

Douglas County Open Space and Natural Resources Potential Prairie Dog Release Site Evaluation and Management Category Recommendations for Three Open Space Properties



Prepared for—

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Figure Sets

Glendale Farm Open Space

- Contours with Elevation
- Slope Analysis
- Soils
- Prairie Dog Colonies
- Relocation Buffer
- Potential Release Sites

Hidden Mesa Open Space

- Contours with Elevation
- Slope Analysis
- Soils
- Prairie Dog Colonies
- Relocation Buffer
- Potential Release Sites

Hungry Horse Open Space

- Contours with Elevation
- Slope Analysis
- Soils
- Prairie Dog Colonies
- Relocation Buffer
- Potential Release Sites

Appendix

- Appendix A. Screening and Evaluation Process Flow Chart

Introduction

On behalf of the Douglas County Open Space and Natural Resources Department (“County”), ERO Resources Corporation (ERO) evaluated Glendale Farm, Hidden Mesa, and Hungry Horse open space properties (“open space properties”; Figure 1) as potential prairie dog release sites per section 2.1 of the 2009 *Douglas County Open Space and Parks Divisions’ Prairie Dog Conservation Policy* (“2009 Policy”). In addition, the three open space properties were evaluated for one of three management categories per section 3.1 in the 2009 Policy.

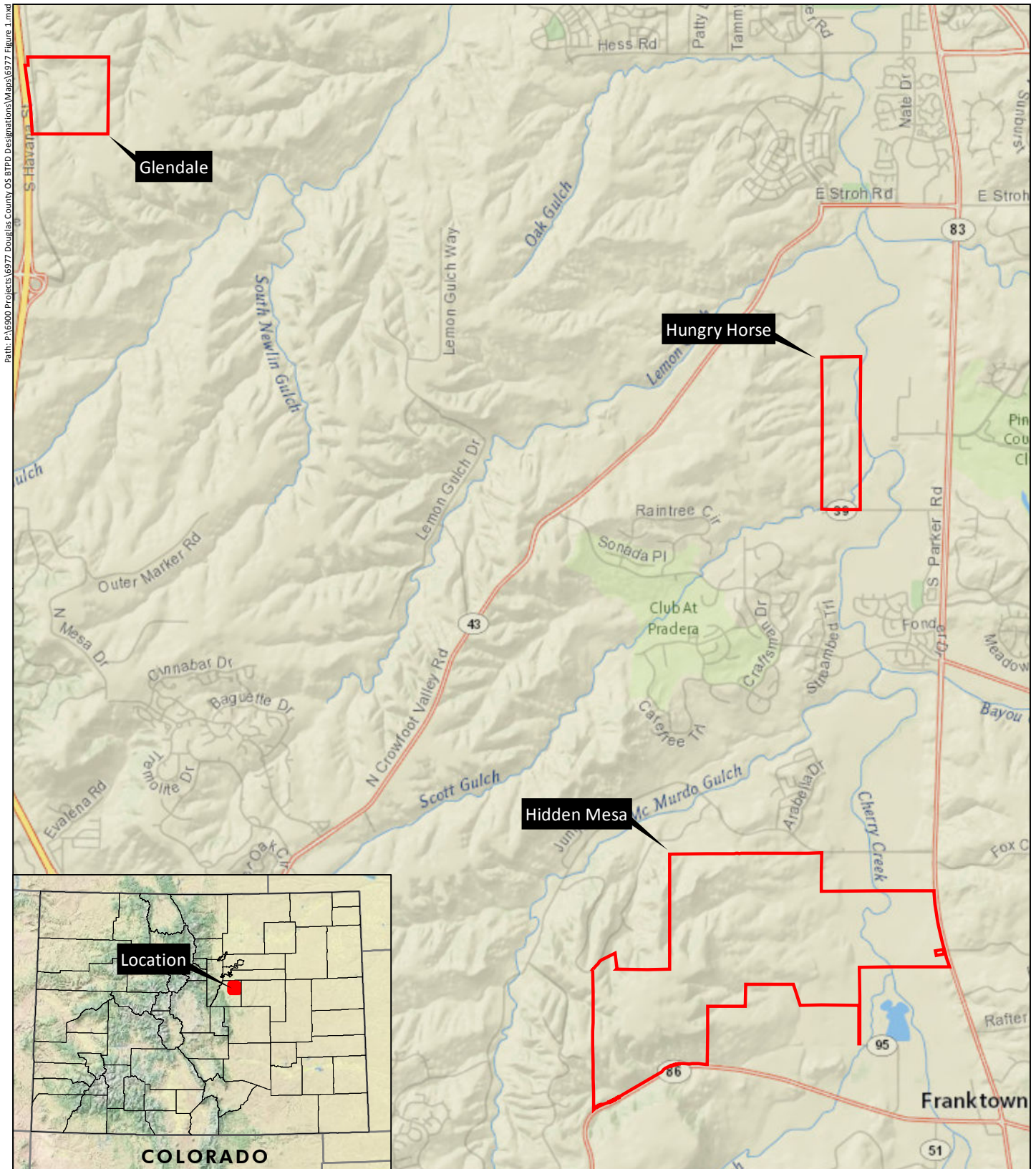
This report provides a summary of ERO’s process used to identify potential release (or “relocation”) sites, and the rationale for why each site is or is not suitable. In addition to the suitability analysis, ERO reviewed existing for prairie dog management designations for each of the open space properties and provides recommendations.

While potential prairie dog relocation sites may be identified as part of this report, it is important to note that any prairie dog relocation is subject to Colorado Parks and Wildlife (CPW) permit requirements and adherence to the 2009 Policy. A component of an issued permit from CPW could necessitate additional on-the-ground management that may be beyond program budgeting.

Summary of Findings

The overall findings of this analysis are that:

- The open space properties (or portions thereof) contain suitable habitat for prairie dogs.
- Prairie dog populations on the open space properties and private lands throughout the area were drastically reduced in size by a likely plague outbreak sometime in 2016.
- Prairie dogs will (and should be allowed to) reestablish themselves in historically-occupied areas via dispersal from nearby active colonies. The lower areas of Hidden Mesa should be allowed to recover naturally, especially given the County controls animals within an established buffer area.
- A discrete potential relocation site (up to 40 acres) is located on the west side of Hidden Mesa.
- Pending a future need for control in the buffer zone on Hidden Mesa, the potential 40-acre relocation area should be used as a receiving site for those animals (i.e., reserved for animals from lower Hidden Mesa first and other Douglas County Open Space properties second). Efforts should be made to control noxious weeds prior to relocation.
- Given the likely plague outbreak in 2016, any relocation effort is unlikely to be permitted, and should not take place until 2018 at the earliest.
- Most other open space property areas are not appropriate for relocation due to potential use conflicts or the spatial nature of suitable habitat. While Glendale Farm and Hungry Horse have suitable habitat, the properties do not lend themselves spatially for relocation purposes.
- Management category areas for Glendale Farm could be better defined or clarified using the unnamed creek as a delineation line between the No Prairie Dog Area (NPD) and the Multiple Objective Area (MOA).
- Management category areas for Hidden Mesa could be better defined or clarified using Cherry Creek as a delineation line between the NPD (east side) and the MOA (west side). Recognizing what is suitable habitat and given the potential management requirement for appropriate buffers to adjacent lands, the entire property west of Cherry Creek could be designated as MOA.



Black-tailed Prairie Dog Habitat Assessment

Sections 34 and 35, T6S, R66W; Section 10, T6S, R66W; Sections 27, 28, 32, 33, and 34, T7S, R66W; 6th PM

USGS Castle Rock North, CO Quadrangle

Douglas County, Colorado

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Prepared for: Douglas County Open Space and
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Policy Background

Management Categories

The 2009 Policy outlines three prairie dog management categories for open space land:

- **Habitat Conservation Area (HCA):** The intention of these areas is to allow prairie dogs to function with minimal human intervention without causing or experiencing significant negative impacts to or from adjacent lands.
- **Multiple Objective Area (MOA):** The intention of these areas is to allow prairie dogs to coexist with other uses but they may not be the highest management priority of a given open space parcel.
- **No Prairie Dog Area (NPD):** These areas are unsuitable for prairie dogs because of ecological conditions or incompatible land uses.

The 2009 Policy directs the County to designate prairie dog management categories for each of its open space properties.

Release Site Designation

The 2009 Policy establishes a specific framework for the humane management of the prairie dog on County-owned open space and park lands. The primary goal of the 2009 Policy is to ensure that prairie dogs remain a component of the landscape in suitable areas of the County. Minimizing mortality of prairie dogs is a secondary benefit but not the main goal.

The 2009 Policy provides guidance on impact avoidance, notification prior to relocation, removal, or lethal control, passive relocation, and relocation to open space. The Policy also directs the County to identify and designate potential prairie dog release sites on County open space.

With regards to release site suitability, the 2009 Policy (Section 2.2) directs the County to establish buffer zones that provide a minimum of 500 feet (ft) separation between the release site and the closest privately-owned property. This stipulation was a consideration in evaluating potential relocation sites on the open space properties.

Analytical Approach

The habitat analysis is based on the scientific literature that suggests that prairie dogs prefer the following habitat attributes (Clippinger 1989):

- 30 to 90 percent herbaceous cover.
- 2- to 10-inch vegetation height.
- Elevations ranging from 2,300 to 5,600 ft.
 - Hoogland (1995) states that the black-tailed prairie dog generally exists between elevations of 2,296 and 5,577 ft. Because the black-tailed prairie dog does not hibernate, as do the Gunnison's, white-tailed, and Utah prairie dog, which exist at elevations higher than 5,577 ft, it can only exist at elevations where foraging can continue throughout the winter.

- Slopes less than 10 percent.
- Generally rock-free soils with less than 70 percent sand content.
 - Hoff (1998) and Apps et al. (2002) suggest that fine sandy loams with little gravel and good drainage are optimal for burrow systems. Although the prairie dog may conduct exploratory diggings in rocky ground, these are not preferred sites and are typically abandoned (King 1955 and Treviño-Villarreal et al. 1997).

Other factors that are considered in this analysis include:

- Presence or proximity of existing or historical occupied habitat.
- Adjacent land use/prairie dog management designation.
- Proximity to private property (> 500 ft, per the 2009 Policy buffer requirement).
- Intended or proposed use of open space property.

ERO used a multi-tiered approach to evaluate the suitability of the open space properties and screen out areas that are not suitable. This approach consisted of three phases:

- **Phase 1:** Identification of areas that clearly are not suitable and do not warrant further consideration.
- **Phase 2:** Using GIS data and field review to evaluate remaining open space areas.
- **Phase 3:** Identification of suitable or potentially suitable open space areas and development of individual recommendations.

Appendix A contains a flow chart illustrating the general screening process that was used in this evaluation.

Analysis Results

Glendale Farm Open Space

The 145-acre property is located approximately 8 miles north of Castle Rock on the east side of I-25 near Surrey Ridge. An intermittent unnamed stream runs north/south through the western third of the property. A 17-acre off-leash dog area is west of the main trail head.

Habitat Summary – Descriptions of property-specific habitat attributes below should be used in tandem with the figure set for Glendale Farm Open Space.

- **Vegetation.** The western third of the property contains shortgrass prairie species, as well as introduced pasture grass. Scrub oak and other foothills shrubs cover the middle third of the property as it rises to meet the mixed grass prairie on the eastern third. Along the northern boundary there are several rock outcroppings that slope steeply down into the central portion of the property.
- **Elevation.** Elevations on the property range from 6,220 ft in the northwest corner, rise up to 6,380 on a knob in the southeastern portion of the property, and then slope back down to 6,340 ft along the eastern boundary.
- **Slope.** The eastern third of the property primarily has slopes of less than 10 percent. Scattered pockets, the dog off-leash area, and the parking lot also have slopes of less than 10 percent.

- **Soils.** Approximately one-third of the property is Fondis clay loam, which is typically rock free and able to support burrow complexes. Other areas (see Glendale Farm Soils figure) of the property have stony or gravelly soil types less likely to support sustained burrowing activity.
- **Existing Prairie Dogs.** Historically, 37 acres were occupied habitat; however, a decline in 2016 reduced occupied habitat to approximately 10 acres.
- **Adjacent Land Use.** Property to the north, south, and east are all private. Land to the west is primarily the Colorado Department of Transportation right-of-way associated with Interstate 25.

Relocation Potential – Most of the suitable habitat on Glendale Farm is located within 500 ft of private property lines, and is therefore not appropriate for relocation. Two small portions (1.6 and 7.2 acres) of the property may be suitable for relocation (see Glendale Farm Potential Release Sites figure). However, the 1.6-acre area is located on the west side near the trail head and parking lot. Therefore, the small area should be dismissed as a relocation site given the possibility for management conflicts. The 7.2-acre area straddles the recreation trail in the southeast corner of the property. Historically, occupied habitat occurred on the east side of the trail, but did not extend to the west side. Relocation on the west side of the trail could lead to potential conflicts along the trail corridor, and subsequent management action. For these reasons, relocation to this site is not recommended.

Management Designation – The County previously designated the off-leash dog area, parking lot, driveway, and service road NPD. The remainder of the property is designated MOA. These designations are consistent with current uses on the property and should be retained. From a management and an outreach perspective, it may be clearer to use the unnamed creek on the west side of the property as a boundary, designate all land west of the unnamed creek NPD, and designate all land east of the unnamed creek MOA.

Management – As the prairie dog population on Glendale Farm and surrounding private lands rebounds, animals are likely to reestablish themselves in historically-occupied areas via dispersal from nearby active colonies. This dispersal and expansion (relative to 2017 conditions) should be permitted on the east side of the property as long as it is consistent with the long-term management goals and future uses per the management plan (Douglas County 2011a). As long as prairie dogs are not relocated to the property, there appears to be little need to manage the species.

Hidden Mesa Open Space

The County manages and owns the 642 acres of land north of State Highway 86. This adjoins 582 acres of open space one mile north of Franktown, previously referred to as “The Grange.” This combined 1,224-acre parcel is now referred to as Hidden Mesa Open Space. There is a hay field and a research and demonstration orchard on the east side of Cherry Creek near the parking lot and picnic shelter.

Habitat Summary – Descriptions of property-specific habitat attributes below should be used in tandem with the figure set for Hidden Mesa Open Space.

- **Vegetation.** Foothill prairies on the mesa and eastern slopes support little bluestem and blue grama grasses, penstemon, and yucca. Mixed foothill shrublands at Hidden Mesa support such species as Gambel oak and mountain mahogany. The caprock mesa top and cliffs of conglomerate rock are rimmed with juniper and ponderosa pine. A few small pockets of riparian and wetland vegetation exist within the two small spring-fed ponds on the mesa top and small ephemeral drainages in gulches.

- **Elevation.** Elevations on the property range from 6,060 ft along Cherry Creek, to 6,500 on the mesa on the west side.
- **Slope.** Slopes of less than 10 percent occur primarily on the eastern portion of the property on both sides of Cherry Creek, as well as on the mesa on the west side.
- **Soils.** Several soil types on the property are loams that are typically rock free and likely support burrow complexes. Other locations, especially on the upper elevations of the property (see Hidden Mesa Soils figure), have stony or gravelly soil types less likely to support burrowing activity. In addition, there are large areas of exposed caprock or caprock just beneath a thin layer of soil on the western third of the property. Prairie dog are likely to only conduct exploratory diggings in these rocky locations.
- **Existing Prairie Dogs.** Historically, 237 acres were occupied habitat; however, a decline in 2010 and 2016 reduced occupied habitat to approximately 37 acres. The decline was likely due to a plague outbreak.
- **Adjacent Land Use.** Hidden Mesa Open Space is generally surrounded by private lands on all sides. Gateway Mesa Open Space adjoins that portion of the property along State Highway 96 to the south.

Relocation Potential – Application of the 500-foot buffer per Section 2.2 of the 2009 Policy, creates an area of 762 acres (see Hidden Mesa Relocation Buffer figure) within the context of the larger open space property. Based on areas with slopes greater than 10 percent and already occupied habitat, there are approximately 164 acres available for relocation (see Hidden Mesa Potential Release Sites figure). This excludes the area east of Cherry Creek that is designated NPD.

Management Designation – The County has designated all of the property east of Cherry Creek and the far south end and far north end adjacent to private property on the west side of Cherry Creek NPD. The rest of the property is MOA. These designations are generally consistent with current uses on the property, but could be clarified to provide more flexibility.

From a management and an outreach perspective, it may be clearer to use the Cherry Creek as a boundary, and designate all land east of the creek NPD to avoid any conflict with the haying operation and the research and demonstration orchard. Recognizing what is suitable habitat and give the potential management need for appropriate buffers to adjacent lands, all lands west of Cherry Creek could be designated as MOA. The MOA designation west of Cherry Creek would still allow the County to control prairie dogs on an as-needed-basis depending on any specific management objectives.

Management – As the prairie dog population on Hidden Mesa and surrounding private land rebounds, animals are likely to reestablish themselves in historically-occupied areas through dispersal from other nearby colonies. This dispersal and expansion (relative to 2017 conditions) should be permitted as long as it is consistent with the long-term management goals and future uses per the management plan (Douglas County 2011a).

In 2011, the County relocated 146 prairie dogs from the parking lot and hay field to the suitable habitat area on the mesa on the west side of the property. However, the relocated animals appear to have been wiped out by a potential plague outbreak in 2016. Typically, CPW requires a minimum of one year before relocating animals to an area with a suspected plague outbreak. Pending a future need for control in the buffer zone to minimize the need for control on adjacent properties per Section 2.2 of the 2009 Policy, the County should consider using the potential mesa relocation site. The mesa represents a habitat area with well-defined barriers (i.e., vegetation and soil type) to potential dispersal.

Hungry Horse Open Space

The 166-acre parcel is located four miles south of Parker along Cherry Creek on the west side of State Highway 83. The paved Cherry Creek Regional Trail winds along the east side of the property.

Habitat Summary – Descriptions of property-specific habitat attributes should be used in tandem with the figure set for Hungry Horse Open Space.

- **Vegetation.** While there are elements of a shortgrass community, vegetation on the property has been heavily disturbed from historical livestock grazing and consistent prairie dog activity. There are signification stands of cheatgrass, field bindweed, and other noxious weeds throughout the property.
- **Elevation.** Elevations on the property range from 6,040 ft in the southwest corner to 5,940 ft along Cherry Creek.
- **Slope.** The property generally has slopes of less than 10 percent. Areas with slopes above 10 percent are associated with small gulches and ridges.
- **Soils.** With the exception of the sandy wet alluvial soils along Cherry Creek, all soil types on the property are likely to support burrowing activity.
- **Existing Prairie Dogs.** Historically, 140 acres were occupied habitat; however, a decline in 2016 reduced occupied habitat to approximately 45 acres.
- **Adjacent Land Use.** Hungry Horse Open Space is surrounded by private lands on all sides.

Relocation Potential – Application of the 500-foot buffer per Section 2.2 of the 2009 Policy, creates a 32-acre rectangle (see Hungry Horse Relocation Buffer figure) within the context of the larger open space property. Based on areas with slopes greater than 10 percent and already occupied habitat, there are approximately 20 acres that could be used for potential relocation (see Hungry Horse Potential Release Sites figure). However, given the spatial nature of the potential release site (i.e., long and narrow), relocation from outside the property is not recommended. Should there be a need for control in the buffer zone to minimize the need for control on adjacent properties per Section 2.2 of the 2009 Policy, the County may want to consider using the potential relocation sites to move animals to a more centralized habitat area on the property.

Management Designation – The County previously designated the property MOA. This designation is consistent with current uses on the property and should be retained.

Management – As the prairie dog population on Hungry Horse and surrounding private land rebounds, animals are likely to reestablish themselves in previously-occupied areas through dispersal from other nearby colonies. This dispersal and expansion should be permitted as long as it is consistent with the long-term management goals and future uses per the management plan (Douglas County 2011b). These future uses include the extension of North Pinery Parkway (10-acre road right-of-way) to the west and the construction of two 10-acre phosphorous removal facilities (Douglas County 2011b).

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Figure Set – Glendale Farm Open Space

Contours with Elevation
Slope Analysis
Soils
Prairie Dog Colonies
Relocation Buffer
Potential Release Sites



Black-tailed Prairie Dog Habitat Assessment

- Property
- Trail
- 20-foot Contour Interval

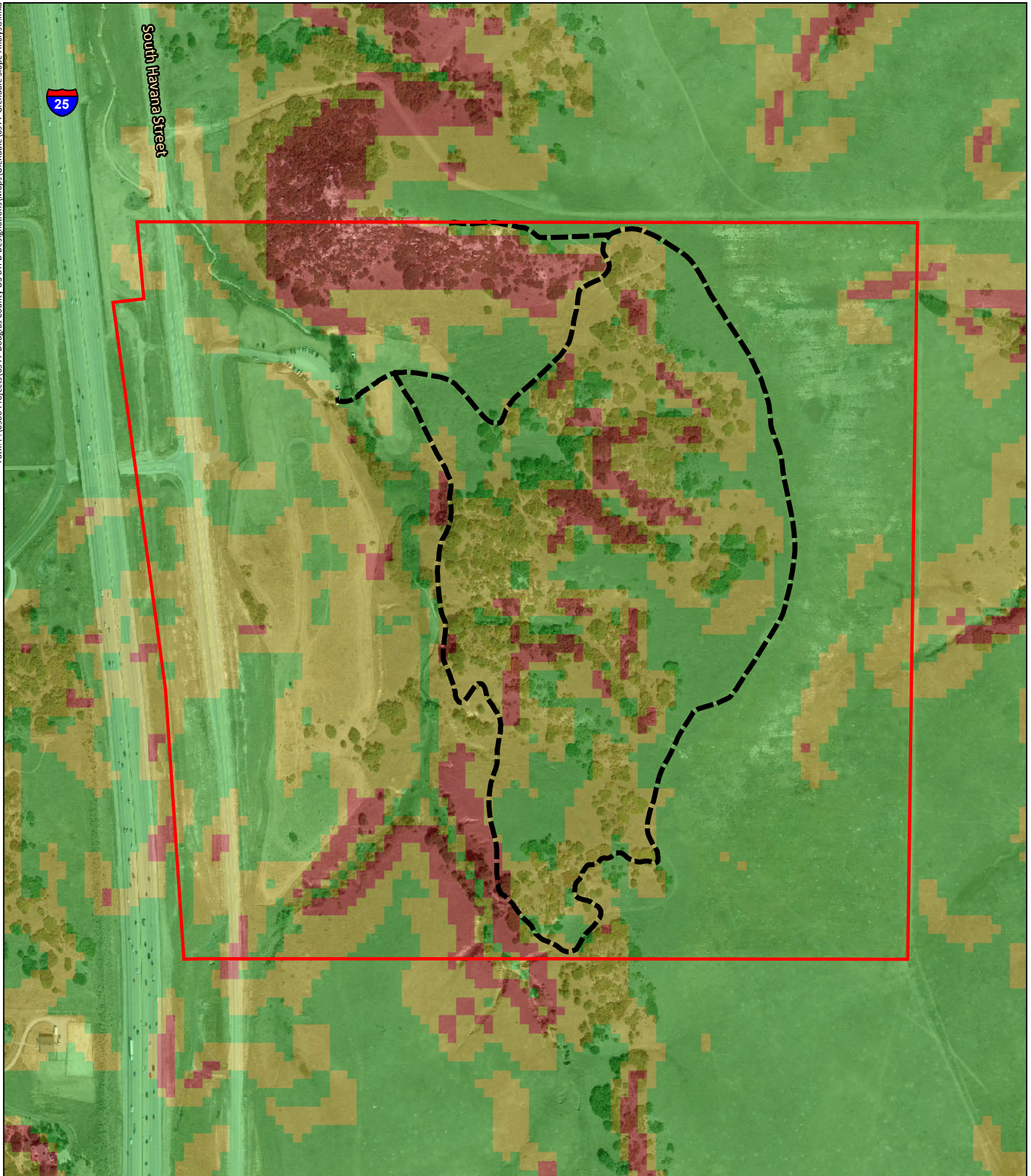
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Glendale Farm Contours with Elevation

Prepared for: Douglas County Open Space and
Natural Resources Department
File: 6977 Glendale Contour Map.mxd [dlH]
September 13, 2017

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Potential Prairie Dog Release Sites and Designation of Management Category

- Property
- Trail
- 0 - 10% Slopes
- 11 - 20% Slopes
- >21% Slopes

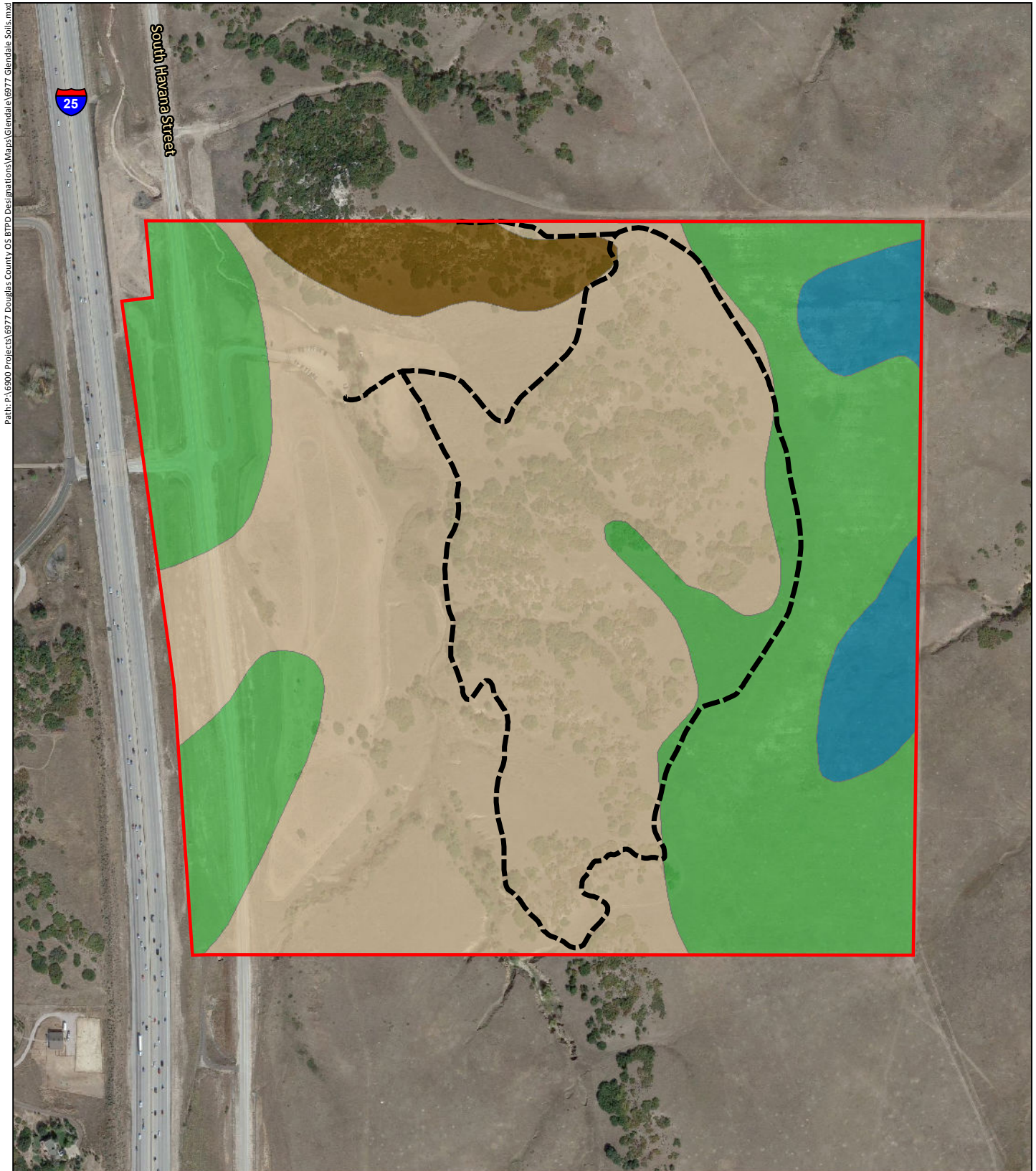
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Glendale Farm Slope Analysis

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September 13, 2017

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Black-tailed Prairie Dog Habitat Assessment

- | | |
|---|--|
| Property | Fondis-Kutch association |
| Trail | Hilly gravelly land |
| Fondis clay loam, 3 to 9 percent slopes | Stony steep land, cold |

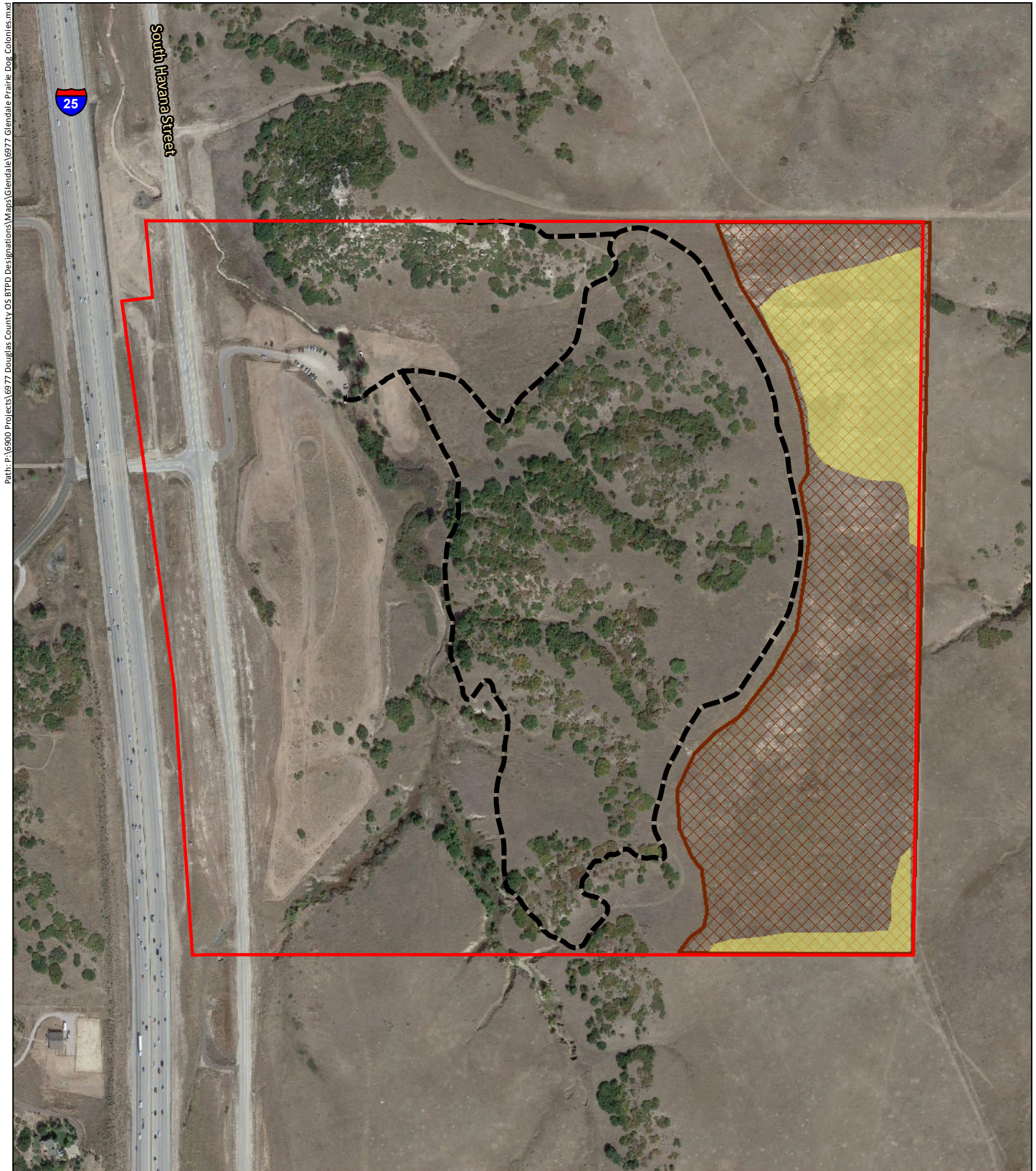
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Glendale Farm Soils

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Black-tailed Prairie Dog Habitat Assessment

- Property
- Trail
- Active Prairie Dog Colony
- Historic Prairie Dog Colony Boundary

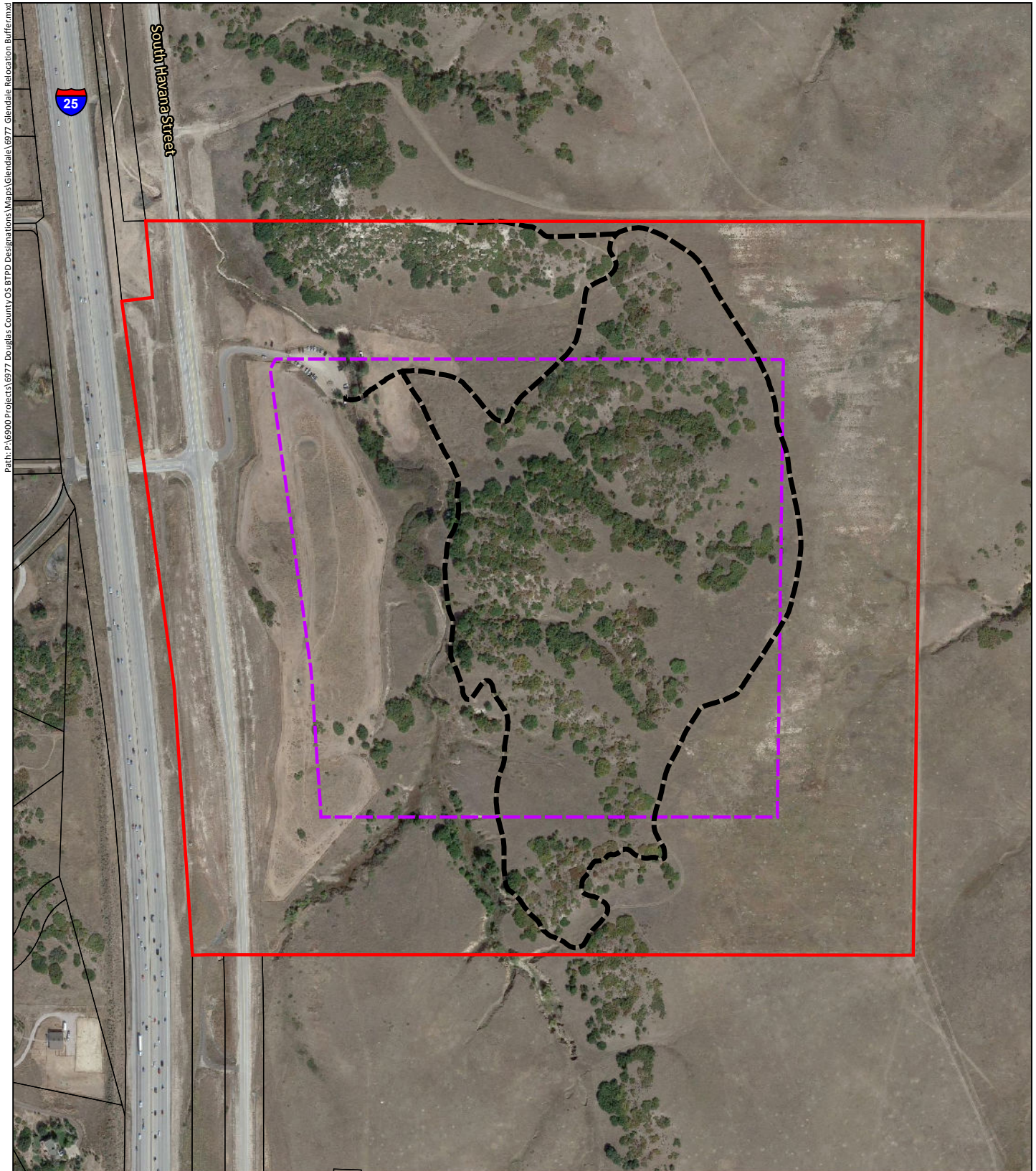
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Glendale Farm Prairie Dog Colonies

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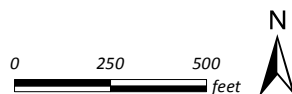
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Black-tailed Prairie Dog Habitat Assessment

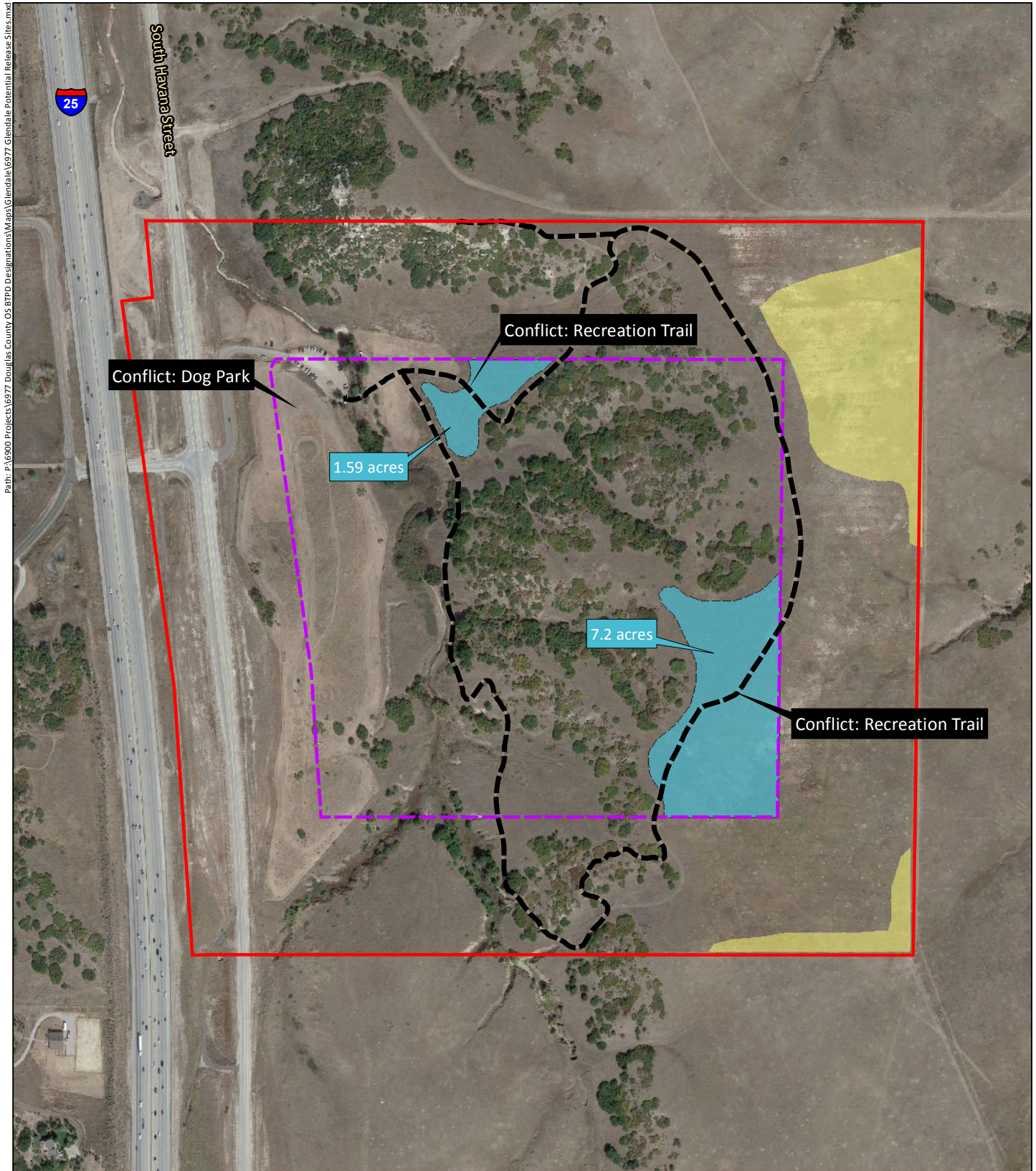
- Property
- Trail
- Relocation Buffer
- Douglas County Parcel Boundary



Glendale Farm Relocation Buffer

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September 13, 2017

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Black-tailed Prairie Dog Habitat Assessment

- Property
- Trail
- Relocation Buffer
- Potential Release Site
- Active Prairie Dog Colony

0 250 500
feet



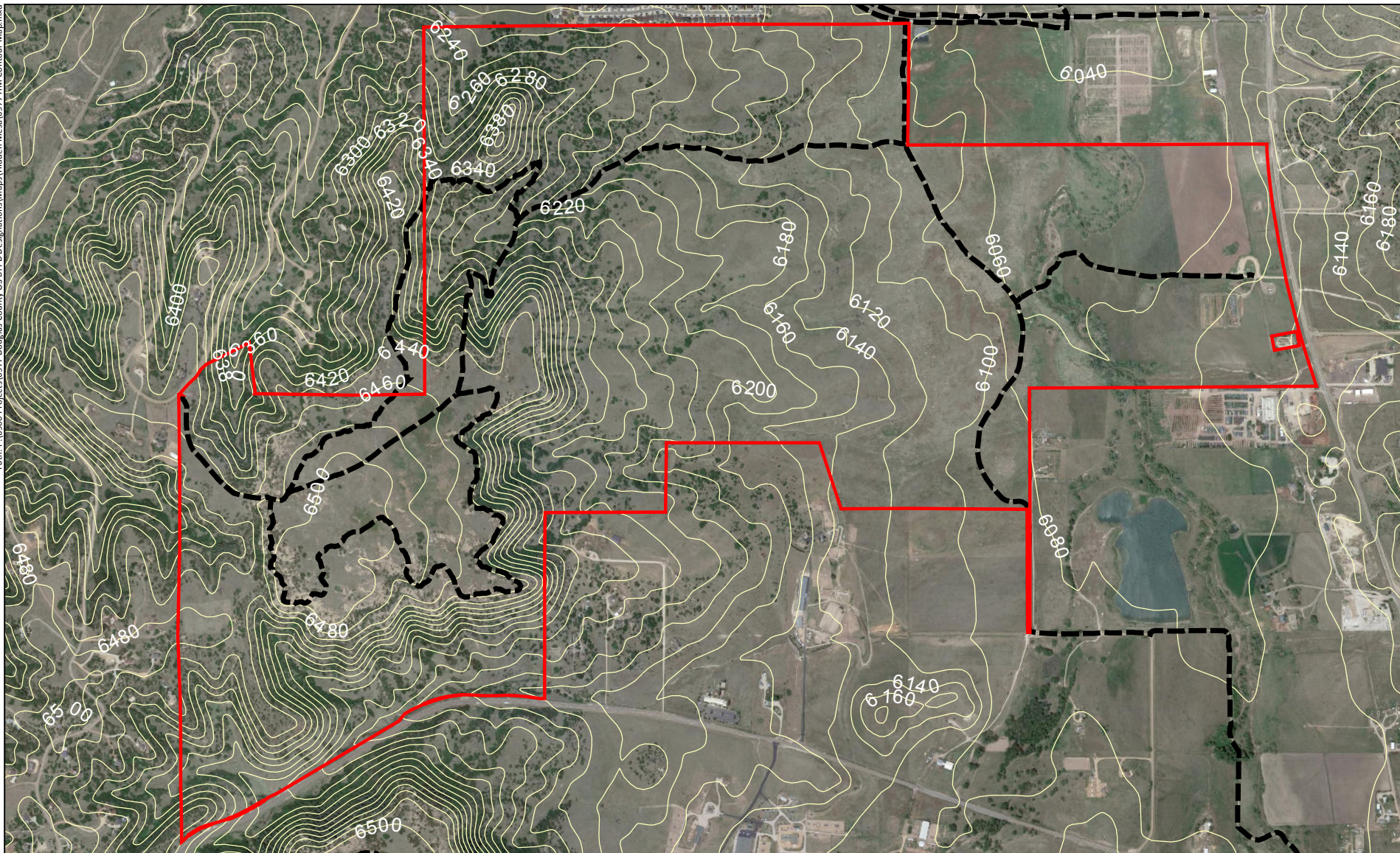
Glendale Farm Potential Release Sites

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September 21, 2017




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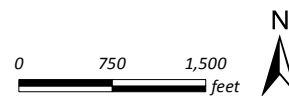
Figure Set – Hidden Mesa Open Space

Contours with Elevation
Slope Analysis
Soils
Prairie Dog Colonies
Relocation Buffer
Potential Release Sites



Black-tailed Prairie Dog Habitat Assessment

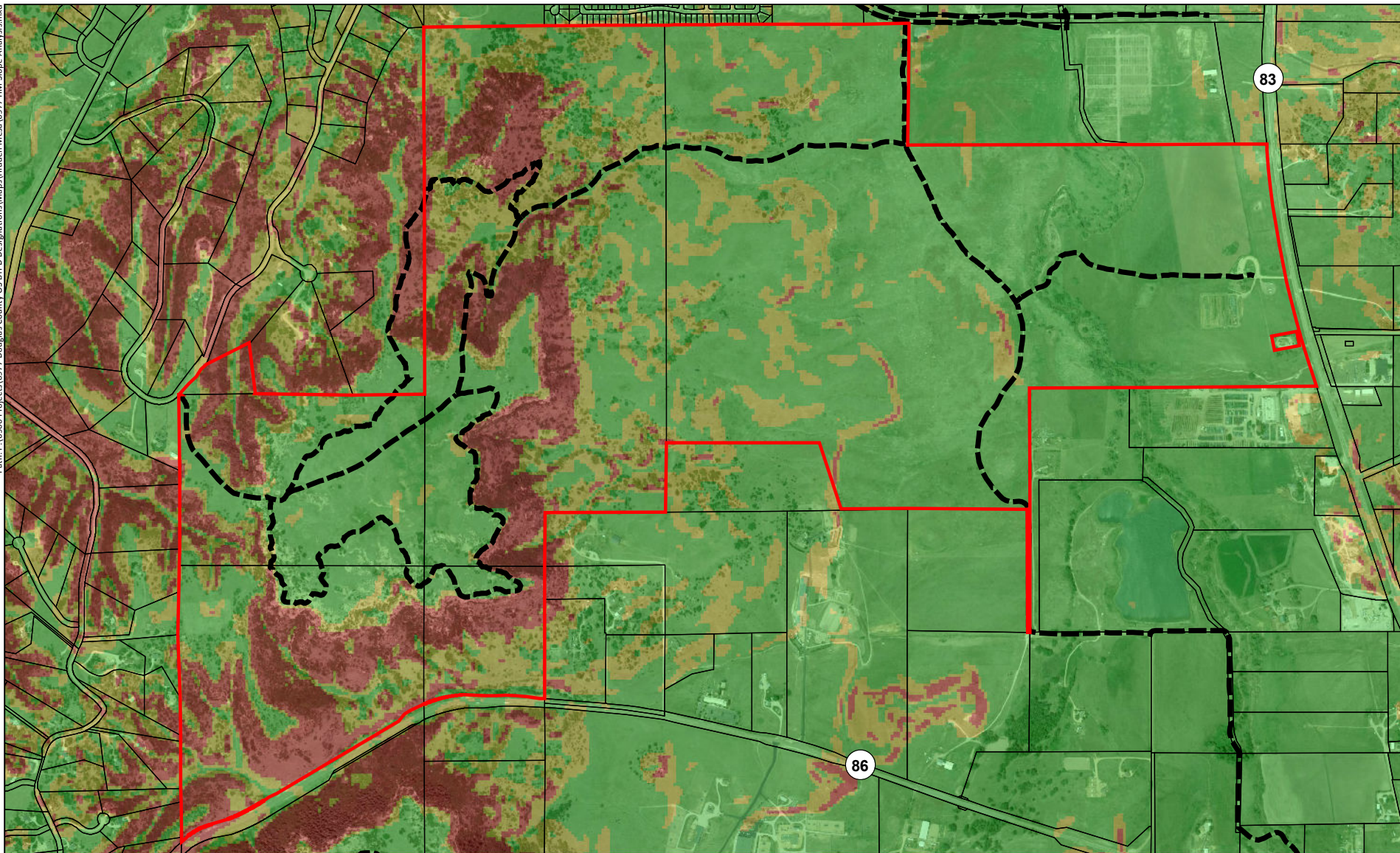
-  Property
-  Trail
-  20-foot Contour Interval



Hidden Mesa Contours with Elevation

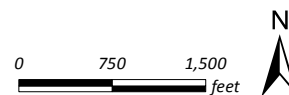
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Black-tailed Prairie Dog Habitat Assessment

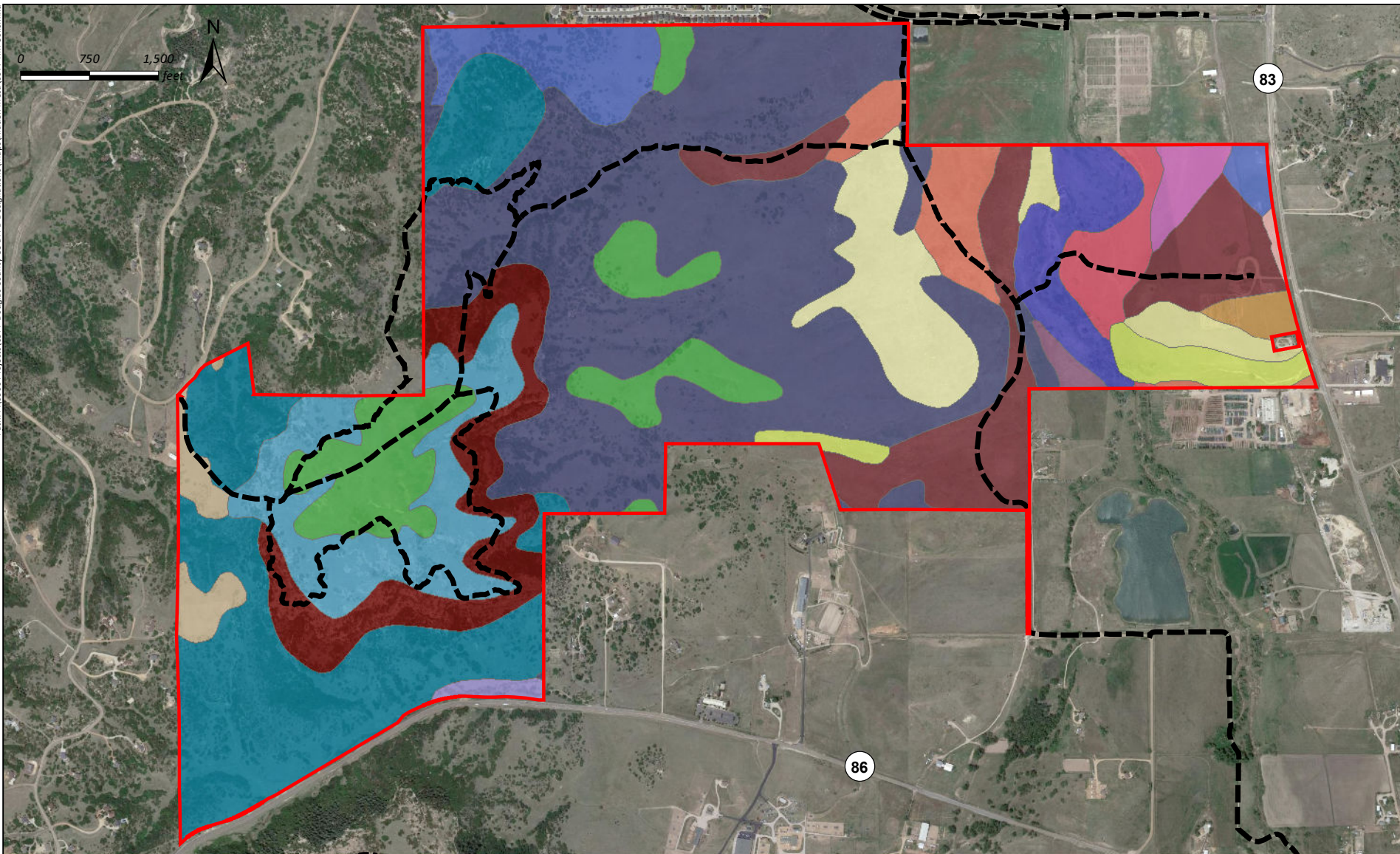
- Property
- Trail
- 0 - 10% Slopes
- 11 - 20% Slopes
- >21% Slopes



Hidden Mesa Slope Analysis

Prepared for: Douglas County Open Space and
Natural Resources Department
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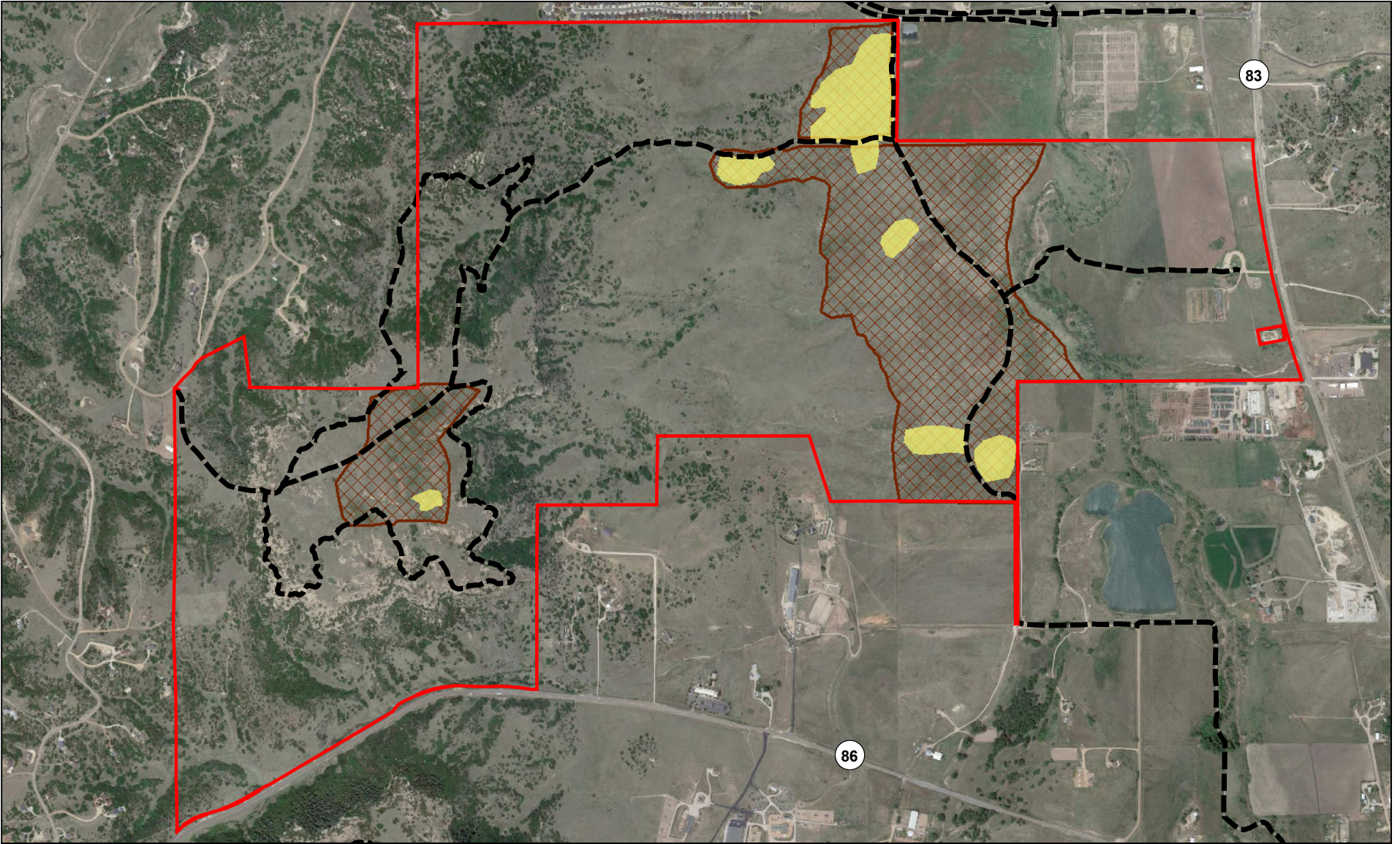
Black-tailed Prairie Dog Habitat Assessment

 Property	 Fondis clay loam, 3 to 9 percent slopes	 Peyton-Pring-Crowfoot sandy loams, 5 to 25 percent slopes
 Trail	 Fondis-Kutch association	 Sampson loam
 Blakeland-Orsa association, 1 to 4 percent slopes	 Hilly gravelly land	 Sandy alluvial land
 Bresser sandy loam, 3 to 9 percent slopes	 Kassler gravelly sandy loam	 Sandy wet alluvial land
 Bresser-Truckton sandy loams, 5 to 25 percent slopes	 Loamy alluvial land	 Satanta loam
 Coni rocky loam, 3 to 100 percent slopes	 Loamy alluvial land, dark surface	 Stony steep land
 Englewood clay loam	 Newlin gravelly sandy loam, 8 to 30 percent slopes	 Truckton sandy loam, 3 to 8 percent slopes





Hidden Mesa Soils

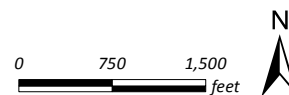
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Natural Resources Department
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September 14, 2017

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Black-tailed Prairie Dog Habitat Assessment

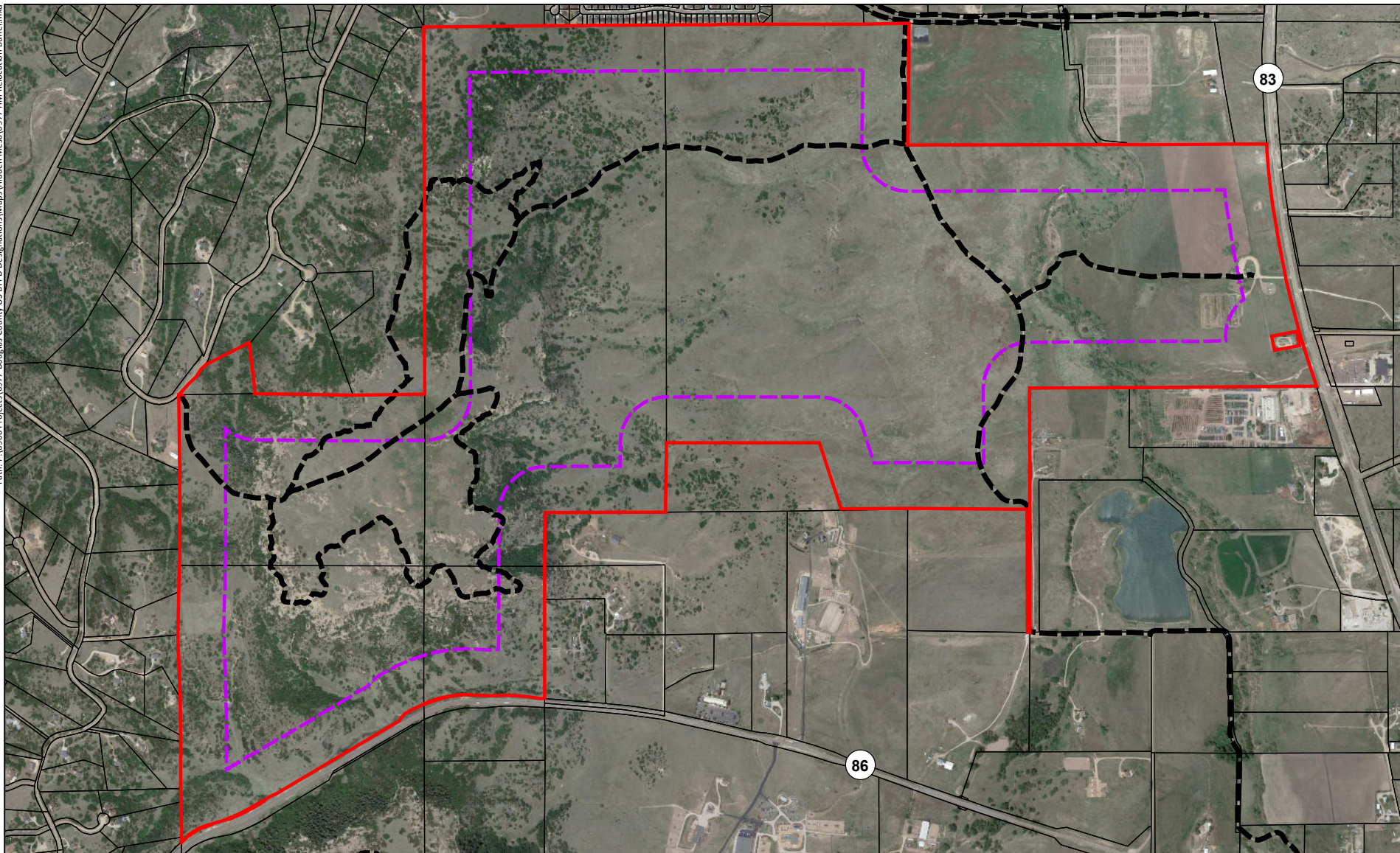
-  Property
-  Trail
-  Active Prairie Dog Colony
-  Historic Prairie Dog Colony Boundary






Hidden Mesa Prairie Dog Colonies

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Natural Resources Department
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September 14, 2017

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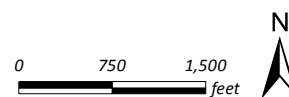
Black-tailed Prairie Dog Habitat Assessment

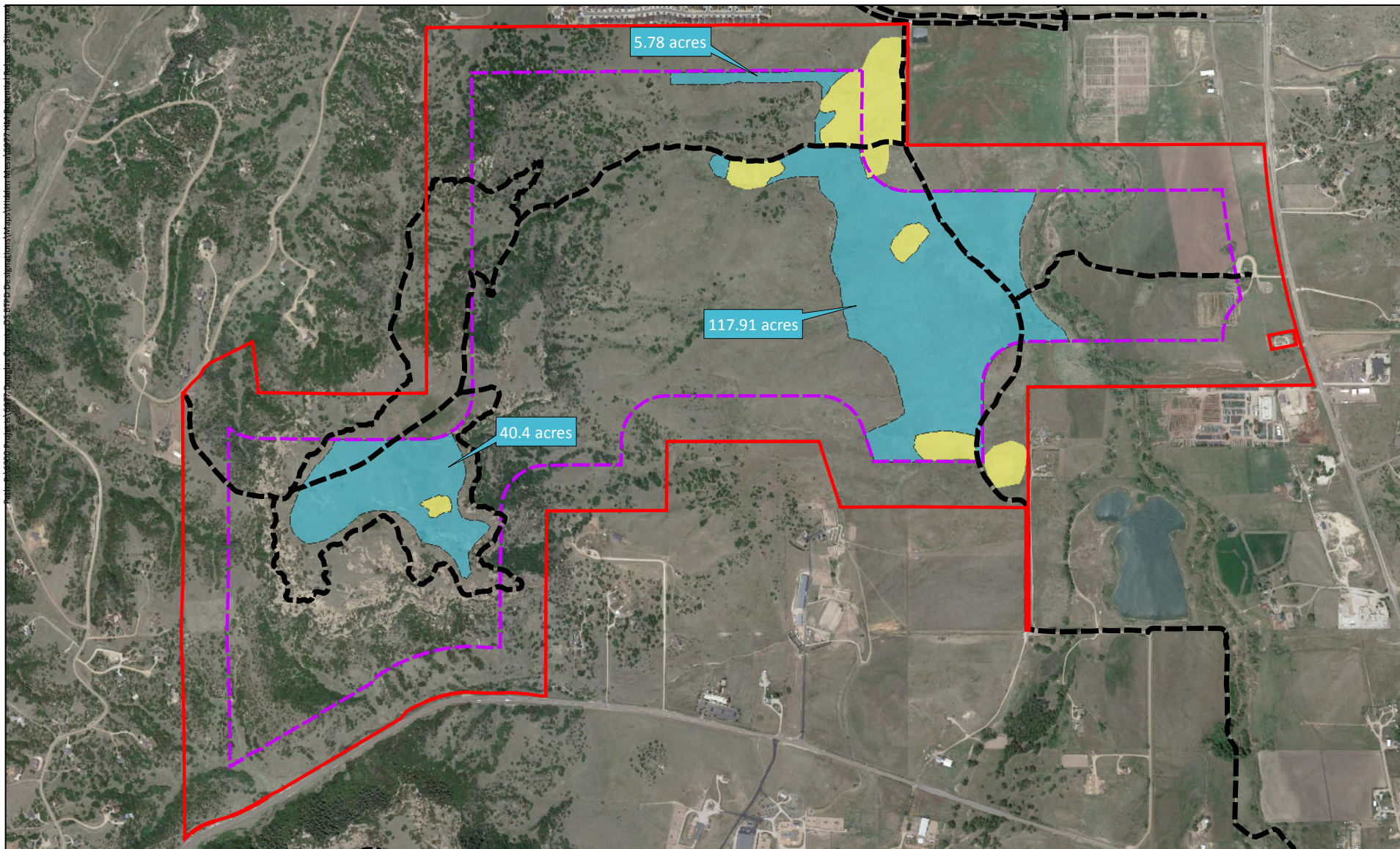
-  Property
-  Trail
-  Relocation Buffer

Hidden Mesa Relocation Buffer

Prepared for: Douglas County Open Space and
Natural Resources Department
File: 6977 HM Relocation Buffer.mxd [dlH]
September 14, 2017

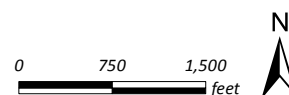
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Black-tailed Prairie Dog Habitat Assessment

- Property
- Trail
- Relocation Buffer
- Potential Release Site
- Active Prairie Dog Colony



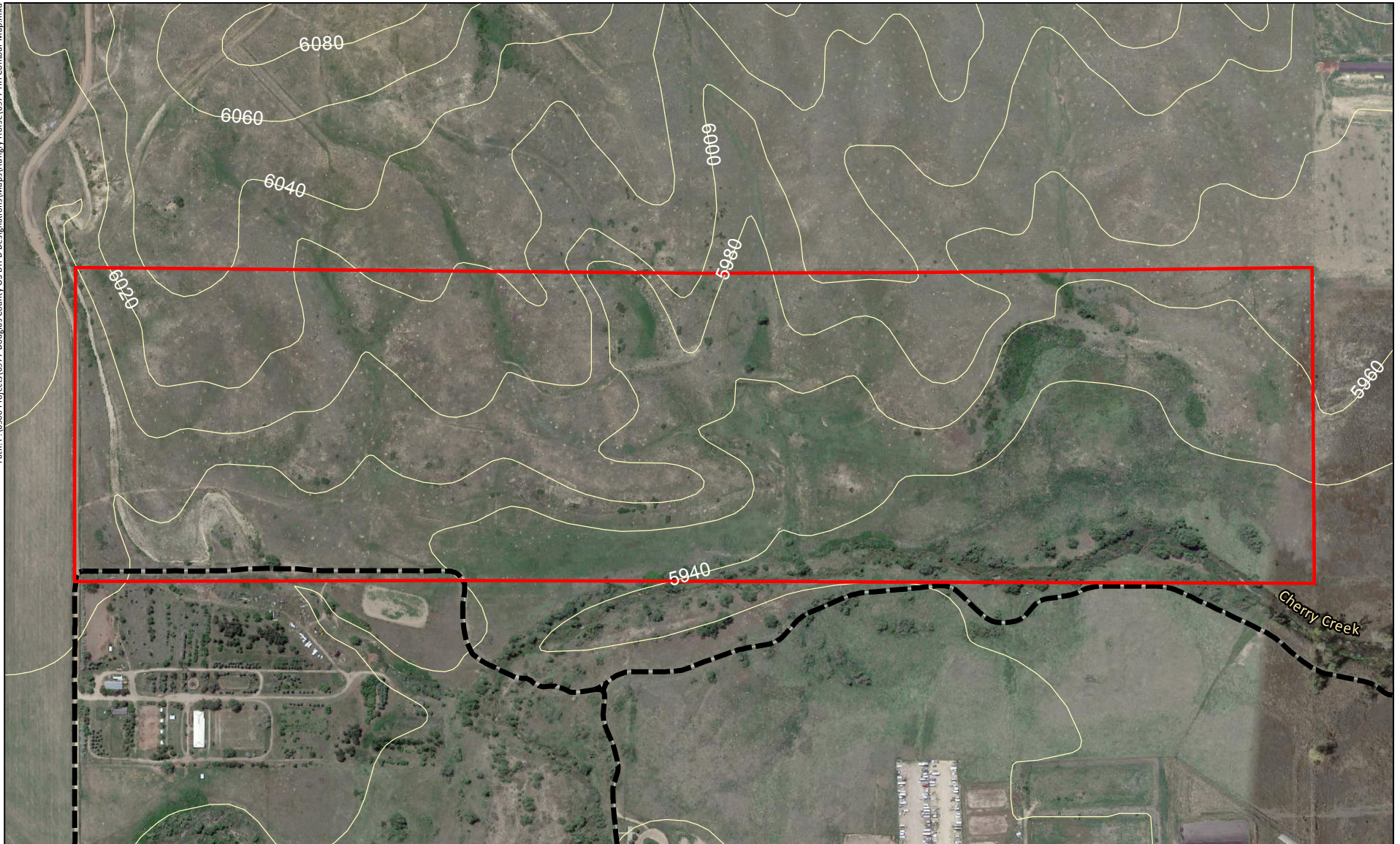
Hidden Mesa Potential Release Sites

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Natural Resources Department
File: 6977 HM Potential Release Sites.mxd [dlH]
September 22, 2017






Figure Set – Hungry Horse Open Space

Contours with Elevation
Slope Analysis
Soils
Prairie Dog Colonies
Relocation Buffer
Potential Release Sites

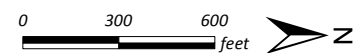


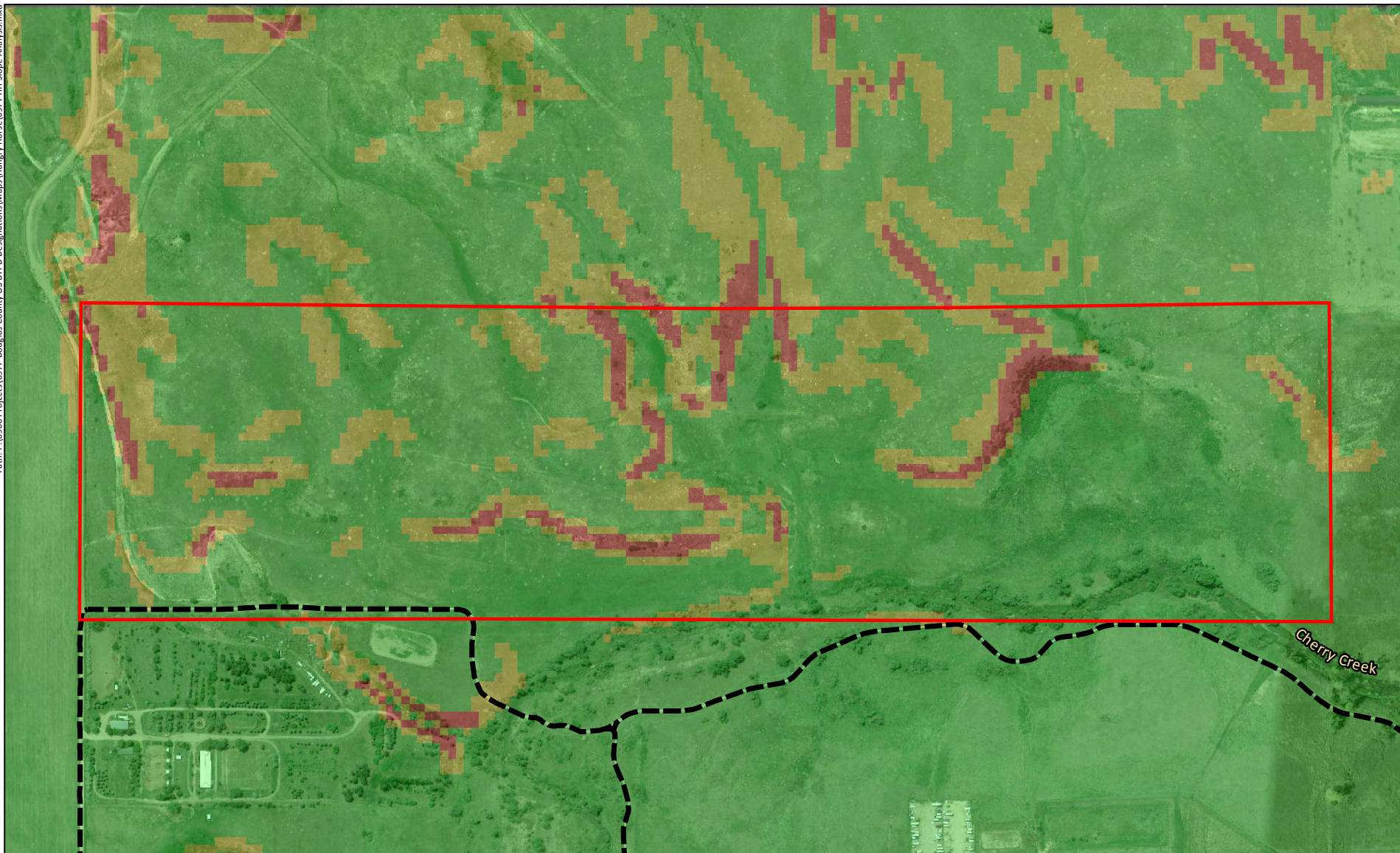
Black-tailed Prairie Dog Habitat Assessment

-  Property
-  Trail
-  20-foot Contour Interval

Hungry Horse Contours with Elevation

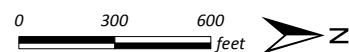
Prepared for: Douglas County Open Space and
Natural Resources Department
File: 6977 HH Contour Map.mxd [dlH]
September 13, 2017





Black-tailed Prairie Dog Habitat Assessment

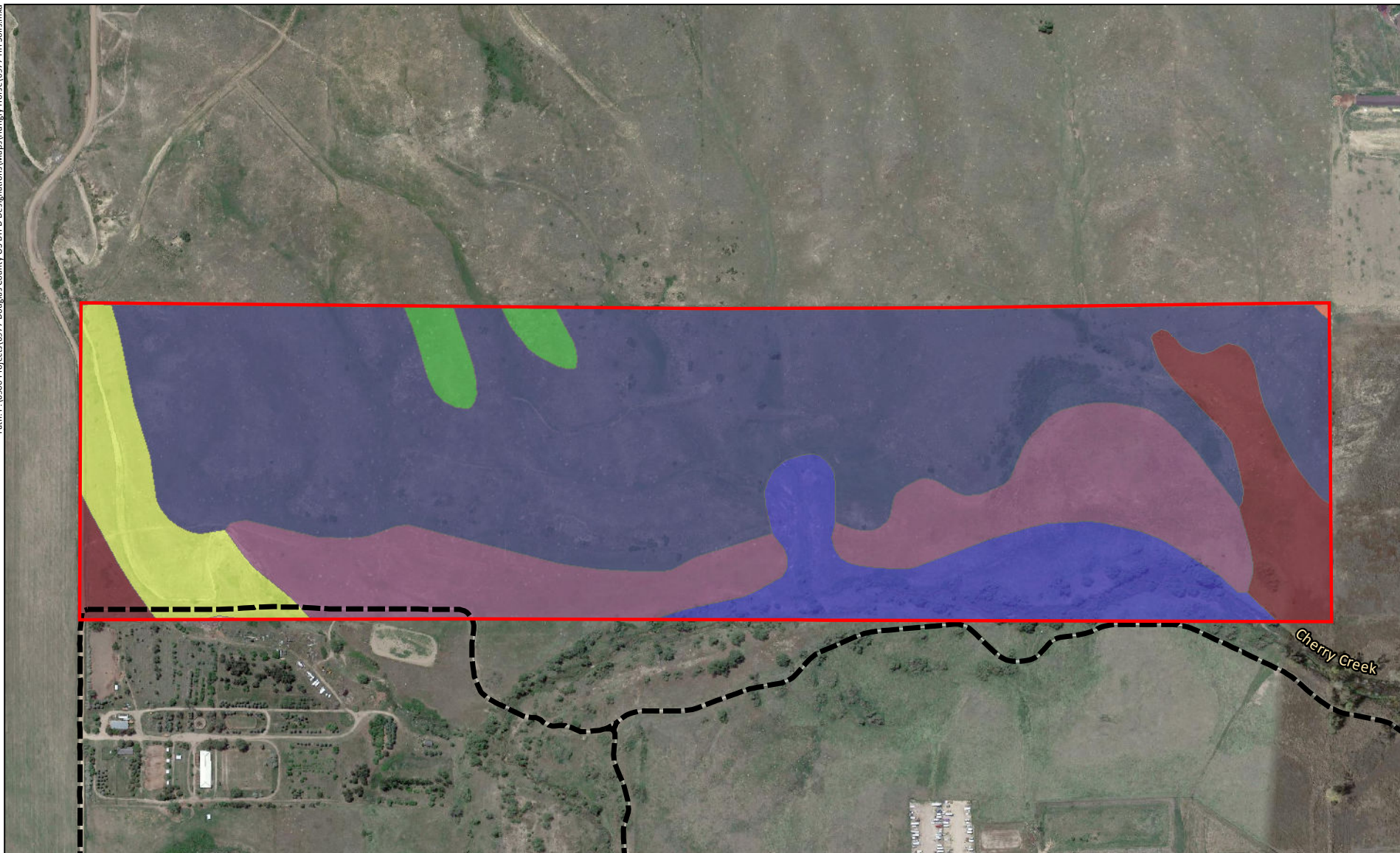
- Property
- Trail
- 0 - 10% Slopes
- 11 - 20% Slopes
- >21% Slopes



Hungry Horse Slope Analysis

Prepared for: Douglas County Open Space and
Natural Resources Department
File: 6977 HH Slope Analysis.mxd (dlH)
September 13, 2017

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Black-tailed Prairie Dog Habitat Assessment

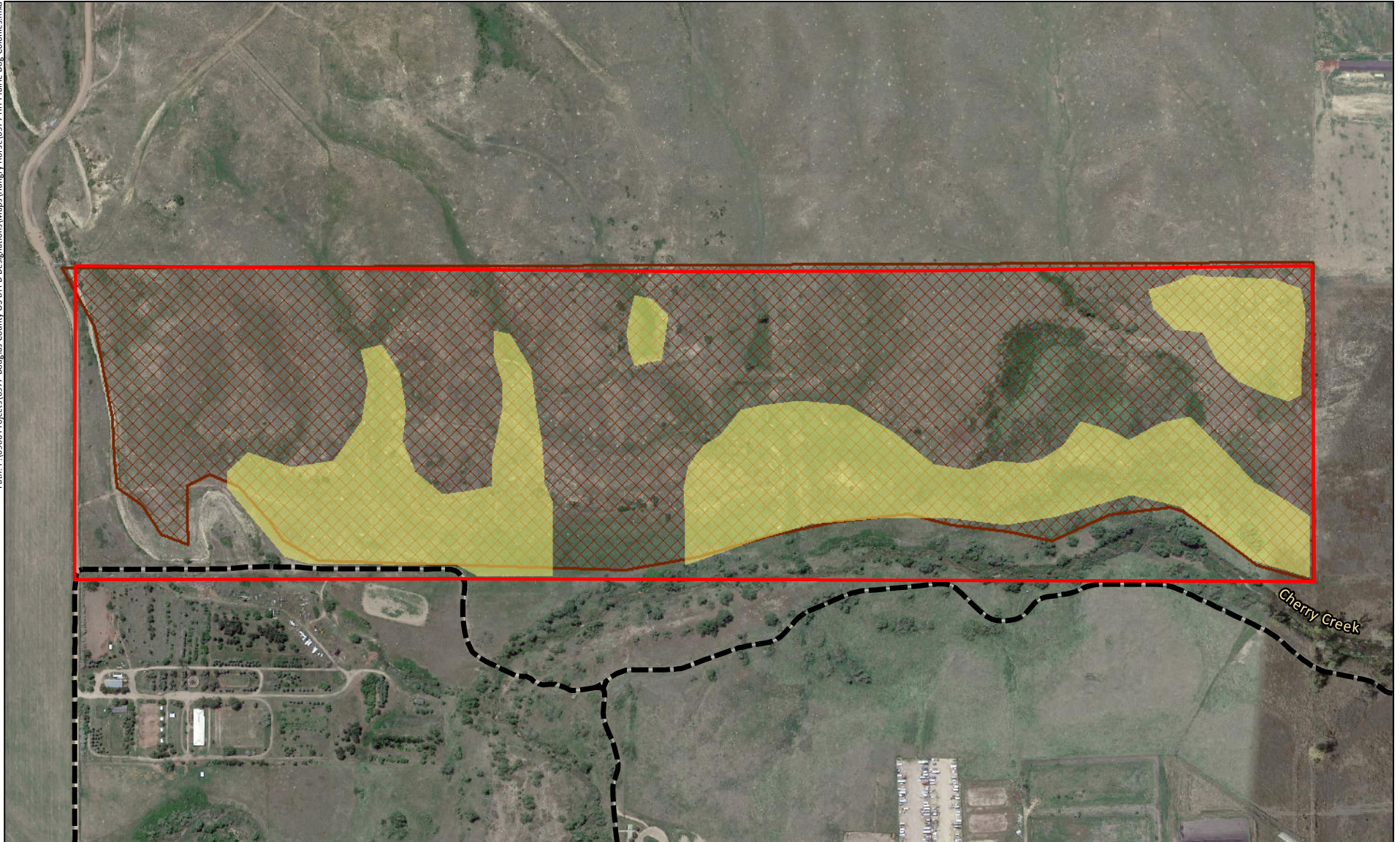
- | | |
|--|---|
| Property | Loamy alluvial land |
| Trail | Newlin gravelly sandy loam, 8 to 30 percent slopes |
| Blakeland-Orsa association, 1 to 4 percent slopes | Sampson loam |
| Bresser sandy loam, 3 to 9 percent slopes | Sandy alluvial land |
| Fondis clay loam, 3 to 9 percent slopes | Sandy wet alluvial land |



Hungry Horse Soils

Prepared for: Douglas County Open Space and
Natural Resources Department
File: 6977 HH Soils.mxd [dlh]
September 13, 2017





Black-tailed Prairie Dog Habitat Assessment

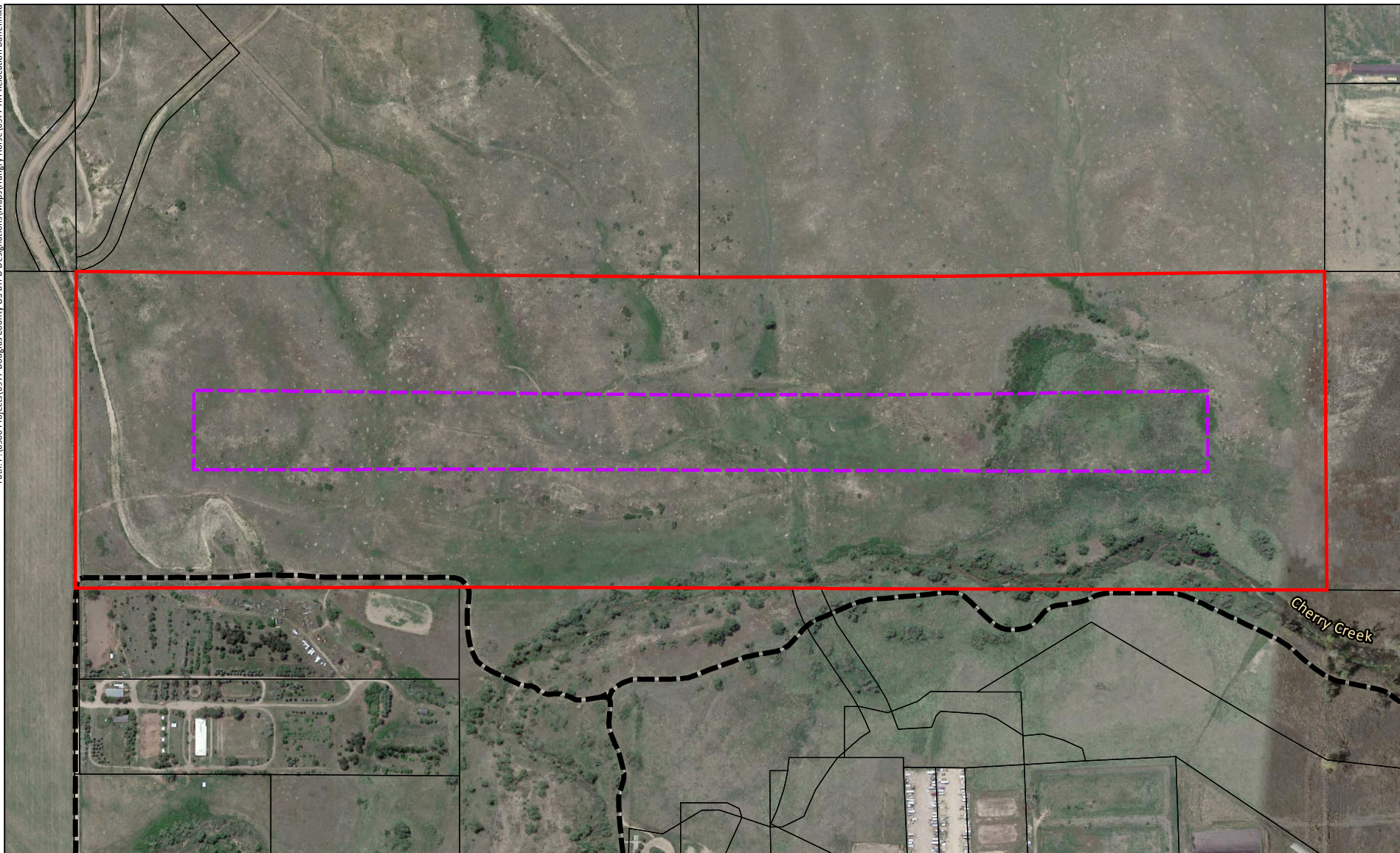
- Property
- Trail
- Active Prairie Dog Colony
- Historic Prairie Dog Colony Boundary

Hungry Horse Contours with Elevation

Prepared for: Douglas County Open Space and
Natural Resources Department
File: 6977 HH Prairie Dog Colonies.mxd [dlH]
September 13, 2017

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Black-tailed Prairie Dog Habitat Assessment

 Property

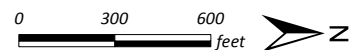
 Trail

 Douglas County Parcel Boundary

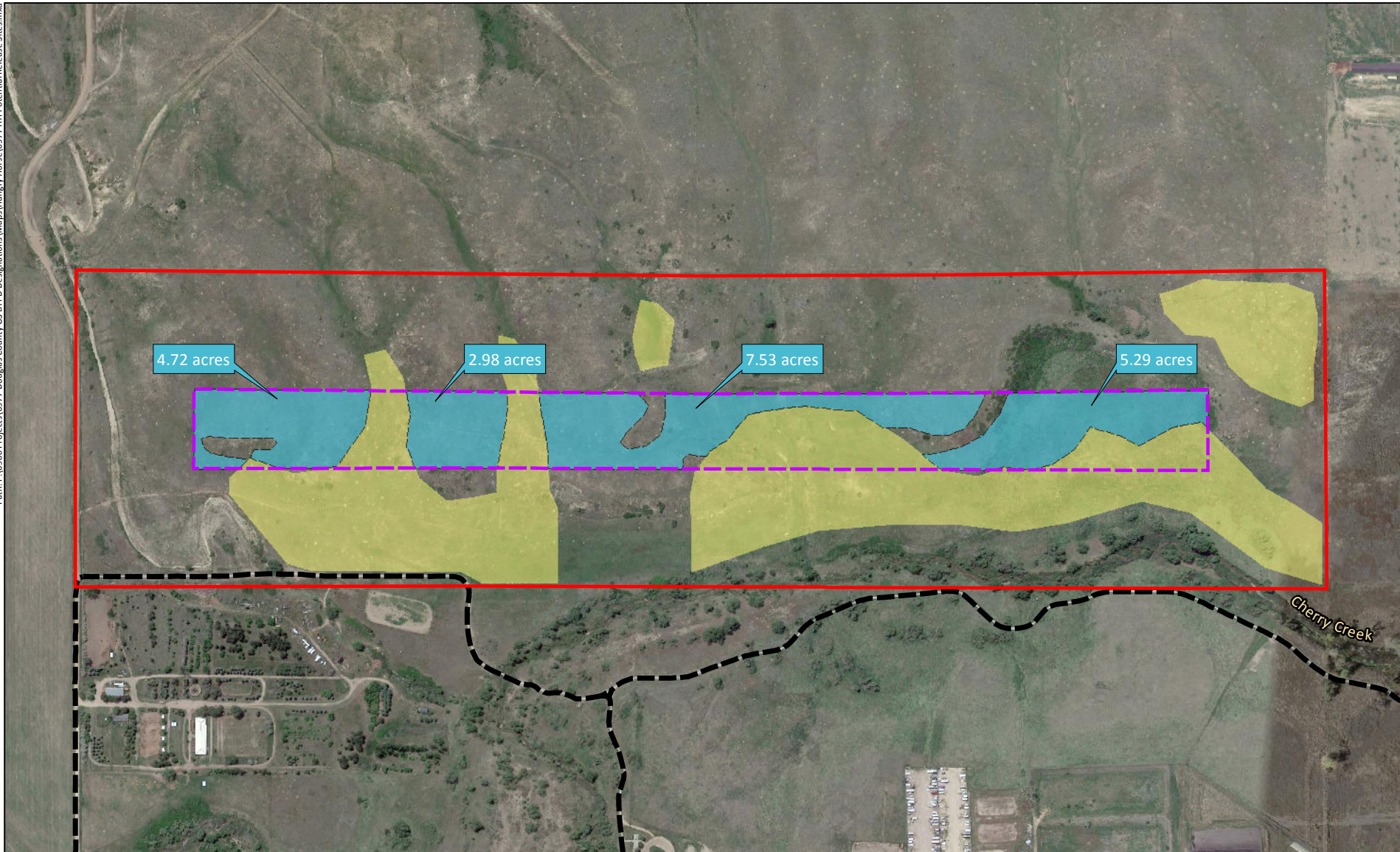
 Relocation Buffer

Hungry Horse Relocation Buffer

Prepared for: Douglas County Open Space and
Natural Resources Department
File: 6977 HH Relocation Buffer.mxd (dlH)
September 13, 2017

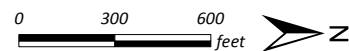


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Black-tailed Prairie Dog Habitat Assessment

- Property
- Trail
- Relocation Buffer
- Potential Release Site
- Active Prairie Dog Colony



Hungry Horse Potential Release Sites

Prepared for: Douglas County Open Space and
Natural Resources Department
File: 6977 HH Potential Release Sites.mxd [dlH]
September 21, 2017



Appendix A. Screening and Evaluation Process Flow Chart

DOUGLAS COUNTY OPEN SPACE POTENTIAL PRAIRIE DOG RELEASE SITE IDENTIFICATION AND MANAGEMENT CATEGORY RECOMMENDATIONS

SCREENING AND EVALUATION PROCESS FLOW CHART

