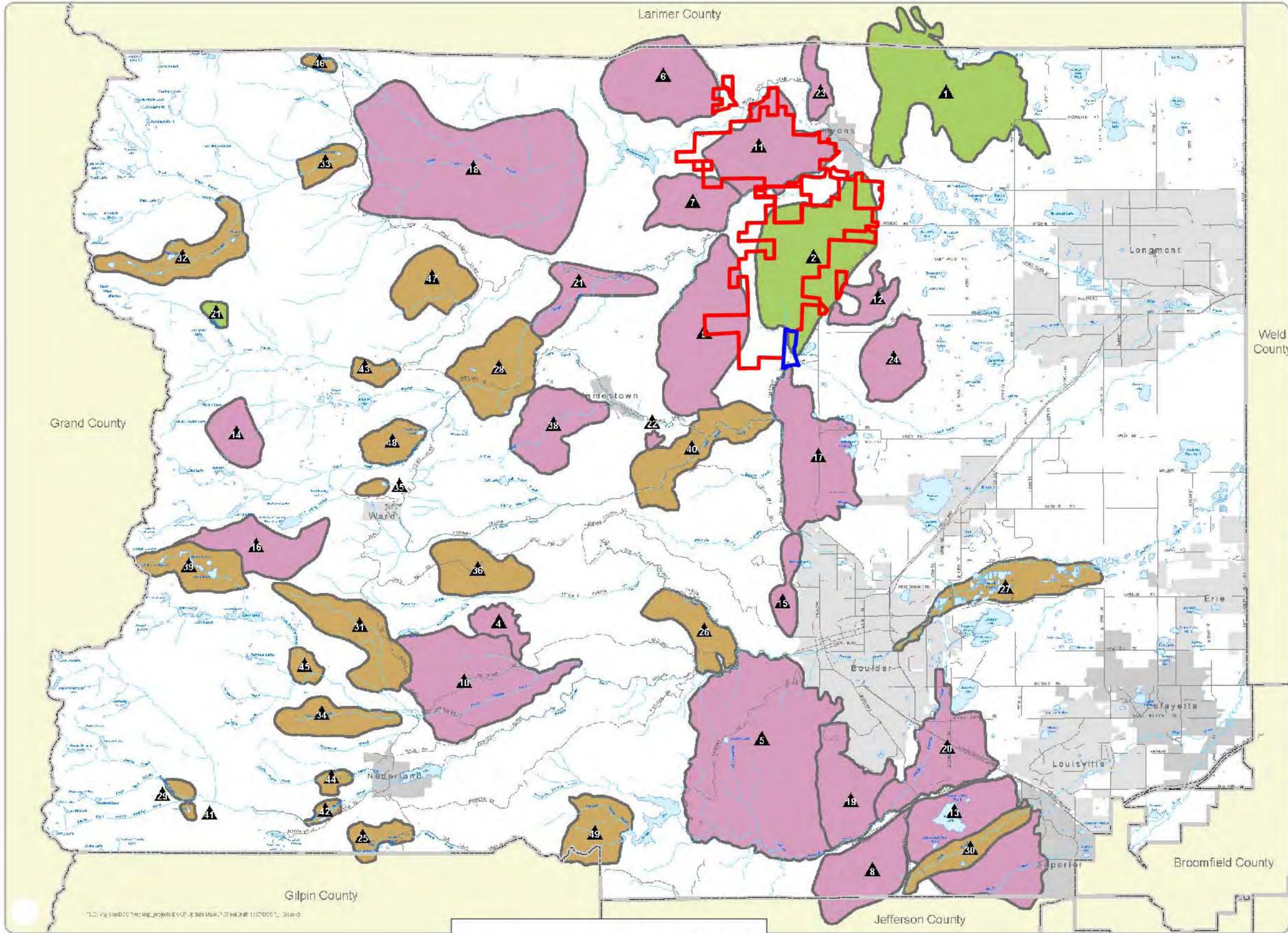
 Areas of wildlife movement across relatively unfragmented landscapes which provides connectivity among Environmental Conservation Areas

Riparian Habitat Connectors

 Areas of wildlife movement adjacent to relative unfragmented waterways which provides connectivity among Environmental Conservation Areas



 Heil Valley Ranch 2
 North Foothills Open Space



High Biodiversity Areas

 **Boulder County**
Comprehensive Plan
2013 Update

High Biodiversity Areas

An area with a concentration of rare and irreplaceable resources that represents one of the greatest opportunities for preserving specific aspects of Boulder County's natural heritage. These areas have been identified and ranked by the 2013 Natural Heritage Program.

B1: Outstanding Biodiversity Significance (Irreplaceable)

 An area that on a global scale is irreplaceable. The area has a concentration of two or more globally critically imperiled or globally imperiled (G1/G2) element occurrences that are in excellent or good (A or B) ranking condition.

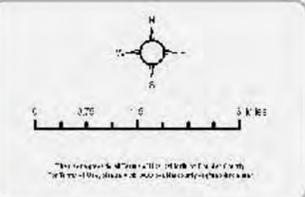
B2: Very High Biodiversity Significance (Nearly Irreplaceable)

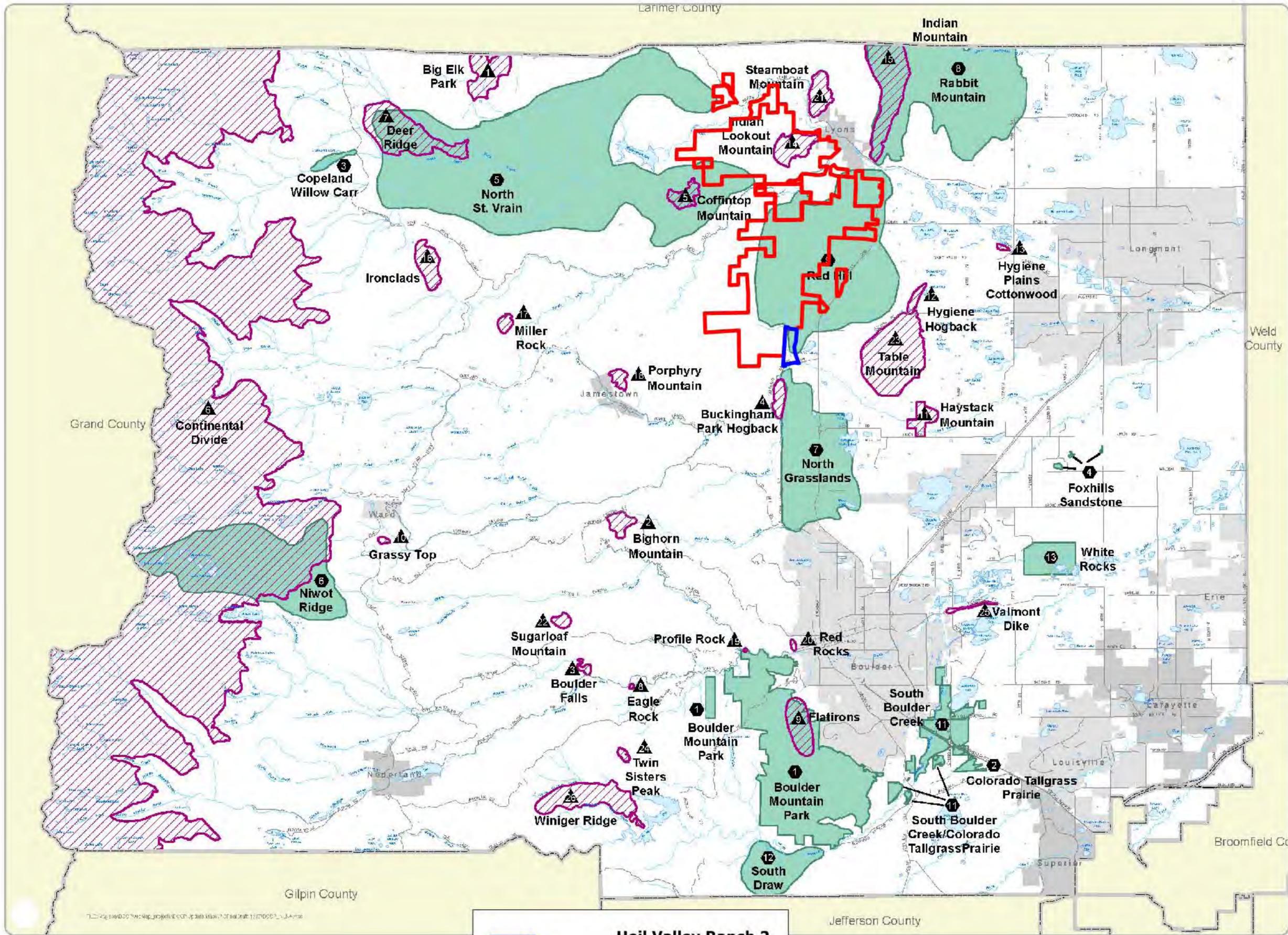
 An area that on a global scale is nearly irreplaceable and significant on a national scale. An area has a concentration of several imperiled elements that are globally rare (G3) and/or species that are common globally (G4 or G5) but rare within Colorado.

B3: High Biodiversity Significance

 An area that has statewide importance. The area has a concentration of several imperiled elements that are common globally but are excellent or good for the region.

 **Heil Valley Ranch 2**
 **North Foothills Open Space**





Natural Landmarks and Natural Areas

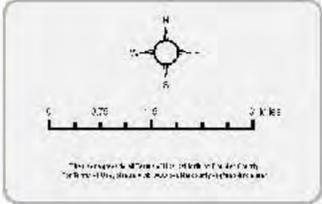
Boulder County
Comprehensive Plan
2013 Update

Natural Landmarks

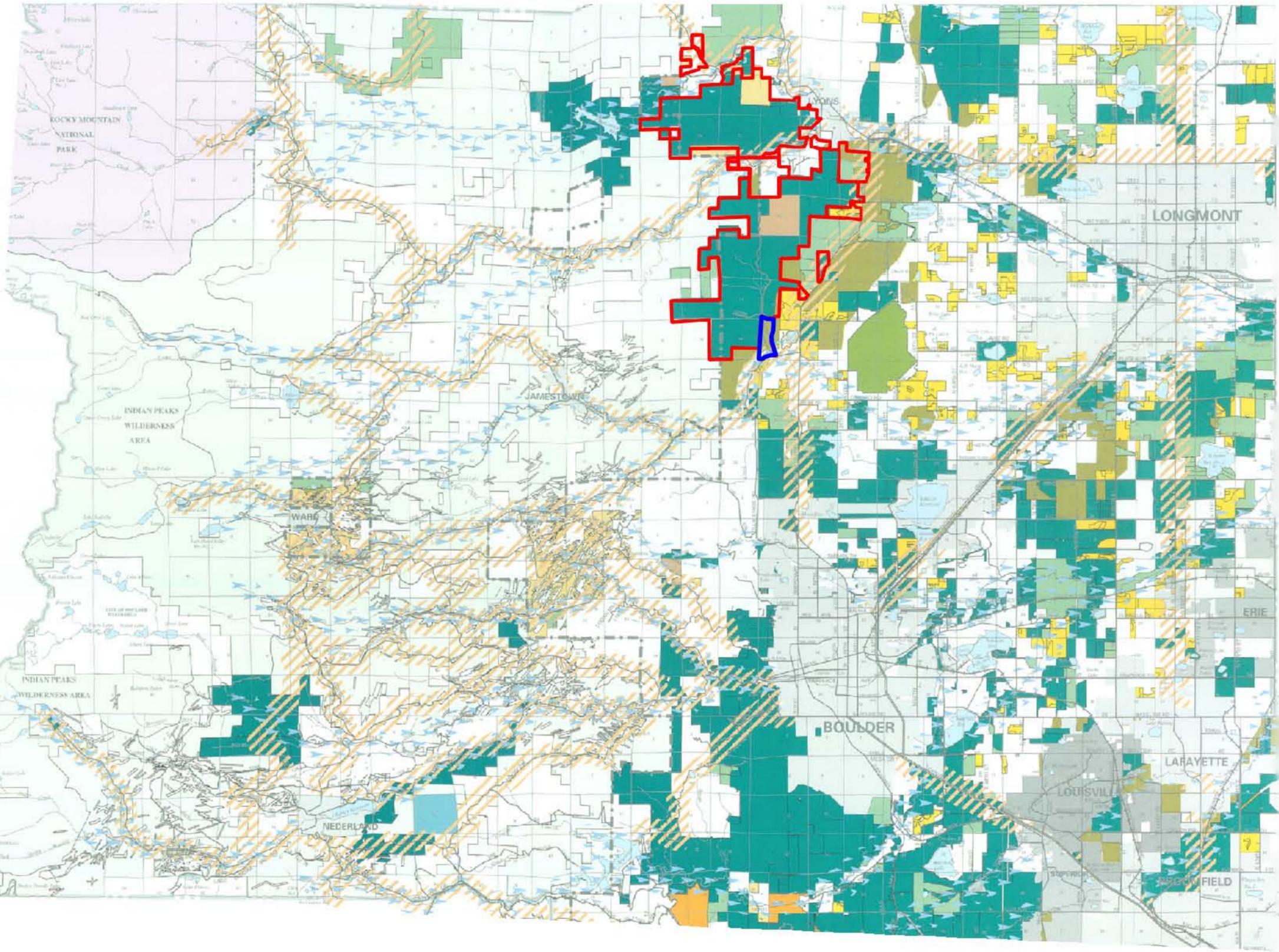
A landscape feature designated solely for its visual and scenic prominence that distinguishes a specific locality in Boulder County.

Natural Areas

An area especially unique and important to the natural heritage of the county that typifies native vegetation and associated biological and geological features and provides habitat for rare or endangered animal or plant species; or includes geologic or other natural features of scientific or educational value.



Heil Valley Ranch 2
 North Foothills Open Space



— Heil Valley Ranch 2
— North Foothills Open Space

County Open Space Plan*
 Open Space
 Areas where conservation has been accomplished or is encouraged if opportunity occurs

Legend

- Open Space (Municipal & County)*
- Conservation Easements*
- USFS
- Bureau of Land Management (BLM)
- Table Mountain (NIST)
- State Parks
- State Land Board
- Special Ownership Properties*
- Non-Urban Planned Unit Development*
- Proposed Open Space*
- Open Corridor, Streamside
- Open Corridor, Roadside
- Incorporated Areas (As of April 20, 1999)

*Not all properties are open to public access. Contact the Boulder County Parks and Open Space Department for specific information.

Notes

Open Space acquisitions are not limited to open space areas proposed on this map. The map indicates areas known to have significant open space values and may not include all areas which the open space goals and policies would support as worthy of preservation.

Open space is not a zoning category. The County shall not deny development or other land use applications, otherwise in compliance with the land use regulations, solely because of the open space designations.

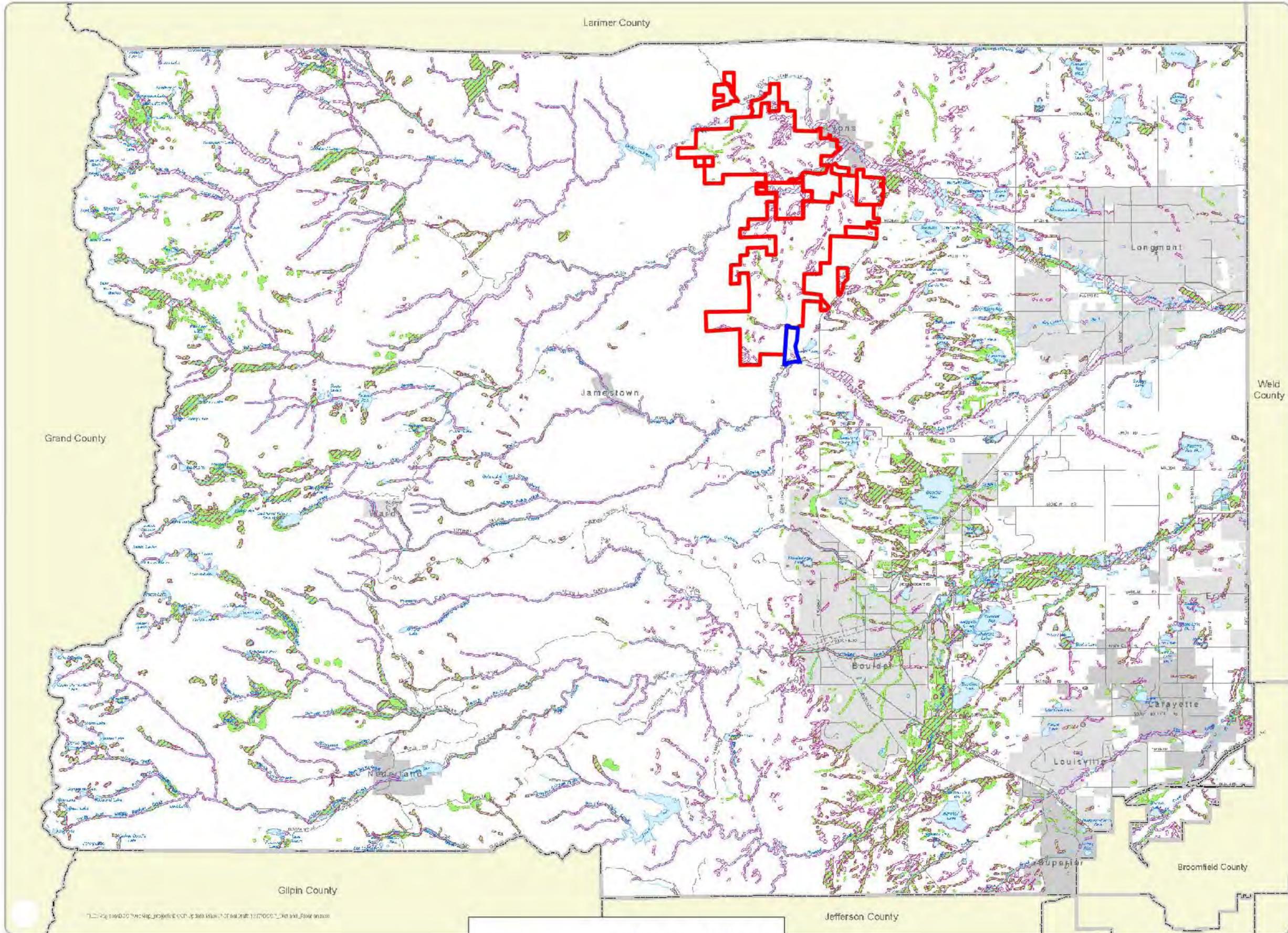
Disclaimer: This map is for illustrative purposes only, and is not suitable for parcel-specific decision making. The areas depicted here are approximate. More site-specific studies may be required to draw accurate conclusions.

Map scale and reproduction method limit precision in physical features and boundary locations.
 PRINTED - APRIL 22, 1999

Revisions
 Adopted - Planning Commission - July 17, 1996

COMPREHENSIVE PLAN MAP

County Open Space Plan*



Wetlands and Riparian Areas

 Boulder County
Comprehensive Plan
2013 Update

Riparian Areas



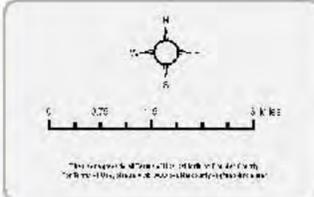
An area recognized by the presence of linear bands of trees, shrubs, and herbaceous vegetation along a waterway where plant communities and soil moisture differ from surrounding upland vegetation and soils

Wetlands



Lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water with one or more of the following attributes: (1) at least periodically, the land supports predominantly hydrophytes (wetland plants); (2) the substrate is predominantly un-drained hydric soil; and/or (3) the substrate is non-soil and is saturated with water or covered by shallow water at some time during the growing season of each year (USFWS 1993).

 Heil Valley Ranch 2
 North Foothills Open Space



APPENDIX 5

VEGETATION

APPENDIX 5A

FEDERAL, STATE, CNHP AND BOULDER COUNTY SPECIES OF CONCERN CODES

APPENDIX 5A
FEDERAL, STATE, COLORADO NATURAL HERITAGE PROGRAM,
BOULDER COUNTY, AND BOULDER COUNTY NATURE ASSOCIATION
SPECIES STATUS CODE DEFINITIONS

Federal Status:

U.S. Fish and Wildlife Service (58 Federal Register 51147, 1993) and (61 Federal Register 7598, 1996)

FE Listed Endangered: defined as a species, subspecies, or variety in danger of extinction throughout all or a significant portion of its range.

FT Listed Threatened: defined as a species, subspecies, or variety likely to become endangered in the foreseeable future throughout all or a significant portion of its range.

State Status:

The Colorado Division of Wildlife has developed categories of imperilment for nongame species (refer to the Colorado Division of Wildlife's Chapter 10 – Nongame Wildlife of the Wildlife Commission's regulations).

SE Endangered: those species or subspecies of native wildlife whose prospects for survival or recruitment within this state are in jeopardy, as determined by the Commission.

ST Threatened: those species or subspecies of native wildlife which, as determined by the Commission, are not in immediate jeopardy of extinction but are vulnerable because they exist in such small numbers, are so extremely restricted in their range, or are experiencing such low recruitment or survival that they may become extinct.

SC Special Concern: those species or subspecies of native wildlife that have been removed from the state threatened or endangered list within the last five years; are proposed for federal listing (or are a federal listing "candidate species") and are not already state listed; have experienced, based on the best available data, a downward trend in numbers or distribution lasting at least five years that may lead to an endangered or threatened status; or are otherwise determined to be vulnerable in Colorado.

Colorado Natural Heritage Program (CNHP) Ranking Systems

Imperilment Ranks of Elements

Global Rank (G): Based on the range-wide status of a species

- G1 Critically imperiled globally because of extreme rarity (5 or fewer occurrences, or very few remaining individuals), or because of some factor of its biology making it especially vulnerable to extinction. (Critically endangered throughout its range).
- G2 Imperiled globally because of rarity (6-20 occurrences), or because of other factors demonstrably making it very vulnerable to extinction throughout its range. (Endangered throughout its range).
- G3 Vulnerable throughout its range or found locally in a restricted range (21-100 occurrences). (Threatened throughout its range).
- G4 Apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery.
- G5 Demonstrably secure globally, though it may be quite rare in parts of its range, especially at the periphery.
- GX Presumed extinct.
- G#? Indicates uncertainty about assigned global rank.
- GU Unable to assign rank due to lack of available information.
- GQ Indicates uncertainty about taxonomic status.
- G#T# Trinomial rank (T) is used for subspecies or varieties. These taxa are ranked on the same criteria as G1-G5.

State Rank (S): Based on the status of a species in an individual state. S ranks may differ between states based on the relative abundance of a species in each state.

- S1 Critically imperiled in state because of extreme rarity (5 or fewer occurrences, or very few remaining individuals), or because of some factor of its biology making it especially vulnerable to extirpation from the state. (Critically endangered in state).

- S2 Imperiled in state because of rarity (6-20 occurrences), or because of other factors demonstrably making it very vulnerable to extirpation from the state. (Endangered throughout its range).
- S3 Rare in state (21 to 100 occurrences).
- S4 Apparently secure in state, though it may be quite rare in parts of its range, especially at the periphery. (Usually more than 100 occurrences and 10,000 individuals).
- S5 Demonstrably secure in state, though it may be quite rare in parts of its range, especially at the periphery.
- S#B Refers to the breeding season imperilment of elements that are not permanent residents.
- S#N Refers to the non-breeding season imperilment of elements that are not permanent residents. Where no consistent location can be discerned for migrants or non-breeding population, a rank of SZN is used.
- SZ Migrant whose occurrences are too irregular, transitory, and/or dispersed to be reliably identified, mapped, and protected.
- SH Historically known from the state, but not verified for an extended period, usually > 15 years; this rank is used primarily when no inventory has been attempted recently.
- SX Presumed extirpated from state.
- S#? Indicates uncertainty about an assigned state rank.
- SU Unable to assign rarity rank, often because of low search effort or cryptic nature of the element.
- SA Accidental in the state.
- SR Reported to occur in the state, but unverified.
- S? Unranked; some evidence that species may be imperiled, but awaiting formal rarity ranking.

Note: Where two numbers appear in a state or global rank (for example, S2S3), the actual rank of the element falls between the two numbers.

Element Occurrence Ranks

- A Excellent viability
- B Good viability
- C Fair viability
- D Poor viability

Biological Diversity Ranks

- B1 Outstanding Significance (indispensable):
 - Only known occurrence of an element
 - A-ranked occurrence of a G1 element (or at least C-ranked if best available occurrence)
 - Concentration of A- or B-ranked occurrences of G1 or G2 elements (four or more)
- B2 Very High Significance:
 - B- or C-ranked occurrence of a G1 element
 - A- or B-ranked occurrence of a G2 element
 - One of the most outstanding (for example, among the five best) occurrences rangewide (at least A- or B-ranked) of a G3 element
 - Concentration of A- or B-ranked elements (four or more)
 - Concentration of C-ranked G2 elements (four or more)
- B3 High Significance:
 - C-ranked occurrence of a G2 element
 - A- or B-ranked occurrence of a G3 element
 - D-ranked occurrence of a G1 element (if best possible occurrence)
 - Up to five of the best occurrences of a G4 or G5 community (at least A- or B-ranked) in an ecoregion (requires consultation with other experts)
- B4 Moderate Significance:
 - Other A- or B-ranked occurrences of a G4 or G5 community
 - C-ranked occurrence of a G3 element
 - A- or B-ranked occurrence of a G4 or G5 S1 species (or at least C-ranked if it is the only state, provincial, national, or ecoregional occurrence)
 - Concentration of A- or B-ranked occurrences of G4 or G5 N1-N2, S1-S2 elements (four or more)
 - D-ranked occurrence of a G2 element
 - At least C-ranked occurrence of a disjunct G4 or G5 element.
 - Concentration of excellent or good occurrences (A- or B-ranked) of G4 S1 or G5 S1 elements (four or more)
- B5 General or State-wide Biological Diversity Significance:
 - Good or marginal occurrence of common community types and globally secure S1 or S2 species.

Boulder County Criteria for Designating Plant Species of Special Concern and Significant Natural Communities

The Boulder County Species of Special Concern List (SSC List) is a compilation of rare plants and significant natural communities of special status that warrant protection in order to prevent population or habitat loss. The list was developed through consultation with botany and plant ecology professionals in federal, state, and local governmental agencies, non-governmental conservation organizations, local universities, and private consultants, as well as Boulder County conservation experts. The majority of species and communities appearing on this list are recognized by the Colorado Natural Heritage Program (CNHP). CNHP is a non-profit organization sponsored by Colorado State University that tracks and ranks Colorado's rare and imperiled species and habitats. The list comprises species CNHP ranks as critically imperiled, imperiled, or vulnerable to extirpation globally (G1-G3) or statewide (S1-S3). Species ranked as more secure or secure (G4-G5, S4-S5) are excluded from the list.

To be listed on the SSC List, a species/community must meet at least one of the required or two or more of the conditional criteria. In some instances, a species has been included on the list even though it does not meet the SSC List criteria. This is based on professional judgment and only occurs with species for which there is presently incomplete or uncertain information available.

Required

1. Species/Communities with Federal Status (listed or proposed threatened or endangered -- LT, LE, PT), candidates for listing -- C or under review for listing), e.g. Colorado butterfly plant (*Gaura neomexicana* ssp. *coloradensis*) – LT, G3T2/S1;
2. All G1-G2 and S1-S2 species that are not also federally listed;
3. Collectable/Harvestable: Species threatened by collection or harvest including showy varieties of orchids, lilies, penstemon, and cacti.

Conditional

4. Species/communities with U.S. Forest Service Region 2 (USFS R2) sensitive species¹, National Park Service (NPS) sensitive species within Rocky Mountain National Park (RMNP)², or City of Boulder Open Space and Mountain Parks sensitive status;

¹This criterion acknowledges that USFS R2 boundaries extend beyond Boulder County and encompass habitats that do not occur within the county, thus not all USFS R2 sensitive species appear on the SSC List.

² This criterion acknowledges that that NPS RMNP boundaries extend beyond Boulder County and encompass habitats that do not occur within the county, thus not all NPS RMNP sensitive species appear on the SSC List.

5. Species/communities that could occur within Boulder County and that CNHP ranks as critically imperiled, imperiled, or vulnerable to extirpation either globally (G1 – G3) or statewide (S1 – S3), e.g., autumn willow (*Salix serissima*) – G4/S1 and narrowleaf grapefern (*Botrychium neolunaria*) – G5/S3;
6. Relictual species/communities having undergone a documented long-term decline or having a critically low population size relative to their historic presence and/or relative abundance in a given ecosystem, e.g., American groundnut (*Apios americana*) – G5/S1 and big bluestem – prairie dropseed (*Andropogon gerardii* – *Sporobolus heterolepis*) – G2/S1S2;
7. Species/communities endemic to Boulder County or region³, e.g., Colorado aletes (*Aletes humilis*) – G2G3/S2S3;
8. Species/communities known or thought to be extinct or extirpated in Boulder County, i.e., species that historically occupied and are native to Boulder County, that may exist in surrounding regions, and that may be able to repopulate Boulder County, e.g., pale moonwort (*Botrychium pallidum*).
9. Species/communities whose populations in the County that are vulnerable to threats⁴ affecting their populations either directly or indirectly, e.g. limber pine (*Pinus flexilis*);
10. Species/communities that have a disproportionately large effect on the diversity within the ecosystem(s) they inhabit e.g., montane riparian forests such as quaking aspen/thinleaf alder (*Populus tremuloides* /*Alnus incana*) forest – G3/S3;
11. Species/communities that are either naturally rare⁵, at the edge of their range in Boulder County, or are isolated or imperiled, e.g., black spleenwort (*Asplenium adiantum-nigrum*) – G5/S1, montane willow carrs such as *Salix bebbiana* shrubland – G3?/S2, and alkali wetlands such as *Suaeda calceoliformis* herbaceous vegetation – GU/S2;

³ Species/communities endemic to Boulder County region indicates a species occurring only in Boulder County and in an adjacent county or counties.

⁴Direct or indirect threats to the stability of species populations or communities include disturbances such as climate change, disease, residential or commercial development, fire suppression, mechanical forest thinning, prescribed fire, etc.

⁵ Species or communities that are “naturally rare” normally occur in low abundance throughout their range. While their populations may be stable, species that are rare on the landscape are more vulnerable to extirpation compared to species with large populations.

12. Species/communities that support sensitive wildlife, e.g., Western Great Plains herbaceous vegetation (*Andropogon gerardii* – *Schizachyrium scoparium*) dominated by big and little bluestem, two native host plants for Arogos skipper (*Atrytone arogos*) – G3G4/S2.

APPENDIX 5B

**COLORADO NATURAL HERITAGE
PROGRAM INFORMATION**

Red Hill south of Lyons

Biodiversity Rank - B1: Outstanding Biodiversity Significance

Protection Urgency Rank - P4: No Threat or Special Opportunity

Management Urgency Rank - M3: Needed within 5 Years to Maintain Quality

U.S.G.S. 7.5-minute quadrangles: Lyons

Size: 6,651 acres (2,692 ha)

Elevation: 5,400 - 6,570 ft. (1,646 - 2,003 m)

General Description: This site is part of the Front Range Hogback system and exemplifies the foothills transition zone. The diverse geology primarily includes sandstones with smaller areas of limestone, claystone, and siltstone (Braddock et al. 1988). The major plant communities present at the site are coniferous woodlands, deciduous shrublands, and grasslands. Bedrock geology is an important influence on the major plant communities. The striking red sandstone hogbacks on the east side of the site are primarily characterized by mountain mahogany (*Cercocarpus montanus*) shrublands although there is significant ponderosa pine (*Pinus ponderosa*) establishment and encroachment in small areas, especially on east-facing hogback slopes. Although mountain mahogany is relatively uniform across the bedrock layers that are exposed on west-facing hogback slopes, the characteristic grass understory tends to shift in correlation with bedrock geology. At lower elevations on Quaternary deposits, needle-and-thread (*Hesperostipa comata*) is characteristic. Lower and mid-slopes, where Fountain, Lyons, Ingelside, and Lykins Formations have more sparse herbaceous cover, New Mexico feathergrass (*Hesperostipa neomexicana*) and/or Scribner's needlegrass (*Achnatherum scribneri*) are characteristic. On Morrison and Dakota formations on high slopes, blue wildrye (*Elymus glaucus*) is common and abundant. Forb diversity is variable within these shrublands, cushion plants tend to be common where other vegetation is sparse. Valley grasslands are compromised and obscured by extensive weed infestation of cheatgrass (*Bromus tectorum*), Jim Hill mustard (*Sisymbrium altissimum*), and alyssum (*Alyssum minimum*). Needle and thread and western wheatgrass (*Pascopyrum smithii*) generally form the current expression of these grasslands. Big bluestem (*Andropogon gerardii*) and little bluestem (*Schizachyrium scoparium*) are infrequent but do form large swards in places. Small areas of calcareous soils are embedded within the valley grasslands, often at toeslopes; these support New Mexico feathergrass grasslands and the globally rare Bell's twinpod (*Physaria bellii*). Granitic bedrock to the west of the sandstone hogbacks support ponderosa pine savanna. This savanna has large patches of trees occurring at various canopy density ranging from 5-25%, which is high for savanna habitat. There is a notable subcanopy of Douglas-fir (*Pseudotsuga menziesii*) and Rocky Mountain juniper (*Juniperus scopulorum*) in certain places. Mountain mahogany is a common shrub beneath the tree canopy and in openings. Other shrubs include wax currant (*Ribes cereum*), skunkbush (*Rhus trilobata*), rabbitbrush (*Chrysothamnus nauseosus*), and others. Graminoid diversity is variable,

but needle-and-thread is the most constant throughout. Tallgrasses like big bluestem and little bluestem are sporadic and often around rock outcrops. Other grasses include junegrass (*Koeleria macrantha*), Indian ricegrass (*Achnatherum hymenoides*), and sideoats grama (*Bouteloua curtipendula*). Forb diversity is also variable but tends to be high in meadow openings and around rock outcrops.

Key Environmental Factors: Tertiary sandstone bedrock layers adjacent to granite massif; foothills-lower montane elevation zone.

Land Use History: The Heil Ranch was acquired during the 1940's. Cultivation of the land occurred at one time and silo structures on the property still attest to this fact. Since the 1940's, the ranch has been utilized for the grazing of livestock. The ranch has several quarry sites which were mined for the Lyons Red Sandstone that was key in the building of many structures in both Lyons and Boulder.

Biodiversity Significance Rank Comments (B1): This site merits an outstanding biodiversity significance rank due to its concentration of globally rare communities and invertebrates in excellent and good condition. Significant plant communities include an excellent to good (AB-ranked) occurrence of the globally imperiled (G2/S2) ponderosa pine savanna (*Pinus ponderosa* / *Cercocarpus montanus* / *Andropogon gerardii*), two good (B-ranked) examples of the globally imperiled (G2/S2) mountain mahogany / needle-and-thread (*Cercocarpus montanus* / *Hesperostipa comata*) shrubland, an excellent to good (AB-ranked) occurrence of the globally imperiled (G2G3/S2S3) mountain mahogany / New Mexico feathergrass (*Cercocarpus montanus* / *Hesperostipa neomexicana*) shrubland, a good (B-ranked) occurrence of the globally critically imperiled (G1G2/S1S2) needle-and-thread grassland (*Hesperostipa comata* Colorado Front Range Herbaceous Vegetation), a good (B-ranked) occurrence of the globally imperiled foothills narrowleaf cottonwood / bluestem willow (*Populus angustifolia* / *Salix irrorata*) riparian woodland, and a good (B-ranked) occurrence of the globally imperiled (G2G3/S2) butterfly, the hops feeding azure (*Celastrina humulus*). Also within the site are a good to fair (BC-ranked) occurrence of globally vulnerable (G3/S3) mountain mahogany / Scribner's needlegrass (*Cercocarpus montanus* / *Achnatherum scribneri*) shrubland, a good (B-ranked) occurrence of the globally vulnerable (G3/S3) New Mexico feathergrass (*Hesperostipa neomexicana*) grassland, occurrences of several rare butterflies including a fair (C-ranked) occurrence of the globally vulnerable (G3G4/S2) Ottoe skipper (*Hesperia ottoe*), a good (B-ranked) occurrence of the globally vulnerable (G3/S2) Arogos skipper (*Atrytone arogos*), and a fair (C-ranked) occurrence of the state rare (G4/S3) Cross-line skipper (*Polites origenes*). There is also an occurrence of black-tailed prairie dog (*Cynomys ludovicianus*). The globally imperiled Bell's twinpod (*Physaria bellii*) occurs within the confines of this site, but is part of the overlapping Lykins Gulch site, which is drawn for the concentration of Bell's twinpod occurrences in the area.

Natural Heritage element occurrences at the Red Hill south of Lyons PCA.

Major Group	State Scientific Name	State Common Name	Global Rank	State Rank	Federal Status	State Status	Fed Sens	EO Rank	Last Obs Date
Insects	Celastrina humulus	Hops Feeding Azure	G2G3	S2				B	2006-06-13
Insects	Atrytone arogos	Arogos Skipper	G3	S2				B	1995-07-21
Insects	Atrytone arogos	Arogos Skipper	G3	S2				C	1995-08-03
Insects	Hesperia ottoe	Ottoe Skipper	G3G4	S2			USFS	C	1995-07-21
Insects	Polites origenes	Cross - line Skipper	G5	S3				C	1995-07-21
Mammals	Cynomys ludovicianus	Black - tailed Prairie Dog	G4	S3		SC	USFS	E	2005-99-99
Natural Communities	Hesperostipa comata Colorado Front Range Herbaceous Vegetation	Great Plains Mixed Grass Prairie	G1G2	S1S2				AB	2007-09-25
Natural Communities	Cercocarpus montanus / Hesperostipa comata Shrubland	Mixed Foothill Shrublands	G2	S2				B	2007-09-25
Natural Communities	Pinus ponderosa / Cercocarpus montanus / Andropogon gerardii Wooded Herbaceous Vegetation	Foothills Ponderosa Pine Scrub Woodlands	G2	S2?				D	1995-08-03
Natural Communities	Pinus ponderosa / Cercocarpus montanus / Andropogon gerardii Wooded Herbaceous Vegetation	Foothills Ponderosa Pine Scrub Woodlands	G2	S2?				AB	2007-09-25
Natural Communities	Populus angustifolia / Salix irrorata Woodland	Foothills Riparian Woodland	G2	S2				B	2008-09-04
Natural Communities	Cercocarpus montanus / Hesperostipa neomexicana Shrubland	Foothills Shrubland	G2G3	S2S3				C	1995-08-25

Major Group	State Scientific Name	State Common Name	Global Rank	State Rank	Federal Status	State Status	Fed Sens	EO Rank	Last Obs Date
Natural Communities	<i>Cercocarpus montanus</i> / <i>Hesperostipa neomexicana</i> Shrubland	Foothills Shrubland	G2G3	S2S3				AB	2007-09-25
Natural Communities	<i>Cercocarpus montanus</i> / <i>Achnatherum scribneri</i> Shrubland	Foothills Shrubland	G3	S3				BC	2007-09-25
Natural Communities	<i>Hesperostipa neomexicana</i> Herbaceous Vegetation	Great Plains Mixed Grass Prairie	G3	S3				B?	2007-07-03
Vascular Plants	<i>Cheilanthes eatonii</i>	Eaton's lip fern	G5?	S2				C	2007-09-25

** The records above are sorted in the following order 1) Major Group 2) Global Rank and 3) Scientific name.

Boundary Justification: The boundary includes the occurrences of plant communities and imperiled butterflies, but also encompasses an area within which management activities consistent with historic natural processes (fire and herbivory and the resulting habitat mosaic) could be employed to increase the habitat quantity and/or quality for the plant communities and butterflies. The boundary generally includes the eastern slope of the hogback which provides or potentially provides habitat for the tallgrass prairie species and butterflies. Since several of the dominant species in the plant communities serve as food plants for the imperiled butterflies, management actions will affect both.

Protection Urgency Rank Comments (P4): The majority of this site is owned and managed by Boulder County Parks and Open Space with minor inholdings in private ownership. Much of the open space property is closed to the public.

Management Urgency Rank Comments (M3): Several exotic species occur in the plant communities in various quantities. The most common of these include smooth brome (*Bromus tectorum*), Japanese brome (*Bromus japonicus*), musk thistle (*Carduus nutans*), Kentucky bluegrass (*Poa pratensis*), Canada bluegrass (*Poa compressa*), Dalmation toadflax (*Linaria dalmatica*), alyssum (*Alyssum minus*), and knapweed (*Centaurea* species). Careful consideration should be given to butterfly species of concern when using herbicides to control exotic species (Moffat and McPhillips 1993). Early season grazing, burning, or mowing may be effective management tools to control many of the cool season exotic plants and favor warm season dominant native plants. However, such treatments should seek to maintain patchiness since butterflies that specialize on tallgrass prairie are seriously impacted by fire (Swengel and Swengel 1995). Consider prescribed burning or logging in woodland to thin tree

canopy.

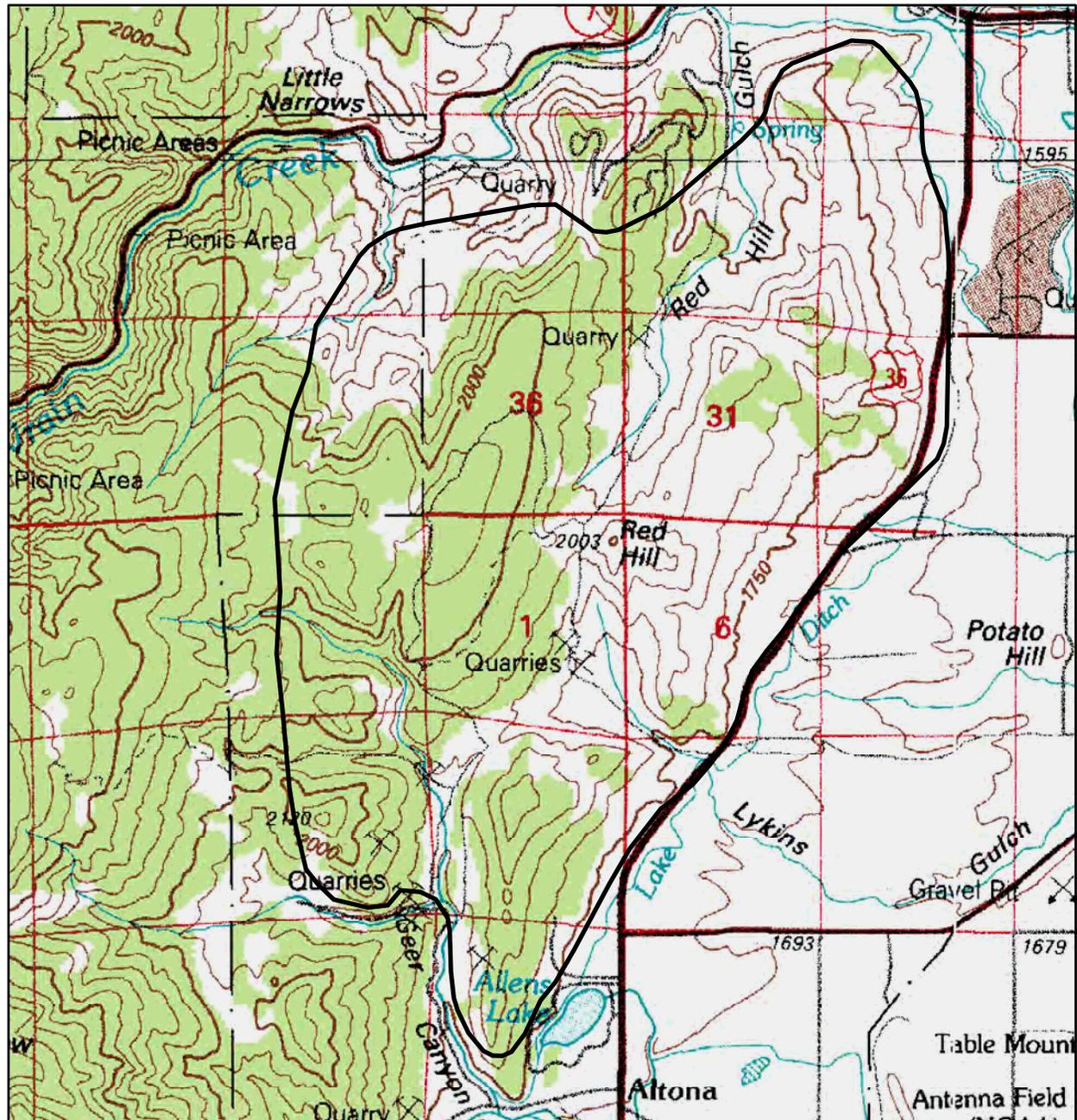
Exotic Species Comments: Several exotic species occur in the plant communities in various quantities. The most common of these include smooth brome (*Bromus tectorum*), Japanese brome (*Bromus japonicus*), musk thistle (*Carduus nutans*), Kentucky bluegrass (*Poa pratensis*), Canada bluegrass (*Poa compressa*), Dalmation toadflax (*Linaria dalmatica*), alyssum (*Alyssum minus*), and knapweed (*Centaurea* species).

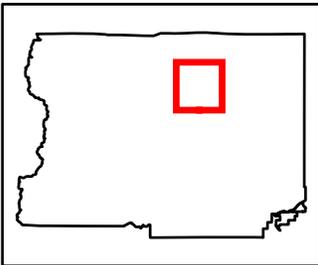
References

- Bock, C. E., and J. H. Bock. 1988. Grassland birds in southeastern Arizona: impacts of fire, grazing, and alien vegetation. ICBP Technical Publication No. 7:43-58.
- Braddock, W.A., R.G. Houston, R.B. Colton, and J.C. Coles. 1988. *Geologic Map of the Lyons Quadrangle, Boulder County, Colorado. Map GQ-1629*. U.S. Geologic Survey, Reston, Virginia.
- Braddock, William A., Prinya Nutalaya, and Roger B. Colton. 1988. Geologic Map of the Carter Lake Reservoir Quadrangle, Boulder and Larimer Counties, Colorado.
- Mehl, M. S. 1992. Old-growth descriptions for the major forest cover types in the Rocky Mountain Region. Pages 106-120 in: M. R. Kaufmann, W. H. Moir, and R. L. Bassett. Old-growth forests in the southwest and Rocky Mountain regions. Proceedings of the old-growth forests in the Rocky Mountains and Southwest conference, Portal, AZ. March 9-13, 1992. USDA Forest Service, General Technical Report RM-213, Rocky Mountain Forest and Range Experiment Station, Fort Collins, CO.
- Moffat, Mary & Nell McPhillips. 1993. Management for butterflies in the northern great plains: a literature review and guidebook for land managers. U.S. Fish and Wildlife Service, Ecological Services, South Dakota State Office, Pierre. SD-ES-93-05.
- Neid, S., J. Lemly, K. Decker and D. Culver. 2009. Final Report: Survey of Critical Biological Resources in Boulder County 2007-2008. Colorado Natural Heritage Program, Fort Collins, CO.
- Peet, R. K. 1981. Forest vegetation of the Colorado Front Range: composition and dynamics. *Vegetatio* 45:3-75.
- Samson, F. and F. Knopf. 1994. Prairie conservation in North America. *Bioscience* 44(6):418-421.
- Swengel, A.B. and S.R. Swengel. 1995. The tall-grass prairie butterfly community. In: La Roe, G.T., G.S. Farris, C.E. Puckett, P.D. Doran, and M.J. Mae, (eds.). *Our Living Resources: A Report on the Distribution, Abundance, and Health of U.S. Plants, Animals, and Ecosystems*. U.S. Department of Interior, National Biological Service, Washington, D.C.
- West, N. E. 1993. Biodiversity of rangelands. *Journal of Range Management*. 46(1).

Version Author: Neid, S.L.

Version Date: 10/23/2008



<p>Colorado Natural Heritage Program Colorado State University 254 General Services Building 8002 Campus Delivery Fort Collins, CO 80523-8002</p> <p>Ph (970) 491-1309 Fax (970) 491-3349 www.cnhp.colostate.edu</p> <p>Map Date: 11/02/2008</p>	<p>Legend</p> <p> PCA Boundary</p> <p>Estes Park, 40105-A1</p> <p>30x60 Minute Digital Raster Graphic produced by the U.S. Geological Survey</p>	<p>Location in Boulder County</p> 
--	--	---

Red Hill south of Lyons Potential Conservation Area, B1: Outstanding Biodiversity Significance

APPENDIX 6

WILDLIFE

Sorted by taxon.			
Occurrence and Abundance Codes based on status in Boulder County. A list of Occurrence and Abundance Classification Criteria are found at the end of this list.			
Species in bold are Boulder County Species of Special Concern.			
AMPHIBIANS			
Common Name	Scientific Name	Occurrence Code	Abundance Code
Tiger Salamander	Ambystoma tigrinum	Known to Occur	Common
Woodhouse's Toad	Bufo woodhousii	Known to Occur	Fairly Common
Western Chorus Frog	Pseudacris triseriata	Known to Occur	Common
Northern Leopard Frog	Rana pipiens	Known to Occur	Uncommon
BIRDS			
Common Name	Scientific Name	Occurrence Code	Abundance Code
Great Blue Heron	Ardea herodias	Known to Occur	Fairly Common
Black-crowned Night-Heron	Nycticorax nycticorax	Known to Occur	Uncommon
Canada Goose	Branta canadensis	Known to Occur	Common
Mallard	Anas platyrhynchos	Known to Occur	Abundant
Common Merganser	Mergus merganser	Known to Occur	Rare
Turkey Vulture	Cathartes aura	Known to Occur	Fairly Common
Osprey	Pandion haliaetus	Known to Occur	Uncommon
Bald Eagle	Haliaeetus leucocephalus	Known to Occur	Uncommon
Northern Harrier	Circus cyaneus	Known to Occur	Uncommon
Sharp-shinned Hawk	Accipiter striatus	Known to Occur	Uncommon
Cooper's Hawk	Accipiter cooperii	Known to Occur	Uncommon
Northern Goshawk	Accipiter gentilis	Known to Occur	Uncommon
Swainson's Hawk	Buteo swainsoni	Known to Occur	Uncommon
Red-tailed Hawk	Buteo jamaicensis	Known to Occur	Fairly Common
Ferruginous Hawk	Buteo regalis	Known to Occur	Uncommon
Golden Eagle	Aquila chrysaetos	Known to Occur	Uncommon
American Kestrel	Falco sparverius	Known to Occur	Fairly Common
Merlin	Falco columbarius	Known to Occur	Uncommon
Prairie Falcon	Falco mexicanus	Known to Occur	Uncommon
Peregrine Falcon	Falco peregrinus	Known to Occur	Uncommon
Dusky Grouse	Dendragapus obscurus	Known to Occur	Fairly Common
Wild Turkey	Melegris gallapavo	Known to Occur	Fairly Common
Sora	Porzana carolina	Known to Occur	Uncommon
American Coot	Fulica americana	Known to Occur	Uncommon
Killdeer	Charadrius vociferus	Known to Occur	Common
Spotted Sandpiper	Actitis macularia	Known to Occur	Fairly Common
Common Snipe	Gallinago gallinago	Known to Occur	Fairly Common
California Gull	Larus californicus	Known to Occur	Rare

Common Name	Scientific Name	Occurrence Code	Abundance Code
Rock Pigeon	<i>Columba livia</i>	Known to Occur	Common
Band-tailed Pigeon	<i>Columba fasciata</i>	Known to Occur	Uncommon
Mourning Dove	<i>Zenaida macroura</i>	Known to Occur	Common
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	Known to Occur	Uncommon
Barn Owl	<i>Tyto alba</i>	Known to Occur	Fairly Common
Flammulated Owl	<i>Otus flammeolus</i>	Known to Occur	Uncommon
Eastern Screech-Owl	<i>Otus osio</i>	Known to Occur	Rare
Great Horned Owl	<i>Bubo virginianus</i>	Known to Occur	Fairly Common
Northern Pygmy-Owl	<i>Glaucidium gnoma</i>	Known to Occur	Uncommon
Long-eared Owl	<i>Asio otus</i>	Known to Occur	Rare
Northern Saw-whet Owl	<i>Aegolius acadicus</i>	Known to Occur	Uncommon
Common Nighthawk	<i>Chordeiles minor</i>	Known to Occur	Fairly Common
Common Poorwill	<i>Phalaenoptilus nuttallii</i>	Known to Occur	Fairly Common
White-throated Swift	<i>Aeronautes saxatalis</i>	Known to Occur	Uncommon
Black-chinned Hummingbird	<i>Archilochus alexandri</i>	Known to Occur	Uncommon
Broad-tailed Hummingbird	<i>Selasphorus platycercus</i>	Known to Occur	Abundant
Rufous Hummingbird	<i>Selasphorus rufus</i>	Known to Occur	Uncommon
Belted Kingfisher	<i>Ceryle alcyon</i>	Known to Occur	Uncommon
Lewis's Woodpecker	<i>Asyndesmus lewis</i>	Known to Occur	Uncommon
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	Known to Occur	Uncommon
Red-naped Sapsucker	<i>Sphyrapicus nuchalis</i>	Known to Occur	Fairly Common
Williamson's Sapsucker	<i>Sphyrapicus thyroideus</i>	Known to Occur	Fairly Common
Downy Woodpecker	<i>Picoides pubescens</i>	Known to Occur	Fairly Common
Hairy Woodpecker	<i>Picoides villosus</i>	Known to Occur	Fairly Common
American Three-toed Woodpecker	<i>Picoides tridactylus</i>	Known to Occur	Uncommon
Northern Flicker	<i>Colaptes auratus</i>	Known to Occur	Common
Olive-sided Flycatcher	<i>Contopus cooperi</i>	Known to Occur	Uncommon
Western Wood-Pewee	<i>Contopus sordidulus</i>	Known to Occur	Common
Willow Flycatcher	<i>Empidonax traillii</i>	Known to Occur	Rare
Hammond's Flycatcher	<i>Empidonax hammondii</i>	Known to Occur	Common
Gray Flycatcher	<i>Empidonax wrightii</i>	Known to Occur	Rare
Dusky Flycatcher	<i>Empidonax oberholseri</i>	Known to Occur	Common
Cordilleran Flycatcher	<i>Empidonax occidentalis</i>	Known to Occur	Fairly Common
Say's Phoebe	<i>Sayornis saya</i>	Known to Occur	Rare
Western Kingbird	<i>Tyrannus verticalis</i>	Known to Occur	Rare
Eastern Kingbird	<i>Tyrannus tyrannus</i>	Known to Occur	Uncommon
Loggerhead Shrike	<i>Lanius ludovicianus</i>	Known to Occur	Rare
Northern Shrike	<i>Lanius excubitor</i>	Known to Occur	Uncommon
Gray Vireo	<i>Vireo vicinior</i>	Known to Occur	Rare
Plumbeous Vireo	<i>Vireo plumbeus</i>	Known to Occur	Fairly Common

Common Name	Scientific Name	Occurrence Code	Abundance Code
Warbling Vireo	<i>Vireo gilvus</i>	Known to Occur	Common
Red-eyed Vireo	<i>Vireo olivaceus</i>	Known to Occur	Uncommon
Steller's Jay	<i>Cyanocitta stelleri</i>	Known to Occur	Common
Blue Jay	<i>Cyanocitta cristata</i>	Known to Occur	Rare
Western Scrub-Jay	<i>Aphelocoma coerulescens</i>	Known to Occur	Uncommon
Pinyon Jay	<i>Gymnorhinus cyanocephalus</i>	Known to Occur	Rare
Clark's Nutcracker	<i>Nucifraga columbiana</i>	Known to Occur	Fairly Common
Black-billed Magpie	<i>Pica pica</i>	Known to Occur	Common
American Crow	<i>Corvus brachyrhynchos</i>	Known to Occur	Fairly Common
Common Raven	<i>Corvus corax</i>	Known to Occur	Common
Horned Lark	<i>Eremophila alpestris</i>	Known to Occur	Uncommon
Tree Swallow	<i>Tachycineta bicolor</i>	Known to Occur	Common
Violet-green Swallow	<i>Tachycineta thalassina</i>	Known to Occur	Common
Northern Rough-winged Swallow	<i>Stelgidopteryx ruficollis</i>	Known to Occur	Uncommon
Bank Swallow	<i>Riparia riparia</i>	Known to Occur	Fairly Common
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	Known to Occur	Rare
Barn Swallow	<i>Hirundo rustica</i>	Known to Occur	Fairly Common
Black-capped Chickadee	<i>Poecile atricapillus</i>	Known to Occur	Fairly Common
Mountain Chickadee	<i>Poecile gambeli</i>	Known to Occur	Abundant
Bushtit	<i>Psaltriparus minimus</i>	Known to Occur	Uncommon
Red-breasted Nuthatch	<i>Sitta canadensis</i>	Known to Occur	Fairly Common
White-breasted Nuthatch	<i>Sitta carolinensis</i>	Known to Occur	Fairly Common
Pygmy Nuthatch	<i>Sitta pygmaea</i>	Known to Occur	Common
Brown Creeper	<i>Certhia americana</i>	Known to Occur	Fairly Common
Rock Wren	<i>Salpinctes obsoletus</i>	Known to Occur	Fairly Common
Canyon Wren	<i>Catherpes mexicanus</i>	Known to Occur	Fairly Common
House Wren	<i>Troglodytes aedon</i>	Known to Occur	Common
American Dipper	<i>Cinclus mexicanus</i>	Known to Occur	Fairly Common
Golden-crowned Kinglet	<i>Regulus satrapa</i>	Known to Occur	Fairly Common
Ruby-crowned Kinglet	<i>Regulus calendula</i>	Known to Occur	Abundant
Blue-gray gnatcatcher	<i>Polioptila caerulea</i>	Known to Occur	Uncommon
Eastern Bluebird	<i>Sialia sialis</i>	Known to Occur	Uncommon
Western Bluebird	<i>Sialia mexicana</i>	Known to Occur	Uncommon
Mountain Bluebird	<i>Sialia currucoides</i>	Known to Occur	Common
Townsend's Solitaire	<i>Myadestes townsendi</i>	Known to Occur	Common
Veery	<i>Catharus fuscescens</i>	Known to Occur	Rare
Swainson's Thrush	<i>Catharus ustulatus</i>	Known to Occur	Fairly Common
Hermit Thrush	<i>Catharus guttatus</i>	Known to Occur	Common
American Robin	<i>Turdus migratorius</i>	Known to Occur	Abundant
Gray Catbird	<i>Dumetella carolinensis</i>	Known to Occur	Rare

Common Name	Scientific Name	Occurrence Code	Abundance Code
Northern Mockingbird	Mimus polyglottos	Known to Occur	Uncommon
Brown Thrasher	Toxostoma rufum	Known to Occur	Rare
Sage Thrasher	Oreoscoptes montanus	Known to Occur	Rare
European Starling	Sturnus vulgaris	Known to Occur	Rare
Bohemian Waxwing	Bombycilla garrulus	Known to Occur	Fairly Common
Cedar Waxwing	Bombycilla cedrorum	Known to Occur	Unknown
Orange-crowned Warbler	Vermivora celata	Known to Occur	Rare
Virginia's Warbler	Vermivora virginiae	Known to Occur	Common
Yellow Warbler	Dendroica petechia	Known to Occur	Fairly Common
Chestnut-sided Warbler	Dendroica pensylvanica	Known to Occur	Rare
Magnolia Warbler	Dendroica magnolia	Known to Occur	Rare
Yellow-rumped Warbler	Dendroica coronata	Known to Occur	Abundant
Townsend's Warbler	Dendroica townsendi	Known to Occur	Fairly Common
Black-and-white Warbler	Mniotilta varia	Known to Occur	Rare
American Redstart	Septophaga ruticilla	Known to Occur	Rare
Ovenbird	Seiurus aurocapillus	Known to Occur	Rare
Northern Waterthrush	Seiurus noveboracensis	Known to Occur	Unknown
MacGillivray's Warbler	Oporornis tolmiei	Known to Occur	Fairly Common
Common Yellowthroat	Geothlypis trichas	Known to Occur	Rare
Wilson's Warbler	Wilsonia pusilla	Known to Occur	Abundant
Yellow-breasted Chat	Icteria virens	Known to Occur	Uncommon
Western Tanager	Piranga ludoviciana	Known to Occur	Common
Green-tailed Towhee	Pipilo chlorurus	Known to Occur	Common
Spotted Towhee	Pipilo maculatus	Known to Occur	Common
Cassin's Sparrow	Aimophia cassinii	Known to Occur	Rare
American Tree Sparrow	Spizella arborea	Known to Occur	Uncommon
Chipping Sparrow	Spizella passerina	Known to Occur	Common
Clay-colored Sparrow	Spizella pallida	Known to Occur	Fairly Common
Brewer's Sparrow	Spizella breweri	Known to Occur	Rare
Vesper Sparrow	Pooecetes gramineus	Known to Occur	Uncommon
Lark Sparrow	Chondestes grammacus	Known to Occur	Common
Lark Bunting	Calamospiza melanocorys	Known to Occur	Uncommon
Savannah Sparrow	Passerculus sandwichensis	Known to Occur	Uncommon
Grasshopper Sparrow	Ammodramus savannarum	Known to Occur	Uncommon
Fox Sparrow	Passerella iliaca	Known to Occur	Common
Song Sparrow	Melospiza melodia	Known to Occur	Common
Lincoln's Sparrow	Melospiza lincolni	Known to Occur	Abundant
White-crowned Sparrow	Zonotrichia leucophrys	Known to Occur	Common
Dark-eyed Junco	Junco hyemalis	Known to Occur	Common
Rose-breasted Grosbeak	Pheucticus ludovicianus	Known to Occur	Rare

Common Name	Scientific Name	Occurrence Code	Abundance Code
Black-headed Grosbeak	<i>Pheucticus melanocephalus</i>	Known to Occur	Fairly Common
Blue Grosbeak	<i>Guiraca caerulea</i>	Known to Occur	Uncommon
Lazuli Bunting	<i>Passerina amoena</i>	Known to Occur	Fairly Common
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	Known to Occur	Fairly common
Western Meadowlark	<i>Sturnella neglecta</i>	Known to Occur	Common
Brewer's Blackbird	<i>Euphagus cyanocephalus</i>	Known to Occur	Fairly common
Common Grackle	<i>Quiscalus quiscula</i>	Known to Occur	Uncommon
Great-tailed Grackle	<i>Quiscalus mexicanus</i>	Known to Occur	Uncommon
Brown-headed Cowbird	<i>Molothrus ater</i>	Known to Occur	Common
Bullock's Oriole	<i>Icterus bullockii</i>	Known to Occur	Fairly Common
Pine Grosbeak	<i>Pinicola enucleator</i>	Known to Occur	Fairly Common
Cassin's Finch	<i>Carpodacus cassinii</i>	Known to Occur	Fairly Common
House Finch	<i>Carpodacus mexicanus</i>	Known to Occur	Uncommon
Red Crossbill	<i>Loxia curvirostra</i>	Known to Occur	Fairly Common
Pine Siskin	<i>Carduelis pinus</i>	Known to Occur	Common
Lesser Goldfinch	<i>Carduelis psaltria</i>	Known to Occur	Fairly Common
American Goldfinch	<i>Carduelis tristis</i>	Known to Occur	Fairly Common
Evening Grosbeak	<i>Coccothraustes vespertinus</i>	Known to Occur	Uncommon
House Sparrow	<i>Passer domesticus</i>	Known to Occur	Rare
MAMMALS			
Common Name	Scientific Name	Occurrence Code	Abundance Code
Masked Shrew	<i>Sorex cinereus</i>	Known to Occur	Fairly Common
Merriam's Shrew	<i>Sorex merriami</i>	Known to Occur	Very Rare
Montane Shrew	<i>Sorex monticolus</i>	Known to Occur	Common
Dwarf Shrew	<i>Sorex nanus</i>	Known to Occur	Unknown
American Water Shrew	<i>Sorex palustris</i>	Known to Occur	Uncommon
Least Shrew	<i>Cryptotis parva</i>	Known to Occur	Rare
Brazilian Free-tailed Bat	<i>Tadarida brasiliensis</i>	Known to Occur	Rare
Western Small-footed Myotis	<i>Myotis ciliolabrum</i>	Known to Occur	Common
Long-eared Myotis	<i>Myotis evotis</i>	Known to Occur	Fairly Common
Little Brown Myotis	<i>Myotis lucifugus</i>	Known to Occur	Common
Fringed Myotis	<i>Myotis thysanodes</i>	Known to Occur	Uncommon
Long-legged Myotis	<i>Myotis volans</i>	Known to Occur	Fairly common
Hoary Bat	<i>Lasiurus cinereus</i>	Known to Occur	Unknown
Silver-haired Bat	<i>Lasionycteris noctivagans</i>	Known to Occur	Common
Tricolored Bat	<i>Perimyotis subflavus</i>	Known to Occur	Uncommon
Big Brown Bat	<i>Eptesicus fuscus</i>	Known to Occur	Common
Towensend's Big-eared Bat	<i>Corynorhinus townsendii</i>	Known to Occur	Unknown
Mountain Cottontail	<i>Sylvilagus nuttallii</i>	Known to Occur	Abundant

Common Name	Scientific Name	Occurrence Code	Abundance Code
White-tailed Jackrabbit	<i>Lepus townsendii</i>	Known to Occur	Abundant
Least Chipmunk	<i>Tamias minimus</i>	Known to Occur	Common
Colorado Chipmunk	<i>Tamias quadrivittatus</i>	Known to Occur	Fairly Common
Yellow-bellied Marmot	<i>Marmota flaviventris</i>	Known to Occur	Common
Wyoming Ground Squirrel	<i>Spermophilus elegans</i>	Known to Occur	Common
Rock Squirrel	<i>Spermophilus variegatus</i>	Known to Occur	Uncommon
Golden-mantled Ground Squirrel	<i>Spermophilus lateralis</i>	Known to Occur	Fairly Common
Thirteen-lined Ground Squirrel	<i>Ictidomys tridecemlineatus</i>	Known to Occur	Uncommon
Black-tailed Prairie Dog	<i>Cynomys ludovicianus</i>	Known to Occur	Fairly Common
Abert's Squirrel	<i>Sciurus aberti</i>	Known to Occur	Fairly Common
Fox Squirrel	<i>Sciurus niger</i>	Known to Occur	Rare
Pine Squirrel	<i>Tamiasciurus hudsonicus</i>	Known to Occur	Abundant
Northern Pocket Gopher	<i>Thomomys talpoides</i>	Known to Occur	Abundant
North American Beaver	<i>Castor canadensis</i>	Known to Occur	Fairly Common
Olive-backed Pocket Mouse	<i>Perognathus fasciatus</i>	Known to Occur	Uncommon
Deer Mouse	<i>Peromyscus maniculatus</i>	Known to Occur	Abundant
Northern Rock Mouse	<i>Peromyscus difficilis</i>	Known to Occur	Uncommon
Western Harvest Mouse	<i>Reithrodontomys megalotis</i>	Known to Occur	Rare
Bushy-tailed Woodrat	<i>Neotoma cinerea</i>	Known to Occur	Fairly Common
Mexican Woodrat	<i>Neotoma mexicana</i>	Known to Occur	Uncommon
House Mouse	<i>Mus musculus</i>	Known to Occur	Abundant
Southern Red-backed Vole	<i>Clethrionomys gapperi</i>	Known to Occur	Fairly Common
Long-tailed Vole	<i>Microtus longicaudus</i>	Known to Occur	Fairly Common
Montane Vole	<i>Microtus montanus</i>	Known to Occur	Common
Meadow Vole	<i>Microtus pennsylvanicus</i>	Known to Occur	Common
Common Muskrat	<i>Ondatra zibethicus</i>	Known to Occur	Common
Western Jumping Mouse	<i>Zapus princeps</i>	Known to Occur	Fairly Common
Preble's Meadow Jumping Mouse	<i>Zapus hudsonius preblie</i>	Known to Occur	Rare
North American Porcupine	<i>Erethizon dorsatum</i>	Known to Occur	Uncommon
Coyote	<i>Canis latrans</i>	Known to Occur	Common
Swift Fox	<i>Vulpes velox</i>	Known to Occur	Uncommon
Red Fox	<i>Vulpes vulpes</i>	Known to Occur	Common
Gray Fox	<i>Urocyon cinereoargenteus</i>	Known to Occur	Uncommon
Black Bear	<i>Ursus americanus</i>	Known to Occur	Common
American Marten	<i>Martes americana</i>	Known to Occur	Uncommon
Ringtail	<i>Bassariscus astutus</i>	Likely to Occur	Unknown
Raccoon	<i>Procyon lotor</i>	Known to Occur	Common
Ermine	<i>Mustela erminea</i>	Known to Occur	Fairly Common
Long-tailed Weasel	<i>Mustela frenata</i>	Known to Occur	Fairly Common
American Mink	<i>Mustela vison</i>	Known to Occur	Rare

Common Name	Scientific Name	Occurrence Code	Abundance Code
American Badger	Taxidea taxus	Known to Occur	Rare
Western Spotted Skunk	Spilogale gracilis	Known to Occur	Uncommon
Striped Skunk	Mephitis mephitis	Known to Occur	Uncommon
Northern River Otter	Lontra canadensis	Known to Occur	Very Rare
Mountain Lion	Felis concolor	Known to Occur	Fairly Common
Bobcat	Lynx rufus	Known to Occur	Fairly Common
American Elk	Cervus elaphus	Known to Occur	Abundant
Mule Deer	Odocoileus hemionus	Known to Occur	Common
White-tailed Deer	Odocoileus virginianus	Known to Occur	Fairly Common
Moose	Alces alces	Known to Occur	Uncommon
Rocky Mountain Bighorn Sheep	Ovis canadensis	Known to Occur	Uncommon
REPTILES			
Common Name	Scientific Name	Occurrence Code	Abundance Code
Plateau Lizard	Sceloporus undulatus	Known to Occur	Fairly common
Six-lined Racerunner	Cnemidophorus sexlineatus	Known to Occur	Uncommon
Racer	Coluber constrictor	Known to Occur	Rare
Milk Snake	Lampropeltis triangulum	Known to Occur	Rare
Smooth Green Snake	Liochlorophis vernalis	Known to Occur	Rare
Gopher Snake	Pituophis catenifer	Known to Occur	Rare
Plains Black-headed Snake	Tantilla nigriceps	Likely to Occur	Unknown
Western Terrestrial Garter Snake	Thamnophis elegans	Known to Occur	Fairly common
Plains Garter Snake	Thamnophis radix	Known to Occur	Fairly common
Common Garter Snake	Thamnophis sirtalis	Known to Occur	Uncommon
Western Rattlesnake	Crotalus viridis	Known to Occur	Uncommon

OCCURRENCE CLASSIFICATION CRITERIA

The following are categories used to classify species occurrence on a county basis for the purposes of the NDIS project.

CATEGORY	DEFINITION
Known to Occur	Species or sub-species known to occur in the county from actual records or sightings.
Likely to Occur	No known records or sightings exist for the county, but the species is suspected to occur because of its proximity to adjacent counties having known records or the availability of suitable habitats.

SPECIES CLASSIFICATIONS FOR ABUNDANCE

The following are the abundance classes which will be used to categorize species abundance on a county basis for the purposes of the NDIS project. The categories are intended to be objective in the sense that specific numbers of individuals or groups are used to define the abundance class.

AMPHIBIANS

CATEGORY	DEFINITION
Common	10 or more individual adults or 4 or more breeding aggregations can usually be observed, and the species can usually be found in 75-100% of areas surveyed in a single day by standard techniques and in appropriate seasons and habitats.
Fairly Common	5 to 10 individual adults or 2 to 3 breeding aggregations can usually be observed, and the species can usually be found in 50-75% of areas surveyed in a single day by standard techniques and in appropriate seasons and habitats.

AMPHIBIANS (continued)

Locally Common	10 or more individual adults or 4 or more breeding aggregations can usually be observed, and the species can usually be found in 0-33% of sites surveyed in a single day by standard techniques and in appropriate seasons and habitats.
Sparsely Common	1 individual adult or 1 breeding aggregation can usually be observed in 67-100% of areas surveyed in a single day by standard techniques and in appropriate seasons and habitats.
Uncommon	Fewer than 5 individual adults or at most 1 breeding aggregation can usually be observed, and the species can usually be found in less than 50% of areas surveyed in a single day by standard techniques and in appropriate seasons and habitats.
Rare	Fewer than 5 individual adults or 1 to 2 breeding aggregations can usually be observed, and the species can usually be found in less than 50% of areas surveyed in a single season by standard techniques and in appropriate seasons and habitats.
Very Rare	Fewer than 10 records (including all historic records) for the state.
Extirpated	Known to have historically occurred, but known to no longer be present in a natural and free roaming condition.
Unknown	Can not be placed in any of the abundance categories above due to lack of information.

BIRDS

CATEGORY	DEFINITION
Abundant	Observed daily; >100/day in appropriate season and habitat
Common	Observed daily; 25-100/day in appropriate season and habitat
Fairly Common	Observed daily; 10-25/day in appropriate season and habitat
Uncommon	Usually observed daily in appropriate season and habitat; 1-10/day OR species may be gregarious so that a large group may be observed at one time, but usually only 1-2 groups per day is observed.
Rare	Usually not observed daily in appropriate season and habitat; 1-5/day and 1-10/season OR species may be gregarious so that a large group may be observed at one time, but usually only 1 group is observed.

BIRDS (continued)

Very Rare	10-40 records (includes all historical records) for the state as a whole
Casual/Accidental	1-9 records (includes all historical records)
Extirpated	Known to have historically occurred, but known to no longer be present
Unknown	Known to occur, but can't be placed in any of the abundance categories above

MAMMALS

CATEGORY	DEFINITION
Abundant	Observed daily; >100/day in appropriate season and habitat OR the dominant species (in terms of number) collected by standard techniques in appropriate season and habitat
Common	Observed daily; 25-100/day in appropriate season and habitat OR one of the most common species collected by standard techniques in appropriate season and habitat
Fairly Common	Observed daily; 10-25/day in appropriate season and habitat OR expected to be collected daily in small numbers by standard techniques in appropriate season and habitat
Uncommon	Usually observed daily in appropriate season and habitat; 1-10/day OR species may be gregarious so that a large group may be observed at one time, but usually only 1-2 groups per day is observed OR usually collected daily in appropriate season and habitat
Rare	Usually not observed daily in appropriate season and habitat; 1-5/day and 1-10/season OR species may be gregarious so that a large group may be observed at one time, but usually only 1 group is observed OR usually not collected daily in appropriate season
Very Rare	10-40 records (includes all historical records) for the state as a whole
Casual/Accidental	1-9 records (includes all historical records) for the state as a whole
Extirpated	Known to have historically occurred, but known to no longer be present
Unknown	Known or Likely to occur, but can't be placed in any of the abundance categories above.

REPTILES

CATEGORY	DEFINITION
Common	10 or more individual adults can usually be observed, and the species can usually be found in 75-100% of areas surveyed in a single day by standard techniques and in appropriate seasons and habitats.
Fairly Common	5 to 10 individual adults can usually be observed, and the species can usually be found in 50-75% of areas surveyed in a single day by standard techniques and in appropriate seasons and habitats.
Locally Common	10 or more individual adults can usually be observed, and the species can usually be found in 0-33% of sites surveyed in a single day by standard techniques and in appropriate seasons and habitats.
Sparsely Common	1 individual adult can usually be observed in 67-100% of areas surveyed in a single day by standard techniques and in appropriate seasons and habitats.
Uncommon	Fewer than 5 individual adults can usually be observed, and the species can usually be found in less than 50% of areas surveyed in a single day by standard techniques and in appropriate seasons and habitats.
Rare	Fewer than 5 individual adults can usually be observed, and the species can usually be found in less than 50% of areas surveyed in a single season by standard techniques and in appropriate seasons and habitats.
Very Rare	Fewer than 10 records (including all historic records) for the state.
Extirpated	Known to have historically occurred, but known to no longer be present in a natural and free roaming condition.
Unknown	Can not be placed in any of the abundance categories above due to lack of information.

2-Dimensional Depiction of Amphibian and Reptile Abundance Classes

	0-33% of Sites	34-66% of Sites	67-100% of Sites
10 Individual/Sites	Locally Common	Fairly Common	Common
2-10 Individuals/Sites	Uncommon	Fairly Common	Fairly Common
1 Individual/Site	Rare	Uncommon	Sparsely Common

Note: Above table created by Hammerson to more easily depict Abundance Criteria.



Parks and Open Space

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

PARKS AND OPEN SPACE ADVISORY COMMITTEE MEETING

TO: Parks & Open Space Advisory Committee

DATE AND LOCATION: Thursday, 2/25/2016, 6:30 p.m. Commissioners Hearing Room, 3rd floor
Boulder County Courthouse, 1325 Pearl Street, Boulder, CO

AGENDA ITEM TITLE: Rocky Mountain Greenway Federal Land Access Program Grant

PRESENTER: Jeff Moline, Resource Planning Manager

ACTION REQUESTED: Recommendation to BOCC

Executive Summary

Acting on behalf of the Rocky Mountain Greenway Steering Committee, Jefferson County is leading an effort to submit a Federal Land Access Program grant in 2016. The proposal would fund the planning, design, and construction of two crossings into the Rock Flats Wildlife Refuge. One of the crossings is over Indiana Street in Jefferson County and would connect the Rocky Mountain Greenway Trail from Broomfield into the Refuge. The other crossing is on the north boundary of the refuge across Colorado State Highway 128. Since FLAP funding is earmarked for transportation related projects that provide access to federal lands, this proposal is expected to favorably compete for roughly \$3 million of federal funds, especially if the two crossings are combined into one application. For the remainder of this memo, discussion will focus on the single crossing proposed on the north boundary of the refuge, crossing SH 128 and connecting to Boulder County and City of Boulder Open Space.

While, the grant does require a local match of at least 17%, it is expected that over 75% of the total project cost would be covered by federal funding. The Steering Committee is proposing to equitably split the local funding match among the project partners. The Committee has requested that Boulder County and the City of Boulder share in the funding of 50% of the northern crossing—a proposed underpass of Colorado State Highway 128 that would link the Greenway and future refuge trails with existing trails and open space managed by both the County and City of Boulder as well as future Greenway destinations further north. The county and city are working to secure additional partners to fund the approximately \$230,000 to \$316,000 local share of costs to Boulder County participants. If awarded, these federal funds would require additional planning, evaluation and public process to determine final design and alignments as required in the National Environmental Policy Act (NEPA). Both the city and county would be active partners in the planning, design, and management of the crossing project. BCPOS staff requests that POSAC recommend that the BOCC make a financial commitment to this project so that the FLAP application can be submitted later this spring.

Introduction

In 2012, Secretary of Interior Ken Salazar and Governor John Hickenlooper signed an agreement that established a steering committee to implement the Rock Mountain Greenway project as part of President Obama's America's Great Outdoors initiative. The Greenway is a visionary partnership program to create uninterrupted trails and transportation linkages connecting the three National Wildlife Refuges in the Denver metro area (Rocky Flats, Rocky Mountain Arsenal, and Two Ponds), Rocky Mountain National Park, and the community trail systems in between these destinations. Commissioner Gardner is Boulder County's representative on the Steering Committee. Since 2012, the project has completed a trail connection between the Arsenal and Two Ponds and construction is underway on the segment from Two Ponds to the east edge of Rocky Flats. An ongoing feasibility study is examining the section from Rocky Flats to Lyons and, along with other partner agencies including the City of Boulder Open Space and Mountain Parks, BCPOS has been involved in the development of that draft plan. The Rocky Mountain Greenway has also been selected as one of the State of Colorado's 16 in 2016 trails projects as part of the Governor's Colorado the Beautiful initiative. This designation should also aid in the acquisition of further funding and the formation of added partnerships as planning, design, and construction of the greenway progresses further north in Boulder County. Collaboration between the various partner agencies would continue as plans for this underpass are refined if the grant is awarded to this project.

Project Description

As currently proposed the underpass would be constructed across the Colorado Department of Transportation's right of way for State Highway 128. The consultant providing initial engineering and feasibility work for the underpass has recently submitted two revised, possible options for this single crossing. (See Attachment 1.) One is a \$2.7 million box culvert located at the mesa edge of the west valley side of Rock Creek. This location is in close proximity to a de facto trailhead in the right-of-way of SH 128 at the intersection of the existing Coalton and High Plains Trails in the far southwest corner of the Lindsay property. Due to wildlife values and critical Preble's meadow jumping mouse (PMJM) habitat, the consultants have suggested a second crossing option that would create an enhanced crossing for wildlife along Rock Creek by building a bridge with an 80-foot base width for accommodating both the trail and animal movement. This crossing is estimated to cost about \$3.7 million. BCPOS staff continues to review this site and does have concerns about the impacts to habitat that it may create.

With the Rocky Mountain Greenway slated to be completed to the east boundary of RFNWR later this year, and with the anticipated development of the trail system in Rocky Flats slated for 2017-2018, the timing for the planning, design, and construction of these connections and crossings is fortuitous. The Greenway feasibility study has examined both the High Plains Trail and Coalton Trail as potential connecting trails leading further north into the county from the north boundary of the refuge. The FLAP-funded crossing of SH 128 would need to connect to these trails in order to provide a link from the refuge to the existing trail system in Boulder County. Current estimates of the cost shares amounts for the Jefferson-Boulder County crossing have been determined by splitting the local match amount (at least 17%) 50-50 between the two

counties and associated municipalities. The City of Boulder Open Space Board of Trustees approved a financial commitment to the project on February 10.

Trail construction to the south of the underpass, on the Rocky Flats NWR would be guided by the approved Comprehensive Conservation Plan for the refuge.

The wildlife/trail crossing option would require the construction of a connector trail between the underpass and the Coalton Trail across the BCPOS-managed Lindsay property. While the construction costs of this trail would be covered by the grant project. BCPOS staff would be involved in the planning and design of this portion of the proposed improvements.

Analysis

The project, with its inclusion of many partner agencies, would provide an uninterrupted trail link from the county's existing Southern Grasslands Open Space area south to the Rocky Mountain Greenway, other Denver Metro trail systems, and the future trails of the Rocky Flats National Wildlife Refuge. These crossings are of critical importance to regional trail connections. By including these crossings in a FLAP application, local partner match funding can be leveraged with federal dollars to economically construct this project in a timely manner. Finally, to have a crossing option that could potentially improve habitat connections for wildlife between the refuge and county open space, including for a federally-threatened species (PMJM), staff feels this project will constitute a strong, supportable grant application.

Environmental Review

Due to its location on the southern boundary of the county, the trail underpass project may impact important ecological systems including riparian areas, wetlands, threatened species habitat and some of the largest blocks of protected grasslands in Boulder County. The consultant working to develop preliminary options for crossing SH 128 initially selected a site on the east side of the Rock Creek drainage. After some confusion about the location of the proposed site and serious concerns about its environmental impacts, Boulder County staff met with the consultant to discuss the proposed crossing site and the potential for identifying alternates. With regard to the original site, staff had particular concerns with the trail alignment that would be necessary to connect the crossing with the Coalton Trail. Due to topography, the connecting trail was forced north into Lindsay Open Space, crossing Rock Creek in at an interior site, and then switchbacking up and across the west side of the valley. This preliminary trail design was approximately twice the length of the line of sight distance between the overpass and the Coalton Trail. This alignment would have likely contributed some level of fragmentation to this large block of grassland habitat and disrupted the current agricultural operation of the lessee.

Given these anticipated impacts, staff worked with the consultant to identify two other less problematic crossing sites. The first would be a box culvert crossing for farther west, near the Coalton/High Plains Trail convergence. Habitat appears less sensitive in this location and there is likely less need for larger wildlife crossing. This crossing would connect to a conceptual trail alignment within the refuge, but not as directly with the proposed USFWS visitor contact center. A second option would relocate the wildlife

crossing west so that it aligns with the Rock Creek culvert of SH 128. This option could potentially create an improvement to the current creek crossing--a small box culvert. It is anticipated that it would allow for greater wildlife movement and remove the need for a trail crossing of the creek farther north in a portion of the property that has less disturbance. This option also keeps the crossing closer to the USFWS visitor contact center on the south side of SH 128. However, since this alternative would put the trail in closer proximity to the creek there is concern about how that would impact wildlife.

The portions of Rock Creek south of SH 128 on the refuge are designated critical habitat for PMJM. While not considered as federally-designated habitat, the portion of Rock Creek just downstream from SH 128 is designated by the county as "Mouse Management Area" in the Environmental Resource Element of the BCCP. This designation indicates that it is either an area where PMJM is known to occur; or that it is both adjacent to occupied habitat and includes suitable habitat that is likely to be occupied by the mouse. Regardless of designations, the planning, design, and construction of this crossing and the trail approaches of both options will be subject to NEPA environmental review and analysis to ensure the project minimizes environmental impacts. BCPOS staff will work with partners, agencies, and regulators to select the crossing option that best provides a trail connection while minimizing resource impacts.

The NEPA process for this proposal, likely an Environmental Impact Statement or an Environmental Assessment, will require the consideration of alternative approaches to meet the objectives of the project. In addition, NEPA requires consultation with the U.S. Army Corps of Engineers and U.S. Fish and Wildlife Service when wetlands and threatened species habitat are affected. These agencies oversee compliance with Clean Water Act and Endangered Species Act regulations respectively. Federal regulations common to both these laws require consideration of designs that avoid impacts to these resources as a first approach, and the minimization of effects where avoidance is not practicable. Compensatory mitigation is typically required for the unavoidable effects of a project.

Conservation Easement

Boulder County Parks and Open Space owns the Lindsay property immediately north of the proposed underpass location, and, in addition, OSMP holds a conservation easement on that same property to preserve natural, scenic and open space values. The terms of this easement will likely need to be modified to allow for the construction of the connector trail. Such a modification would likely require approval from both city and county boards, but the staffs from both agencies feel this would not be difficult to obtain if the city and county governing bodies support this project.

Funding

Boulder County is seeking clarification on the specifics and timing for the funding. If the grant is awarded, the county would enter into a reimbursable agreement with the Federal Highways Administration which typically allows flexibility in terms of when the match dollars can be paid. The project can be scheduled out for three to five years, but would be targeted for 2017-2018 since that aligns with the USFWS trail funding and development at Rocky Flats NWR. Prior to grant application, a more accurate estimate

will be available--within 10% of actual cost. After meeting the local match, all of the project costs would be covered by the grant, including the costs for 1. planning process, permitting, and final design, 2. construction of the underpass, and 3. design and construction of the trail connection from the underpass to Coalton Trail.

Discussion

This project allows the county to recognize the importance of regional trail planning efforts for the Rocky Mountain Greenway, part of a federal- and state-supported initiative to improve access to public lands, raise environmental awareness, and promote recreation and a healthy lifestyle. With the involvement of BCPOS staff, project partners, and a NEPA process, the subsequent planning, design and construction of the project will address a variety of issues, including visitor access, experience and safety as well as existing conservation values and improvements to wildlife habitat and passage. The Federal Land Access Program represents an opportunity to provide funding for significant portion of the design and construction costs for the crossing of the Rocky Mountain Greenway at State Highway 128.

Recommendation

BCPOS staff recommends that POSAC support Jefferson County's application for Federal Lands Access Program funding and recommend that the BOCC provide a financial contribution in 2017 towards local match requirements for that grant application to support planning, design and construction of an underpass of State Highway 128 and trail connection to the existing Coalton Trail.

Attachments

Figure 1. Overview Map of FLAP Proposal.

Figure 2. Proposed Crossing Options for a single underpass of SH 128.

Figure 1
Rocky Mountain Greenway - Regional Transportation Infrastructure

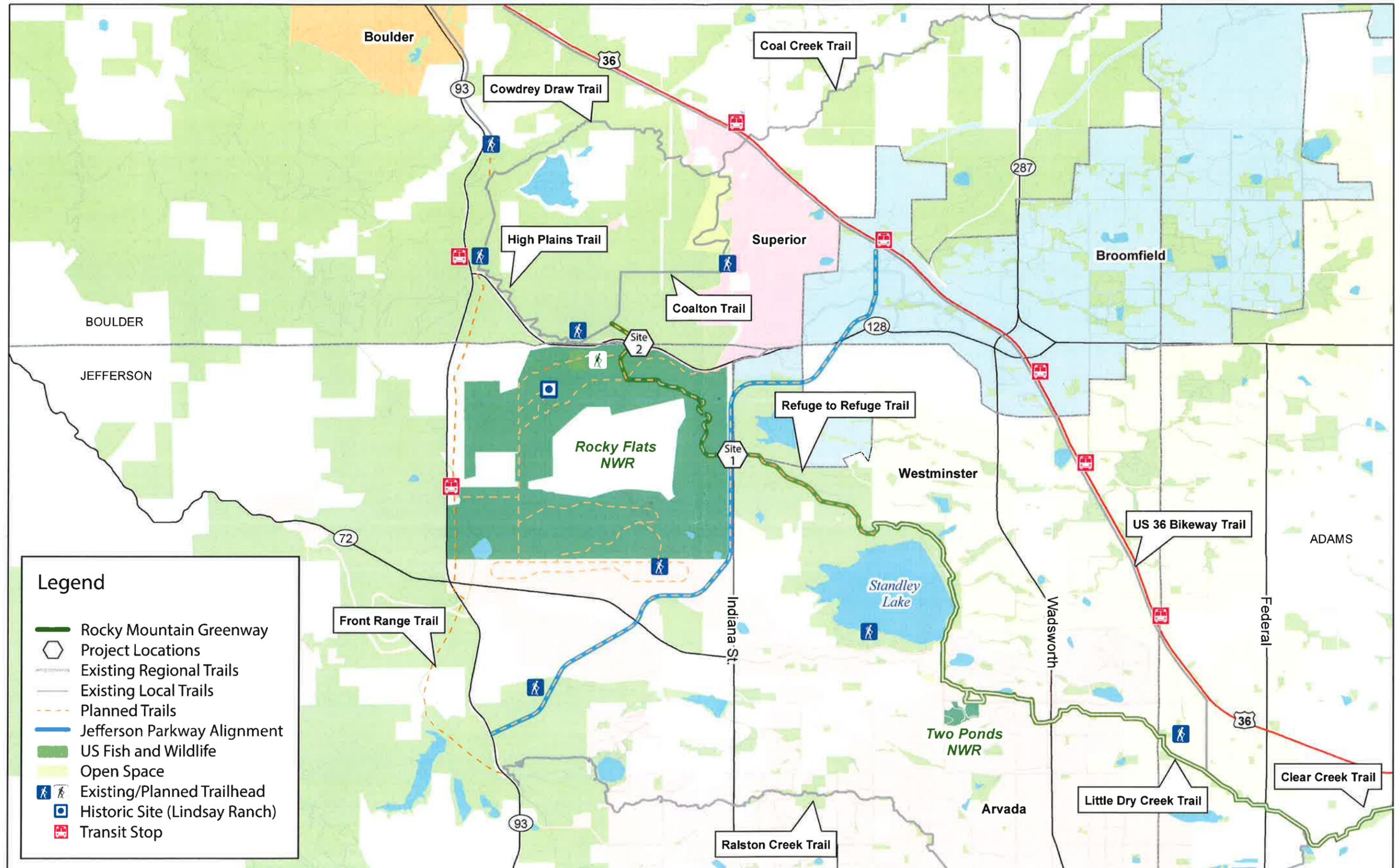
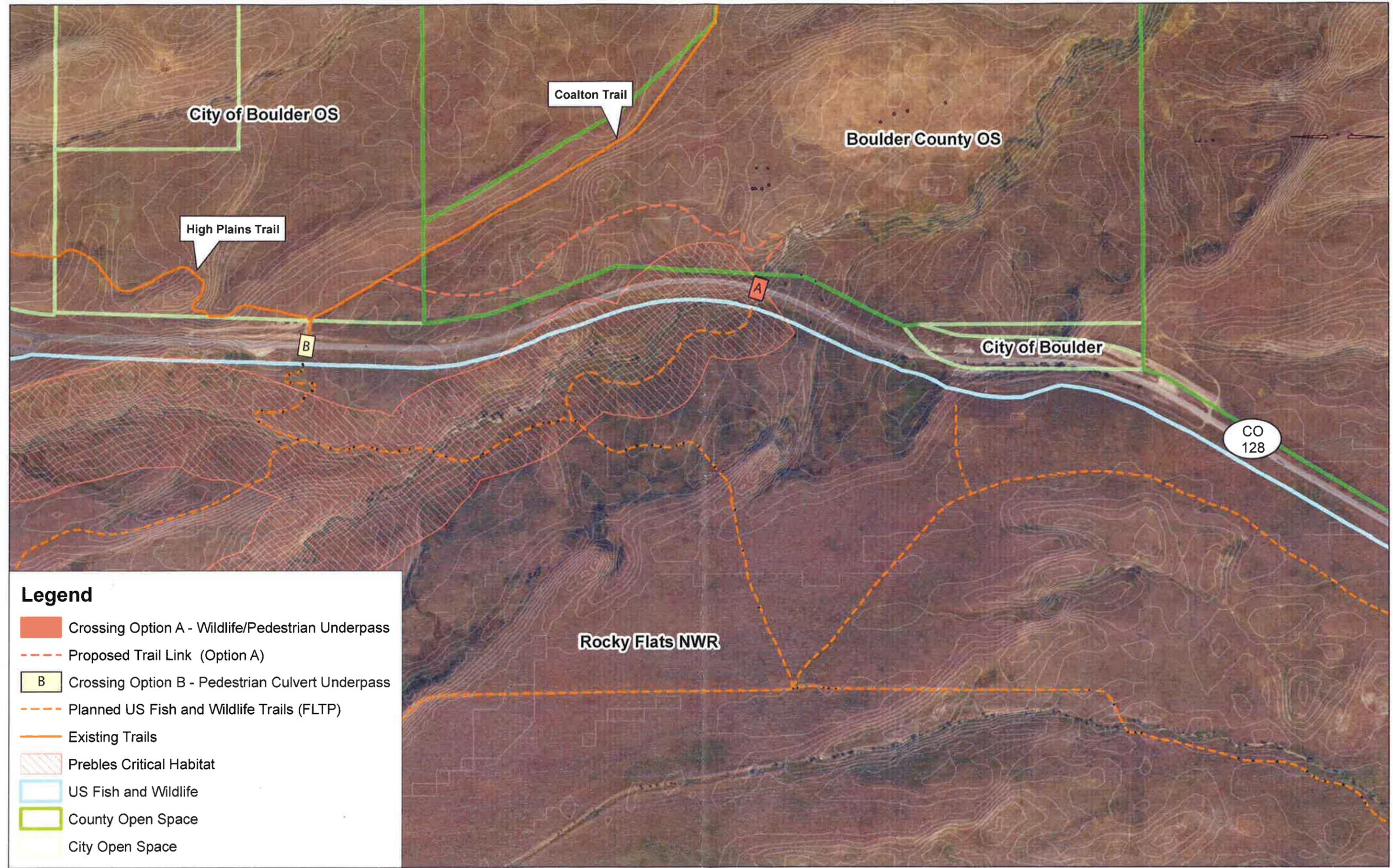


Figure 2

Site Two Detail - Crossing CO HWY 128



Legend

- Crossing Option A - Wildlife/Pedestrian Underpass
- Proposed Trail Link (Option A)
- Crossing Option B - Pedestrian Culvert Underpass
- Planned US Fish and Wildlife Trails (FLTP)
- Existing Trails
- Prebles Critical Habitat
- US Fish and Wildlife
- County Open Space
- City Open Space

Map compiled 2/2016;
Intended for planning purposes only.
Data Source: Jefferson County, CDOT, USFWS

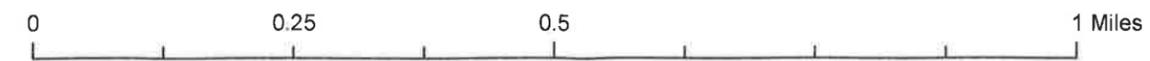
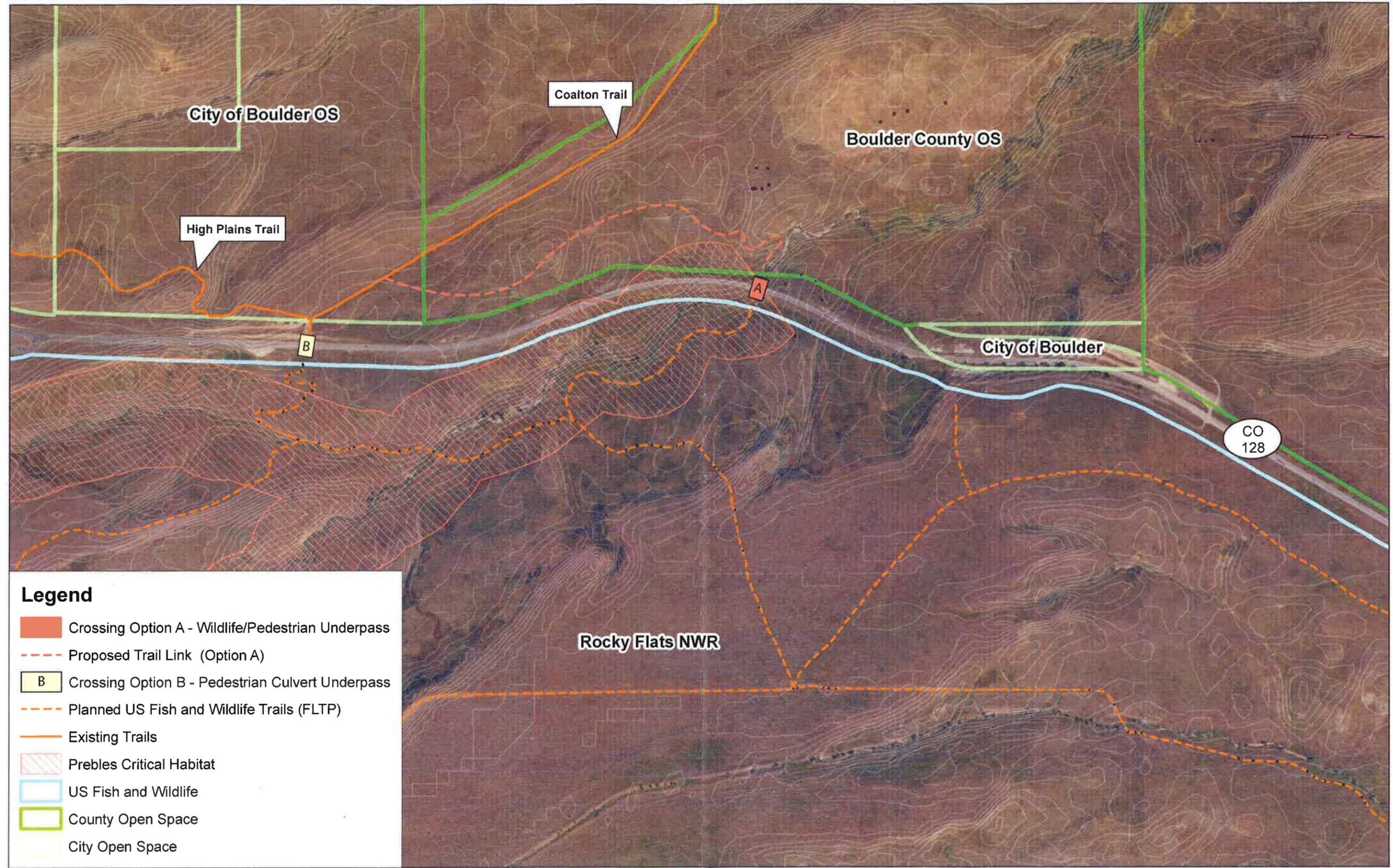


Figure 2

Site Two Detail - Crossing CO HWY 128





Parks and Open Space

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

PARKS AND OPEN SPACE ADVISORY COMMITTEE MEETING

TO: Parks & Open Space Advisory Committee

DATE AND LOCATION: Thursday, 2/25/2016, 6:30 p.m. Commissioners Hearing Room, 3rd floor Boulder County Courthouse, 1325 Pearl Street, Boulder, CO

AGENDA ITEM TITLE: City of Boulder's North Trail Study Area Planning Project

PRESENTERS: Steve Armstead, Environmental Planner and Project Manager, City of Boulder Open Space and Mountain Parks; Jeff Moline, Resource Planning Division Manager Boulder County Parks and Open Space

ACTION REQUESTED: Advise City of Boulder Open Space and Mountains Parks

Introduction

City of Boulder Open Space and Mountain Parks (OSMP) is developing a community vision for 7,700 acres of OSMP-managed lands north of Linden Avenue and the Diagonal Highway. The North Trail Study Area (TSA) Plan seeks to improve visitor experiences and increase the sustainability of trails and trailheads while conserving the area's natural, cultural and agricultural resources. While the boundary of the study area extends into Longmont and up to Hygiene Road, the plan only addresses lands owned and managed by OSMP. Most of the planning has focused on the area south of Lefthand Creek—where the city controls the vast majority of the public land. North of the creek where county open space accounts for much of the public land, the city intends to have their management reflect the regional context of that rural part of the county.

The City of Boulder's OSMP has provided extensive online resources and information about the North TSA plan and process. These can be accessed on the web page: <https://bouldercolorado.gov/osmp/north-tsa>

The North TSA planning process began in February of 2015 and it includes four phases: 1. Collecting and compiling information about current conditions and management practices (included in the North TSA Inventory and Assessment Report) 2. Identifying key issues and interests that need to be addressed in the plan (summarized in the Interests and Issues Report) 3. Developing, assessing, and refining management scenarios for the area—and subsequently selecting one scenario to use as the basis of the plan (staff created four preliminary scenarios for the North TSA Plan that balanced community interests and addressed issues using a range of actions and then refined those based on public comment and Open Space Board of Trustees (OSBT) direction and ultimately selected a recommended scenario) 4. Developing the draft plan and seeking an OSBT recommendation that City Council accept the North TSA Plan.

Most recently, OSMP staff discussed the two refined scenarios at the January 2016 OSBT study session and then again at the February OSBT monthly meeting. The differences between the scenarios are primarily actions linked with the trail connections to the

Joder property. Scenario A is characterized by a connection to the Joder property on the east side of US 36, and would include a new trail from Longhorn Road to Lefthand Trail and improvements to the alignment of the Lefthand Trail. Scenario A would also require the construction of an underpass beneath US 36 near the Joder property. Scenario B provides access to the Joder property on the west side of the highway, and relies partially on the use of an undesignated trail lying atop a railroad grade for a portion of the route. In either case, considerable trail rehabilitation and new trail construction will be required to complete the connection.

At the February 10 OSBT meeting, the Trustees approved changes to both scenarios and selected Scenario B to be used as the basis for the draft plan. The draft North TSA Plan will be brought to the board for consideration at their meeting on March 9 (and 10 if needed). OSMP anticipates presenting the North TSA Plan to the Boulder City Council in May.

Role of Boulder County Parks and Open Space

Since the beginning of the North TSA planning process, OSMP has solicited the input of BCPOS. From the start, BCPOS has primarily focused our review and comment on places where city and county open space properties adjoin. These interfaces become critical locations where the two agencies attempt to coordinate adjacent management strategies for the benefit of environmental resources, agricultural operations, and recreational amenities. In this planning effort, that attention has primarily been placed on the “Northern Subarea”, Six-Mile Fold, North Rim, and future trail connections to county trails both inside and just outside the North TSA boundary. BCPOS also recognizes the importance of environmental resources identified in the Boulder County Comprehensive Plan and has provided recommendations based on concerns for those values.

Beech Open Space

The jointly-owned Beech property (located both west and east of US 36) is an important part of the North TSA Trails Plan. The property is contiguous to OSMP lands on the north and south. From the start of the planning process, BCPOS staff concluded that it was appropriate to have the planning for this property included in the North TSA process because the intended ownership of the property – discussed below - was a joint ownership and because the City of Boulder has responsibility for management of the property. Nonetheless, BCPOS staff has provided input in the planning process in regard to the Beech property.

Our review and the city’s review of the property ownership of Beech revealed that the ownership does not conform to the original intent of the joint purchase. Because Boulder County used cash for its share of the purchase and the City of Boulder financed its share, the property ownership was divided to provide Boulder County with a parcel that reflected its cash purchase and the City of Boulder with other portions of the property that were purchased by bond revenues. The bonds were paid off over time but the agreed upon reconfiguration of ownership never occurred. BCPOS staff agrees with OSMP staff that the agencies should reconfigure the ownership as intended by the original purchase agreement. Both organizations have staff assigned to that objective.

The City of Boulder also has responsibility for management of the property. Under a jointly-adopted IGA, the city manages some jointly-owned open space (including Beech) while the county manages other jointly-owned properties. While the IGA expired at the end of 2015, BCPOS staff and OSMP staff intend to bring forward a proposed extension of the IGA this spring. BCPOS staff feels that the North TSA Plan should be reviewed under the terms of the previous IGA. Those terms require that the managing entity provide “an opportunity for comment and consultation to the other party”. This POSAC meeting gives the public and the county an opportunity to provide comments.

Discussion and Analysis

BCPOS supports aspects of the proposed plan as it relates to county open space properties. Over the last year, BCPOS has discussed a number of specific issues with OSMP staff and these are discussed below.

1. Currently, and per agreement, BCPOS manages the Beech Pavilion on the east side of the Beech property. Because OSMP manages the surrounding property, the county suggested that having the city manage the site would make programmatic sense. City management of the pavilion was recommended with Scenario A and an east Joder Connection. However, with Scenario B and a west connection being included in the draft plan, the county is prepared to continue management of the Beech Pavilion.
2. A similar situation exists for the North Rim Trail. County staff expected the city would receive input from the adjacent county subdivision residents or the public-at-large about the trails in this area. This is an unmaintained trail in a county-owned outlot that is part of the county North Rim subdivision. In past management planning agreements, the county had considered the formalization of a trail in portions of the outlot and on adjacent property so that a trail link could be made to the Left Hand Valley Trail. If the improvement had been completed, the city would take over the management and maintenance of the formalized trail. Since this work had not been completed, OSMP and BCPOS agreed to see if the North TSA process would yield any recommendations. This aspect of the plan has received very little comment. At this time, both city and county open space agencies are recommending status quo for the area: the county will continue to manage the trail and outlot.
3. Both POSAC and BCPOS staff supported the interim trailhead concept which located a portion of the parking on county open space. Staff supports a permanent trailhead at Joder Ranch that provides safe access to the area on a permanent basis.
4. With respect to the Six-Mile Fold area adjacent to Joder Ranch, the city’s proposed plan shows only the Joder Connector Trail west of the county property. Currently, there is no formal trail to or within the county’s open space. Depending on the final North TSA outcome, the county will determine if trail improvements will be necessary on Six-Mile Fold Open Space. Trailhead improvements could also increase accessibility and visitation of this unique area and the county may want to formalize a trail on its property in the future (through a separate management planning process). At such time as the county contemplates improvements at Six-Mile Fold, staff would consult with OSMP staff to determine if a connection to adjacent city trails is desirable or feasible.

BCPOS recommends a scenario with some regular car parking spaces for the convenience of people who want to visit Six Mile Fold.

5. A trail connector between Lefthand Canyon Drive and the existing Heil Valley Ranch trailhead is proposed as part of the management planning for Heil Valley Ranch 2. This would contribute to the effort of linking Boulder and Lyons via a foothill trail system.
6. The city and county remain part of the multi-agency Rocky Mountain Greenway-America Gets Out initiative to identify trail alignments from Rocky Flats to Lyons in the existing phase of the project. While not formally part of the North TSA analysis, the project can help provide a regional perspective that compliments the process.
7. The county supports trail connections, as depicted in the plan, that link the proposed trail along 55th Street to the future Imel Connector at Oxford Road and Boulder Reservoir system to both the LoBo Regional Trail (at the IBM Connector).
8. The county supports the management designations of the plan's North Subarea properties since they are consistent with management of adjacent county open space properties and with the values and sites identified in the Environmental Resources Element of the Boulder County Comprehensive Plan.

Finally, the Joder Trail Connection element of the plan has been and remains a concern for BCPOS staff. The county recognizes the importance and value of a North Foothills connecting trail. At the same time, BCPOS staff note that the Environmental Resource Element of the County Comprehensive plan indicates that there are more significant environmental resources on the west side of US 36 than the east side. In particular the North Boulder Grasslands Critical Wildlife Habitat supports a number of vertebrate and invertebrate species of special concern, many of which are vulnerable to habitat fragmentation. Both sides of Beech have many designated environmental resources including riparian and wetland areas, rare plant and significant natural communities, natural and high biodiversity areas, and environmental conservation designations. The east side of the property does include suitable, but non-contiguous Preble's meadow jumping mouse habitat. We feel that protection and conservation of these resources will be an important consideration in the further refinement of the plan.

Public Comment

Along with City of Boulder staff and officials, County staff, POSAC members, and the County Commissioners have received extensive comments on this plan from many stakeholders, groups, and individuals.

Attachments

1. OSMP Memo to OSBT for February 10 meeting: https://www-static.bouldercolorado.gov/docs/16-0210_North_TSA_OSBT_memo-1-201602051804.pdf
2. Public comments received by County staff. The OSMP has collected public comment on this web site: [North TSA Public Feedback & Meeting Materials](#)



BOULDER COUNTY

HORSE ASSOCIATION

The Voice for Horses and Horse People in Boulder County

**To: Open Space Board of Trustees, Tracy Winfree, Steve Armstead
Boulder City Council
Boulder County Parks & Open Space
Board of County Commissioners**

Date: January 10, 2016

Re: BCHA Recommendations for the North TSA

The purpose of this letter – and the accompanying attachments – is to support “Alternative B with modifications” for the North Trail Study Area (NTSA).

These recommendations reflect many hours of discussion and negotiation among ourselves, with staff, and with other recreation groups. Many tradeoffs were made in order to accommodate a balance among various user groups as well as environmental values.

As you know, for more than 150 years the entire NTSA has been comprised of horse farms, horse ranches and open space properties that are, simply put, excellent “horse habitat.” Yet many equestrian facilities (including Joder Ranch) have been purchased and immediately extinguished by OSMP. This process has had a disproportionately negative effect on the vitality of the horse community compared with other stakeholder groups.

But horses are a way of life in Boulder County and equestrians are here to stay. With our recommendations for the NTSA we are trying to preserve some of what is left of our legacy and our access to now-public lands.

Following the text in this letter is a map showing our recommendations for the NTSA. It is largely Alternative B, with a few modifications that are important to equestrians.

Additional attachments include a map showing the eight miles of trail that currently exist on the Joder Ranch as traced from satellite imagery, and an open letter from Brian Joder expressing a strong interest in seeing that many of the existing trails on his family’s ranch be re-opened to the public during the North TSA process.

NORTHWEST QUADRANT

BCHA supports:

- **Revisiting the arbitrary HCA status of Joder Ranch and West Beech.** These properties do not reflect the undisturbed habitat requirements typical of Habitat Conservation Areas, and the process used to arrive at the HCA designation was flawed. Joder Ranch was home to more than a hundred horses and their people for decades, and there are more than 8 miles of existing trails on the property that were built by equestrians. West Beech has old ranch roads, a railroad grade, and rocket-fueling infrastructure, as well as numerous undesignated trails. We are unaware of any justification for designating it an HCA. Wildlife and plants in the North TSA in general, but on these properties in particular, have coexisted with horses for hundreds of years. Therefore, we recommend that Joder Ranch be reclassified as a Passive Recreation Area (PRA) and West Beech as a Natural Area (NA).
- **designating the Interim Joder Trail as multi-use** (shown in green) .
- **designating another trail at Joder Ranch pedestrian/equestrian only** to honor the important equestrian history of this ranch (the map attached herein sketches this loop trail in purple, utilizing mostly existing trails to accomplish this objective, but other loops are possible) . Please note that to retain an environmental/recreation balance we would forgo the east-west “valley trail” we had sought, in exchange for this perimeter loop at Joder Ranch. Alternatively, we support designating off-trail use by equestrians at Joder Ranch (purple dots), since this is a historic equestrian center and horses and natural resources have coexisted for a hundred years.
- **designating a pedestrian-only trail** (pink) on the BCPOS Six Mile Fold property. This is primarily a site of geological interest but a trail was in the purchase from the Joder family.
- **building a consolidated, permanent trailhead for all visitors**, with amenities and designated horse trailer parking, at the current Interim Joder Trailhead (Six Mile Fold). This property was purchased by BCPOS from the Joders for a trailhead and trails. Use it.
- **designating the existing trail on the Buckingham property as multi-use** and supporting the eventual off-road connection to Heil Valley Ranch utilizing that trail .
- **designating the north-south connection between the Hogback Ridge Trail and Joder Ranch as a multi-use trail**, located on the west side of Highway 36, utilizing the old railroad grade and old ranch roads as much as possible; this alignment makes an important loop with the Left Hand Trail system.
- **ensuring safe crossings of Hwy 36** at Foothills and Joder Ranch at Schooley.
- **building a designated multi-use trail connector from Schooley south** along Neva Road, then along the Beech Shelter driveway to the Left Hand Trail.

BCHA does *not* support:

- building trailhead parking either at Schooley east of Highway 36, or up at the former Joder Ranch horse facility near the Cox house, or on the Dagle property.
- using Left Hand Canyon Drive as a trail connection to Heil Ranch under any scenario.
- relying on either the Left Hand Trail or any new alignment near the highway on either side of it to make the long-sought off-road connection from Boulder to Joder Ranch.

SOUTHWEST QUADRANT

BCHA supports:

- **realigning the Hogback Ridge Trail** with designated usage as pedestrian/equestrian
- **designating one of the many through-trails at Wonderland Lake as pedestrian/equestrian**, in order to preserve connectivity for equestrians on the Trail Around Boulder (TAB)
- **building a new trailhead at Linden** (as we had strongly urged in the West TSA) with designated horse trailer parking. This parking would enable equestrians to access the WTSA trails that are open to horses, as well as this portion of the TAB north into the NTSA
- **giving up some equestrian access on the rest of the trails in the Wonderland Lake if necessary** in order to preserve the balance between recreational use of open space and conservation of natural resources.
- **designating and building the Trail Around Boulder (TAB)**, which runs through the southern half of the NTSA (shown in red on the map attached). For more information on the TAB, please visit www.trailaroundBoulder.org.

BOULDER VALLEY RANCH

BCHA supports:

- **enlarging the Foothills Trailhead** to accommodate horse trailer parking
- **enlarging the Boulder Valley Ranch Trailhead or reopening former trailer parking at the ranch complex**, so that equestrians can park near the arena to ride there or to start their BVR ride in the middle of the property .
- **reopening the existing riding arena to public equestrian use** per the existing lease

-
- **paving Longhorn Road to the BVR Sage Trailhead**, if “road maintenance” is seen as a problem (this action would enhance access for the lessee and boarders as well)
- **rebuilding the existing Degge/Mesa Reservoir/Hidden Valley Ranch trail complex** and designating it pedestrian/equestrian only
- **realigning and designating the existing shelf trail connecting the Sage loop and Mesa Reservoir one-way uphill to prevent user conflicts**
- **opening the Papini trail for pedestrians/equestrians only**, with a small lollipop loop at the east end to make for a more satisfying visitor experience
- **enlarging the Eagle Trailhead** to include designated horse trailer parking
- **building the North Rim/Axelson trail complex as multi-use** and extending it north to Niwot Road
- **designating some areas for off-trail use by equestrians on the East Beech, Boulder Valley Ranch, and Axelson properties** (shown in purple dots), to honor historic uses and in view of the low equestrian use and lack of impact to resources in these areas.

BCHA does *not* support:

- closing the BVR complex as a leased agricultural operation
- closing the BVR “Sage” Trailhead
- closing the existing public outdoor riding arena to the public
- installing new fencing on the East Beech property.

NORTHERN TIER AGRICULTURAL PROPERTIES

BCHA supports:

- **preserving the agricultural purposes for Open Space and Mountain Parks.** Passive recreation access, ongoing agricultural activities, and preservation of natural resources are not mutually exclusive and can be accommodated simultaneously on many agricultural properties. We believe the recommendations made by staff in Alternative B for the Northern Tier balance these purposes very well.
- **closing** the Brewbaker, Stratton, Campbell, Hester, Deluca, Waldorf, Ryan, Andrea, and Jacob properties, as recommended by staff

- **allowing public access, including equestrian**, on the Bison, Oasis, Berman, Abbott, Dodd, Schooley, Bruning and Johnson properties but not constructing infrastructure for visitor access, as recommended by staff
- **allowing partial public access (including equestrian, but not dogs)** on the Steele and Bennett properties but not constructing visitor infrastructure, as recommended by staff.

BCHA does *not* support:

- closing agricultural properties merely because they are agricultural properties. They were purchased under the willing seller/willing buyer principle, enabling farmers to derive substantial amounts of money to continue farming or not as they choose. Staff has done a good job balancing which properties should be open, partially open, or closed to public access.

ALL AREAS

BCHA supports the Trail Around Boulder (TAB) as multi-use, starting in the NTSA.

BCHA supports regional trails and urges OSMP to work proactively with other public land management agencies to get them built.

BCHA supports some off-trail access for equestrians in all TSAs.

BCHA has compiled extensive research from the literature and from our anecdotal experience showing that horses do NOT have undue environmental impacts of any kind on natural resources. Horses do not spread weeds or pathogens, horses do not erode the landscape or threaten the wildlife. These data are summarized in a series of position papers and can be requested by contacting us at info@boulderhorse.org.

For more information about BCHA, please visit our website at www.boulderhorse.org.

The Boulder County Horse Association promotes, protects, and unifies the equestrian community of Boulder County through education, recreation and legislation. BCHA was incorporated in 1971. We hope you will continue to use us as your resource for all things equestrian!

Thank you for your support for our recommendations as outlined above.

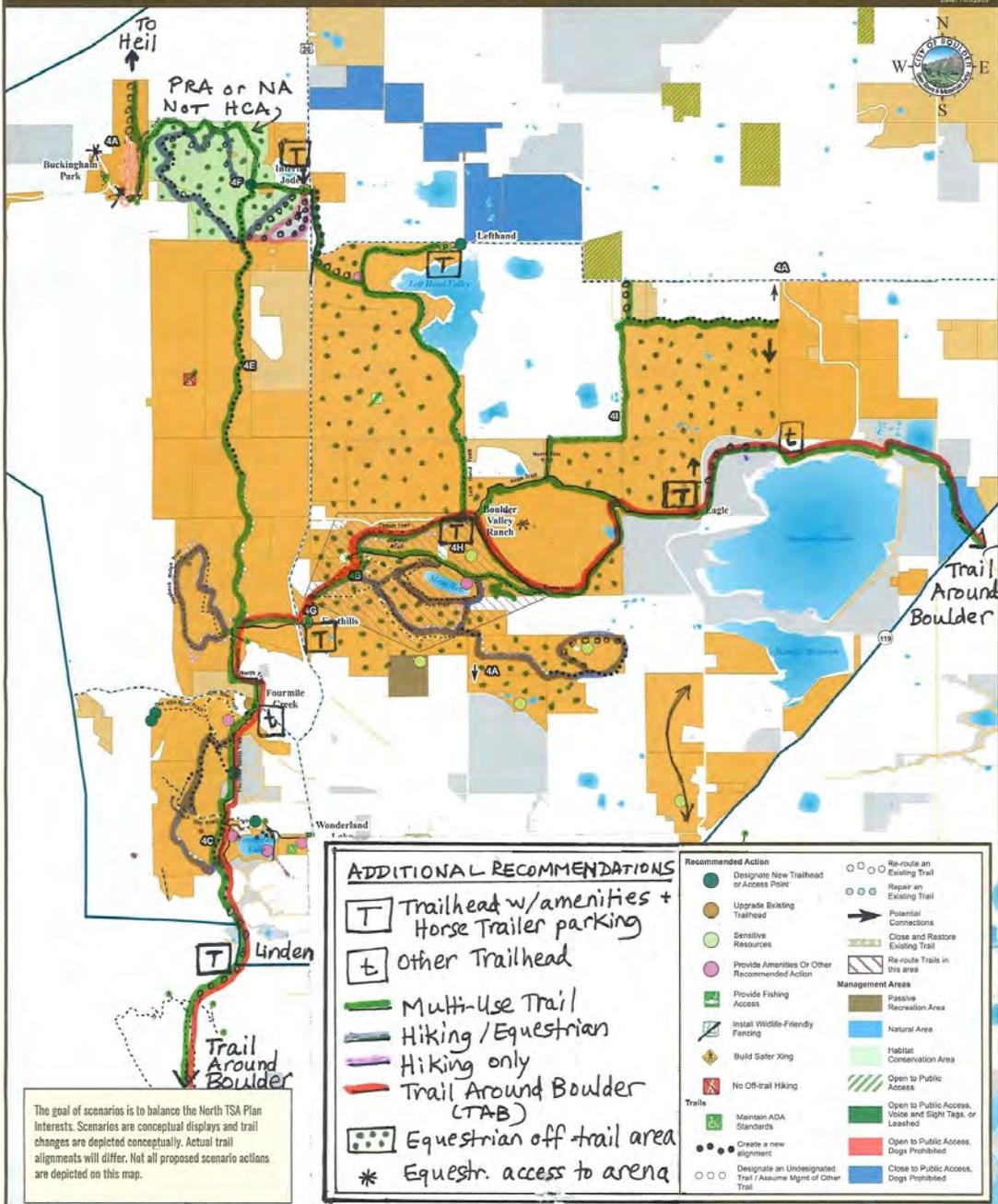
Sincerely,

The BCHA Board of Directors.

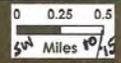


North Trail Study Area Plan

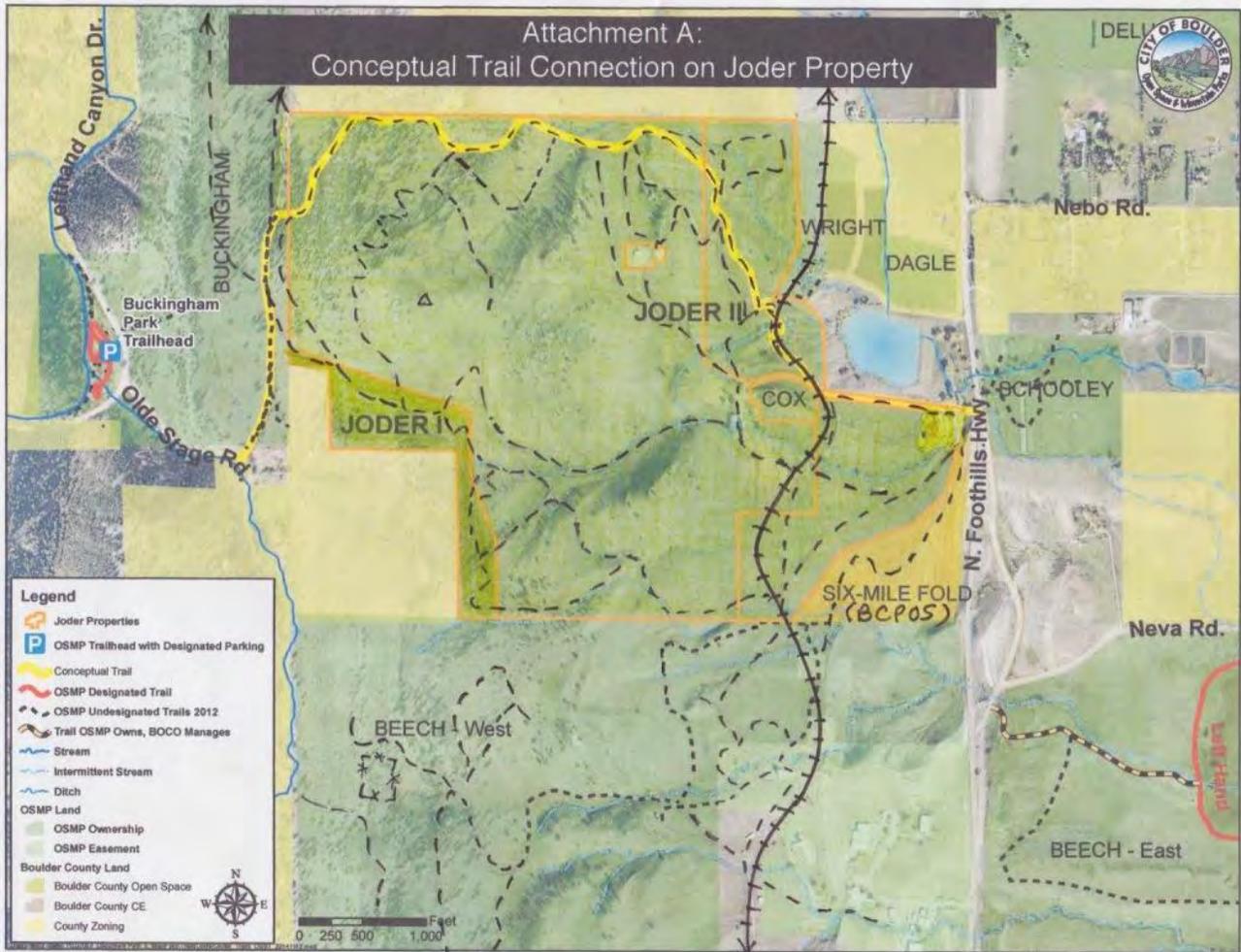
Date: 10/2015



System Wide Scenario 4 Zoom



	North Trail Study Planning Area		OSMP Hiking/Equestrian Trail		North Trail Study Area Lands
	North Trail Study Subareas		OSMP Multi-Use Trail		OSMP Fee & Managed Property in the North TSA
	OSMP Trailhead		OSMP Gliding Access		Lands Not Included in the North Study Area
	OSMP Access Point		Non-OSMP Managed Hiking Trail		OSMP Easement or Jointly Owned, County-Managed Land
	OSMP Recreational Feature Access		Non-OSMP Managed Multi-Use Trail		Other Government Land
	Boulder County Trailhead				



+++ Boulder, Left Hand + Middle Park RR

--- EXISTING TRAILS 2014



JoderB · 21 hours ago

+2

Hello Boulder Community,

Although we Joders put out a general statement we individually have varying opinions on this subject. Collectively the quotes above are accurate - we believe a process (the only one currently available) will hopefully yield access to all user groups in some form.

PERSONALLY and speaking only for myself, would like to see this property open to all user groups and that the process can move as quickly as possible. Cooperation among the user groups I would think help speed up this process. The process is slow enough already without slowing it down even more.

When we departed from our ranch there were approximately 7.5 miles of trails on the land. In my opinion and my personal usage, some of those should stay and some should go. Some new trails will need to be built and/or old trails re-aligned based on who/what is going to be using them.

THE LAND in this area varies substantially from area to area and does not lend itself to all user groups in all areas. The Joders utilized our ranch for walking, running, hiking, mountain biking, dog walking and of course riding horses. In knowing the land and also active in all of the disciplines of the main user groups I can attest that some areas and existing trails are much better for one use over another.

SOME SPECIFICS:

There is the old well established railroad cut that goes all the way from Boulder to Lyons and runs directly through the Joder Ranch. This would be an excellent route for access all the way from Boulder to the Ranch and beyond... and it is already in place.

The jeep trail that has existed for four or five generations is an easy way to allow access from the foothills area to the "back side" near Buckingham Park in Left Hand Canyon.... with then access to many more opportunities. In my opinion this is an easy quick term solution for access through the property as a connector.

There is an "outer parameter" trail which I believe would be good for almost all the user groups (with some upgrading in areas) and is very well established. Most of the inner trails would be better suited for equestrians and hikers. There are other trails more suited for hiking only and no bikes or horses.

I believe there can be a plan so all user groups have access to the area but a certain type of user may not have access to certain trails within that area. I think to the greater extent the land, soil composition and habitat conservation should determine these trails. I also believe that the Boulder user group demographics should play a significant role in the layout of a trail system.

All user groups should be able to enjoy part or parts of this land best suited for their activity without bias toward or against any one user group. I do not think it has to be real hard to figure this out if each user group accepts that maybe not every trail on a property is best suited for their particular activity. As I have said, in the case of the Joder Ranch I believe that ALL users should be able to be on some parts of this property and enjoy this open space as we had done for years.

If the City of Boulder would like further input from a Joder, I am always interested in helping the process move forward.

Brian Joder

[Reply](#)

[Report](#)

December 31, 2015

Dear Boulder Open Space Board of Directors:

We are writing this letter to support Scenario A of the North Trail Study Project, with the routing of the trail connection to the EAST of Highway 36.

The Colorado Native Plant Society (CoNPS) is concerned that critical plant and animal communities be safeguarded during the finalization of plans for new trails and trail connectors and construction of new recreational opportunities in the North Trail Study Project. CoNPS is a non-profit organization dedicated to furthering the knowledge, appreciation and conservation of native plants and habitats of Colorado through education, stewardship and advocacy. CoNPS appreciates that you recognize the Area has some of the last untouched mixed grass prairie along the Front Range. As such, it is home to many rare and imperiled native species.

As an example, Bell's Twinpod (*Physaria bellii*) is a rare and imperiled native plant endemic to Colorado which blooms in spring in the Foothills. This population is one of a few along the Front Range. The Foothills habitat is critical to the preservation of this plant as it only grows in the limestone and shale formations in Boulder and Larimer counties. Special attention must be given to protecting native plant populations during construction. The entire population and the species Wolf Creek Evening Primrose was extirpated during road construction in the early 1980's.

Scenario A with the routing of trail connectors EAST of Hwy 36 to preserve the Foothills habitat should be accepted. In addition, consideration should be given to designating the Joder property as a Habitat Conservation Area. More detail is needed on trail loops to know if they are appropriate; this cannot be seen on the present map. Regional connectivity is an issue, and the peripheral alignment which already exists in scenario A could be used. The route NE along the drainage from Longhorn Rd. should only be used if it can be constructed sustainably.

The relative rarity of a species may be related to many factors in an ecosystem. What is under our control is the preservation of undisturbed habitat where these species and communities thrive. You have many surveys of plant and animal species that exist within the planning area as a resource to identify these species. You have considerable power to preserve these ecosystems and individual plants and animals for the present and future generations, through thoughtful planning and control over the execution of the Project.

CoNPS urges you to use this input in the finalization of the Plan. Please do not hesitate to contact us with any additional questions.

Sincerely yours,

Mo Ewing,
Conservation Chair,
Colorado Native Plant Society



**CITY OF BOULDER
OPEN SPACE BOARD OF TRUSTEES AGENDA ITEM**

MEETING DATE: February 10, 2016

AGENDA TITLE: Staff requests that the Open Space Board of Trustees (OSBT):

- a) Approve the newly refined Scenarios A and B for the North Trail Study Area (TSA) Plan
- b) Identify which of the newly refined scenarios should be used as the basis for the North TSA Plan.

PRESENTER/S

Tracy Winfree, Director, Open Space and Mountain Parks

Mark Gershman, Environmental Planning Supervisor, Open Space and Mountain Parks

Steve Armstead, Environmental Planner, Open Space and Mountain Parks

EXECUTIVE SUMMARY

The goal of the North TSA planning process is to provide the management direction and document the implementation actions which will improve the visitor experience, protect natural, cultural and agricultural resources, and provide a physically and environmentally sustainable system for visitor access in the North TSA. The OSBT, community members and staff have been working for approximately one year collecting and compiling information about the TSA, identifying issues and interests, and developing scenarios. Working with the OSBT and community members, staff initially developed four management scenarios to address community issues and interests. Using feedback including input from the OSBT and members of the public, staff narrowed the range of scenarios to two. The two scenarios and public comments about them formed the basis of a study session held on Jan. 13 and 14, 2016. At this study session, OSBT members shared their feedback about the ways to further improve the scenarios, and provided an indication about which of the scenarios would be preferred as the basis of the North TSA Plan.

Staff has revised the scenarios discussed at the January study session and is requesting the Board's approval of the revisions (Attachment A). Staff is recommending that only one scenario be implemented, and is requesting the Board's direction on which scenario should be the basis of the North TSA Plan.

STAFF RECOMMENDATION: Staff requests the Open Space Board of Trustees approve Scenarios A and B as amended; and that the Board identify which of the newly refined scenarios (A or B) should be used for drafting the North Trail Study Area Plan.

COMMUNITY SUSTAINABILITY ASSESSMENTS AND IMPACTS

- **Environmental:** Open Space and Mountain Parks (OSMP) is a significant community-supported program that is recognized worldwide as a leader in preservation of open space lands contributing to the environmental sustainability goal of the City Council. The implementation of the North TSA Plan will include environmental impact to natural areas, wetlands, rare plant populations, plant communities and ecological systems. Implementation will also reduce the number of undesignated trails and improve the sustainability of trails and visitor infrastructure in ways that may foster improved resource conservation.
- **Economic:** OSMP contributes to the economic vitality goal of the city as it provides the context for the diverse and vibrant economic system that sustains services for residents. The land system and the quality of life it represents attract visitors and help businesses to recruit and retain quality employees.
- **Social:** The North TSA Plan will increase sustainable access by community members. Since OSMP lands, facilities and programs are equally accessible to all members of the community, the North TSA Plan will increase community accessibility to opportunities to improve physical wellbeing, mental health and enjoyment of the many features of open space lands.

OTHER IMPACTS

- **Fiscal:** The funding allocation from the 2016 budget includes funding to support the completion of the North TSA Plan. Once the plan is approved, requests for implementation funding will be integrated into the City of Boulder's six-year Capital Improvements Program and annual budgeting practices.
- **Staff time:** The staff time needed to complete this project is part of the 2016 work plan for OSMP staff.

PUBLIC COMMENT AND PROCESS

This item is being heard as part of this public meeting advertised in the *Daily Camera* on Feb. 7, 2016. The extensive public involvement strategy used in the development of the North TSA scenarios is described in Attachment B.

ANALYSIS

The [North TSA](#) includes OSMP lands north of the Diagonal Highway and Linden Avenue. The North TSA Plan will include management recommendations for 7,701 acres that OSMP owns and manages in this area. The goal of the North TSA Plan is to improve visitor experiences and increase the sustainability of trails and trailheads while conserving the area's natural, cultural and agricultural resources. Additional background on the plan and process is available in Attachment B.

The Planning Process

The North TSA planning process began in February of 2015 and includes the following four phases:

1. Collecting and compiling information about current conditions and management practices in the TSA which was made available as the [North TSA Inventory and Assessment Report](#) in June 2015.
2. Identifying key issues and interests that need to be addressed in the plan, summarized in the [Interests and Issues Report](#). The report was distributed in July 2015.
3. Assessing and improving the scenarios—and selecting one scenario to use as the basis of the plan. Staff created [four preliminary scenarios](#) for the North TSA Plan that balanced community interests and addressed issues using a range of actions. The four preliminary scenarios were completed and made available for public review in October 2015.

Using input from community members and the OSBT, staff [created two refined scenarios](#) from the four preliminary ones. These were distributed in December 2015. In a January study session, staff asked the Board for feedback on ways that the refined scenarios could be further improved; and to indicate preferences for the scenario that should be used as the basis of the North TSA Plan.



Current Phase

4. Developing the draft plan and seeking the OSBT's recommendation that City Council accept the North TSA Plan.

North TSA Plan Scenarios

The two scenarios discussed at the January OSBT study session include a significant number of elements that are the same in both scenarios. Taken together these shared actions form the core management improvements for the North TSA. The differences between the scenarios are primarily actions linked with the trail connections to the Joder property. Scenario A is characterized by a connection to the Joder property on the east side of US 36, and would include a new trail from Longhorn Road to Lefthand Trail and improvements to the alignment of the Lefthand Trail. Scenario A would also require the construction of an underpass beneath US 36 near the Joder property. Scenario B provides access to the Joder property on the west side of the highway, and relies partially on the use of an undesignated trail lying atop a railroad grade. In both cases, considerable trail rehabilitation and new trail construction will be required to complete the connection.

Feedback by the OSBT at the January study session was consistent and supportive for a number of actions including the following:

- Reaffirming the Habitat Conservation Area (HCA) designation for the Joder property,
- Locating a single loop trail on the Joder property,
- Coordinating with Boulder County Parks and Open Space to manage access to Six Mile Fold after they have updated their management plan for this property,
- Increasing clarity about how the plan addresses regional trail connections,
- Allowing Voice and Sight control on corridor along the Joder interim trail,
- Providing a parallel single track trail next to the Sage and Eagle trails, and

- Determining management benefits and potential topics for educational signage.

Staff appreciates the significant unanimity expressed by the Board regarding these above-noted items and staff has amended the scenarios accordingly.

Topics with more varied feedback included:

- Locating, designing and managing the Joder connector trail,
- Developing and modifying access for cyclists and dogs,
- Locating, designing and managing specific trails, and
- Managing public access to the relatively isolated northern properties.

In situations with varied feedback, staff did its best to continue to balance interests and to make refinements to scenarios based on community feedback, professional judgment informed by best practice, experience elsewhere, knowledge of the area and other factors.

There were also comments and discussion by Board members on other items related to the scenarios. These comments were mostly about:

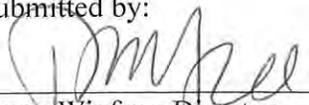
- Understanding environmental regulations, especially wetlands regulations, as they affect the scenarios,
- Understanding rare and sensitive natural resources and potential impacts with proposed routes of conceptual trails and in particular the Joder connector trail, and
- Developing and providing access to facilities (new vault toilets, horse trailer parking at Boulder Valley Ranch).

A table describing the OSBT feedback from the January study session in greater detail is included as Attachment C. The table is arranged according to TSA Subarea, then specific topic/location and includes a description about how the study session feedback was addressed in one or both of the newly revised scenarios.

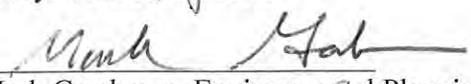
NEXT STEPS

Staff will revise each scenario according to the direction provided by the OSBT and community input and use the scenario identified by the Board as the preferred scenario and the basis for the North TSA Plan document. Updates on the status of the draft plan will be presented to both the City's Parks and Recreation Advisory Board (PRAB) and the County's Parks and Open Space Advisory Committee (POSAC) at their February meetings. Staff will return at the March OSBT meeting with a draft of the plan to request the Board's approval and its recommendation that City Council accept the plan. The scenario not selected to be advanced for developing the plan will be included in materials provided to City Council as an alternative that was assessed and considered in developing the draft plan.

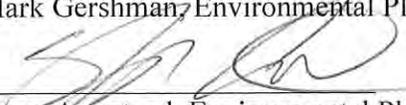
Submitted by:



Tracy Winfree, Director



Mark Gershman, Environmental Planning Supervisor



Steve Armstead, Environmental Planner

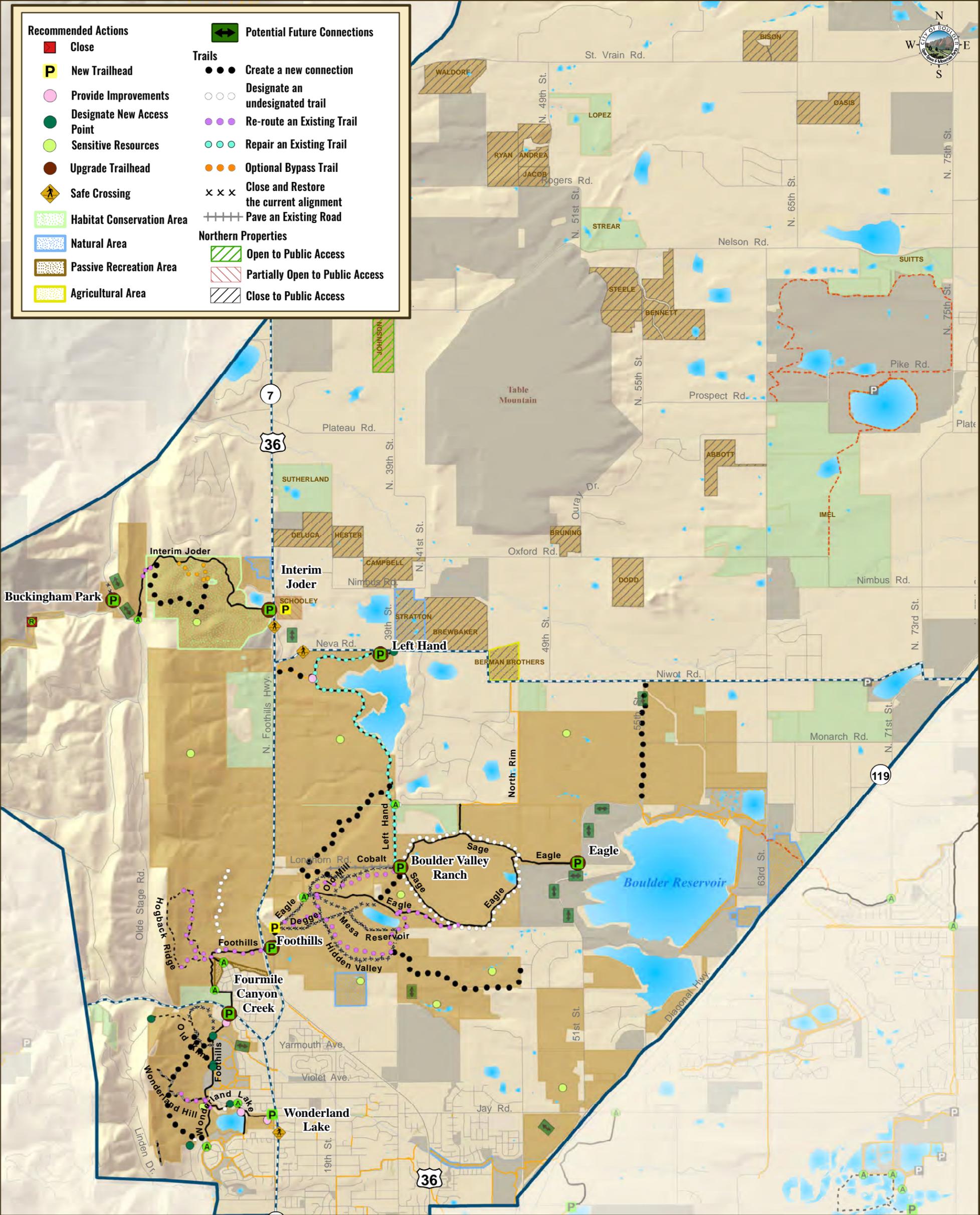
ATTACHMENTS:

- A. Scenario Maps and Comparison Tables
- B. North TSA Plan and Process Background
- C. Open Space Board of Trustees Feedback from January Study Session and Related Changes to Scenarios A and B

This page is intentionally left blank.

North Trail Study Area Plan

Recommended Actions		Potential Future Connections	
	Close		Potential Future Connections
	New Trailhead		Create a new connection
	Provide Improvements		Designate an undesignated trail
	Designate New Access Point		Re-route an Existing Trail
	Sensitive Resources		Repair an Existing Trail
	Upgrade Trailhead		Optional Bypass Trail
	Safe Crossing		Close and Restore the current alignment
	Habitat Conservation Area		Pave an Existing Road
	Natural Area	Northern Properties	
	Passive Recreation Area		Open to Public Access
	Agricultural Area		Partially Open to Public Access
			Close to Public Access



Revised Scenario A

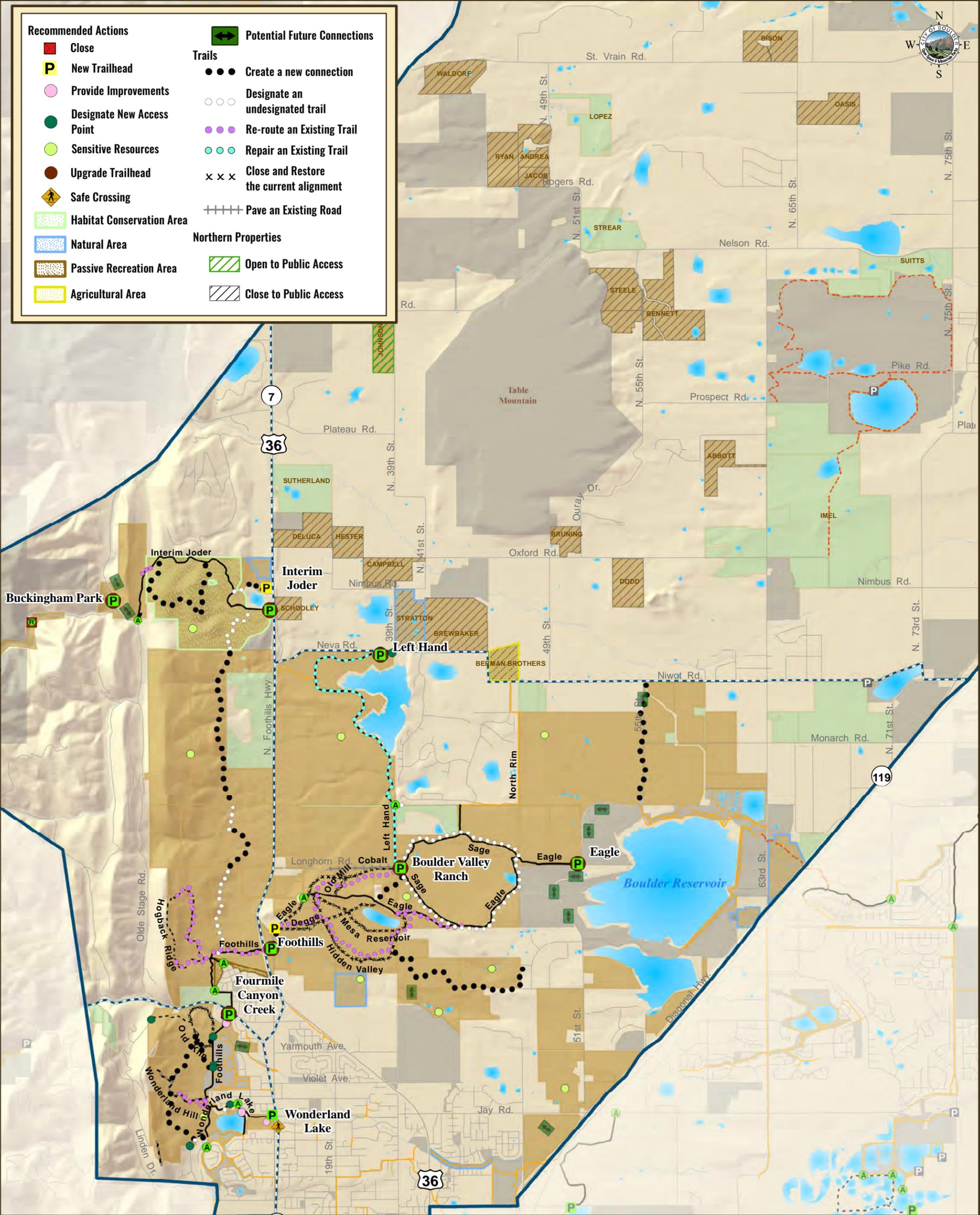


	North Trail Study Planning Area		OSMP Hiking/Equestrian Trail	North Trail Study Area Lands		
	North Trail Study Subareas		OSMP Multi-Use Trail			OSMP Fee & Managed Property in the North TSA
	OSMP Trailhead		OSMP Gliding Access	Lands Not Included in the North Study Area		
	OSMP Access Point		Non-OSMP Managed Hiking Trail			OSMP Easement or Jointly Owned, County-Managed Land
	OSMP Recreational Feature Access		Non-OSMP Managed Multi-Use Trail			Other Government Land
	Boulder County Trailhead		Non-OSMP Planned Trail			

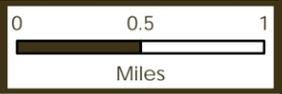
North Trail Study Area Plan



Recommended Actions		Potential Future Connections	
■ Close	↔	●●● Create a new connection	
P New Trailhead	○	○ Designate an undesignated trail	
 Provide Improvements	●	● Re-route an Existing Trail	
● Designate New Access Point	○	○ Repair an Existing Trail	
● Sensitive Resources	x	x Close and Restore the current alignment	
● Upgrade Trailhead	+	+ Pave an Existing Road	
▲ Safe Crossing	Northern Properties		
 Habitat Conservation Area	 	 Open to Public Access	
 Natural Area	 	 Close to Public Access	
 Passive Recreation Area			
 Agricultural Area			



Revised Scenario B



 North Trail Study Planning Area	- - - OSMP Hiking/Equestrian Trail	 North Trail Study Area Lands
 North Trail Study Subareas	- - - OSMP Multi-Use Trail	 OSMP Fee & Managed Property in the North TSA
P OSMP Trailhead	- - - OSMP Gliding Access	 Lands Not Included in the North Study Area
A OSMP Access Point	- - - Non-OSMP Managed Hiking Trail	 OSMP Easement or Jointly Owned, County-Managed Land
 OSMP Recreational Feature Access	- - - Non-OSMP Managed Multi-Use Trail	 Other Governmen
P Boulder County Trailhead	- - - Non-OSMP Planned Trail	

North Trail Study Area Plan

Potential Future Connections

Recommended Actions

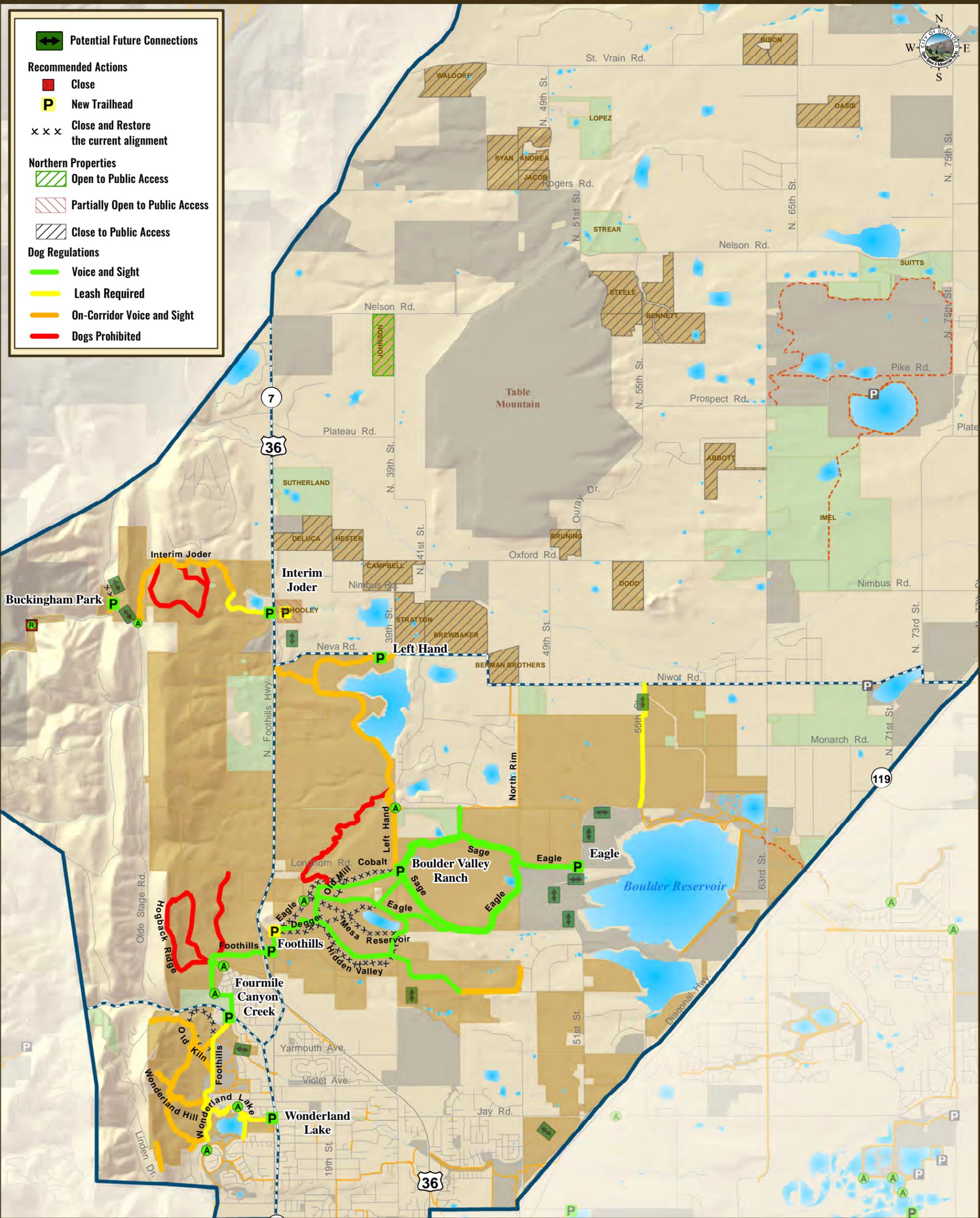
- Close
- New Trailhead
- Close and Restore the current alignment

Northern Properties

- Open to Public Access
- Partially Open to Public Access
- Close to Public Access

Dog Regulations

- Voice and Sight
- Leash Required
- On-Corridor Voice and Sight
- Dogs Prohibited



Revised Scenario A Dog Regulations

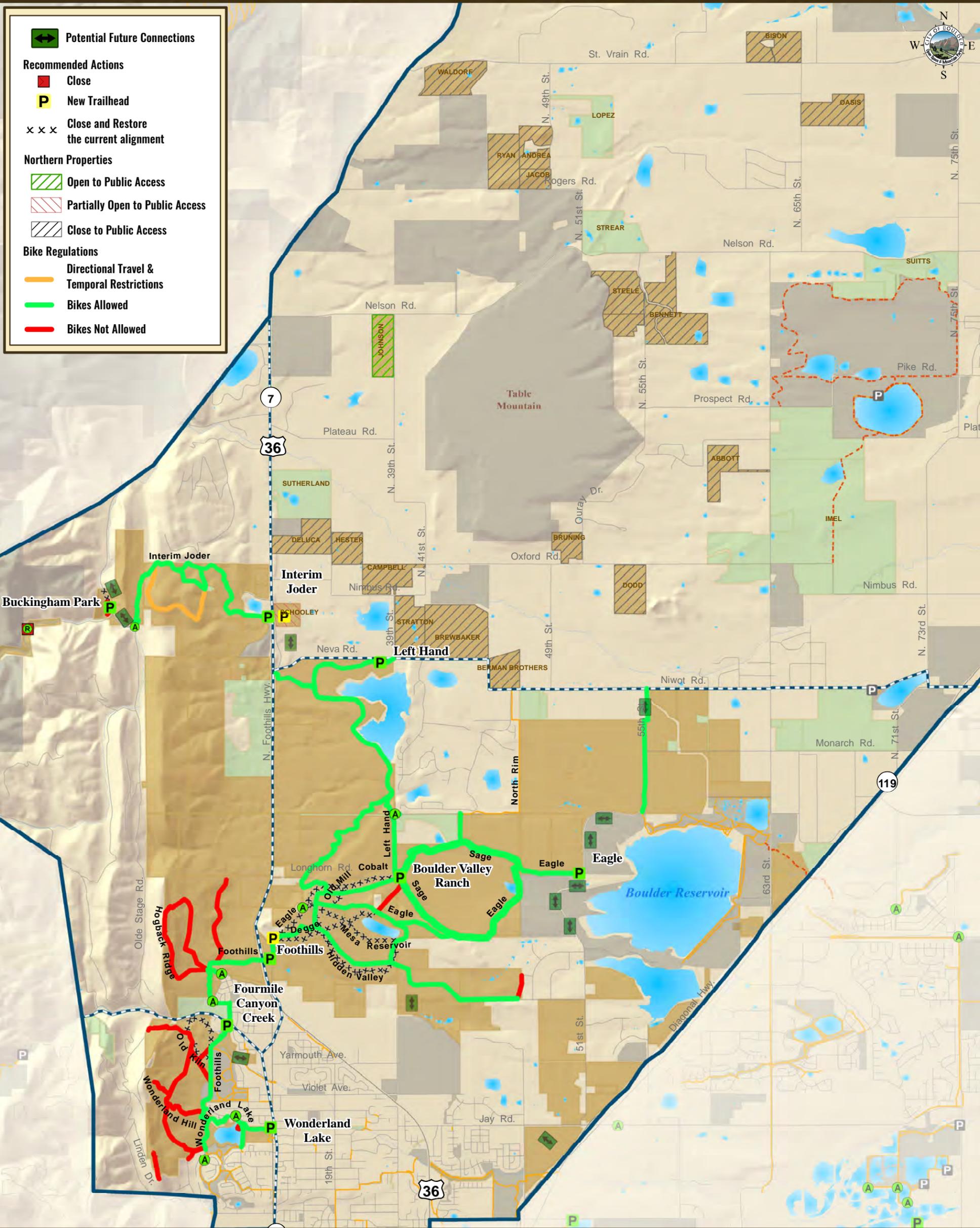


- North Trail Study Planning Area
- North Trail Study Subareas
- OSMP Trailhead
- OSMP Access Point
- OSMP Recreational Feature Access
- Boulder County Trailhead

- OSMP Hiking/Equestrian Trail
- OSMP Multi-Use Trail
- OSMP Gliding Access
- Non-OSMP Managed Hiking Trail
- Non-OSMP Managed Multi-Use Trail
- Non-OSMP Planned Trail

- North Trail Study Area Lands**
- OSMP Fee & Managed Property in the North TSA
- Lands Not Included in the North Study Area**
- OSMP Easement or Jointly Owned, County-Managed Land
 - Other Governmen

North Trail Study Area Plan



Revised Scenario A Bike Regulations



<ul style="list-style-type: none"> North Trail Study Planning Area North Trail Study Subareas OSMP Trailhead OSMP Access Point OSMP Recreational Feature Access Boulder County Trailhead 	<ul style="list-style-type: none"> OSMP Hiking/Equestrian Trail OSMP Multi-Use Trail OSMP Gliding Access Non-OSMP Managed Hiking Trail Non-OSMP Managed Multi-Use Trail Non-OSMP Planned Trail 	<p>North Trail Study Area Lands</p> <ul style="list-style-type: none"> OSMP Fee & Managed Property in the North TSA <p>Lands Not Included in the North Study Area</p> <ul style="list-style-type: none"> OSMP Easement or Jointly Owned, County-Managed Land Other Governme
--	--	---

North Trail Study Area Plan

Potential Future Connections

Recommended Actions

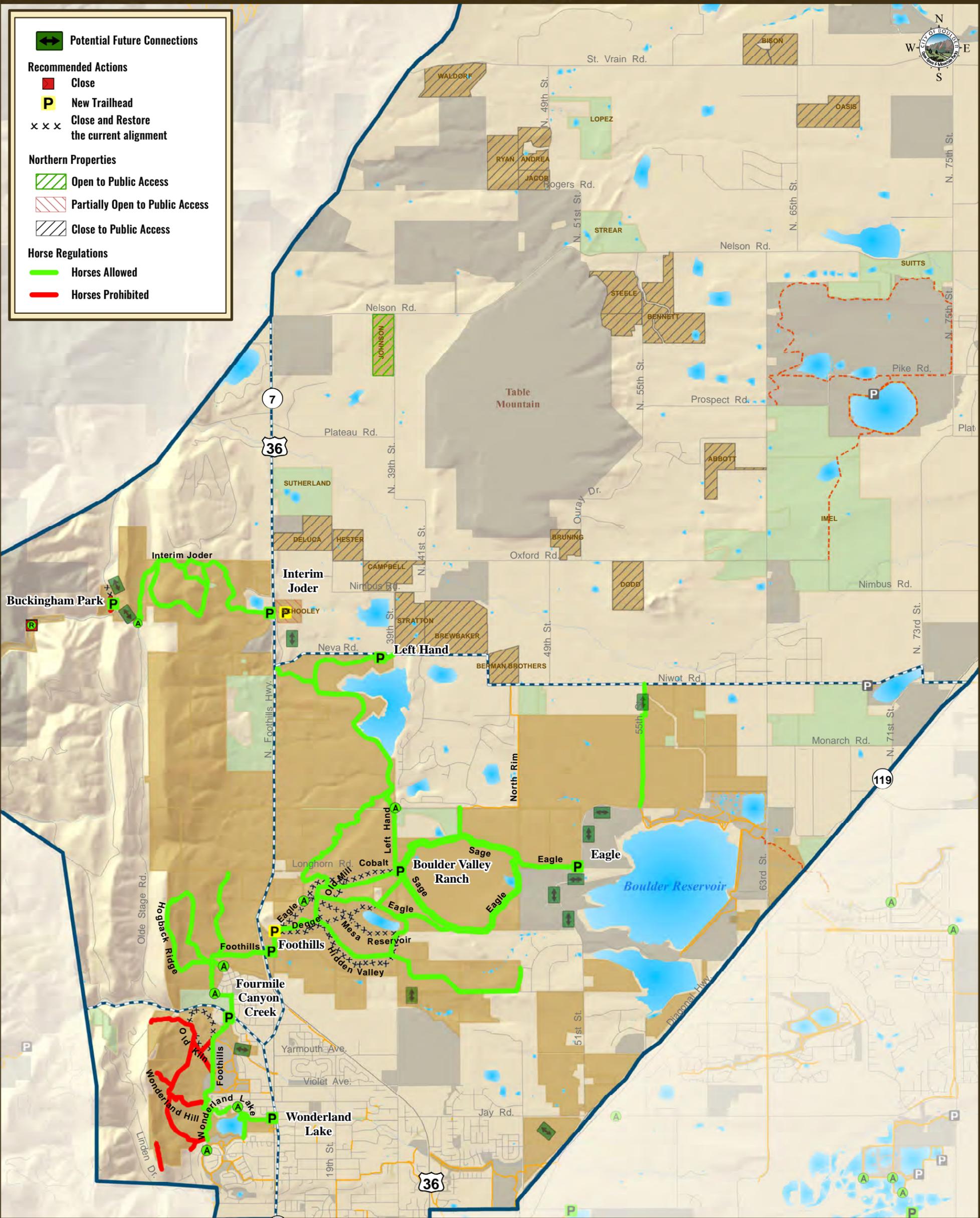
- Close
- New Trailhead
- Close and Restore the current alignment

Northern Properties

- Open to Public Access
- Partially Open to Public Access
- Close to Public Access

Horse Regulations

- Horses Allowed
- Horses Prohibited



Revised Scenario A Horse Regulations



- North Trail Study Planning Area
- North Trail Study Subareas
- OSMP Trailhead
- OSMP Access Point
- OSMP Recreational Feature Access
- Boulder County Trailhead

- OSMP Hiking/Equestrian Trail
- OSMP Multi-Use Trail
- OSMP Gliding Access
- Non-OSMP Managed Hiking Trail
- Non-OSMP Managed Multi-Use Trail
- Non-OSMP Planned Trail

- North Trail Study Area Lands**
- OSMP Fee & Managed Property in the North TSA
- Lands Not Included in the North Study Area**
- OSMP Easement or Jointly Owned, County-Managed Land
 - Other Governme

North Trail Study Area Plan

Potential Future Connections

Recommended Actions

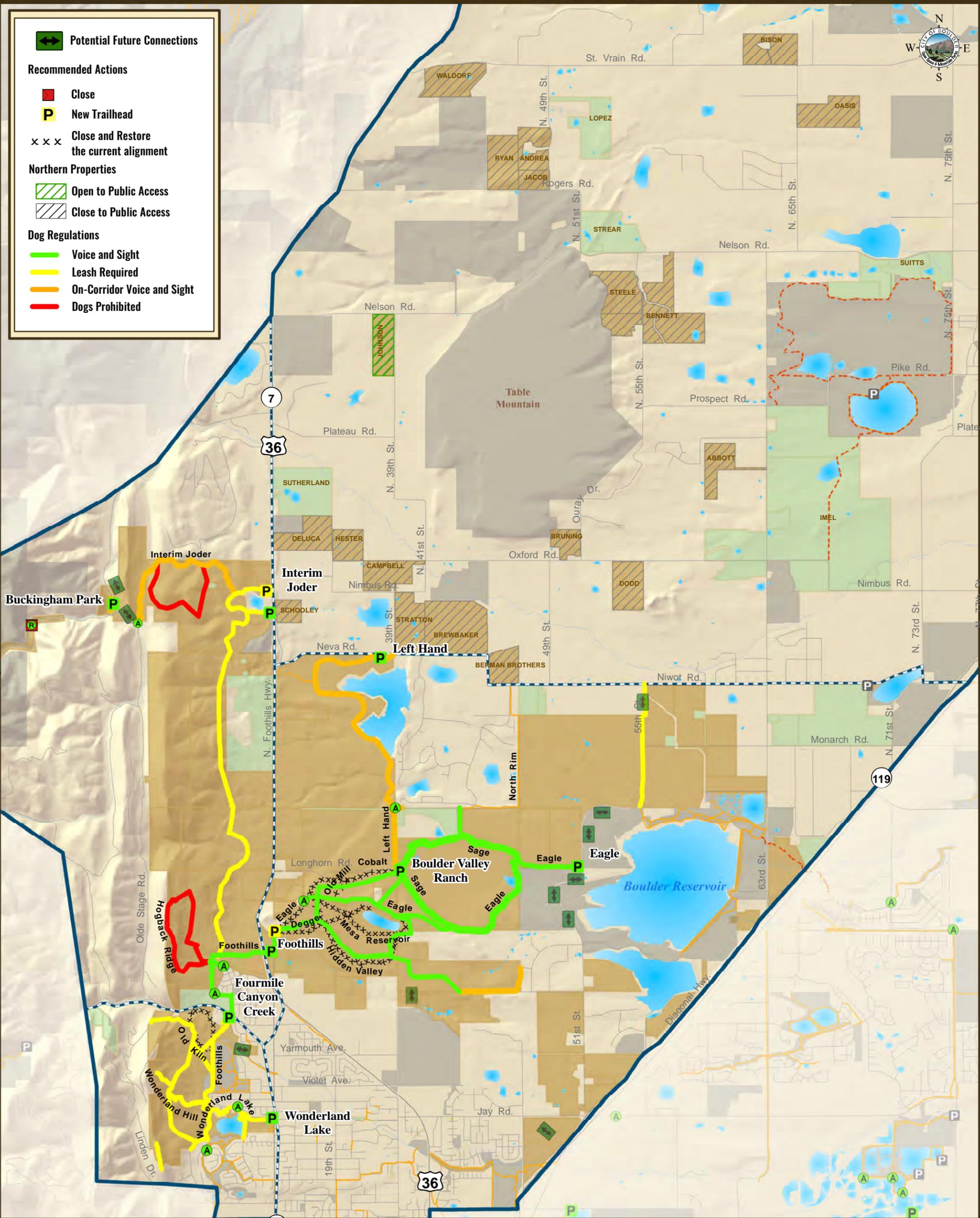
- Close
- P New Trailhead
- x x x Close and Restore the current alignment

Northern Properties

- Open to Public Access
- Close to Public Access

Dog Regulations

- Voice and Sight
- Leash Required
- On-Corridor Voice and Sight
- Dogs Prohibited



Revised Scenario B Dog Regulations



 North Trail Study Planning Area	 OSMP Hiking/Equestrian Trail	North Trail Study Area Lands
 North Trail Study Subareas	 OSMP Multi-Use Trail	 OSMP Fee & Managed Property in the North TSA
P OSMP Trailhead	 OSMP Gliding Access	Lands Not Included in the North Study Area
A OSMP Access Point	 Non-OSMP Managed Hiking Trail	 OSMP Easement or Jointly Owned, County-Managed Land
R OSMP Recreational Feature Access	 Non-OSMP Managed Multi-Use Trail	 Other Governme
P Boulder County Trailhead	 Non-OSMP Planned Trail	

North Trail Study Area Plan

Potential Future Connections

Recommended Actions

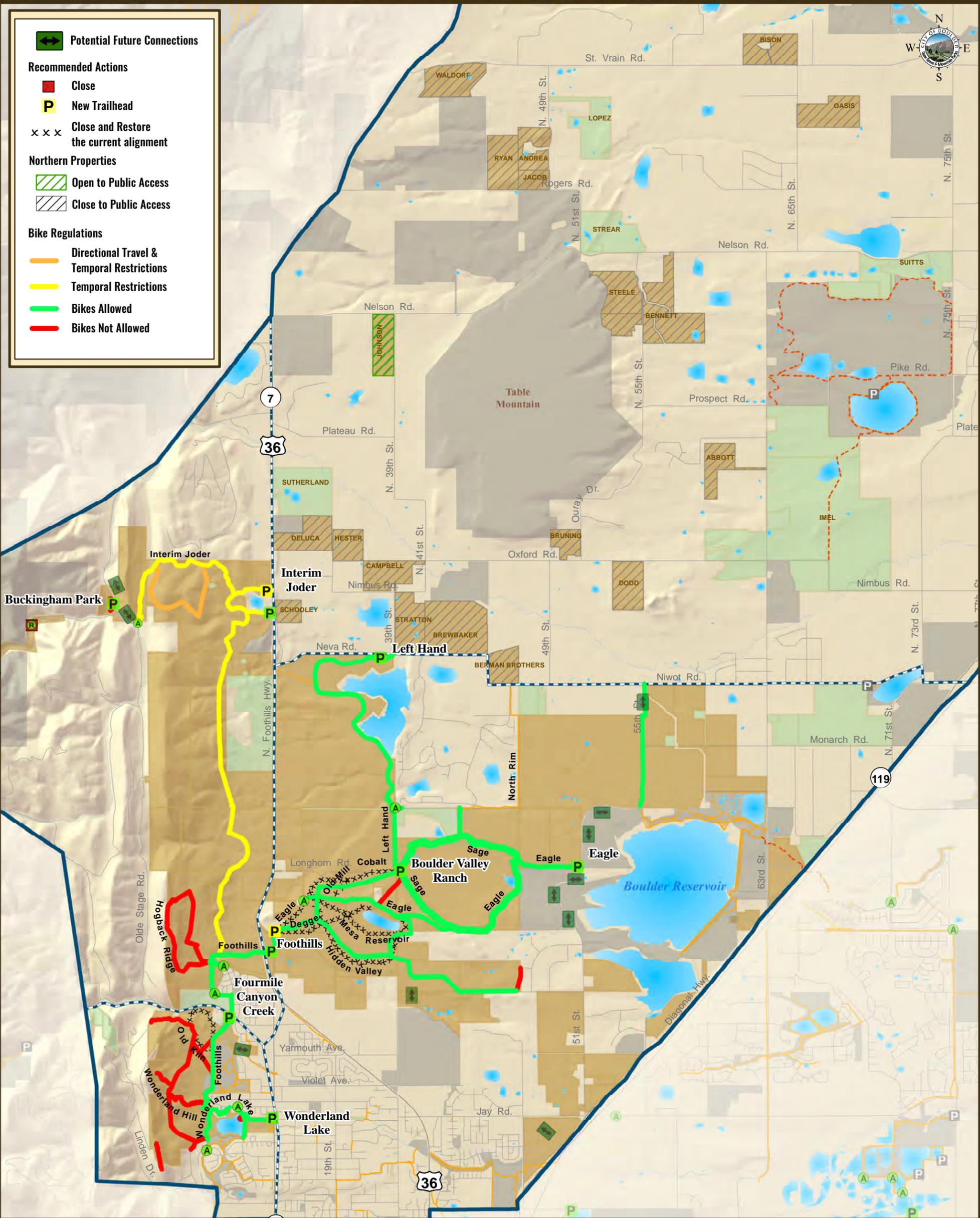
- Close
- New Trailhead
- Close and Restore the current alignment

Northern Properties

- Open to Public Access
- Close to Public Access

Bike Regulations

- Directional Travel & Temporal Restrictions
- Temporal Restrictions
- Bikes Allowed
- Bikes Not Allowed



Revised Scenario B Bike Regulations

- North Trail Study Planning Area
- North Trail Study Subareas
- OSMP Trailhead
- OSMP Access Point
- OSMP Recreational Feature Access
- Boulder County Trailhead

- OSMP Hiking/Equestrian Trail
- OSMP Multi-Use Trail
- OSMP Gliding Access
- Non-OSMP Managed Hiking Trail
- Non-OSMP Managed Multi-Use Trail
- Non-OSMP Planned Trail

- North Trail Study Area Lands**
- OSMP Fee & Managed Property in the North TSA
- Lands Not Included in the North Study Area**
- OSMP Easement or Jointly Owned, County-Managed Land
 - Other Governme



North Trail Study Area Plan

Potential Future Connections

Recommended Actions

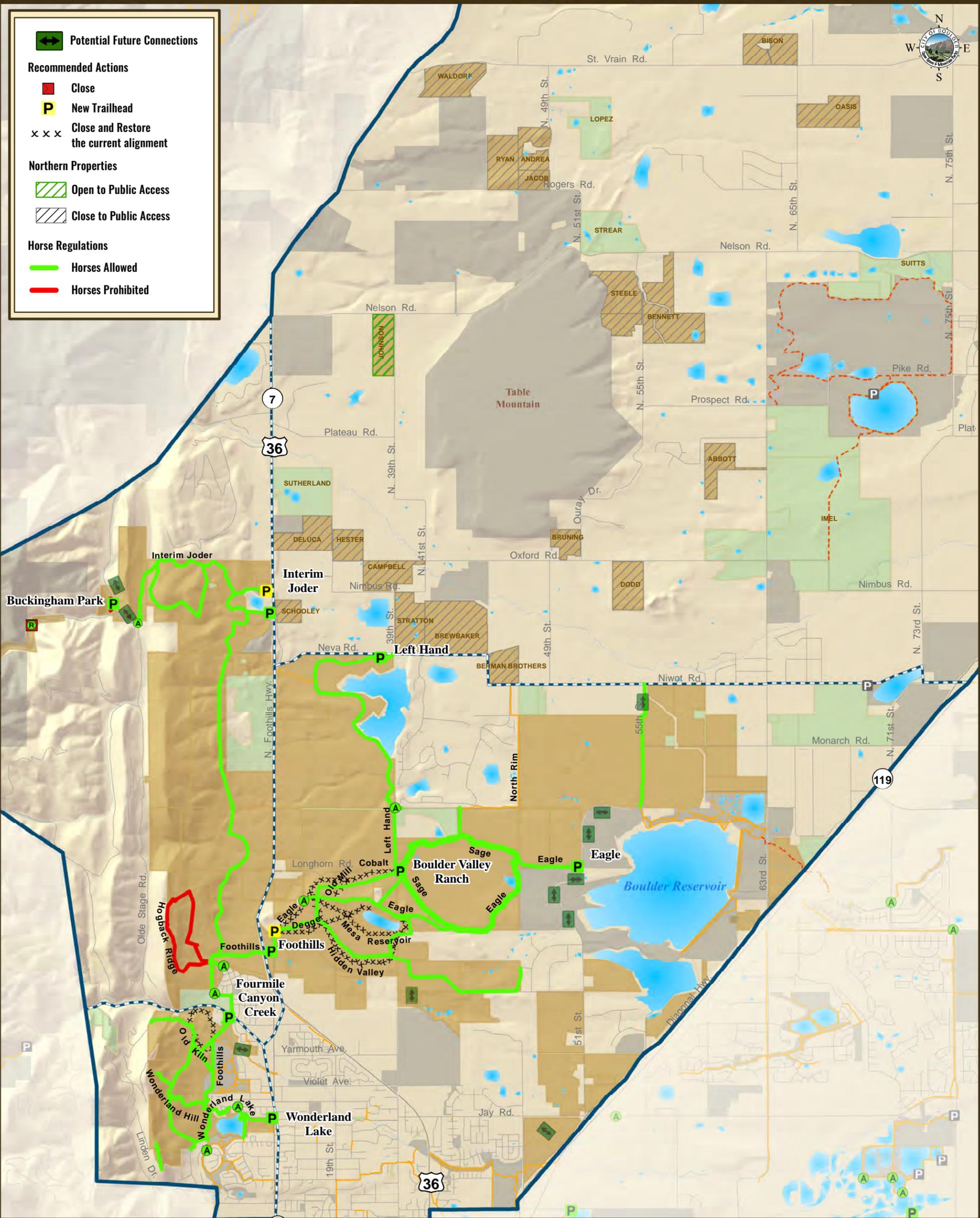
- Close
- New Trailhead
- Close and Restore the current alignment

Northern Properties

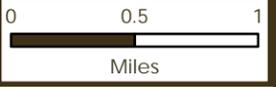
- Open to Public Access
- Close to Public Access

Horse Regulations

- Horses Allowed
- Horses Prohibited



Revised Scenario B Horse Regulations



<ul style="list-style-type: none"> North Trail Study Planning Area North Trail Study Subareas OSMP Trailhead OSMP Access Point OSMP Recreational Feature Access Boulder County Trailhead 	<ul style="list-style-type: none"> OSMP Hiking/Equestrian Trail OSMP Multi-Use Trail OSMP Gliding Access Non-OSMP Managed Hiking Trail Non-OSMP Managed Multi-Use Trail Non-OSMP Planned Trail 	<p>North Trail Study Area Lands</p> <ul style="list-style-type: none"> OSMP Fee & Managed Property in the North TSA <p>Lands Not Included in the North Study Area</p> <ul style="list-style-type: none"> OSMP Easement or Jointly Owned, County-Managed Land Other Governme
--	--	--

North Trail Study Area (TSA) Updated Refined Scenarios Comparison Chart
(Red text highlight updates after Jan 13-14 OSBT study session)

ACTION	SCENARIO A	SCENARIO B
Joder Trail Connection / North Foothills Habitat Conservation Area (HCA)	<ul style="list-style-type: none"> • Joder Connection located east of US 36 via new diagonal connector from Longhorn Road to Lefthand Trail. Make additional improvements and changes to Lefthand Trail to make it a more sinuous and fun trail. • Add educational signage about the HCA and its important resources and safety concerns along the designated trail section using the railroad grade. 	<ul style="list-style-type: none"> • Joder Connection located west of US 36 and Foothills Business Park. Staff is exploring the possibility of routing part of the trail on the neighboring conservation easement property as well as the feasibility of wetland permitting. • Add educational signage about the HCA and its important resources and safety concerns.
Joder Trails	<ul style="list-style-type: none"> • One loop trail on western portion of Joder property with temporal and spatial separation as well as directional regulations for bikes. (<i>Bikes not allowed on Tuesdays and one alternating weekend day</i>) • Include two-year moratorium after the Joder loop trail has been constructed prohibiting off-trail permits inside the loop to allow time for restoration of undesigned trails. (<i>Off-trail permits are not allowed outside the loop trail.</i>) • Partially rerouted Interim Trail that would reduce steepness and create a small loop off the existing Interim Trail. • Proviso clarifying that the North TSA Plan does not preclude future planning processes to assess and recommend a regional connector trail connection to Heil Ranch on the Buckingham property. • Coordinate with Boulder County Parks and Open Space to manage access to Six Mile Fold after they have updated their management plan for this property. • Remove any “attractive nuisances” from the property. 	<ul style="list-style-type: none"> • One loop trail on western portion of Joder property with temporal and spatial separation as well as directional regulations for bikes. (<i>Bikes not allowed on Tuesdays and one alternating weekend day</i>) • Include two-year moratorium after the Joder loop trail has been constructed prohibiting off-trail permits inside the loop to allow time for restoration of old trails. (<i>Off-trail permits are not allowed outside the loop trail.</i>) • Non rerouted Interim Trail • Connector trail from Dagle Trailhead to Interim Joder Trail • Proviso clarifying that the North TSA Plan does not preclude future planning processes to assess and recommend a regional connector trail connection to Heil Ranch on the Buckingham property. • Coordinate with Boulder County Parks and Open Space to manage access to Six Mile Fold after they have updated their management plan for this property. • Remove any “attractive nuisances” from the property.

ACTION	SCENARIO A	SCENARIO B
Local Trail Connections	<p>OSMP is interested in collaborating with community and partner agencies to create local trail connections with North TSA trails.</p> <ul style="list-style-type: none"> • Boulder to North TSA through Area III 	<p>OSMP is interested in collaborating with community and partner agencies to create local trail connections with North TSA trails.</p> <ul style="list-style-type: none"> • Boulder to North TSA through Area III
BVR Trails	<ul style="list-style-type: none"> • Designate and slightly re-route one parallel single-track around Eagle and Sage Trails, parallel to the road. • Provide safe road crossings/access along the Joder Connector. • Post educational signs about dog access, important resources and safety concerns. 	<ul style="list-style-type: none"> • Designate and slightly re-route one parallel single-track around Eagle and Sage Trails, parallel to the road. • Post educational signs about dog access, important resources and safety concerns.
BVR Trailheads	<ul style="list-style-type: none"> • Bring Sage Trailhead up to standards. Do not include horse trailer parking at BVR agricultural headquarters or continue public access to arena. Assess alternative locations where an enclosed horse training ring can be located near a trailhead with horse trailer parking. 	<ul style="list-style-type: none"> • Bring Sage Trailhead up to standards. Assess alternative locations where an enclosed horse training ring can be located near a trailhead with horse trailer parking.
Wonderland Lake Loops	<ul style="list-style-type: none"> • Create a more sustainable trail connection near the existing glider access trail to provide a small loop trail up Wonderland Hill. Removed eastern section of loop trail to reduce the extent of new trail. 	<ul style="list-style-type: none"> • Create a more sustainable trail connection near the existing glider access trail to provide a small loop trail up Wonderland Hill. Removed eastern section of loop trail to reduce the extent of new trail.
Northern Properties	<ul style="list-style-type: none"> • Seventeen properties with no public access • Two properties with public access 	<ul style="list-style-type: none"> • Eighteen properties with no public access • One property with public access

North TSA Updated Refined Scenarios Proposed Regulations and Existing Regulations Comparison Chart
(Red text highlights updates after Jan 13-14 OSBT Study Session)

ACTION	SCENARIO A Proposed Regulations	SCENARIO B Proposed Regulations	EXISTING REGULATIONS
Joder Trail Connection	Connection on the east side of US 36	Connection on the west side of US 36	
Dogs	Voice and Sight on Corridor (Lefthand Trail); no dogs on connection from Cobalt Trail to Lefthand Trail	Leashed	West side – No dogs East side (Lefthand Trail) – Leashed
Bikes	Yes	Yes, except for Tuesdays and alternating weekend days	Yes
Horses	Yes	Yes	Yes
Joder Loop	One Joder loop trail on western section of property with no dogs allowed with spatial and temporal separation consistent with Joder Connector Trail in Scenario B and directional regulations for bikes.	One Joder loop trail on western section of property with spatial and temporal separation consistent with Joder Connector Trail and directional regulations for bikes.	N/A
Dogs	No	No	
Bikes	Yes, except for Tuesdays and alternating weekend days with directional restrictions that will change every six months.	Yes, except for Tuesdays and alternating weekend days with directional restrictions that will change every six months.	
Horses	Yes	Yes	
Joder Interim Trail	Partially rerouted	Not rerouted	
Dogs	Voice and Sight on Corridor	Voice and Sight on Corridor	Leashed
Bikes	Yes	Yes, except for Tuesdays and alternating weekend days	Yes
Horses	Yes	Yes	Yes
BVR Trail Redevelopment	Reroute and improve trails	Reroute and improve trails	
Dogs	<ul style="list-style-type: none"> • Voice and Sight Control on most trails • Voice and Sight, on-corridor on Lefthand Trail and neighborhood connector into Lefthand Trail • Voice and Sight on Papini connector • Leashed on Niwot Road connector trail • No dogs on Cobalt to Longhorn Road connector to Lefthand Trail 	<ul style="list-style-type: none"> • Voice and Sight Control on most trails • Voice and Sight, on-corridor on Lefthand Trail and neighborhood connector into Lefthand Trail • Voice and Sight on Papini connector • Leashed on Niwot Road connector trail 	<ul style="list-style-type: none"> • Voice and Sight on most trails • Leashed on Lefthand Trail
Bikes	<ul style="list-style-type: none"> • Yes on most trails • Yes, on Papini connector • No, on designated and re-routed social trail near shale barrens north of Mesa Reservoir 	<ul style="list-style-type: none"> • Yes on most trails • Yes, on Papini connector • No, on designated and re-routed social trail near shale barrens north of Mesa Reservoir 	<ul style="list-style-type: none"> • Yes, on Eagle, Sage and Lefthand trails
Horses	Yes	Yes	Yes
Wonderland Hill Loops and Old Kiln Trail	<ul style="list-style-type: none"> • Create loop trail connection including reroutes of existing trails, paragliding access trails and undesignated trails. • Reroute paragliding access trail to create a smaller loop option in addition to Wonderland Hill loop. 	<ul style="list-style-type: none"> • Create loop trail connection including reroutes of existing trails, paragliding access trails and undesignated trails. • Reroute paragliding access trail to create a smaller loop option in addition to Wonderland Hill loop. 	

North TSA Updated Refined Scenarios Proposed Regulations and Existing Regulations Comparison Chart
(Red text highlights updates after Jan 13-14 OSBT Study Session)

ACTION	SCENARIO A Proposed Regulations	SCENARIO B Proposed Regulations	EXISTING REGULATIONS
	<ul style="list-style-type: none"> Restore northern section of Old Kiln 	<ul style="list-style-type: none"> Restore northern section of Old Kiln 	
Dogs	Voice and Sight on corridor	Leashed	Leashed
Bikes	No	No	No
Horses	No	Yes, but not designed for	Yes
Northern Properties	<ul style="list-style-type: none"> Seventeen properties with no public access Two properties with public access 	<ul style="list-style-type: none"> Eighteen properties with no public access One property with public access 	<ul style="list-style-type: none"> Twelve properties with no public access Seven with partial or full public access
Dogs	Voice and Sight control on Johnson and leashed on Schooley where there will be a trailhead.	Voice and Sight control on Johnson.	Voice and Sight control on properties where public access is allowed
Bikes	No	No	No
Horses	Yes, on open properties	Yes, on open properties	Yes, on open properties

ATTACHMENT B: NORTH TSA PLAN AND PROCESS BACKGROUND

Trail Study Area Plans

In 2005, the Boulder City Council approved the Open Space and Mountain Parks (OSMP) Visitor Master Plan (VMP). An integral feature of the VMP was the creation of Trail Study Areas (TSAs). TSA plans were to establish visitor access and recreation resource management priorities and projects for specific areas of OSMP lands.

The North TSA

The [North TSA](#) includes lands north of the Diagonal Highway on the east and lands north of Linden Avenue on the west. The North TSA Plan will include management recommendations for 7,701 acres that OSMP owns and manages. The North TSA planning area includes land with some level of city open space ownership, but where OSMP does not provide or manage public access (conservation easements, lands jointly owned with and managed by Boulder County). Lands not managed by OSMP are outside the scope of the North TSA but do provide important context for plan recommendations. The goal of the North TSA Plan is to improve visitor experiences and increase the sustainability of trails and trailheads while conserving the area's natural, cultural and agricultural resources.

The Planning Process

The [planning process](#) has four phases. The first phase focused on collecting and compiling information about current conditions and management practices in the TSA. The primary deliverable for the first phase was the inventory and assessment report which was available on June 15, 2015.

The second phase identified key interests and issues that need to be addressed in the plan. The interests and issues along with the inventory and assessment information informed and guided the development of alternative scenarios which are ways to meet interests or address issues. This phase resulted in a list of interests and potential actions to help direct the development of scenarios.

During the third (current) phase, staff, the community and the Open Space Board of Trustees (OSBT) will assess scenarios, resulting in the selection of preferred recommended actions to include in a draft plan. This part of the planning process will conclude with the completion of a draft plan.

The fourth and final phase includes the review of the draft plan by the community, the OSBT and recommendation and acceptance of the plan by City Council.

Community Engagement

The intent of the planning process and community engagement is to have broad community participation, inclusive dialogue and connect with the community in varied and meaningful ways. Community members have been involved through a range of different approaches including:

- Nine community workshops
- Inspire Boulder, the city's internet-based participatory platform

- On-site and local store-front engagement
- Email and social media submissions
- Youth engagement

Community participation in the assessment, interest and preliminary scenario development phases of the process has represented a diversity of perspectives in the community including people visiting trails in the North TSA, neighbors, stakeholder organizations, youth and families. Currently, 642 people have signed up to receive email updates about the plan. A complete compendium of comments received is available on the [North TSA Website](#).

Figure 1. Community Engagement Participation Levels

Engagement Approach	Assessment Phase	Interest Phase	Expert Panels	Preliminary Scenarios	Refined Scenarios
Workshop Participation	60	36	65	155	70
In-field, store front, neighborhood and Latino community engagement	167	413	NA	Outreach Only	Outreach Only
Youth engagement	16	57	NA	NA	NA
Totals	243	507	65	155	70
Comments on Inspire Boulder/online/email/social media comments	105	115	NA	196	276

OSBT Hosting of the Process

The OSBT has been involved with the development of the North TSA Plan from the beginning as “host” of the North TSA Plan. The intent of this role is to make it clear that OSBT is the recommending body to the City Council and to raise the Board’s visibility in different types of community forums. The role as host also supports community engagement throughout the process, providing an alternative to the three-minute public testimony approach of more traditional public hearings. As host, the Board’s participation can clearly be seen by the community and the City Council as the Board primarily welcomes, listens to and observes the community engagement process.

North TSA Plan Interests

The North Trail Study Area Interests and Issues [report](#) is a compilation of the perspectives and feedback provided to date during the interests and issues phase of the North TSA planning process. Community members were asked to share their interests in the planning area rather than positions. Positions describe what someone wants or needs, while an interest explains why they want or need it. If the community was asked to share ideas about positions, the final result would be distributive, rather than integrative, and a lot of people would not get what they want. Assessing the “why” of what community members want enables staff and the OSBT to better meet the needs of a diverse community and recognizes that individuals carry multiple interests about managing properties, allowing for more win/win opportunities.

Through the various engagement efforts to understand the community and stakeholder interests in the North TSA, ten interests emerged. These interests are consistent with the goal and objectives of the North TSA Plan and provided guidance for staff in the development of the scenarios. The desired plan outcomes or actions that were suggested in the effort to understand interests also informed how potential actions were combined into different scenarios.

North TSA Interests			
Improved Visitor Experience		Improved Connectivity	
Conservation of Resources (Natural/Agricultural/Cultural)		Balance of Recreation and Resource Conservation	
Improved Access and Accessibility		Increased Safety	
Honoring Community Values and Commitments		Decreased Visitor Conflict	
Increased Education and Understanding		Effective Planning Process and Plan Implementation	

North TSA Plan Preliminary Scenarios

Finding ways that the North TSA can be enhanced for the identified plan interests accomplishes the goal of the North TSA Plan. The interests also provided a means to focus the range and types of actions considered in the development of preliminary scenarios. Scenarios are conceptual visions of alternative trail changes, proposals for new trail connections and trailhead improvements for the North TSA that also advance efforts to conserve the area’s diverse natural, agricultural and cultural resources. Scenario maps depict concepts of a proposed set of actions that make up the scenario. Staff had three primary factors to guide the development of the scenarios:

1. Consistency with the North TSA Plan Sideboards.
2. How the group of proposed actions achieve the interests.
3. How well the scenario balances the interests.

Staff deliberately avoided the approach of developing scenarios that prioritized specific interests such as scenarios that were best for improving visitor experience or best at protecting natural resources. In determining changes and actions to include in the scenarios, staff considered suggestions made by the community as part of the public engagement effort to understand interests, information from the inventory and assessment report and ideas shared during the expert panels. The fundamental intent of each preliminary scenario is to balance all of the community interests through different combinations of proposed actions.

Balancing Interests in the Preliminary Scenarios

Each of the four preliminary scenarios sought to balance the North TSA interests in different ways. OSMP staff reviewed the inventory and assessment report and the full scope of community input from the assessment phase through the expert panels to propose ideas. The North TSA project team worked hard to listen to each other’s ideas and consider different and creative proposals for addressing the interests. Staff also understood that there are a lot of ways proposed actions could be combined to balance the interests. None of the preliminary scenarios

had the “right” mix and balance of ideas; however, the four preliminary scenarios provided a good base for integrating community feedback into the scenarios and building the refined scenarios.

To develop the scenarios, staff began with the four subareas and discussed a range of possible actions for each of the subareas. Staff then combined actions in alternative ways so the interests could be balanced across the subareas. The subareas were then combined in different ways to make up the four preliminary scenarios and further adjustments were made to balance interests. Proposed actions that were important to balancing interests across the four scenarios include:

- Regional connections,
- New trail connections,
- Trail re-development,
- Measures to avoid habitat fragmentation and conserve sensitive resources,
- Innovative ideas to manage a range of passive recreational activities and decrease visitor conflict,
- Trailhead and access improvements, and
- Education and stewardship opportunities.

A table summarizing some of the significant actions and the ways they varied between the scenarios to balance interests across the scenario is available in [Attachment D of the November 16, 2015 OSBT Study Session Memo](#). A [summary table comparing the preliminary scenarios](#) is available online along with the preliminary scenario [maps and tables](#) describing the actions relevant to all scenarios and to each of the individual scenarios. The tables describing the scenario actions identify the intended interests that the recommended actions achieve. The [regulation maps](#) for the scenarios reflect the trail changes proposed in the scenarios.

Community Feedback on Preliminary Scenarios

Staff initially presented the preliminary scenarios to the community at a workshop on Oct. 5 and provided an opportunity for participants to provide initial thoughts about the scenarios and how they did or did not balance the interests. Feedback from break-out groups and from a participant poll is available on the [project website](#). After the workshop, staff posted an online [survey](#) to gather additional input. Both the poll and the survey aimed to gather information on community perspectives about how well the preliminary scenarios balanced interests and on which interests the scenarios fell short. They were not designed to determine what changes to make to the scenarios or to select which scenarios should be refined further.

A second workshop on Oct. 19 sought feedback from participants about which of the scenarios they thought could be improved on how well they balanced the interests and to suggest changes to the scenarios that would improve the balance. Community members were able to provide feedback online for a week after the workshop. Feedback from the second workshop and online comments were combined together and are available in a [detailed table](#). Included are all comments submitted in response to the questions to which staff asked for feedback:

- Which scenario was selected?
- Why was it selected?
- What changes are proposed and how do the changes improve the balance among the interests?

There was substantial community engagement and feedback during both workshops and the associated online community review and comment opportunity for the preliminary scenarios. Staff received many comments including support for the various scenarios, concerns about specific actions and suggestions on how interests could be better accomplished and balanced for particular scenarios.

Staff compiled feedback on the suggested changes to the scenarios in a separate summary table that includes proposed changes, associated rationale and if/how the proposed change(s) were incorporated into the two refined scenarios. This information is available on the [North TSA Website](#).

OSBT Feedback on Preliminary Scenarios

Staff presented the preliminary scenarios as well as the community feedback received on the preliminary scenarios to the OSBT at a Study Session on Nov.16, 2015. Staff asked the Board:

- Does the OSBT have comments on the community input about which of the preliminary scenarios best balances the North TSA interests?
- Which of the preliminary scenarios do OSBT members suggest staff revise and advance as preferred scenarios?
- Are there specific actions or changes to the scenarios OSBT members think important for staff to consider in the development of preferred scenarios that balance the interests better?

Staff compiled the feedback received from the Board in a table that details the feedback as well as if/how it was integrated into the two refined scenarios. This information is available on the [North TSA Website](#).

North TSA Plan Refined Scenarios

Based on community input and Board feedback, staff modified the four preliminary scenarios into two refined scenarios as detailed in the Jan.13, 2016 OSBT Study Session Memo. Feedback by the OSBT at the January study session focused upon the following topics:

- Locating, designing and managing of the Joder connector trail
- Locating, designing and managing loop trails on Joder
- Developing and modifying access for cyclists
- Developing and modifying access for dogs
- Managing public access to the relatively isolated northern properties

There were also comments unrelated to these primary topics. Topics that generated multiple comments by the Board, but with less overall frequency from community members were mostly about:

- Locating, designing and managing specific trails,
- Increasing clarity about how the plan addresses regional trail connections, and
- Addressing equestrian access and trailer parking at Boulder Valley Ranch.

**1/13-14/2016 Open Space Board of Trustees (OSBT) Study Session Feedback and Revisions
to Refined Scenarios**

JODER TRAIL CONNECTION		
Scenario /Topic	Feedback	How Addressed in Revised Scenarios
Scenario B / west of US 36 Joder connector	Continue to explore alignment via the conservation easement (and consider re-opening this up as a public process)	The feasibility of locating part of the trail alignment on the conservation easement will continue to be explored. The need for additional public feedback will be assessed at the time alignments are determined.
	Continue to explore wetland permitting concerns to ensure feasibility of the west connector.	Staff will continue to assess permit requirements and feasibility.
	Do not allow online off-trail permits west of the connector. Make people apply for permits in person.	Off-trail permits will not be allowed west of the connector. Making permits only available by applying in person creates complexities and feasibility issues with the application procedures that increase complications and confusion for visitors.
	In locations where a pedestrian/equestrian designed trail rather than bike accessible trail can reduce resource impacts, consider making a few sections of the west Joder connector so that cyclists will need to dismount their bikes. <i>(Eg. 3 dismount areas over 3 miles would be okay, more than that would be a hindrance.)</i>	This idea would be explored further when the actual alignment of the proposed west connector is determined. The use of this trail design approach would require suitable locations where visitors could be kept to the trail rather than going around stairs or trail sections not constructed for bike access.
	Set a speed limit to increase safety and have fewer switchbacks to minimize visual impacts from US 36.	The trail will be designed to minimize visual impacts from US 36. Speed limits on trails have been assessed previously by staff and determined to be difficult to enforce and less practical than other techniques to reduce recreational conflicts.
	Use signage about rattlesnake hibernacula to increase education and safety.	Educational signage about the Habitat Conservation Area (HCA) and important natural resources and safety concerns such as rattlesnakes, will be recommended for the connector trail. Staff will also be cognizant of sign design and location to minimize visual impacts.
	Do not have temporal restrictions on west connector trail for bikes. One Board member suggested considering using temporal restrictions as an adaptive tool if a need becomes apparent.	Temporal restrictions for bikes on the west connector are still included to reduce visitor conflict and increase safety on this trail. Recommendations

JODER TRAIL CONNECTION		
Scenario /Topic	Feedback	How Addressed in Revised Scenarios
		from the recreation expert panel indicate it is difficult and less successful to “adaptively manage” and change recreational use patterns once they have become established. It is best to apply temporal strategies when opening new trails.
	Consider temporal restrictions for safety and to minimize conflict.	Included.
Scenario A / east of US 36 Joder connector	Make the new diagonal connector more sinuous, long, fun and provide a larger loop experience.	The new diagonal connector will remain as proposed since it threads the needle between important resources, but further re-design and improvements to the Lefthand Trail to provide the desired sinuous, long and fun trail will be explored further in Scenario A.
	Complete the process of cattle grate crossings for trails in this area.	Installing grate crossings is part of OSMP’s on-going practice of determining the most suitable locations for this type of crossing and scheduling them for installation throughout OSMP.
	If an out and back trail is designated along the RR grade, include educational signage about the resources there and make the east connector as interesting/good a visitor experience as possible.	An out and back trail along the RR grade will be designated in Scenario A and educational signage about the HCA and its important resources will be provided, being cognizant of sign design and location to provide important information, but minimize visual impacts. Further re-design and improvements to the Lefthand Trail to provide a better visitor experience will be explored further in Scenario A.

JODER PROPERTY		
Area/Topic	Feedback	How Addressed in Revised Scenarios
Both Scenarios / Habitat Conservation Area (HCA) status	Support for Joder to remain an HCA.	Included in both scenarios.
Both Scenarios / future trail	Put in a proviso that there will be a separate process to determine whether there will be a connector trail to the Buckingham property.	Included in both scenarios.

JODER PROPERTY		
Area/Topic	Feedback	How Addressed in Revised Scenarios
connections		
Scenario B / Buckingham Trail	Maintain V&S access on the Buckingham Trail. One Board member thought V&S access on the Buckingham Trail was okay, but leash should be required throughout the rest of the property.	V&S on corridor access on Buckingham is included in both scenarios.
Scenario B / Joder loop trail	Only have one loop on Joder (rather than two loops) and keep it on the west side of the property. One Board member suggested opening loop location as a public process. Another suggested that the western loop be made larger while a different Board member suggested avoiding drainages and rocky outcrops.	One primary loop on Joder is included in both scenarios. Scenario A includes an alternate reroute for the Interim trail that creates a second smaller loop.
Scenario B / Eastern loop on Joder	Concern about the eastern Joder loop proposed in Scenario B being too near the Six Mile Fold.	In Scenario B, this proposed eastern loop is removed. In both scenarios, the county will go through its own planning process to determine access and management of visitors onto Six Mile Fold. OSMP will coordinate with the county's planning efforts to determine if and where trails could be located in this area.
Scenario B / Joder loop	Make Joder loop(s) no dogs and provide V&S on corridor access on the Interim Joder Trail. One Board member suggested that fencing should be added where there currently isn't any. Another suggested a preference that dogs remain on leash, but if V&S access is allowed, suggested adding educational signage about the resources in the area.	The Interim Joder Trail will provide V&S on corridor access for dogs in both scenarios. The Joder loop (trail south of the Joder Interim Trail) will not allow dogs. The alternate reroute section for the interim trail in Scenario A will also not allow dogs.
Both Scenarios / Joder loop	Temporal restriction is preferable to directional regulations on Joder loop. A Board member suggested that signage should indicate alternate location for bikers on Joder-restricted days. Another Board member recommended making regulations equitable (if hikers are allowed a bike-free experience, then bikers should be allowed a hiker-free experience). He suggested gathering information from Jefferson County Parks and Open Space about their temporal regulations.	Temporal restrictions are included for the Joder loop trail in both scenarios which match the temporal restrictions recommended for the west side Joder connector trail. Directional regulations for bikes are included on the loop trail in both scenarios to minimize visitor conflict, increase safety and increase visitor experience.
Both Scenarios / Rerouted Joder Interim Trail	Reroute the Joder Interim Trail to address steepness/safety concerns and improve visitor experience/narrower trail.	An optional bypass (rerouted) section of the Joder Interim Trail to address steepness is included in Scenario A. The bypass section is not included in Scenario B in an effort to balance resource impacts because it is extremely challenging to find an area to reroute the trail that minimizes impacts to resources.
Both Scenarios /	Suggested removing the "attractive nuisances" on the Joder property.	Included in both scenarios.

JODER PROPERTY		
Area/Topic	Feedback	How Addressed in Revised Scenarios
Joder Property		
Both Scenarios / Joder Property	Suggested having restrooms at HCA trailheads to help prevent off-trail use.	New trailheads and existing trailheads requiring significant improvements will be assessed for the suitability of adding restrooms during implementation of the plan. The new trailhead at Degge is likely to include restrooms. Site details for the expanded Eagle Trailhead and Joder trailheads will need additional assessments during implementation to determine suitability.
Both Scenarios / Joder Property	Cautioned against putting additional infrastructure in the form of restrooms at trailheads going into HCAs.	

BOULDER VALLEY RANCH		
Area/Topic	Feedback	How Addressed in Revised Scenarios
Both Scenarios / Eagle and Sage parallel single track	Designation of single track trail parallel to Eagle and Sage trails should be included.	Included in both scenarios.
Scenario A / Safe road crossings	Ensure safe road crossings/access along the Joder Connector route.	Included in Scenario A.
Both Scenarios / Horse trailer parking at BVR	Horse trailer parking should be included somewhere near the BVR headquarters (maybe on the south side of Longhorn Road with a turn-around at the headquarters)	Horse trailer parking will not be included near the BVR headquarters in either scenario. General public access to BVR arena will not be allowed, access will be managed by lessee. Concerns about public safety, insurance requirements, maintenance, limited available public access times, and enforcement of trailer parking and the protection of private property are reasons for this recommendation.
Both Scenarios / North Rim / Axelson connection to Niwot Road	Support for taking over management of North Rim Trail, making improvements to the trail (5-10 foot realignment), and adding a connection across the Axelson property to Niwot Road.	The connection across the Axelson property to Niwot Road will not be included in either scenario because this trail would need to be closed 8 months out of the year to protect raptor habitat and an alternate connection via 55 th St to Niwot Road is included in both scenarios. OSMP will not take on management of the North Rim Trail from the county. The low level of community interest for making improvements and possibly high costs for improvements and

BOULDER VALLEY RANCH		
Area/Topic	Feedback	How Addressed in Revised Scenarios
		maintenance make this not a priority for inclusion in the North TSA Plan. OSMP and the county will coordinate on improvements to this trail if the need arises in the future.
Both Scenarios / BVR area properties	Consider removing some of the existing fencing at BVR.	Included in both scenarios.
Both Scenarios / Regional connections	Supported the connection coordinated through the Greenways Master Plan as well as the Area III connection.	Included in both scenarios.
Both Scenarios / BVR general	Encouraged posting more educational signs about dog regulations/trail etiquette; particularly to reduce visitor conflict and minimize rattlesnake encounters around Lefthand Trail and other areas in BVR.	Educational signage about dog access, important resources and safety concerns such as rattlesnakes will be included in both scenarios, being cognizant of sign design and location to provide important information, but minimize visual impacts.
Both Scenarios / Off-trail equestrian access	Supported equestrian off-trail use on East Beech and throughout BVR.	Equestrian off-trail access will continue to be allowed on East Beech and throughout BVR in both scenarios.

WONDERLAND LAKE		
Area/Topic	Feedback	How Addressed in Revised Scenarios
Both Scenarios / Direct hang gliding access loop	Felt that the direct and shorter hang gliding access route and small loop does not need to be included in either scenario.	This shorter loop and hang gliding access route is included in both scenarios in order to improve resource protection by managing a more sustainable trail and consolidating and minimizing social trails in the area. Continuing to provide access to a shorter loop was supported by community interest.
Both Scenarios – Wonderland Lake shorter, hang gliding access loop	Felt that the shorter, hang gliding access route loop does not need to be included in either scenario.	This shorter, hang gliding access route loop is still included in both scenarios in order to improve resource protection by managing a more sustainable trail and minimizing social trails in the area and continuing to provide access to a shorter loop which was a community interest.
Scenario B / Wonderland loops	Allow V&S on corridor on Wonderland loops.	V&S on corridor is allowed on Wonderland loops in Scenario A. Dogs are allowed on Wonderland loops on leash in Scenario B in an effort to maintain balance of interests.
Both	Supported existing dogs on leash regulations in	Included in Scenario A.

Scenarios- Wonderland	all of Wonderland.	
--------------------------	--------------------	--

NORTHERN PROPERTIES		
Area/Topic	Feedback	How Addressed in Revised Scenarios
Scenario A / Deluca property	Suggested keeping this property open and using it as an opportunity to connect into the Joder property (instead of providing a connection via the Schooley property)	Deluca property will remain closed in both scenarios because it is irrigated agricultural land and to protect bobolinks and their related habitat.
Both Scenarios – All Properties	Felt that these properties should not be opened for additional access at this point.	In Scenario A only two properties will remain open to public access; Schooley to provide trailhead access to the Joder property via an underpass and Johnson because it has minimal natural and agricultural resources. In Scenario B only one property (Johnson) will remain open to public access.
Both Scenarios / Stratton, Brewbaker and Berman Brothers properties	Suggested Stratton, Brewbaker and Berman Brothers be open in order to provide an off-road/adjacent to the road trail on the east side of these properties. After learning more about the ditch on Stratton, one Board member felt this might not be a good idea after all.	These properties will remain closed in both scenarios. Stratton is an active agricultural site with valuable ponds and wetland/riparian resources and habitat. Berman Brothers is an agricultural land of statewide importance suitable for hay and grazing with irrigation ditches. It includes wetlands, raptor foraging habitat and ground-nesting bird habitat. Brewbaker has active agricultural operations, the potential area for parking near the property is limited, and community concern was expressed about opening this property to public access.
Both Scenarios / Stratton and Brewbaker properties	Noted that Stratton should remain closed to public access because of the ponds/riparian resources on it. If a property were to be opened as an off-road alternative it should be Brewbaker, though this is not a priority.	Stratton remains closed in both scenarios to protect important resources. Brewbaker will also remain closed in both scenarios, but this does not preclude future access to any of these properties should they become integral to providing future regional connections.

Linda Andes-Georges
8417 Stirrup Ln
Longmont, CO 80503
Feb. 8, 2016

Dear County staff, Mr. Stewart, POSAC members and County Commissioners:
As you cannot but know, the Boulder OSMP department is going through the spasms of another public process, focusing on how to manage their North Trail Study Area. What always happens in these proceedings has happened once again: because we are focusing on a TRAILS study area, the ecological imperatives that are supposed to underpin our considerations are put on sidetracks (these days also called “sideboards,” which most folks tend to disregard—even the decision-makers).

Whatever spurts out of the upcoming OSBT meeting in the City, I'd like the County to participate as a rightful partner in the deliberations. The County owns or co-owns an important portion of the area in question, and the management and ecological principles of the City and County certainly should be aligned.

I write to urge you to pay close attention to what is being said and to what is being ignored. The recreational users wish to have a connector trail (through an HCA) that provides a “quality experience,” that is “fun and challenging” (to quote one of the OSMP Board of Directors). The environmentalists have been trying to call attention to the over-arching principles in the Visitor Master Plan, the N-TSA mission, and to the science-oriented members of the staff, who have stated that a trail on West Beech would be **“ecologically unsustainable.”**

Setting aside the incredibly costly economics of a proposed trail on the West Side through our lovely Habitat Conservation Area, I beg you to look closely at other potential impacts. I hope your own staff will document these for you:

- the multiple drainages where wildlife currently finds shelter, and for which wetland permits will be needed;
- the botanical values (very high);
- the fauna (few rare, but many species of concern);
- and the risks. Once such a lengthy and expensive trail is built, “paradise” will be “paved” (to paraphrase Ms. Mitchell). No amount of monitoring findings—assuming the dept. ever has the money to do in-depth monitoring—will persuade future decision-makers to close this behemoth.

Meanwhile, a dreadful side-effect of a western alignment for this trail will have far-reaching consequences: The policy documents that we put in place with equally painful processes when I was on the OSBT-- and after--will have been completely de-fanged. They will be considered “ignorable.” Statements therein (see below) that should be guiding us have been disregarded as so many words on paper in favor of the new big thing: fun and cardiochallenging activities. A letter from the surviving Founders of City Open Space (attached) makes clear that this was not part of the conception for Open Space. (Ricky Weiser must be turning over in her grave!)

I love a cardio-challenge myself. But there is a place for everything, and an HCA is not the place for this. Future trail connections with big-picture (regional) corridors can be placed largely on the east side of the highway. The views from there are terrific also. We need to correct the perspective that seems to be dominating this debate: that OSMP should supply everything to everyone in every part of the system. Impossible... and not desirable.

Thank you for your public service, and your consideration of my comments.

Yours sincerely,
Linda Andes-Georges

Policy document reminders:

- The well-known statements of Boulder's Charter (which places all charter uses on equal footing);

-- The OSMP Visitor Master Plan, severely weakened by a previous City Council but still stating (in 2005), that the North Foothills are part of a precious "habitat conservation area." Further, that "Open Space and Mountain Parks shall be careful to *protect and preserve environmental resources when there is uncertainty about their conservation status, the impacts of visitor use, and/or the effects of management actions.*" And that "When there are conflicts between resource protection and visitor use, *management priorities will be established by considering the context provided by the underlying management area designation [in this case, HCA].*" P 30

-- The N-TSA objectives as stated in section 12.2.1: **Tier 1 (urgent and extremely important) goals, objectives, and management actions:** ...Encourage the protection of large tracts of unfragmented

land, undisturbed from the effects of recreational trails... to maximize available undisturbed habitat and minimize impact from developed "edges."

-- Lastly, the OSMP Mission statement itself: The Open Space and Mountain Parks Department preserves and protects the natural environment and land resources that characterize Boulder. We foster **appreciation and use that sustain the natural values of the land for current and future generations.**

2 February 2016

Those of us involved in the original establishment of Open Space are often asked about our initial priorities and what we had in mind. It has arisen again in recent discussions concerning the placement of trails north of town. Let us be absolutely clear, from the very beginning our commitment was to protect these lands and waters for their inherent value as natural areas. In those days we unabashedly thought of these areas as part of "mother nature."

Starting in 1959 with the "blue line" limiting growth in the foothills, followed by the initial Open Space tax in 1967, then an ordinance in 1973 which established an Open Space Board of Trustees and formalized the purposes for which open space lands could be used, and finally with the establishment of a separate department in the 1986 charter amendment, this commitment to protect these ecosystems for their intrinsic value has never wavered. While passive recreation was always recognized as an obvious asset of these natural areas, the essential motivation behind the years of work that secured their protection was, in part, to buffer Boulder from urban growth, but primarily to protect them for their beauty and their fundamental value as preserves of unspoiled nature.

We wanted to protect these lands because they are home to the plants and animals we cherish, and we viewed them as a precious trust we had a responsibility to preserve for their own sake. We could not imagine why we would not want to protect them. It never felt like an undue burden to limit some of our uses, and it still feels like a small price to pay for the benefits. At the 40th anniversary celebration for the initial establishment of Open Space, our late friend Al Bartlett said, "We have the responsibility to manage our open space lands and their unique ecosystems so that they can be passed on, ecologically undiminished, to our children, to their children, and to their children."

Open Space has been fundamental to our community's identity. It is a testament to Boulder's collective restraint that in giving nature a little room to roam, we have discovered an inexhaustible generosity in her steady solace and beauty.

Ruth Wright Dr. Oakleigh Thorne II

From: Suzanne Webel [<mailto:suzannewebel@gmail.com>]
Sent: Sunday, January 10, 2016 7:38 PM
To: Frye, Renata; Boulder County Board of Commissioners
Subject: Boulder County Horse Recommendations for the North TSA

Attached please find BCHA's recommendations for the North Trail Study Area of the City of Boulder Open Space & Mountain Parks. We're sending you, at the Boulder County level, this information because what happens in the NTSA affects all of Boulder County, and we'd like your support.

In most instances equestrians seek the same trails as everyone else, and we don't need any special infrastructure other than horse trailer parking. The attached material includes our thoughts on the desirability of regional non-motorized trails, the Trail Around Boulder, and trails within the NTSA. The NTSA is especially important to equestrians because of its long heritage as a major area of horse ranches, equestrian centers, riding lessons and educational programs, liverys and more. In the NTSA alone, however, we have recently lost a major horse center due to OSMP acquisitions and subsequent classification as an HCA (Joder Ranch), and we have been essentially deprived of access to others due to indifference from staff over the years (including Schooley and Boulder Valley Ranch, both of which used to be popular sites for horse boarding, lessons, training and liverys). We lost Heil Valley Ranch as a place where people could go to rent horses and experience the backcountry from the back of a horse. Double Dove's future is uncertain given its recent acquisition by BCPOS. Many local ranches have been sold to developers and some indoor arenas have even been turned into marijuana grow facilities(!).

The pressures of urbanization are perhaps more intense for horsekeepers than for any other stakeholder group. Yet the horse community supports open space acquisition and management. Horse farms preserve open lands, horses do not exert disproportionately more impact on natural resources than any other group, horsekeeping is a major economic driver for Boulder and Boulder County, and horses are positively viewed by the large majority of citizens in open space poll after poll. We need open space, and you need us!

Please help us preserve horses as a way of life in Boulder County. Please join us in supporting Alternative B with some modifications, especially those that would be meaningful for equestrians. The full text of our response is attached herewith.

We know that finding the appropriate "balance" for Open Space in general is difficult. We sincerely appreciate your time and support of our issues. Thank you.

Suzanne Webel
President, BCHA

Begin forwarded message:

From: Dianne Andrews <dandrews@boulder.net>
Date: January 3, 2016 9:09:30 PM MST
To: 'Boulder County Board of Commissioners' <commissioners@bouldercounty.org>, <[OSBT-](#)

Web@bouldercolorado.gov>, <rstewart@bouldercounty.org>,
<ArmsteadS@bouldercolorado.gov>, <WinfreeT@bouldercolorado.gov>

Subject: NORTH TRAIL STUDY AREA

I am writing to strongly support adoption of Scenario A for the North Trail Study Area.

Scenario A provides the best protection for the west side of Beech, along with the biological diversity of its native plant communities and critical wildlife habitat. This area contains the last foothills riparian drainages that are not negatively impacted by recreational use. A trail on the west side would significantly compromise the biological integrity of this area.

I support staff's recommendation to maintain the Joder property's designation as an HCA. Trail placement should be determined only after thorough review of valuable plant communities and wildlife habitat.

Thank you for your consideration of these comments.

Dianne Andrews

336 Taylor Road

Lyons, CO 80540

forwarded message:

From: Sandra Laursen <salaursen@gmail.com>

Date: January 3, 2016 10:45:26 PM MST

To: <ArmsteadS@bouldercolorado.gov>, <WinfreeT@bouldercolorado.gov>, <OSBT-Web@bouldercolorado.gov>, <commissioners@bouldercounty.org>, <rstewart@bouldercounty.org>

Cc: Sandra Laursen <salaursen@gmail.com>

Subject: NTSA planning

To City of Boulder Open Space Staff and Trustees, and Boulder County Commissioners -
I write to comment on the North Trail Study Area scenarios.

I support Scenario A, in particular the placement to the east of US 36 of a trail that connects the Foothills Trail to the Joder Trail. This placement will preserve valuable wildlife habitat on the west side of the highway - especially the riparian drainages that are currently unfragmented by recreational use and thus can continue to serve as corridors for wildlife travel and seed dispersal, both essential to the survival of individuals but also to the genetic mixing that ensures a healthy, diverse population. Chopping through these drainages with a trail will deter wildlife movement, isolate populations, and provide a vector to carry invasive weeds into plant habitats.

Moreover, the east-side placement of a trail makes it possible to offer new recreational opportunities while staying true to the city charter and Boulder Valley comprehensive plan and the values of open space that are designated there. Indeed I have concerns about the "sidebar" terminology that has been used throughout the NTSA process to describe the charter and comprehensive plan, because it seems to relegate them to appendices. Instead, these guiding documents of our community offer essential guidance for any open space decisions, as they define community values that include preservation of natural areas as habitat for native flora and fauna.

I also support the recommendation of staff to maintain the HCA designation of the Joder property. Any trails proposed for this property must be carefully routed so as to protect plant and wildlife resources within the HCA. As a birder, I am especially concerned to preserve the shrubby and grassland habitats in this property that are favored by many nesting birds, and the cliff habitats that support species as diverse as golden eagles and rock wrens.

I appreciate the spirit of city-county cooperation that is implied by this planning process and urge it to continue in order to serve not only our human citizens but the voiceless plants and animals who also live here.

Sincerely,
Sandra Laursen
Boulder, CO
forwarded message:

From: pat billig <p.billig@comcast.net>
Date: January 3, 2016 7:09:15 PM MST
To: <ArmsteadS@bouldercolorado.gov>, <WinfreeT@bouldercolorado.gov>, <OSBT-Web@bouldercolorado.gov>
Cc: <commissioners@bouldercounty.org>, <rstewart@bouldercounty.org>
Subject: North TSA Comments on Scenarios A and B

1. I am urging you to recommend Scenario A to the Boulder City Council. Scenario A is a classic example of the “balancing” of resource values and recreation interests that is OSMP’s responsibility. With a trail of comparable interest that connects the Foothills Trail to the Joder Trail on the east side of the North Foothills Highway (U.S. 36) (recreation interest) and the maintenance of an intact HCA that enables the preservation of valuable, diverse, unfragmented habitat on the west side of Highway 35 (resource protection interest), Scenario A is a responsible choice for many reasons, including:

· Both the Boulder County and Boulder Valley Comp Plans (sideboards to the NTSA planning process to which alternatives should adhere) show trail connections on the east side of Highway 36 and habitat conservation areas (HCAs) on the west side of Highway 36. If the trail through the West Beech HCA is built, it will cross Boulder County land that is designated a high biodiversity area with rare plant communities and critical wildlife habitat, and an area “especially unique and important to the natural heritage of the county” (Boulder County Comprehensive Plan).

- One of the purposes of open space, as stated in the city charter, is “preservation of natural areas characterized by or including terrain, geologic formations, flora, or fauna that are unusual, spectacular, historically important, scientifically valuable, or unique, or that represent outstanding or rare examples of native species.” The area on the west side has been designated as an HCA by competent, professional open space staff who have studied the area and contains the last foothills riparian drainages in our open space system that are not impacted by recreation. This is our last chance to protect this HCA for future study and limited access.

- Providing a connector trail to the east and habitat conservation on the west will balance recreation and natural resources conservation interests.

2. In addition, I strongly agree with OSMP staff’s recommendation to maintain the Joder property’s designation as an HCA, and, because of the extremely valuable plant communities and wildlife resources, ask staff to make sure that any trails proposed for the Joder property are carefully placed to preserve those resources, not impact them. As OSMP staff have noted, the Joder property contains:

- a drainage with five springs
- high quality shrub-nesting bird habitat that supports species like lazuli bunting (a species of special concern) and a wide variety of other wildlife
- rare plants and plant communities (e.g., large areas of big-bluestem)
- habitat that supports several herds of deer and elk
- exposed rock and cliffs that support rock wrens (a species of special concern) and has been occupied by golden eagles for over 130 years
- rare and imperiled butterflies

Finally, as a previous OSBT member, I appreciate the care and broad range of professional judgements that determine HCA designations and the use of HCAs to protect wildlife and their habitats from being “loved to death”. We, the general public, must not see these HCAs as simply “unfair” barriers to recreation, but as OSMP’s most important tool to balance resource protection efforts and it is up to OSMP, OSBT, and, if need be, City Council to stand firm on protection of professionally-determined critical resources and locations. Unfortunately, we have seen too many examples in the last several years of high speed recreation not only becoming the dominant form of recreation on trails where it is permitted, but these “open” trails also providing an entry point to restricted trails (e.g., the Goshawk Trail within an HCA) not only during the day, but also at night, as I recently observed nighttime use of “snow bikes and headlamps on the Mesa

Trail near El Dorado Springs and south of El Dorado Springs in areas that should be daytime use only. If OSMP and the OSBT do not protect our natural resources, who will?

Thank you!

Patricia Billig

3390 Longwood Ave.

Boulder, CO 80305

From: Steve Watts <stevenup@gmail.com>

Date: January 3, 2016 6:32:29 PM MST

To: Steve Armstead <ArmsteadS@bouldercolorado.gov>, Tracy Winfree <WinfreeT@bouldercolorado.gov>, Ron Stewart <rstewart@bouldercounty.org>, <OSBT-Web@bouldercolorado.gov>, Boulder County Commissioners <commissioners@bouldercounty.org>, Boulder City Council <council@bouldercolorado.gov>

Cc: BMA Board <bmaboard@yahoogroups.com>, Kevin Bracy Knight <bracyknight@gmail.com>, Adam Sher <Adam.Sher@bryancave.com>, Mike Barrow <mikeb@bouldermountainbike.org>

Subject: North TSA comment, Jan 3, 2016

Dear Mr. Armstead, Ms. Winfree, Mr. Stewart, Trustees of Open Space, and County Commissioners,

Thank you for taking public input on the North Trail Study Area (NTSA). I hope you will consider BMA's position and that of like-minded residents as the plan for the NTSA moves forward.

As Executive Director of the Boulder Mountainbike Alliance I have an obligation to represent the values, needs and desires of BMA's 1000+ members who reside in Boulder County. BMA, along with OPEN Boulder (a coalition of over 6000+ recreationists) fully support Scenario B.

I have spent the last six months or so learning the history of decision making as it pertains to open space in Boulder County, using the West TSA as a case study. That process, while opinions vary on the the success or failure of it, caused divisiveness within the community. I believe OSMP took that lesson to heart and sincerely offered a different process to overcome the negativity from the WTSA process. I commend you for recognizing that the process had to change. However, I do believe that intentions did not lead to a process to eliminate rancor within our community due to two overwhelming factors. One, the process was overly complicated to understand and engage in given the time constraints of most people--especially people who are younger, hold full time employment, and/or are raising children. Additionally, the process, while

striving to be balanced, was fundamentally flawed because OSMP doesn't employ staff with adequate specialization in recreation science to offer balance to the process. How can the overall process be balanced without the recreational science, data and analysis inputs into the base decisions that resulted in the various scenarios? Without balanced debate, discussion, and compromise within the department staff, the process, much like what happened in the WTSA process, seems to have a political bias which I believe was not the intention of OSMP leadership. So now the community is facing a decision that will go to the County Commissioners--an inherently political solution in which someone wins and someone loses. Not a optimal solution for building community--especially in a community where recreationists already feel marginalized after the WTSA debacle.

So, how do we move forward? First, recognize that the area between Wonderland Lake and Joder Ranch is not a pristine wilderness area. It has been recreated on via historical trails and a railroad grade for decades, includes an industrial/warehouse complex and is adjacent to a high volume US highway. Second, that potential impacts can be mitigated to protect species of concern through trail design and education. And, third, that the goal of building regional connectors can be realized that create great user experiences desired by the VMP, OSMP and the recreational community.

Regardless of process issues, a few truisms are fundamental for our unique community and greater society. Without a great trail experience, we fail to get people out of their cars and into nature. Without balanced scientific analysis, we fail to create a process devoid of politics. And in general, without access to open space, we fail to build the connection between humans and nature needed to ensure future commitment to stewardship of the environment.

Thank you for your efforts and invitation to provide input to the decision making process. BMA looks forward to continuing our engagement in the NTSA decision.

Sincerely,

Steve Watts
Executive Director, Boulder Mountainbike Alliance

--

Steve Watts
MPA--Indiana University-School of Public and Environmental Affairs

575-496-3785 cell
1237 Elder Avenue, #1
Boulder, CO 80304-2660

"Imagine your ideal world, and imagine

From: pat billig <p.billig@comcast.net>
Date: January 3, 2016 6:17:39 PM MST
To: <ArmsteadS@bouldercolorado.gov>, <WinfreeT@bouldercolorado.gov>, <OSBT-Web@bouldercolorado.gov>
Cc: <commissioners@bouldercounty.org>, <rstewart@bouldercounty.org>
Subject: North TSA Comments on Scenarios A and B

1) I am urging OSMP staff and the OSBT to recommend Scenario A to the Boulder City Council with a trail that connects the Foothills Trail to the Joder Trail on the east side of the North Foothills Highway (U.S. 36) and enables the preservation of valuable, diverse, unfragmented habitat on the west side of the highway for the following reasons:

- Both the Boulder County and Boulder Valley Comp Plans (sideboards to the North TSA planning process) show trail connections on the east side of the highway and habitat conservation areas on the west side of the highway.
- One of the purposes of open space, as stated in the city charter, is “preservation of natural areas characterized by or including terrain, geologic formations, flora, or fauna that are unusual, spectacular, historically important, scientifically valuable, or unique, or that represent outstanding or rare examples of native species.” The “West Beech HCA” (to the west of Highway 36) contains the last foothills riparian drainages in our open space system that are not impacted by recreation. This is our last chance to protect them for future study and limited access.
-
- our communities’ values and land use commitments are spelled out in the charter and comp plans and we need to honor them.

Patricia Billig

3390 Longwood Ave.

Boulder, CO 80305

From: Hannah <huse@aol.com>
Date: January 3, 2016 2:26:21 PM MST
To: <rstewart@bouldercounty.org>
Subject: Re: North Boulder Open Space Trail Proposals

Re: North Boulder Open Space Trails

I want to express my concerns about the environmental impact of potential trail expansion on the North Boulder Open Space areas. I believe the sensitive habitats on the west side of the North Foothills Highway should remain undisturbed. If the choice is between Scenario A or B, I favor Scenario A (on the east side of the highway)

This recreational expansion has many enthusiastic supporters, I'm sure. However, this trail proposal is for a discretionary development, an enhancement project for a limited audience. At the very least, every effort should be made to reduce the impact on environmentally sensitive areas.

Hannah Huse
2190 Linden Avenue
Boulder, CO 80304
huse@aol.com
303-449-9740 (home)

From: Terry Stuart <tsboulder@gmail.com>
Date: January 3, 2016 2:23:41 PM MST
To: Steve Armstead <ArmsteadS@bouldercolorado.gov>, <WinfreeT@bouldercolorado.gov>, <OSBT-Web@bouldercolorado.gov>, <commissioners@bouldercounty.org>, <rstewart@bouldercounty.org>
Subject: West TSA

As an OSMP volunteer, former BCNA board member and an active participant in the last TSA, I want you to count me as a strong supporter of both BCNA's and old friend Karen Hollweg's position to keep the bike trail on the East side of 36. The trail from Heil Valley Ranch is a fantastic bike trail and a less fantastic hiking trail because of it. I love riding my mountain bike on trails AND I also love to hike in relative solitude without having to step out of the way of bikers. Knowing how much time and energy you are devoting to this effort I want to keep it simple for your team and myself.

Thank you for your incredible dedication.
Terry Stuart, 3743 Nelson Rd, Longmont

From: Tom <tomdugan5747@msn.com>
Date: January 3, 2016 1:07:57 PM MST
To: Tom <tomdugan5747@msn.com>
Subject: North TSA

Dear ladies and gentlemen,

I am contacting you in regard to the upcoming decisions you will be making on path alignment on the public land north of Boulder along highway 36. The land west of the highway has not been impacted by recreation much and has a broad diversity of plants and wildlife that I and many naturalists feel need to be left undisturbed. It is presently a uniquely undisturbed part of our public land holdings and should remain that way. A path to the east of highway 36 would be

about the same length ,would provide good access and recreation , and would be in keeping with the designation of both Comprehensive Plans addressing that area which should be followed .

Along with supporting Scenario A ,I hope you will follow the staff's recommendation to keep the Joder Ranch designated as a conservation area because it has many rare plants and also has ecosystems which support many birds, some of which are threatened.

Thank you,

Tom Dugan

2945 19th st

Boulder, Co 80304

From: <marymcquiston@comcast.net>

Date: January 3, 2016 11:28:47 AM MST

To: <ArmsteadS@bouldercolorado.gov>, <WinfreeT@bouldercolorado.gov>, <OSBT-Web@bouldercolorado.gov>, <commissioners@bouldercounty.org>, <rstewart@bouldercounty.org>

Subject: North TSA

To our loyal keepers of Open Space,

I am writing to encourage you to support Scenario A as the most appropriate choice for a trail system within the North TSA.

It seems obvious that running a trail along the EAST side of North Foothills Highway is practical, less costly, and less damaging than running the trail on the west side in critical habitat that makes up the HCA.

The Boulder County and Valley Comp Plans have already shown trail connections on the east side and the HCA on the West side.

To change this designation would compromise decades of consistency in protecting critical habitat.

Staff have responsibly recommended that the Joder Property remain an HCA for all of the reasons that such designations exist:

drainage with five springs that complement high quality bird habitat, rare plant communities, wildlife habitat and a sanctuary for rare and imperiled butterflies.

As the Front Range increasingly grows and demand for more recreational access builds, it is places like this that become increasingly rare.

To slice and dice such critical habitat would not be in the long term interest of Open Space nor its users.

Boulder County and City have forged ahead with wisdom and caution in order to preserve our special lands. To place a connector trail through fragile territory would sabotage the very goals of those efforts.

Scenario A provides a reasonable balance between recreation and conservation.....a win win for everyone!

Thank you for your efforts!

Mary McQuiston
4331 Eldorado Springs Drive
Boulder, CO
80303

From: Mary Eberle <m.eberle@wordrite.com>

Date: January 2, 2016 4:23:41 PM MST

To: Steve Armstead <ArmsteadS@bouldercolorado.gov>, Tracy Winfree <WinfreeT@bouldercolorado.gov>, Ron Stewart <rstewart@bouldercounty.org>, <OSBT-Web@bouldercolorado.gov>, Boulder County Commissioners <commissioners@bouldercounty.org>

Cc: Heather Bergman <heather@peakfacilitation.com>, Mark Gershman <gershmann@bouldercolorado.gov>, Bryan Bowen <bryan@caddispc.com>, "Boulder City Council" <council@bouldercolorado.gov>

Subject: North Trail Study Area--support for Scenario A with tweaks

January 2, 2016

Dear Mr. Armstead, Ms. Winfree, Mr. Stewart, Trustees of Open Space, and County Commissioners,

Thank you for taking public input on the North Trail Study Area (NTSA). I hope you will consider my opinion and that of like-minded residents as the plan for the area moves forward.

Visitor Access to and through the NTSA

Scenario A offers the most “balance” between the overriding and competing goals of recreational access versus conservation of the area’s natural resources. I put “balance” in quotes because the wild animals, birds, reptiles, insects, and plants do not have a voice in the decision. If we value other kinds of life as well as human life, we must preserve the necessary habitat. West of U.S. 36, Scenario A will preserve a large block of fairly undeveloped, unfragmented space for wildlife and the native plants that support the wildlife. Such preservation of sensitive natural resources is a high value for me, and the NTSA harbors species of concern.

In Scenario A, I like the trail improvements and additions planned for the Wonderland Lake area and the hogbacks to its west and northwest of Fourmile Creek. I have enjoyed the social trails and will like better-designed ones even more. And I think the glider community has been respectful of the area and deserves access (which is disallowed in Scenario B for cost reasons).

To allow access from Boulder to the Joder Ranch property and destinations to the northwest, the proposed trail in Scenario A (using some existing trails and some new ones) on the east side of

U.S. 36 seems appropriate. Much of the area is already fairly heavily used; however, the proposed changes will enhance the visitor experience by reducing some trail “duplication” and affording human users a view unbroken by other people on adjacent trails. The trail changes and improvements will afford wildlife more unfragmented room.

I am concerned about the plan to put car parking at Schooley and horse trailer parking on the west side of U.S. 36. Visitors will arrive at the “wrong” lot and be frustrated and possibly have difficulty moving to the correct lot. Please consider a design that accommodates both types in both locations. Alternatively, and much better, I think, put all the parking at Schooley, along with a restroom facility. Horse trailers could park along an edge-hugging loop, and cars could park in the middle. Add a stoplight on U.S. 36 to allow safe access to Joder; add warning signs with flashing lights on both the north and south approaches to the crossing. The trees between the Joder Reservoir and U.S. 36 provide some ambiance and perhaps bird habitat; I think they would be cut down to accommodate parking if it is on the west side of the highway, so that is another reason to place the parking at Schooley.

At the October 5th workshop, I was at the table with the two ranchers who manage and work Boulder Valley Ranch. They convinced us that leaving the house and equipment areas where they are is the most logical ranch-management approach, which seems to be settled. They also explained that the dust from traffic on the access road is excessive; I am happy to see that paving or another solution is indicated. The ranchers further suggested putting the parking near U.S. 36 and letting visitors walk or bike in. Along with everyone at the table, I found their arguments compelling. During the clicker session, these options were not presented, however, which I found distressing. Perhaps because they were not presented, the Scenario A map still shows a parking indication at the Boulder Valley Ranch headquarters. I hope parking will be removed from that location and the parking area near U.S. 36 made large enough to accommodate users.

Scenario A shows that the Interim Joder Trail will be made permanent and two adjoining loop trails will be added. We were constantly advised by staff that trail locations were conceptual rather than set in concrete in the scenario maps, but I hope that the extremely valuable bird habitat along the drainage to the west of the Joder Quonset hut riding arena will be preserved without trail access. Please evaluate whether a single loop that completely avoids that drainage would be satisfactory. Also, if design improvements might be made to the alignment of the Interim Trail, please let such improvements be considered as the project progresses. Methods to reduce the grade may be useful in places.

One other out-and-back trail would allow visitors to walk on the Niobrara Limestone outcrop (the rock layer’s exposed edge) along the surface expression of Six-Mile Fold. Such a trail would provide a special geologic experience not otherwise available near Boulder; signage could ask users to exercise caution and explain the interesting structure that the originally planar Niobrara has been bent into. Signage could also describe the fracking of the Niobrara under the eastern part of our county and show a cross section depicting how deep the Niobrara is where the fracking is occurring. If we must wait for a cooperative agreement with Boulder County, that would be all right. I don’t think that the loop trail shown in Scenario B is a good idea because the western leg of the loop would cross the drainage far upstream of the rock outcrop and the start of the Joder Interim Trail, which would put trail users in a more wildlife-rich zone.

Dog Access to and through the NTSA

The “on-leash” requirement on the Joder Interim Trail is good. The seasonal (May–July) dog-access closure on any loop trail(s) on the Joder property is also a good step. However, I would prefer no dog access on any Joder loops, in deference to wildlife and to humans who are seeking a contemplative experience of our open space. The value of the contemplative use of the outdoors cannot be overstated. Dogs interfere with quiet enjoyment, and their human guardians often do not pick up after them. The smell along some of our trails is disgusting at times, especially near trash cans; thus it would be preferable to have more “no dog” trails.

Therefore, I also think that there should be a “no dog” restriction instead of “Voice and Sight” on the trails along the hogback west of Wonderland Lake. That area has a lot of deer. Dogs will break their training and chase adult deer and fawns. Even dogs on leash will spoil the enjoyment for many, as mentioned in the previous paragraph. There are miles of trails for dogs in the less sensitive parts of the NTSA—that should be enough.

Certain parts of the NTSA east of U.S. 36 that are planned to allow “Voice and Sight” dog access in Scenario A would be more environmentally protected if dogs were only allowed if leashed and on-trail. These areas include special habitats such as wetlands and places where wildlife such as prairie dogs might be chased. Explanatory signage may help dog guardians understand why a part of a trail has a new leash restriction.

Horse Access to and through the NTSA

Despite the historical use of Joder by horse riders, a new day has dawned that should favor hikers now that the property belongs to all of us. I think that horses should be allowed on the Interim Joder Trail, which is wide enough to allow hikers and bicyclists to avoid horse poop without having to move off the trail. But I do not think that horses belong at Six-Mile Fold or on any loop(s), which should be narrower trails and focused on contemplative opportunities. Furthermore, native grasses need to be encouraged, not out-competed by grasses from horse feed.

Similarly, I would like horses to not be allowed on the hogback northwest of Fourmile Creek. Meeting a horse on a steep, narrow trail is not pleasant for some people and can be dangerous.

The other “Horses Allowed” trails to the east of the steep terrain (east of U.S. 36) seem quite suitable, though weed invasion will need to be guarded against.

Horse riding should be only on-trail throughout the NTSA (or at least in the HCA) to protect the native grasses. I hope funds and volunteers will be found to help restore the grasslands where needed.

Bicyclist and Trail Running Access to and through the NTSA

Obviously, the Interim Joder Trail is planned for bicyclists. It is wide enough to accommodate hikers and cyclists as well as horse riders, though adding a pack of trail runners may make the

wide trail seem inadequate. Still, it is needed for connectivity, and signage can help with safety issues. Other trails on Joder, however, should not allow bicyclists so that contemplative hiking can be enjoyed in this new area so far from towns and traffic. Because of the need to have some quiet place for such hiking, trail running on other than the Interim Trail should not be allowed either.

If bicyclists are allowed on any Joder loop(s), please do institute directional riding that changes seasonally and “no bike” Tuesdays and Sundays, as described in the December 10th meeting. To avoid visitor conflicts, such approaches are very successful and much appreciated at Betasso, where the “no bike” days are Wednesdays and Saturdays.

On the Scenario A Bike Regulations map, there is a short red (“no bike”) line about 1 mile north of “Rd.” in “Jay Rd.” There may be a good reason for the restriction, but to someone just looking at the map, that restriction seems unnecessary. If it is lack of landowner agreement, perhaps the problem could be addressed creatively. The rest of the map seems appropriate to me. I would encourage signage that asks users to not widen trails where they get muddy; it seems that muddy trails are expected at times in some areas east of U.S. 36.

Comments on the Process

The NTSA process seemed less combative than the West TSA process of a few years ago. I fervently hope that this is not because the bicyclists, dog walkers, and horse riders are more organized and have decided to hold back on getting their groups’ members to give input until this point in the process or until the Open Space Board of Trustees or City Council meets. Most individual hikers do not belong to organized groups, and of course the wild inhabitants and the plants they depend on have no voice at all if we do not speak for them.

I hope that conservation will be on everyone’s lips as this process goes forward. We can preserve what we have acquired for the future but once. We can mess it up anytime. Let us aim toward preservation.

One part of the NTSA process that I have found lacking is the use of the term “Interim” to describe the Joder Trail, which was clearly permanent from the beginning. I think it was a huge mistake to provide an “interim trail” to eager users before the scientific data on plants and wildlife were gathered. It is almost impossible for something that has been granted to be taken away. Let us learn from this experience and do better in the future.

The other approach that I found objectionable was shoe-horning various possibilities into scenarios. It seemed that the intent was to show how “balance” between recreationists and conservationists could be achieved in different ways. However, it made evaluation of various possibilities much more difficult. I would rather have looked at Joder as an area and then looked at the Wonderland Lake area separately, etc.

It would be helpful to hire an editor to find all location names mentioned in various texts and be sure that those names are placed on the maps.

Finally, the clicker usage was interesting but not completely effective. It was handled much too quickly. I think discussion could have been allowed before each “click vote” was made so that if choices were available but not listed, they could be added before the click vote was made. Also, the wording of the choices was so “absolute” (especially because I used the clicker at the early stage in the NTSA process, in September) that it was off-putting, at least for me.

Appreciation for the Staff and Officials

I thank all the city staff and contractors who made this NTSA process possible, understandable, and sometimes even fun. I also thank the Open Space Board of Trustees members and other city and county officials who attended. The presentations, maps, explanatory charts, and giant resource book were very helpful.

Mary C. Eberle

1520 Cress Court

Boulder, CO 80304

303 442-2164

From: Lesley Smith <lesley.smith@comcast.net>

Date: January 2, 2016 4:29:11 PM MST

To: <ArmsteadS@bouldercolorado.gov>, <WinfreeT@bouldercolorado.gov>, <OSBT-Web@bouldercolorado.gov>, <rstewart@bouldercounty.org>

Subject: PROTECT CRITICAL WILDLIFE HABITAT IN THE NORTH TSA

Dear Open Space Board of Trustees, Staff, and County Commissioners,

I am writing to express my support of Scenario A for the North Trail Study Area. One of the purposes of open space, as stated in the city charter, is “preservation of natural areas characterized by or including terrain, geologic formations, flora, or fauna that are unusual, spectacular, historically important, scientifically valuable, or unique, or that represent outstanding or rare examples of native species.” This section of open space has multiple drainages, riparian corridors, cascading down from the top of the local watershed toward Highway 36. These riparian areas are fragile, unique ecosystems that provide critical ecological functions, such as acting as transit corridors for many species of animals. Riparian ecosystems in the west have been systematically destroyed by overgrazing, farming and now possibly recreation. Once an official trail is opened up in this section of open space, other social trails will develop almost certainly. Curious hikers might use these corridors themselves to explore further into the open space. Once the fragile banks are walked upon, the soils are compacted and the delicate ecology - the hydric soils making up the wetlands - will begin to transform.

I am a wetland ecologist, and I've had the privilege to research the biogeochemistry of major wetlands of the world - the Amazon, Orinoco and MacKenzie - as well as some of the smaller and rarer ones like local alpine wetlands. These ecosystems are unique and only occupy a very

small percentage of our earth, yet they are critical ecosystems providing services beyond their coverage. I suggest that you carefully consider the alternative as a way to protect these important riparian zones. Once impacted, they will never be the same again.

Sincerely,
Lesley K. Smith, Ph.D.
345 Evergreen Ave
Boulder, CO
80304

From: Tom Andrews <tandrews@boulder.net>

Date: January 2, 2016 9:11:24 PM MST

To: Boulder County Board of Commissioners <commissioners@bouldercounty.org>, <OSBT-Web@bouldercolorado.gov>, <rstewart@bouldercounty.org>, <ArmsteadS@bouldercolorado.gov>, <WinfreeT@bouldercolorado.gov>

Subject: North Trails Study Area

Dear Open Space Board and County Commissioners,

I am writing to urge you to select Alternative A in the North Trails Study Area. It would be an ecological disgrace to build a trail through the undisturbed area on the west side of Hwy 36 as is proposed in Alt B. This region of riparian drainages, rolling pristine grasslands, critical habitat for rare species, and immense biological value would be permanently degraded by putting a trail through it.

Boulder County Open Space has the sacred mission of protecting priceless ecosystems like the lands west of Hwy 36 and north of Boulder. The desired recreational access and trail connectivity can be easily achieved with Alt A. There should never be some misguided attempt to "balance recreation and resource conservation" by degrading natural areas, whatever the recreation issues. There will always be a clamor for more trails and more access, just like there are immense pressures to degrade and destroy all parks, open space, and protected areas around the globe. Boulder is a special place largely because of its success in protecting the open space and natural world that surrounds it. Please keep doing this.

Thank you for considering these comments,

Tom Andrews
336 Taylor Road
Lyons, CO 80540

Begin forwarded message:

From: <reynolds331@comcast.net>

Date: January 2, 2016 2:44:50 PM MST

To: <ArmsteadS@bouldercolorado.gov>, <WinfreeT@bouldercolorado.gov>, <OSBT-Web@bouldercolorado.gov>, <commissioners@bouldercounty.org>, <rstewart@bouldercounty.org>

Subject: North TSA trail option

Jan. 2, 2016

To: Open Space Board of Trustees, staff, and the County Commissioners:
ArmsteadS@bouldercolorado.gov ; WinfreeT@bouldercolorado.gov ; OSBT-Web@bouldercolorado.gov and commissioners@bouldercounty.org ;
rstewart@bouldercounty.org

Re: North TSA trail options

I'm writing to support the trail option that would link Foothills Trail to Joder Trail **on the east side** of the North Foothills Highway (**scenario A**).

The area west of North Foothills Highway contains high biodiversity that requires protection. A trail along the entire west side of the highway would generate slice-and-dice fragmentation of rapidly dwindling wildlife habitat on our open spaces.

Appropriate designation as HCA for the Joder property underscores the natural values of the entire open-space area west of the highway. Nearly all of similar foothills settings in the County and City are already degraded by numerous trails and heavy usage in sensitive areas. I urge City and County to provide reasonable protection of the remnants of foothills-plains ecotones. There are almost none left.

As a frequent runner on open space trails, I can enjoy workouts on any trail, where the goals might be heart-rate intensity, distance, etc. Intensive recreationalists who demand what they consider to be most "beautiful" trail, at the expense of natural richness, are simply selfish. For a change, let's strike some balance between the "me-first" users and nature, which is almost always losing ground.

As an example of what should be learned from past mistakes, please consider the area containing Doudy Draw and the Spring Brook trail system. This area was previously rich in wildlife until fragmented by trails that were partly cut through ancient (2-million-year old) native grass communities and concentrations of other rare plants. In many places along those trails, disturbances from trail building and use led to areas of dense cheatgrass invasion. Groups of night-time bike riders with bright lights are common at all times of the year. Since the trails

were cut, we no longer hear elk bugling in the fall. Apparently, they've not returned. Let's please not repeat these mistakes in North TSA.

For the areas west of North Foothills Highway, please institute "dogs always on-leash" protections and, of course, dog exclusion in HCA.

Thank you,

Richard Reynolds

4331 Eldorado Springs Dr

Boulder, CO 80303

From: Susan Douglass <sdouglass@earthlink.net>
Date: January 2, 2016 2:35:57 PM MST
To: "Stewart, Ron" <rstewart@bouldercounty.org>
Subject: NTSA Comments on Sideboards

Dear Ron,

My comments on the North TSA scenarios are included in the attached pdf document. I always find it rewarding to think and write on the policy issues involved. Thanks for taking the time to read my views. These are mainly for the OSBT, but I thought you might find them interesting.

Susan Douglass

From: Nickie Kelly <kelly1080@comcast.net>
Date: January 2, 2016 11:33:18 AM MST
To: <rstewart@bouldercounty.org>
Subject: Support Scenario A in the North TSA

Dear Mr. Stewart,

Please support Scenario A in the North TSA.

The need for habitat protection to preserve biodiversity outweighs the wants of human recreation. Both needs and wants can be met by providing a north south trail on the east side of highway 36.

The outdoor industry is realizing our impact on the wild places we visit. We respect the conclusion of science. Studies prove fragmentation such as proposed in scenario B has a negative impact on wildlife. Advance progressive outdoor re-creationists agenda by abandoning Scenario B's north south trail on the west side of US36.

A connector trail on the east side of US36

- * Honors the values that developed the Boulder Valley Comp Plan

- * Balances the recreation and preservation mission in the city charter.

- * Aligns with the city's desire to take action against climate change. Bio-diversification being one of the 9 planetary boundaries scientists use to measure Anthropocene impacts. By preserving the west side of US36 wildlife, elk, deer mountain lions and plants flourish.

- * Science has studied and proven that large vistas have a relaxing impact on humans. More humans will benefit from an undeveloped west 36. Far more people drive past 36 than will ride their bikes on the property.

For these reasons please support the staff recommendation to designate Joder Ranch as an HCA and on leash dog trails. The latter is a significant safety issue. The area of Joder/Beech supports a large mountain lion population. I lived decades west of Joder Ranch on Olde Stage Road. Having lost a pet and knowing neighbors who lost pets and livestock to lions, minimizing the likelihood of lion attacks is critical.

The development on Lee Hill near Broadway, especially the old Wine Glass Ranch, changed the vibe heading into the canyon. Increasing visitors' usage at Joder and the old Beech Property will do the same. Don't lose the opportunity to give future generations a taste of the landscape that drew our forefathers and the Arapahos to the area.

Globally our race is called to minimize human impact on the planet. Please think global and act local.

Thank you.

Nickie Kelly.

From: Cathy Comstock <Cathy.Comstock@Colorado.EDU>

Date: January 1, 2016 10:06:40 PM MST

To: "ArmsteadS@bouldercolorado.gov" <ArmsteadS@bouldercolorado.gov>, "WinfreeT@bouldercolorado.gov" <WinfreeT@bouldercolorado.gov>, "OSBT-Web@bouldercolorado.gov" <OSBT-Web@bouldercolorado.gov>, "commissioners@bouldercounty.org" <commissioners@bouldercounty.org>, "rstewart@bouldercounty.org" <rstewart@bouldercounty.org>, "tglowacki@bouldercounty.org" <tglowacki@bouldercounty.org>

Subject: Thank you for supporting natural resources and connectivity in the NTSA

Dear Open Space Board of Trustees, Staff and Boulder County Commissioners –

I'm writing to affirm strongly the protection of our remarkable natural resources in the NTSA, by choosing Scenario A and maintaining, as staff has wisely suggested, the HCA designation of the Joder property.

No one knows better than all of you the growing pressures on Boulder open space. Boulder's hard-won preservation of undisturbed natural habitat and its species is such a treasure that increasing numbers of users are drawn to the area from all around the state and even the nation. Sadly, vulnerable ecosystems and their inhabitants are at serious risk of "being loved to death." And the threat will only grow greater and greater with time. Making the right decision in the NTSA is one of our last chances to draw the protective lines that can at least minimize the impacts of the growing deluge of use, which will increase as well due to connections with other future regional trails already being discussed.

I am sure you know all the following well, but a brief rundown of the assets of choosing Scenario A and maintaining the HCA designation for the Joder property include:

- Balancing the interests of stakeholders by improving connectivity while “avoid[ing] direct, indirect or cumulative negative effects on rare species, communities and potential habitat,” as directed in the North Boulder Valley Area Management Plan.
- Preserving especially vulnerable species such as Lazuli Buntings, Rock Wrens, Golden Eagles and rare butterflies, while offering a haven to several herds of deer and elk.
- Protecting valuable terrain that also supports these and many other species, such as the last undisturbed foothills riparian drainages, high-quality shrub-nesting habitat, and important plant communities, such as big-bluestem and other native grasses.
- Preserving noteworthy geological formations such as exposed rock and cliffs which serve as home for at-risk species.

Choosing Scenario A and maintaining the HCA designation for the Joder property are also in concert with the explicit directives of all the relevant city and county planning documents, from the Boulder County Comprehensive Plan and the Boulder Valley Comprehensive Plan, to the Grassland Ecosystem Management Plan and the North Boulder Valley Area Management Plan.

Thank you for continuing to support our long-term community commitments to protect these highly sensitive areas and all the species who depend upon them.

Sincerely,

Cathy Comstock

From: Mark Correll <Mark.Correll@Colorado.EDU>

Date: January 1, 2016 9:34:32 AM MST

To: <OSBT-Web@bouldercolorado.gov>, <commissioners@bouldercounty.org>

Cc: <ArmsteadS@bouldercolorado.gov>, <WinfreeT@bouldercolorado.gov>,

[<rstewart@bouldercounty.org>](mailto:rstewart@bouldercounty.org)

Subject: North TSA - Supporting Scenario A

Dear All Hard-Working Public Servants:

Please support Scenario A, establishing trails to the East of Foothills Highway, and preserving/restoring wildlife habitat on the west side.

Thank you,
Mark R. Correll
forwarded message:

From: Sallie Greenwood <sallie.greenwood@gmail.com>

Date: January 1, 2016 12:06:29 PM MST

To: <rstewart@bouldercounty.org>

Subject: North Boulder TSA: Pro Scenario A

As a Boulder resident, I want to register my support for Scenario A proposed for the North TSA. The scenario does not compromise what has been identified as "unique and important." Fragmenting the area with a trail destroys the unique nature of the area.

A trail east of 36 is less detrimental, especially if the HCA designation for the Joder property is maintained.

We should not be so arrogant and selfish and short-sighted to compromise increasingly rare habitat. We have an opportunity to preserve and protect, concepts consistent with our city charter and Boulder County and Boulder Valley Comp plans.

--

--

Sallie Greenwood
4424 Greenbriar Blvd.
Boulder, Colorado 80305
home: (303) 494-3271
cell: (303) 906-9094

From: Doug Turley <dougturley@yahoo.com>

Date: January 1, 2016 1:18:46 PM MST

To: <commissioners@bouldercounty.org>, <rstewart@bouldercounty.org>

Subject: NTSA

Honorable Commissioners,

As a former Chairman of the Boulder Group of the Colorado Mountain Club and the current President of the Boulder Tennis Association, I encourage you to adopt scenario A of the NTSA and I agree with the staff recommendation to maintain the HCA designation for the Joder property. Our planet needs uninterrupted spaces and the original Boulder Green Belt ideas was

meant for that. Let's not sacrifice our land for a few recreationist's hobby. Bike trails can easily be placed to lessen the impact on these lands.

Thanks!

Doug Turley

From: Rosalind B McClellan <rosalind.mcclellan@colorado.edu>

Date: January 1, 2016 8:00:06 PM MST

To: "<ArmsteadS@bouldercolorado.gov>" <ArmsteadS@bouldercolorado.gov>, "<WinfreeT@bouldercolorado.gov>" <WinfreeT@bouldercolorado.gov>, "<OSBT-Web@bouldercolorado.gov>" <OSBT-Web@bouldercolorado.gov>, "Boulder County Board of Commissioners" <commissioners@bouldercounty.org>, "<rstewart@bouldercounty.org>" <rstewart@bouldercounty.org>

Subject: Preserve Habitat Integrity in the North TSA

January 1, 2016

To: Boulder County Commissioners, Open Space Board of Trustees, and Staff

Re: Preserving the Habitat Integrity of the North TSA

As avid naturalist and hiker of Boulder County Open Space trails, I would like to register my support for Scenario A for the North TSA, which locates a proposed connector trail on the east side Highway 36, rather than on the west side.

The reason for my recommendation is that the open space on the West side of Highway 36 provides a long stretch of unbroken habitat, that has important values as effective habitat in an otherwise quite fragmented landscape. Locating the trail on the east side will also protect important habitat conservation areas, and some of the county's last undisturbed riparian drainages.

I also urge you to maintain the Joder property as an HCA, and to avoid any trail disturbance to rare plants, bird habitat including Rock Wrens and Golden Eagles and other resources this land provides.

It does not make sense to me to split up this narrow stretch of habitat, with a trail parallel to the highway, that will slice up the landscape integrity of this contiguous grassland ecosystem, when there is a cost effective alternative.

Existing direction in the Boulder County and Boulder Valley Comprehensive Plans specifies that future trails be located on the east, not west, side of the highway. I am concerned about a west side location in view of the guidance and direction in these plans.

For these reasons, I hope you will select a connector trail on the east side of the highway, a location which offers comparable opportunities at much less cost to an intact ecosystem.

Thank you for your consideration of these comments.

Yours Sincerely,

Roz McClellan
1567 Twin Sisters Rd.
Nederland, CO 80466

From: Marthaddick <marthaddick@gmail.com>
Date: December 31, 2015 4:05:43 PM MST
To: "rstewart@bouldercounty.org" <rstewart@bouldercounty.org>
Subject: NTSA

Subject: NTSA

I support Scenario A. As plans are finalized for a trail involving the Joder property there are several critical issues to consider.

The city charter states that open space should "preserve natural areas characterized by or including terrain, flora, fauna, etc." This carefully researched and enacted document should be adhered to. It spells out that the trail connections should be established on the east side of the highway. Thus, the habitat conservation area on the west side would protect the last used riparian area in open space.

In addition, I agree with the Joder property's designation by the staff as a Habitat Conservation Area. This land has numerous unique populations of imperilled species which is used by golden eagles, rock wrens, lazuli buntings as well as several butterfly species. Much of this habitat is due to the drainage of the five springs found on the property.

This reasoning as well as many additional issues prove that the west side of the Joder property should be preserved as a HCA, while the east side of U.S. 36 should contain the connector trails.

Martha D. Dick

From: Donald Dick <donalddick@gmail.com>
Date: December 31, 2015 4:18:09 PM MST
To: <ArmsteadS@bouldercolorado.gov>, <WinfreeT@bouldercolorado.gov>, <OSBT-Web@bouldercolorado.gov>, <commissioners@bouldercounty.org>, <rstewart@bouldercounty.org>
Subject: Protect Open Space Habitat North of Boulder

I strongly support preserving the integrity of open space land on the west side of US 36 north of Boulder donated by the Joder family. The proposal to build a trail only on the east side of the highway makes this possible without decreasing the length of the trail for bicycles, pedestrians,

and horses. It seems to be a win-win approach to maintaining the conservation areas while still providing additional trails for recreation use.

This proposal also remains consistent with both the Boulder County and Boulder Valley Comp plans which recognize the importance of this intact natural area. Why create these plans if we do not follow them? Future generations will appreciate and benefit from maintaining the Joder property as a Habitat Conservation Area as recommended by staff.

I have lived in Sunshine Canyon for over 47 years and respect the policies that Boulder County has adopted to keep areas as natural as possible while designing trails that allow people to appreciate the land without damaging vital areas.

Donald E. Dick

3992 Sunshine Canyon Drive

From: Ann Tagawa <anntagawa@msn.com>

Date: December 31, 2015 10:11:25 PM MST

To: "rstewart@bouldercounty.org" <rstewart@bouldercounty.org>

Subject: North TSA

Hi Ron,

This is Ann Tagawa writing you about my support for Scenario A and a trail connecting the Foothills trail to the Joder trail on the EAST side of the N. Foothills Highway. Please preserve the natural habitat and eco-system (HCA) on the WEST side of 36. As a birder, board member of the Boulder County Audubon Society, and lover of wildlife and nature, I feel strongly about this.

Also, the Joder property should be maintained as an HCA and any trails in the area should not negatively affect plants and wildlife. It would be wise to make that area leashed dogs only and preferably to designate some areas and trails as dog-and bike-free. Thank you, Ron, and I wish you a very happy new year!

Ann

From: Cindy Carlisle <cacarlisle@msn.com>

Date: December 30, 2015 3:54:54 PM MST

To: 'Ron Stewart' <rstewart@bouldercounty.org>

Subject: North TSA--Protect Critical Wildlife Habitat

Dear Ron,

Below is an email I've sent the city's OS staff and Board of Trustees. Please take a moment to read and keep in consideration when the county's turn comes to weigh in.

Thank you!

I'm writing to ask that the city's Open Space staff and board of trustees do its utmost to protect the critical habitat in the North TSA on the west side of Hwy 36. I support Scenario A with a trail connecting the Foothills Trail to the Joder Trail on the east side of the North Foothills Highway (36), thus enabling the preservation of valuable, diverse, unfragmented habitat on the west side of the highway. Both the Boulder County and Boulder Valley Comp Plans show trail connections on the east side of the highway with habitat conservation areas on the west. As you are aware, the area on the west side contains the last foothills riparian drainages in our open space system not impacted by recreation. We owe it to the wild creatures/plants/waters to leave them a little space in the face of our burgeoning human populations.

Further, I agree with the staff's recommendation to maintain the Joder property's designation as a Habitat Conservation Area, and because of the critically valuable plant communities and wildlife resources, ask that any trails proposed for the Joder property are sensitively placed to preserve these assets and not negatively impact them. Golden eagles, rock wrens, high quality shrub-nesting habitat for such as the lazuli bunting, large areas of big bluestem, a drainage with five springs, rare and imperiled butterflies surely speak to the need for our utmost efforts in preservation and conservation.

Thank you for your attention to this matter.

Sincerely,

Cindy Carlisle

303-444-2606

Original Message-----

From: Catharine Harris [<mailto:charris@indra.com>]

Sent: Monday, December 28, 2015 11:11 AM

To: Steve Armstead; Tracy Winfree; Boulder County Board of Commissioners; Stewart, Ron

Subject: NTSA Comments

Dear all, This is a revised letter of comments on the NTSA to replace the draft I mistakenly sent 12/19/2015. Thank you for your work and care in the NTSA. I know it is a complicated job.

Dear all caretakers of our open space lands, You invited comments on the two scenarios for the NTSA: I greatly prefer scenario A because of the location of the Joder trail on the east side of the North Foothills Highway. This avoids many of the drainages that are the last in our open space system that are not impacted by human use. At least the Joder trail goes on the edge of the North Boulder Grasslands which are nearly irreplaceable and are of high biodiversity significance. These unfragmented areas provide support for the biodiversity present. Having the trailhead on the east side of North Foothills Highway hopefully minimizes human impact to a very high biodiversity area.

I am assuming that Joder property will remain as an HCA to minimize human and bike impact on areas of high biodiversity.

I am concerned about the two loops on the Joder trail which will greatly impact the important plant communities there. Recreation fun is for today; preservation is for generations to come. Fragmentation of plant communities leads to their death. I am not sure how recreation and visitor experience can be balanced with preservation of the land for generations to come.

Scenario A, in general, abides by the NTSA Sideboards. However, a trail on the railroad grade from the Foothills Trail north into the southern part of the West Beech HCA is already inviting invasive species. Access via OSMP-guided hikes would help preserve the HCA and increase education and understanding of the importance of the area. The Grasslands Plan calls for establishing "on-leash requirements in areas of special conservation value or sensitivity as part of TSA planning process." Therefore, dogs need to be on on-leash for the entire length of the Joder interim Trail. Also protect the resources east of Hwy 36 by making the Lefthand connection Trail on-leash from Cobalt to Neva Road.

Though I do not want more trails in the NTSA, there are not enough quiet hiking trails. The Wonderland Lake and Mesa Reservoir areas are busy areas and include dogs and bicycles. If the loops off the Joder interim trail are established, perhaps they can be designated with directional restrictions, for no-bikes on Tuesdays and Sundays, and as dog-free to provide for quiet hiker interests and to decrease visitor conflict.

Sincerely, Catharine Harris

From: Marti Oetzel [<mailto:marti@birdhike.com>]

Sent: Monday, December 28, 2015 8:00 AM

To: ArmsteadS@bouldercolorado.gov; Boulder County Board of Commissioners; WinfreeT@bouldercolorado.gov; OSBT-Web@bouldercolorado.gov; Stewart, Ron

Subject: Please protect important wildlife habitat in the North TSA

I understand that you will make decisions starting January 3 about the value of preserving the last foothills riparian drainages that have no recreation impacts, versus building trails in an area "especially unique and important to the natural heritage of Boulder County."

Please preserve these especially valuable lands to the west of Highway 36. I support Scenario A with a trail that connects the Foothills Trail to the Joder Trail on the east side of U.S. 36 and preserves valuable, diverse, unfragmented habitat on the west side of the highway. This scenario goes along with the Boulder County and Boulder Valley Comp Plans. This is our last chance to protect the last foothills riparian drainages in our open space system for future generations. Having a connector trail on the east and habitat conservation on the west will balance recreation and conservation of natural resources, both of which have staunch support.

I agree with staff's recommendation to maintain the Joder property's designation as an HCA. I ask staff to make sure that any trails proposed for the Joder property are placed carefully to preserve the extremely valuable plant communities and wildlife resources, not impact them. Species of special concern in this area (including lazuli bunting, rock wrens, and rare butterflies) and rare plants and plant communities such as large areas of big-bluestem grass are important resources needing protection, not destruction and

elimination.

Thank you for giving serious consideration to these important issues for decisions that will impact future generations of many life forms.

Martha Oetzel
425 Drake St.
Boulder CO 80305
303-543-3712

-----Original Message-----

From: George Oetzel [<mailto:geno425@birdhike.com>]

Sent: Monday, December 28, 2015 9:00 AM

To: ArmsteadS@bouldercolorado.gov; Winfreet@bouldercolorado.gov; OSBT-Web@bouldercolorado.gov; Boulder County Board of Commissioners; Stewart, Ron

Subject: support plan A in the North TSA

I want to express my support for the plan A option in the North TSA, with trails east of U.S. 36 and preservation of riparian habitat west of the highway that has significant value for wildlife. This option accords with both the Boulder County and Boulder Valley comp plans, which I think were formulated with great foresight. Providing a connector trail on the east and habitat conservation on the west will balance recreation and conservation of natural resources.

I also agree with the staff's recommendation that the Joder property be designated as a Habitat Conservation Area (HCA) to preserve several threatened and uncommon species of animals and plants that occur there.

Any trails proposed for this area should be placed carefully to preserve those resources and not impact them.

George Oetzel
425 Drake St.
Boulder, CO 80305
303-543-3712

From: Eleni Arapkiles <ekarapkiles@gmail.com>

Date: December 27, 2015 11:38:58 AM MST

To: <rstewart@bouldercounty.org>

Subject: North TSA Open Space

How many times have we headed north on the highway north of town – getting away for a day in the hills – and breathed a sigh of relief as we rested our eyes on that stretch of open space west of the road, noting its lushness in the spring and its changes through the seasons? A mountain-bike trail bisecting that tract of open space would undoubtedly work as an apt metaphor for the apparent destruction of so much of what has made Boulder extraordinary.

Please preserve what little undeveloped land we can!

Sincerely,

Eleni Arapkiles

Dear local officials: I am writing to you to support Scenario A, the trail that will connect Foothills Trail to the Joder Trail, keeping trail activity on the east side of Highway 36 and allowing the west side to remain as it is today, a protected area for wildlife and plants. I have been an active supporter and user of both city and county open space for the 55 years I have lived in Boulder County, hiking the trails, birding and enjoying our unique place in our beautiful state. In my capacity as Chief Deputy Boulder County Clerk and Recorder, I was privileged to conduct the first successful sales tax election allowing public funds to be used for open space acquisition and maintenance and will never forget how proud we all were of our fellow citizens for taking this important step for ourselves and future generations. My understanding is that a trail can be build on the east side of the highway which will not impact the animals and plants that continue to live on the west side. I sincerely hope that this will be the plan which is adopted; it makes no sense to me to encourage destructive human activity on the west side.

Sincerely

Linda L Flack
1553 Lodge Lane
Boulder, 80303

-----Original Message-----

From: Anne Fenerty [<mailto:anne@fenerty.com>]
Sent: Wednesday, December 23, 2015 12:40 PM
Subject: North Trail Study Area

Hello,

This message regards the proposal to construct a trail through critical wildlife habitat in the North Trail Study Area.

The proposal is to place a trail on the west side of U.S. 36. We object to this proposal as a trail of approximately equal length could be constructed on the east side at far less cost and with less impact on the environment. We also urge that the Joder property retain the designation of Habitat Conservation Area because of its rare plants, large areas of big bluestem, and habitat for herds of deer and elk.

Thank You,

Anne and Mike Fenerty
2805 Stanford Ave
Boulder CO 80305

From: Tim M Hogan [<mailto:Tim.Hogan@colorado.edu>]

Sent: Wednesday, December 23, 2015 9:20 AM

To: 'ArmsteadS@bouldercolorado.gov'; 'WinfreeT@bouldercolorado.gov'; 'OSBT-

Web@bouldercolorado.gov'; Boulder County Board of Commissioners; Stewart, Ron
Subject: NTSA comments

23 December 2015

Friends,

I have been following closely the North Trail Study Area (NTSA) deliberations and have submitted independent comments at two other points in the process, once back in June and more recently in October. I am writing to express my strong preference for Scenario A in the NTSA planning process, and to request the area west of Hwy 36, south of Joder, and north of the Foothills Trail, be retained and managed as a Habitat Conservation Area (“West Beech”) with social trails removed and restored, and access permitted only through the established HCA permit system.

The most obvious difference between Scenarios A and B is the latter would place a trail on the west side of Hwy 36, running N-S directly across some of the best representations of Upland Shrublands and Xeric Tallgrass Prairie communities occurring in the NTSA. In the parlance of the planning process, it is an “Upland Grassland Best Opportunity Area”.

It is understandable why this trail in “Scenario B” is so coveted by mountain bikers and other recreational interests, it is a beautiful area with lots of dips and rises. On the other hand, placement of a trail across this area is problematic for a number of reasons.

- It is inconsistent with numerous sideboards, including the OSMP Charter, the North Boulder Valley Area Management Plan (1997), Boulder County Comprehensive Plan (2015 update), the Boulder Valley Comprehensive Plan (2010), and the OSMP Grassland Ecosystem Management Plan (2010). There is a consensus in the planning documents that no trail should be placed in this sector of the NTSA.

- The trail would fragment an expanse with some of the last foothills riparian drainages in the OSMP system not impacted by recreation – nearly a dozen drainages based on information provided by department staff at a public meeting (12/10/15). This would clearly compromise the value of this area as a node of connectivity for wildlife across the landscape, and directly impact

critical habitat for a diversity of reptiles, mammals, and song-birds. In addition, trails are always vectors for invasive weeds, and this trail would be no different.

- The Natural Resource component of the North TSA Inventory and Assessment Report makes a strong case that trails on the erosive soils found in the NTSA have a particularly egregious effect. The proposed trail runs through the Smokey Hills Shales, a lens of strata vulnerable to recreational impacts, no matter how well built or expensive the trail might end up being.

“Scenario A” avoids these problems while serving to balance a wealth of other interests.

- While providing N-S connectivity via a trail system east of Hwy 36, it minimizes impacts upon the conservation values found in the rich interface where the high plains meet the mountain foothills west of the highway.

- In balancing conservation with recreational demands, it would honor community values and commitments made over generations, and decrease visitor conflicts that would arise if a route used heavily by mountain bikes was built on the west side. (In effect, if not by statute, bike routes displace other users.) The trails on the east side provides more options for dispersing various user groups.

- In maintaining an HCA in the “West Beech” area, and upholding the HCA designation for Joder, OSMP would have an unprecedented opportunity to increase understanding and appreciation for grassland ecosystems, one of the most imperiled biomes in North America.

There is no doubt that if the above suggestions are followed a hue and cry will erupt from the mountain biking community and their partners. Nevertheless, I am confident the broader community of Boulder citizens who value their city and county Open Space systems will view it as a fair and effective plan.

As I wrote in my comments in October, while this is being portrayed as another controversy between recreationists and conservationists, the department may not be giving the role of our

collective civic commitment to Open Space its due weight. As enshrined in the charter, the purposes of Open Space lean heavily on the preservation and restoration of these lands and waters for their value as natural areas, as well as for their role in shaping our community boundaries, and in securing these lands for their “aesthetic or passive recreational value and [their] contribution to the quality of life of the community”. (It is not an oversight that the qualification of bikes and horses as passive recreation is recognized as problematic in the charter.) As TSAs are developed, it is important to give careful consideration to citizen’s input, yet it is at least as critical to give the same consideration to the mandates and institutions handed down across generations of Boulder’s citizen.

One of the most pressing environmental concerns of the 21st C. is the extinction and extirpation of species. The plight of the planet is a story with which we are all too well aware. Boulder cannot solve these profound losses by itself, but it can play a small role in conserving local habitat for native species, and an outsized role in demonstrating how an expanding urban area might protect and restore relatively intact ecosystems for the benefit of people, plants, and animals. Moving into a future where increased management of our public lands will be necessary, council, the OSMP board, and the department must view this not only as a mandate in its charter, but also as an imperative deserving our ceaseless commitment.

Thank you for the opportunity to offer these comments.

Tim Hogan

Boulder, 80304

From: Edith Stevens <ediest1@me.com>

Date: December 22, 2015 4:10:31 PM MST

To: <armsteads@bouldercolorado.gov>, <WinfreeT@bouldercolorado.gov>, <OSBT-Web@bouldercolorado.gov>, <commissioners@bouldercounty.org>, <rstewart@bouldercounty.org>

Subject: Protect Critical Wildlife Habitat in the North TSA

Boulder's Open Space department has proposed two Scenarios, A and B, for the construction of trails in the North TSA that will "balance community interests."

"Balance community interests." Give hikers quiet, contemplative areas; dog owners space to walk their dogs under voice and sight control; mountain bikers a connector between north Boulder and the Heil Ranch; and equestrians bike-free areas where their horses won't be spooked. All reasonable goals.

But carve a trail, pursuant to Open Space's Scenario B, through Boulder County land west of U.S. 36, which Boulder County has designated a "high diversity area...especially unique and important to the natural heritage of the county"?

In the face of climate change, the disappearance of habitat, and the extinction of multiple species across this earth, propose a trail that would enable the potential extinction of an imperiled species of butterflies that pollinate our tall grass prairie; allow invasive species to intrude upon rare plants and Big Bluestem, a grass unique in the western U.S.; disrupt the habitat of multiple species of nesting birds, snakes, and that of deer and elk? Because the area is "interesting" to special interests....

A balancing act? That is no "balance" that anyone in this city or county who purports to care about our environment can, in any honesty, support.

I urge you all, guardians of our Open Space, to support Boulder Open Space's Scenario A, which connects the Foothills Trail to the Joder property on the east side of U.S. 36, in order to preserve the unfragmented habitat and the resources west of the highway, and to maintain the Joder property as a Habitat Conservation Area for the benefit of **all** of us now and in the future.

Eddie Stevens
2059 Hardscrabble Drive
Boulder, CO 80305
303-494-1580