



August 11, 2023

PCD File No.

NATURAL FEATURES REPORT
Graupner Subdivision Filing No. 1
Project No. 61176

1.0 Introduction

M.V.E., Inc. performed a site visit for natural features and existing drainage conditions on May 31, 2023. Photographs of the site visit is included in the **Appendix**.

The Graupner Subdivision Filing No. 1 site encompasses 41.019 ± acres of land zoned currently zoned RR-5 (Rural Residential 5 acres). The parcel currently has a single-family residence, detached garage, and a barn/horse stables located within the east 1/3 of the parcel. Access for this developed area is an existing unpaved driveway along the west and south property lines extending from the existing Tanner Trail cul-de-sac. The owners intend to subdivide the parcel into four lots. One 25.9 acre lot will contain the existing buildings. Three 5 acre lots will be available for new single-family residential development.

1.1 Site Description

The Graupner Subdivision Filing No. 1 site is located within the South ½ of Section 32, Township 11 South, Range 64 West, of the 6th Principal Meridian, County of El Paso, Colorado. The site is situated west of Eastonville Road and north of Murphy Road. The current address is 14710 Tanner Trail in Elbert, Colorado. The site is made up of a single unplatted parcel having El Paso County Tax Assessor's Schedule Number: 41320-00-010. A Vicinity Map is included in the **Appendix**. This report is submitted in connection with the application for a Minor Subdivision.

This parcel is partially undeveloped with existing buildings as mentioned above. The site is generally well vegetated with tall grasses. There are sparse coniferous trees located within the northeast portion of the site. There is no significant natural features with gentle hills with no rock outcropping. There is a large existing drainageway along the north property line draining southeasterly into an existing livestock pond. The drainageway within the property have no improvements or previous stabilization. They are well vegetated with no indication of erosion.

This site is surrounded by similar RR-5 lots with single-family residences on well and septic systems.

2.0 Soils, Floodplain, Wetlands, and Wildlife Assessment

2.1 Soil Description

Rocky Mountain Group (RMG) performed a Soil and Geology Study, Job No. 192447 with a report dated May 2, 2023. The study encountered silty sandstone and clayey sandstone which has a high swell potential which is mitigated by special foundation design and over-excavation. In the report, there were no major concerns about groundwater or erosion except for areas that will experience potential seasonally wet conditions during high moisture events which is mitigated by implementing foundation drains. Generally the soils, are well drained and are explained further in the report.

According to the National Resource Conservation Service, there are two soil types identified at the Graupner Subdivision Filing No. 1 site. Pring coarse sandy loam, 3 to 8 percent slopes (map unit 71) makes up 97% of the site. This soil is deep and is well drained, permeability is rapid, surface runoff is medium, and the hazard of erosion is moderate.

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The secondary soil group is: Columbine gravelly sandy loam, 0 to 3 percent slopes (map unit 19) which a small amount is present on the northwest portion of the site. This soil is shallow to deep and well drained to excessively drained, permeability is very rapid, surface runoff is slow, and the hazard of erosion is slight to moderate. A portion of the Soil Map and data tables from the National Cooperative Soil Survey and relevant Official Soil Series Descriptions (OSD) are included in the **Appendix**.^{1 2}

2.2 Floodplain

No portion of the site lies within FEMA designated Special Flood Hazard Areas (SFHA's). The current Flood Insurance Study of the region includes a Flood Insurance Rate Map (FIRM), effective on December 7, 2018.³ The proposed subdivision is included in Community Panel Numbers 08041C0340G of the Flood Insurance Rate Maps for El Paso County and Incorporated Areas. An excerpt of the current FEMA Flood Insurance Rate Maps with the site delineated is included in the **Appendix**.

2.3 Wetlands and Wildlife Assessment

This site is not located within a designated wetlands area according to the National Wetlands Inventory (NWI) and a map is included in the **Appendix**.⁴

In preparation of this report, MVE, Inc. researched documentation for the listing of endangered species native and migratory to El Paso County. The endangered or threatened wildlife known to be found in the general area was the Preble's Meadow Jumping Mouse. This species of rodent can be found adjacent east of the Front Range Mountains with a range from Cheyenne, Wyoming to Pueblo. This species is mostly found within wetlands or areas of ponding.⁵ MVE did not observe any wildlife during the May 31st site visit nor found any indication of burrows or nesting sites.

3.0 Conclusion

This Minor Subdivision will have limited impact and complexity by creating only four (4) five acre lots on the 41.0 acre site, which will not discernibly impact environmental resources. The Minor Subdivision will not have significant impacts on the surrounding neighborhood, water resources, the environment, and any of the community facilities and services. Access will be provided by existing public and private roadways and existing private driveway. Access provisions will not have an impact on natural features or drainageways.

Z:\61176\Documents\Natural Features\Parts\61176 Impact Identification Statement.odt

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- 1 WSS
 - 2 OSD
 - 3 FIRM
 - 4 NWI
 - 5 EPC Env.

References

WSS: United States Department of Agriculture, Natural Resources Conservation Service, NRCS Web Soil Survey, October 2016,

<http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>

OSD: United States Department of Agriculture, Natural Resources Conservation Service, NRCS Official Soil Series Descriptions, October 2016,

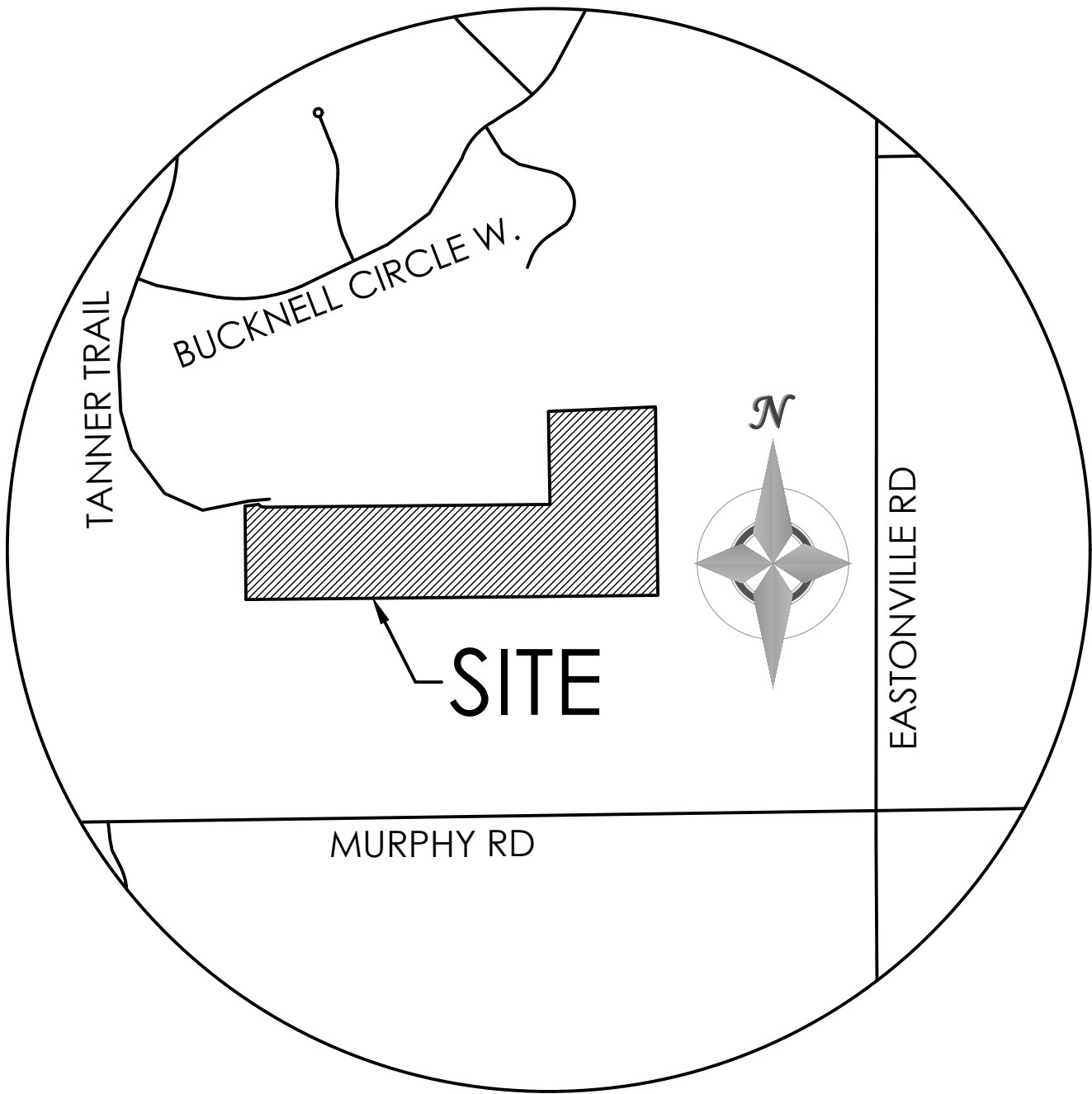
<http://soils.usda.gov/technical/classification/osd/index.html>

FIRM: Federal Emergency Management Agency, National Flood Insurance Program, Flood Insurance Rate Map, December 7, 2018

NWI: US Fish and Wildlife Service, National Wetlands Inventory, 2023

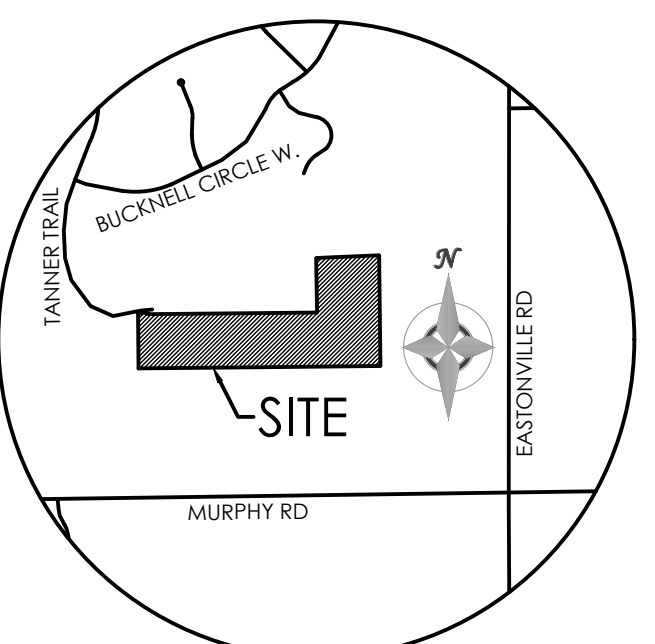
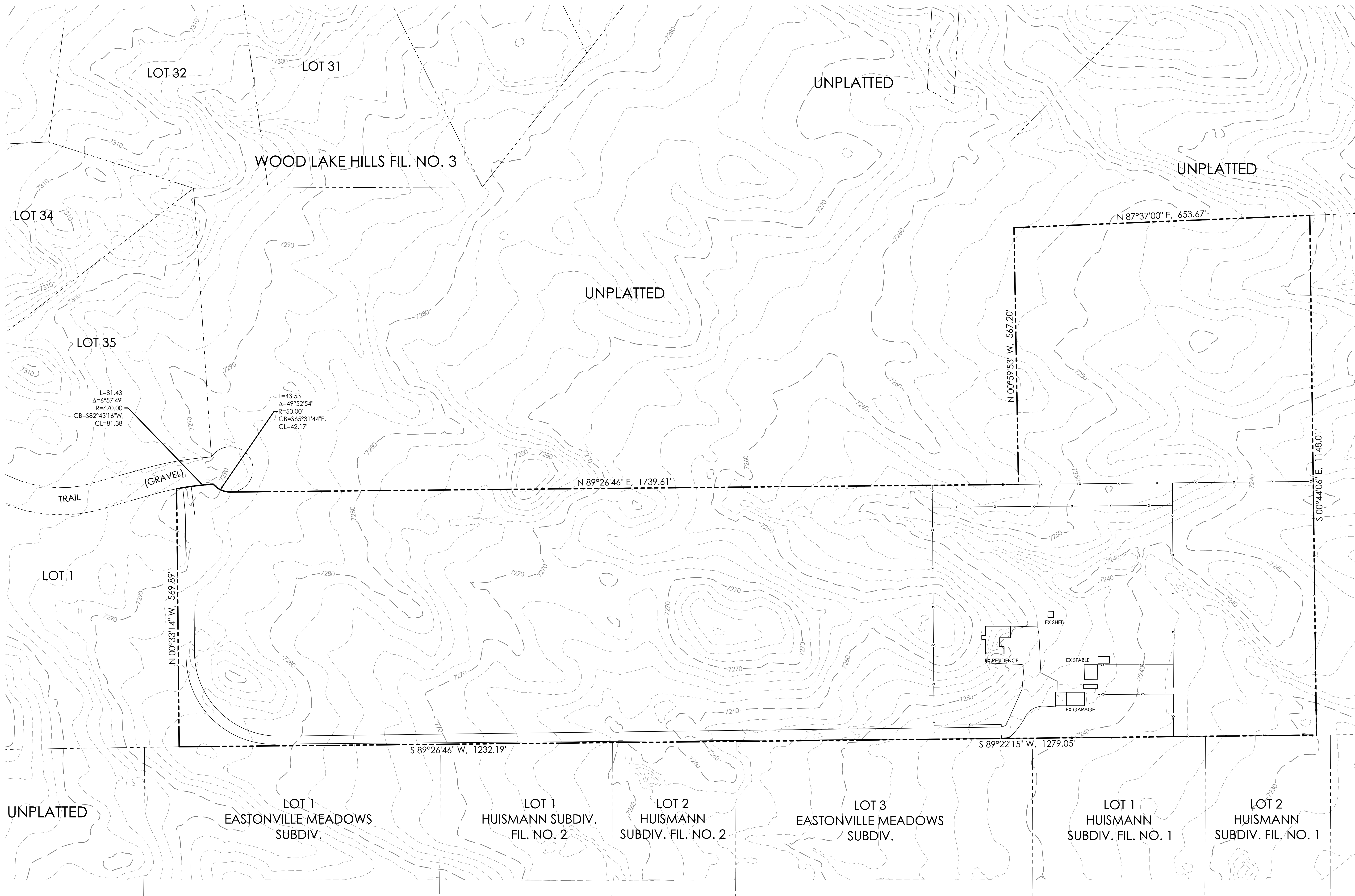
EPC Env.: El Paso County, Biological Resources of El Paso County, 2020

Appendix

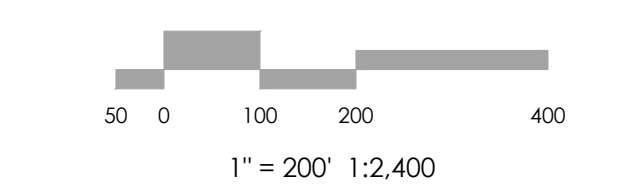
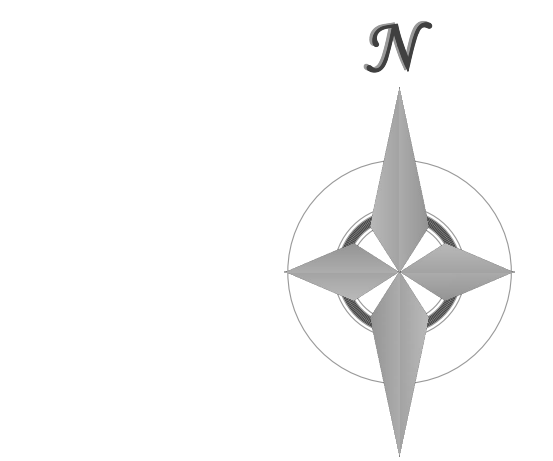


VICINITY MAP

NOT TO SCALE



VICINITY MAP
NOT TO SCALE



REVISIONS

DESIGNED BY _____
 DRAWN BY JO
 CHECKED BY _____
 AS-BUILTS BY _____
 CHECKED BY _____

GRAUPNER SUBDIVISION

EXISTING CONDITIONS
MAP

MVE PROJECT 61176
 MVE DRAWING EXH-NF

AUGUST 10, 2023
 SHEET 1 OF 1

LEGEND

	PROPERTY LINE
	EASEMENT LINE
	LOT LINE
EXISTING	
	INDEX CONTOUR
	INTERMEDIATE CONTOUR

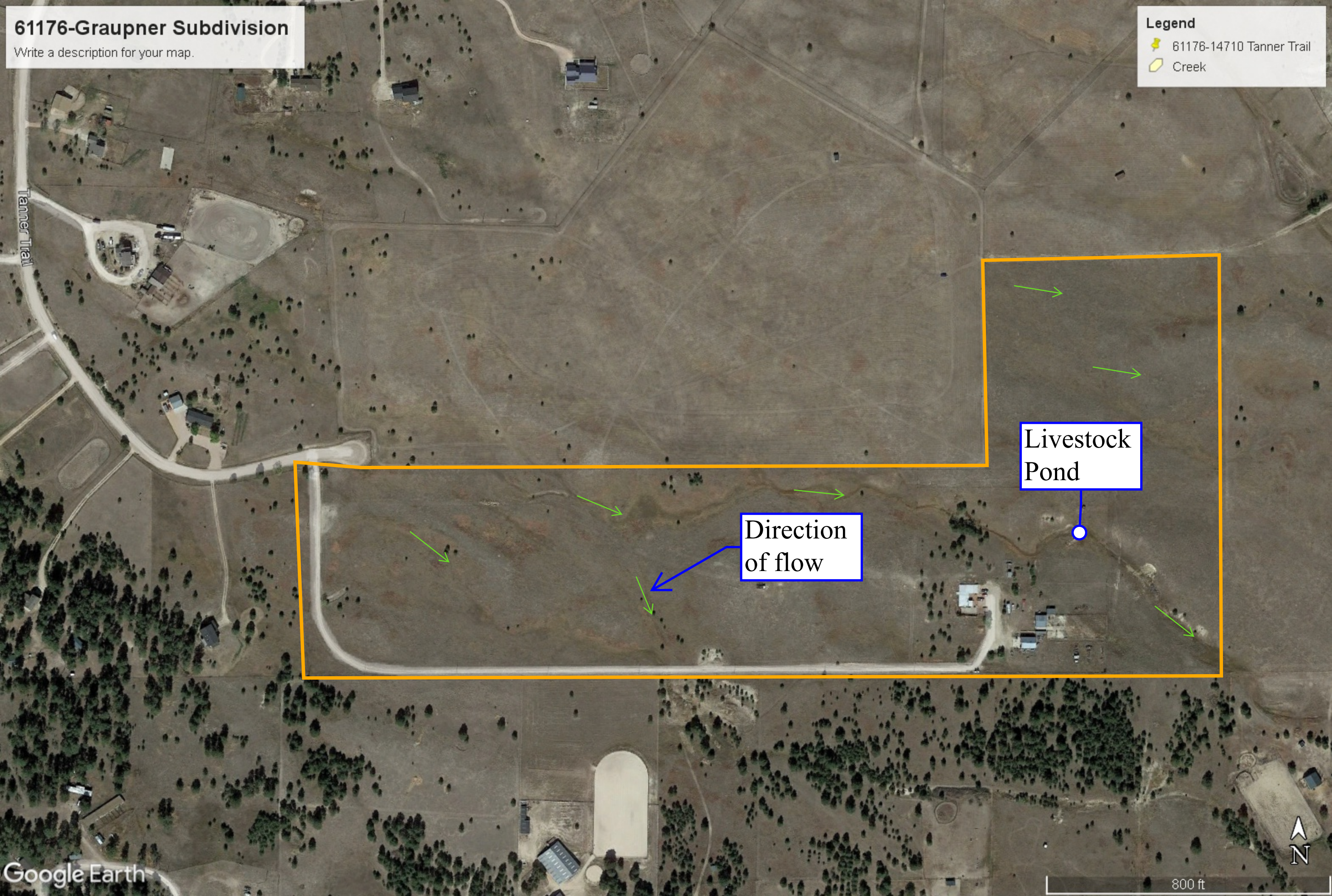
FLOODPLAIN STATEMENT
 NO PORTION OF THE SUBJECT PROPERTY IS LOCATED WITHIN A FEMA DESIGNATED SPECIAL FLOOD HAZARD AREA (SFHA) AS INDICATED ON THE FLOOD INSURANCE RATE MAPS (FIRM) FOR EL PASO COUNTY, COLORADO AND INCORPORATED AREAS - MAP NUMBERS 08041 C03405, EFFECTIVE DECEMBER 7, 2018.

61176-Graupner Subdivision

Write a description for your map.

Legend

- 61176-14710 Tanner Trail
- Creek



Tanner Trail

Livestock Pond

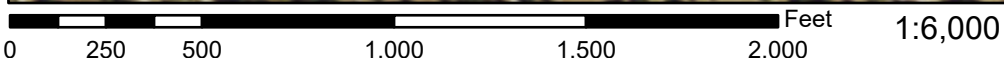
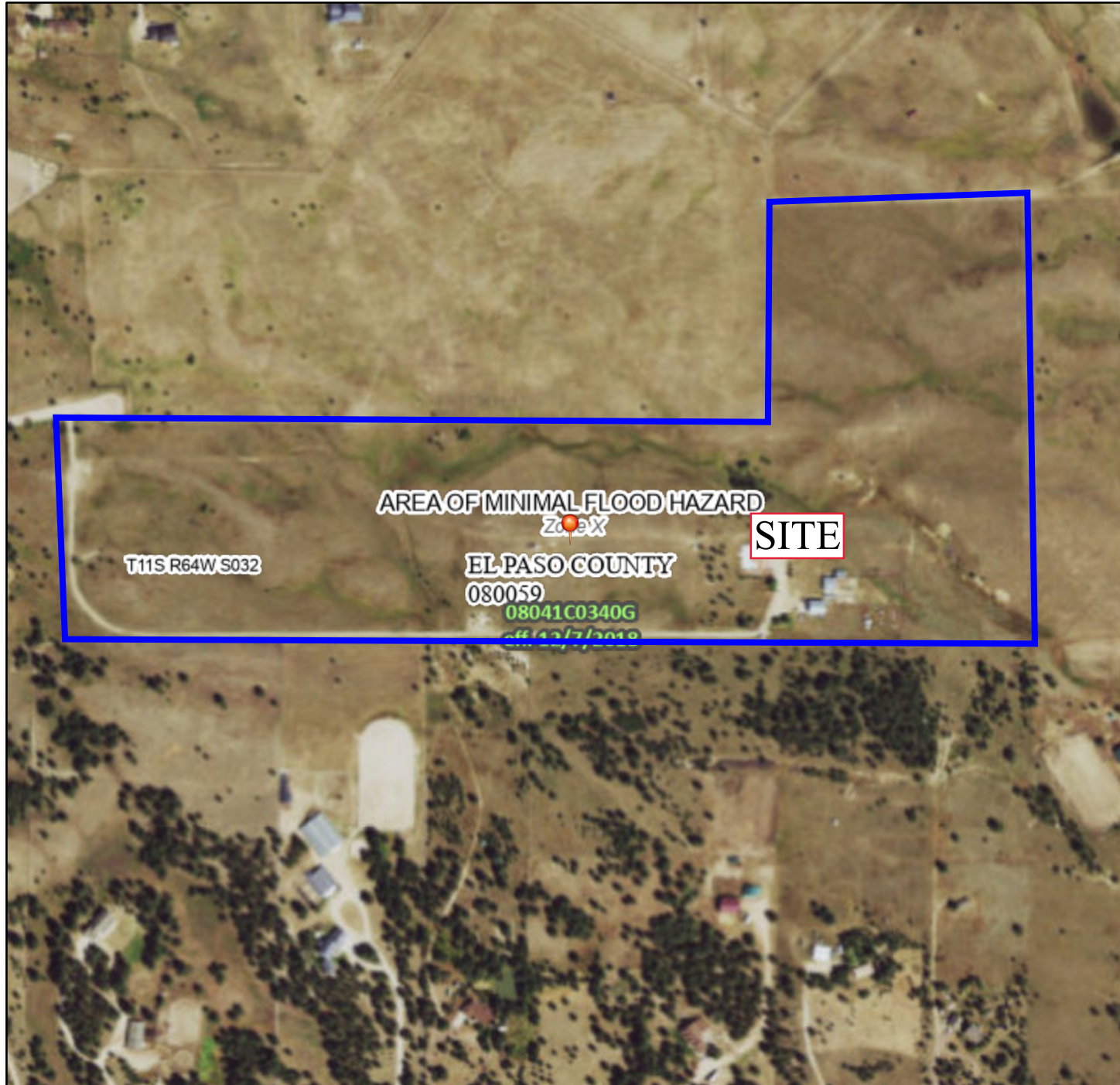
Direction of flow



National Flood Hazard Layer FIRMette



104°35'7"W 39°3'2"N



Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) <i>Zone A, V, A99</i>
		With BFE or Depth <i>Zone AE, AO, AH, VE, AR</i>
		Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile <i>Zone X</i>
		Future Conditions 1% Annual Chance Flood Hazard <i>Zone X</i>
		Area with Reduced Flood Risk due to Levee. See Notes. <i>Zone X</i>
		Area with Flood Risk due to Levee <i>Zone D</i>

OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard <i>Zone X</i>
		Effective LOMRs
		Area of Undetermined Flood Hazard <i>Zone D</i>

GENERAL STRUCTURES		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall

OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance
		17.5 Water Surface Elevation
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature

MAP PANELS		Digital Data Available
		No Digital Data Available
		Unmapped



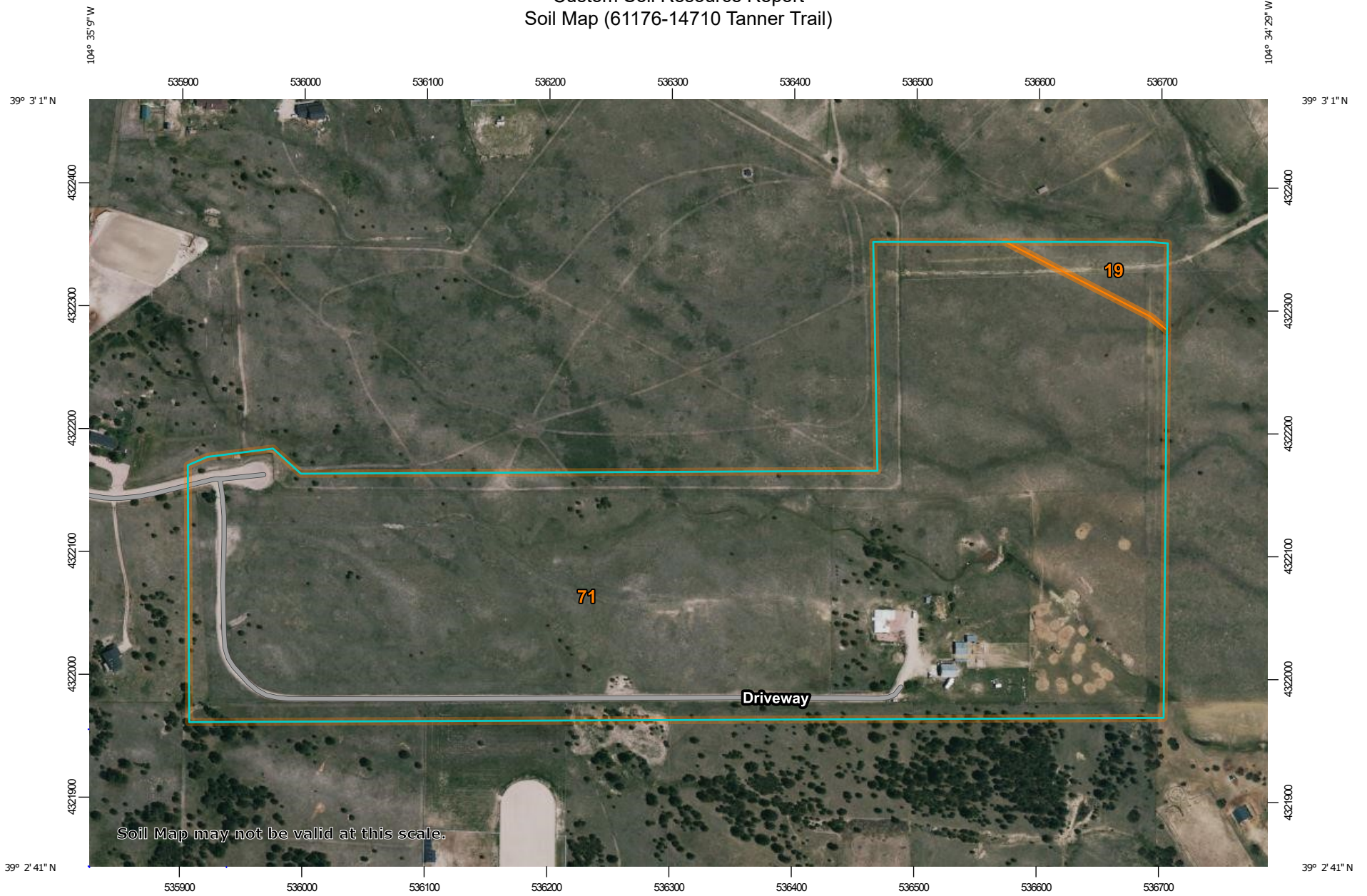
The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

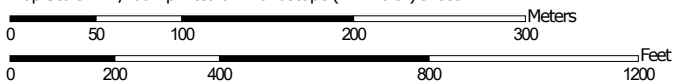
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **4/11/2023 at 10:45 AM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Custom Soil Resource Report Soil Map (61176-14710 Tanner Trail)




Map Scale: 1:4,400 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines


 Soil Map Unit Points

Special Point Features

-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features

Water Features

 Streams and Canals

Transportation

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

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

Soil Survey Area: El Paso County Area, Colorado
 Survey Area Data: Version 20, Sep 2, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 9, 2021—Jun 12, 2021

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.

Map Unit Legend (61176-14710 Tanner Trail)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
19	Columbine gravelly sandy loam, 0 to 3 percent slopes	1.1	2.2%
71	Pring coarse sandy loam, 3 to 8 percent slopes	50.2	97.8%
Totals for Area of Interest		51.3	100.0%

Map Unit Descriptions (61176-14710 Tanner Trail)

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, 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.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate

Custom Soil Resource Report

pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

El Paso County Area, Colorado

19—Columbine gravelly sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 367p
Elevation: 6,500 to 7,300 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 46 to 50 degrees F
Frost-free period: 125 to 145 days
Farmland classification: Not prime farmland

Map Unit Composition

Columbine and similar soils: 97 percent
Minor components: 3 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Columbine

Setting

Landform: Fans, fan terraces, flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

A - 0 to 14 inches: gravelly sandy loam
C - 14 to 60 inches: very gravelly loamy sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Ecological site: R049XY214CO - Gravelly Foothill
Hydric soil rating: No

Minor Components

Fluvaquentic haplaquolls

Percent of map unit: 1 percent
Landform: Swales
Hydric soil rating: Yes

Other soils

Percent of map unit: 1 percent
Hydric soil rating: No

Pleasant

Percent of map unit: 1 percent
Landform: Depressions
Hydric soil rating: Yes

71—Pring coarse sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 369k
Elevation: 6,800 to 7,600 feet
Farmland classification: Not prime farmland

Map Unit Composition

Pring and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pring

Setting

Landform: Hills
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Arkosic alluvium derived from sedimentary rock

Typical profile

A - 0 to 14 inches: coarse sandy loam
C - 14 to 60 inches: gravelly sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 6.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: R048AY222CO - Loamy Park
Hydric soil rating: No

Minor Components

Pleasant

Percent of map unit:

Landform: Depressions

Hydric soil rating: Yes

Other soils

Percent of map unit:

Hydric soil rating: No

References

- American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.
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- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.
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- United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084>

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United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

gravelly subsoil is exposed during site preparation. Access roads must be designed to control surface runoff and help stabilize cut slopes. The Midway soil has poor potential for homesites and roads because of shallow depth to shale, high frost-action potential, and high shrink-swell potential. Special designs are necessary to overcome these limitations. Capability subclass VIIe.

19—Columbine gravelly sandy loam, 0 to 3 percent slopes. This deep, well drained to excessively drained soil formed in coarse textured material on alluvial terraces and fans and on flood plains. Elevation ranges from 6,500 to 7,300 feet. The average annual precipitation is about 15 inches, the average annual air temperature is about 47 degrees F, and the average frost-free period is about 135 days.

Typically, the surface layer is grayish brown gravelly sandy loam about 14 inches thick. The underlying material is light yellowish brown very gravelly loamy sand.

Included with this soil in mapping are small areas of Stapleton sandy loam, 3 to 8 percent slopes; Blendon sandy loam, 0 to 3 percent slopes; Louviers silty clay loam, 3 to 18 percent slopes; and Fluvaquent Haplaquolls, nearly level. In places the parent arkose beds of sandstone or shale are at a depth of 0 to 40 inches.

Permeability of this Columbine soil is very rapid. Effective rooting depth is 60 inches or more. Available water capacity is low to moderate. Surface runoff is slow, and the hazard of erosion is slight to moderate.

This soil is used mainly for grazing livestock and for wildlife habitat. It is also used for homesites.

Native vegetation is mainly western wheatgrass, side-oats grama, needleandthread, and little bluestem. The main shrub is true mountainmahogany.

Proper location of livestock watering facilities helps to control grazing.

Windbreaks and environmental plantings are fairly well suited to this soil. Blowing sand and low available water capacity are the principal limitations to the establishment of trees and shrubs. The soil is so loose that trees need to be planted in the rows. Supplemental irrigation may be needed to insure survival. Trees that are best suited and have good survival are Rocky Mountain juniper, eastern redcedar, ponderosa pine, and Siberian elm. Shrubs that are best suited are skunkbush sumac, lilac, and Siberian peashrub.

Rangeland wildlife, such as pronghorn antelope, cottontail, coyote, and scaled quail, is best adapted to life on this droughty soil. Forage production is typically loam, and proper livestock grazing management is necessary if wildlife and livestock share the range. Livestock watering developments are also important and are used by various wildlife species.

The main limitation of this soil for urban development is a hazard of flooding in some areas. Care must be taken when locating septic tank absorption fields because of possible pollution as a result of the very rapid permeability of this soil. Capability subclass VIe.

20—Connerton-Rock outcrop complex, 8 to 90 percent slopes. This moderately sloping to extremely steep complex is in the Garden of the Gods area, west of Colorado Springs. Elevation ranges from 6,200 to 6,500 feet. The average annual precipitation is about 16 inches, and the average annual air temperature is about 47 degrees F.

The Connerton soil makes up about 45 percent of the complex and has slopes of 8 to 30 percent, Rock outcrop makes up about 40 percent, and other soils about 15 percent.

Included with this complex in mapping are areas of Neville fine sandy loam, 3 to 9 percent slopes; Penrose-Manvel complex, 3 to 45 percent slopes; and Fortwingate-Rock outcrop complex, 15 to 60 percent slopes. Also included are small areas of soils that contain more sand than is typical for the series.

The Connerton soil is deep and well drained. It formed in alluvium derived from reddish sandstone on moderately sloping alluvial fans and valley side slopes. Typically, the surface layer is reddish brown loam about 13 inches thick. The substratum is reddish brown sandy clay loam.

Permeability of the Connerton soil is moderate. Effective rooting depth is 60 inches or more. Available water capacity is high. Surface runoff is medium to rapid, and the hazard of erosion is moderate. A few gullies are in areas of this soil, especially along paths and trails and in drainageways.

Rock outcrop is in long, narrow bands in the form of cliffs or as monoliths and monuments. It consists of red to gray sandstone and limestone.

This complex is used for recreation, wildlife habitat, homesites, and limited livestock grazing.

Native vegetation is mainly western wheatgrass, needlegrasses, big bluestem, side-oats grama, blue grama, and native bluegrasses.

If the range has deteriorated, blue grama, junegrass, and native bluegrasses increase. Sleepygrass and annuals replace these grasses if the range has seriously deteriorated. Seeding is a good practice if the range is in poor condition. Seeding of the native vegetation is desirable, but the range can also be seeded with tame species of grasses such as Nordan crested wheatgrass, Russian wildrye, pubescent wheatgrass, or intermediate wheatgrass.

This complex is suited to the production of juniper and pinyon pine. It is capable of producing 4 cords per acre in a stand of trees that average 5 inches in diameter at a height of 1 foot. The limitations for the production of wood crops are the presence of stones on the surface and a high hazard of erosion. Stones on the surface can influence felling, yarding, and other operations involving the use of equipment. Special care must be taken to minimize erosion when harvesting timber.

This complex is relatively unproductive for vegetation, especially in times of drought, when annual production may be as low as 300 pounds per acre. Rangeland wildlife, such as antelope and scaled quail, can be encouraged by properly managing livestock grazing, installing livestock watering facilities, and reseeding range where needed.

survival are Rocky Mountain juniper, eastern redcedar, ponderosa pine, Siberian elm, Russian-olive, and hackberry. Shrubs that are best suited are skunkbush sumac, lilac, and Siberian peashrub.

These soils are suited to habitat for openland and rangeland wildlife. Rangeland wildlife, such as pronghorn antelope, can be encouraged by developing livestock watering facilities, properly managing livestock grazing, and reseeding range where needed.

These soils have a good potential for homesites. The main limitations, especially on the Peyton soil, are low bearing strength and frost-action potential. Buildings and roads can be designed to overcome these limitations. Access roads should have adequate cut-slope grade and be provided with drains to control surface runoff and keep soil losses to a minimum. Capability subclass VIe.

69—Peyton-Pring complex, 8 to 15 percent slopes. These gently to moderately sloping soils are on valley side slopes and on uplands. Elevation ranges from 6,800 to 7,600 feet. The average annual precipitation is about 17 inches, the average annual air temperature is about 43 degrees F, and the average frost-free period is about 120 days.

The Peyton soil makes up about 40 percent of the complex, the Pring soil about 30 percent, and other soils about 30 percent.

Included with these soils in mapping are areas of Holderness loam, 8 to 15 percent slopes; Tomah-Crowfoot loamy sands, 8 to 15 percent slopes; Kettle gravelly loamy sand, 8 to 40 percent slopes; and a few areas of Rock outcrop.

The Peyton soil is commonly on the less sloping part of the landscape. It is deep, noncalcareous, and well drained. It formed in alluvium and residuum derived from weathered, arkosic, sedimentary rock. Typically, the surface layer is grayish brown sandy loam about 12 inches thick. The subsoil, about 23 inches thick, is pale brown sandy clay loam in the upper 13 inches and pale brown sandy loam in the lower 10 inches. The substratum is pale brown sandy loam to a depth of 60 inches or more.

Permeability of the Peyton soil is moderate. Effective rooting depth is 60 inches or more. Available water capacity is high. Surface runoff is medium to rapid, and the hazard of erosion is moderate to high. Some gullies have developed along drainageways and livestock trails.

The Pring soil is deep, noncalcareous, and well drained. It formed in sandy sediment derived from weathered, arkosic, sedimentary rock. Typically, the surface layer is dark grayish brown coarse sandy loam about 4 inches thick. The substratum is dark grayish brown coarse sandy loam about 10 inches thick over pale brown gravelly sandy loam that extends to a depth of 60 inches or more.

Permeability of the Pring soil is rapid. Effective rooting depth is 60 inches or more. Available water capacity is moderate. Surface runoff is medium to rapid, and the hazard of erosion is moderate to high. Some gullies have developed along drainageways and livestock trails.

The soils in this complex are used as rangeland, for wildlife habitat, and for homesites.

These soils are well suited to the production of native vegetation suitable for grazing. The dominant native species are mountain muhly, bluestem grasses, needle-andthread, and blue grama. These soils are subject to invasion of Kentucky bluegrass and Gambel oak. Common forbs are hairy goldenrod, geranium, milkvetch, low larkspur, fringed sage, and buckwheat.

Properly locating livestock watering facilities helps to control grazing. Timely deferment of grazing is needed to protect the plant cover.

Windbreaks and environmental plantings generally are suited to these soils. Soil blowing is the main limitation to the establishment of trees and shrubs. This limitation can be overcome by cultivating only in the tree rows and leaving a strip of vegetation between the rows. Supplemental irrigation may be needed when planting and during dry periods. Trees that are best suited and have good survival are Rocky Mountain juniper, eastern redcedar, ponderosa pine, Siberian elm, Russian-olive, and hackberry. Shrubs that are best suited are skunkbush sumac, lilac, and Siberian peashrub.

These soils are well suited to wildlife habitat. They are best suited to habitat for openland and rangeland wildlife. Rangeland wildlife, such as pronghorn antelope, can be encouraged by developing livestock watering facilities, properly managing livestock grazing, and reseeding range where needed.

These soils have good potential for use as homesites. The main limitations are steepness of slope, limited ability to support a load, and frost-action potential. Buildings and roads can be designed to overcome these limitations. These soils also require special site or building designs because of the slope. Access roads should have adequate cut-slope grade, and drains should be provided to control surface runoff and keep soil losses to a minimum. Capability subclass VIe.

70—Pits, gravel. Gravel pits are in nearly level to rolling areas. They are open excavations several feet deep and commonly 5 acres or less in size.

Gravel pits are very low in natural fertility and are highly susceptible to soil blowing. A cover of weeds or straw helps to control erosion.

Windbreaks and environmental plantings generally are not suited to these areas. Onsite investigation is needed to determine if plantings are feasible. Capability subclass VIIIs.

71—Pring coarse sandy loam, 3 to 8 percent slopes. This deep, noncalcareous, well drained soil formed in sandy sediment derived from arkosic sedimentary rock on valley side slopes and on uplands. Elevation ranges from 6,800 to 7,600 feet. The average annual precipitation is about 17 inches, the average annual air temperature is about 43 degrees F, and the average frost-free period is about 120 days.

Typically, the surface layer is dark grayish brown coarse sandy loam about 4 inches thick. The substratum is dark grayish brown coarse sandy loam about 10 inches thick over pale brown gravelly sandy loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Alamosa loam, 1 to 3 percent slopes, along drainageways; Cruckton sandy loam, 1 to 9 percent slopes; Peyton sandy loam, 1 to 5 percent slopes; Peyton sandy loam, 5 to 9 percent slopes; and Tomah-Crowfoot loamy sands, 3 to 8 percent slopes. In some places arkose beds of sandstone and shale are at a depth of 0 to 40 inches.

Permeability of this Pring soil is rapid. Effective rooting depth is 60 inches or more. Available water capacity is moderate. Surface runoff is medium, and the hazard of erosion is moderate.

Almost all areas of this soil are used as rangeland. Some areas previously cultivated have been reseeded to grass. This soil is also used for wildlife habitat and homesites.

This soil is well suited to the production of native vegetation suitable for grazing by cattle and sheep. Rangeland vegetation is mainly mountain muhly, little bluestem, needleandthread, Parry oatgrass, and junegrass.

Deferment of grazing in spring helps to maintain vigor and production of the cool-season bunchgrasses. Fencing and properly locating livestock watering facilities help to control grazing.

Windbreaks and environmental plantings generally are suited to this soil. The hazard of soil blowing is the main limitation to the establishment of trees and shrubs. This limitation can be overcome by cultivating only in the tree rows and leaving a strip of vegetation between the rows. Supplemental irrigation may be needed when planting and during dry periods. Trees that are best suited and have good survival are Rocky Mountain juniper, eastern redcedar, ponderosa pine, Siberian elm, Russian-olive, and hackberry. Shrubs that are best suited are skunkbush sumac, lilac, and Siberian peashrub.

This soil is suited to habitat for openland and rangeland wildlife. Rangeland wildlife, such as pronghorn antelope, can be encouraged by developing livestock watering facilities, properly managing livestock grazing, and reseeding range where needed.

This soil is well suited for use as homesites. Erosion control practices are needed to control soil blowing and water erosion on construction sites where the ground cover has been removed. Capability subclass IVe.

72—Pring coarse sandy loam, 8 to 15 percent slopes. This deep, noncalcareous, well drained soil formed in sandy sediment derived from arkosic sedimentary rock on valley side slopes and on uplands. Elevation ranges from 6,800 to 7,600 feet. The average annual precipitation is about 17 inches, the average annual air temperature is about 43 degrees F, and the average frost-free period is about 120 days.

Typically, the surface layer is dark grayish brown coarse sandy loam about 4 inches thick. The substratum is dark grayish brown coarse sandy loam about 10 inches thick over pale brown gravelly sandy loam that extends to a depth of 60 inches or more.

Included with this soil in mapping are small areas of Cruckton sandy loam, 1 to 9 percent slopes; Peyton sandy

loam, 5 to 9 percent slopes; and Tomah-Crowfoot loamy sands, 8 to 15 percent slopes. Arkose beds of sandstone and shale are at a depth of 0 to 40 inches in some places.

Permeability of this Pring soil is rapid. Effective rooting depth is 60 inches or more. Available water capacity is moderate. Surface runoff is medium, and the hazard of erosion is moderate. Some gullies have developed along drainageways.

Almost all areas of this soil are used as rangeland. Some areas previously cultivated have been reseeded to grass. This soil is also used for wildlife habitat and as homesites.

This soil is well suited to the production of native vegetation suitable for grazing by cattle and sheep. The native vegetation is mainly mountain muhly, little bluestem, needleandthread, Parry oatgrass, and junegrass.

Deferment of grazing in spring helps to maintain the vigor and production of the cool-season bunchgrasses. Fencing and properly locating livestock watering facilities help to control grazing.

Windbreaks and environmental plantings generally are suited to this soil. The hazard of soil blowing is the main limitation to the establishment of trees and shrubs. This limitation can be overcome by cultivating only in the tree rows and leaving a strip of vegetation between the rows. Supplemental irrigation may be needed when planting and during dry periods. Trees that are best suited and have good survival are Rocky Mountain juniper, eastern redcedar, ponderosa pine, Siberian elm, Russian-olive, and hackberry. Shrubs that are best suited are skunkbush sumac, lilac, and Siberian peashrub.

This soil is suited to habitat for openland and rangeland wildlife habitat. Rangeland wildlife, such as pronghorn antelope, can be encouraged by developing livestock watering facilities, properly managing livestock grazing, and reseeding range where needed.

This soil has good potential for urban uses. The main limitation is slope. Special site or building designs are needed because of the slope. Access roads must have adequate cut-slope grade and be provided with drains to control surface runoff. Capability subclass VIe.

73—Razor clay loam, 3 to 9 percent slopes. This moderately deep, well drained, clayey soil formed in residuum derived from calcareous shale on uplands. Elevation ranges from 5,300 to 6,100 feet. The average annual precipitation is about 13 inches, the average annual air temperature is about 49 degrees F, and the average frost-free period is about 145 days.

Typically, the surface layer is light brownish gray clay loam about 3 inches thick. The subsoil is grayish brown heavy clay loam or clay about 15 inches thick. The substratum is grayish brown clay that grades to calcareous shale at a depth of about 31 inches. Visible lime is in the lower part of the subsoil and in the substratum.

Included with this soil in mapping are small areas of Midway clay loam, 3 to 25 percent slopes; Heldt clay loam, 0 to 3 percent slopes; and Stoneham sandy loam, 3 to 8 percent slopes.



Figure 1: Facing north from existing gravel driveway



Figure 2: Facing south from existing gravel road



Figure 3: Facing north from existing gravel driveway



Figure 4: Facing west adjacent to existing gravel road



Figure 5: Facing east from existing gravel road



Figure 6: Facing east from existing drainage path to livestock pond



Figure 7: Facing west from existing drainage path to livestock pond



Figure 8: Facing southeast from existing drainage path to livestock pond



Figure 9: Facing southeast from existing drainage path to livestock pond



Figure 10: Facing east toward existing livestock pond



Figure 11: Facing east from existing livestock pond










Figure 12: Downstream of existing livestock pond facing southeast



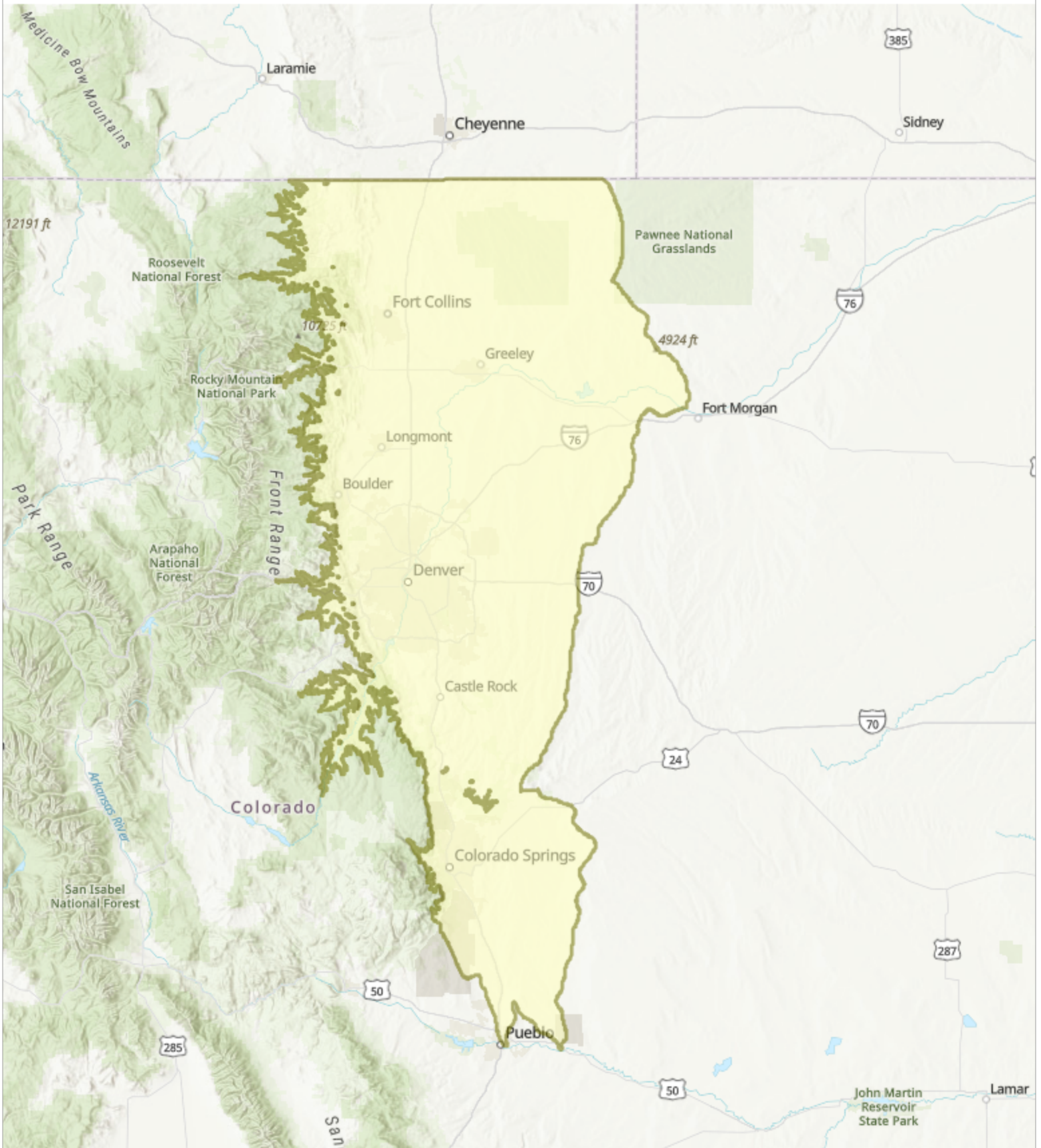
August 10, 2023

Wetlands

- | | | | | | |
|---|--------------------------------|---|-----------------------------------|---|----------|
|  | Estuarine and Marine Deepwater |  | Freshwater Emergent Wetland |  | Lake |
|  | Estuarine and Marine Wetland |  | Freshwater Forested/Shrub Wetland |  | Other |
| | |  | Freshwater Pond |  | Riverine |

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

Preble's Meadow Jumping Mouse- Colorado Parks & Wildlife



Biological Resources of El Paso County

Located in east-central Colorado, El Paso County encompasses more than 2,158 square miles and is located at the interface of the Rocky Mountains and the great plains. Elevation within El Paso County ranges from around 5,100 feet near the southern border at Black Squirrel Creek to 14,115 feet on the summit of Pikes Peak.

This significant elevational variation provides for a wide array of biological diversity within the Pikes Peak region. Habitat within the county ranges from the grassy plains in the east to the alpine tundra found on Pikes Peak, and within these habitats, species range from pronghorn and rattlesnakes, to black bear and mountain lions, to bighorn sheep and pikas. El Paso County's diversity provides its citizens unending opportunities to observe and partake in the natural wonders present at every turn.

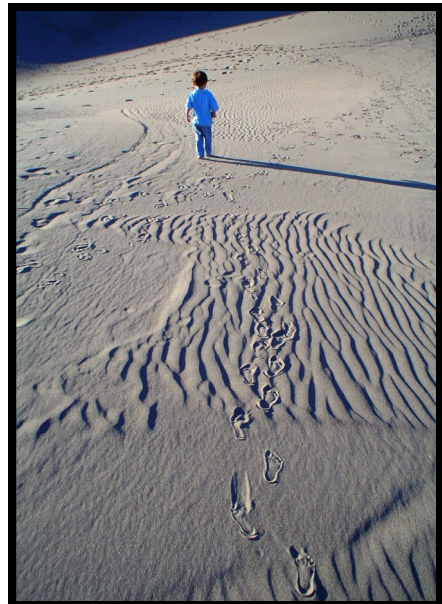




Have you ever stood in reverence of the beauty of Pikes Peak, taking in the glory of America's mountain? Marveled at the majesty of a bald eagle soaring high above? Or, enjoyed the fluttering of songbirds delicately balancing on the feeder outside your window? These are examples of our natural heritage.

Citizens of Colorado are extremely lucky in that our natural resources encompass ecosystems ranging from tallgrass prairie to alpine peaks, rugged canyons to sagebrush deserts, and dense forests to open tundra. Within each of these unique ecosystems, we are given the opportunity to glimpse into the lives of the living things that inhabit them.

While it is easy to see the need to care for and protect the eagles, deer and Rocky mountain columbine, the value of the smaller, not so easily observed plant and animal species is less prominent. The world is shared with other creatures, and the stewardship of this planet is our responsibility.



There are numerous practical reasons why the protection of species and their habitats is important to humankind. The natural world exists within a complex network of delicately balanced plants and animals. It is unknown to what extent the removal of just one species will affect that balance. An example is a car engine. It may go for a long time with various parts leaking and faltering, but at some point, the failure of one part, even a seemingly inconsequential one, may leave you stranded.



Healthy natural diversity lends itself to advances in medicine. For example, cancer-fighting drugs have been developed from wild plants, the venom of gila monsters has been studied and synthesized into treatments for type 2 diabetes, and bat saliva has been studied for its anti-coagulation properties for use in the treatment of stroke victims. A cure for cancer or Alzheimer's may lie in the compounds present in that nondescript plant on the hillside.



A diverse natural world is important to agriculture. Worldwide, the consumption of mass quantities of insects by bats minimizes the need for chemical insecticides and undiscovered plants may exist which could hold future solutions to food shortages.



The health of plants and animals provide indicators of the health of the world in which we, too, live. If species are extinguished, no matter how insignificant they may seem, we will never know what opportunities may have been lost.



Federally Threatened and Endangered Species



The United States Congress passed the Endangered Species Act (ESA) (16 U.S.C.A §§1531-1543) in 1973 in order to protect various species of plants, invertebrates, fish and other wildlife from extinction. Protections under the ESA extend to the habitats on which these species depend, as well.

The ESA is administered at the federal level by the U.S. Fish and Wildlife Service (terrestrial and freshwater species) and the National Marine Fisheries Service (marine species).



Under the ESA, a species may be listed as either endangered if it is in danger of extinction throughout all or a significant portion of its range or threatened if it is likely to become endangered within the foreseeable future.



The ESA makes it unlawful for anyone to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect a listed animal or significantly modify its habitat. Following are the three listed species having the greatest potential to be encountered within El Paso County.



Preble's Meadow Jumping Mouse (Threatened)

The Preble's meadow jumping mouse (*Zapus hudsonius preblei*) (Preble's mouse) is a small rodent approximately nine inches long with very long hind feet designed for jumping. The Preble's mouse is nocturnal with a diet of insects, seeds, fungi and fruit.

Habitat for the species consists of well-vegetated riparian corridors and adjacent upland habitats. Riparian corridors within the Air Force Academy are examples of good quality Preble's mouse habitat. The species is found in the foothills along the eastern edge of the Front Range from southeastern Wyoming to Colorado Springs.



The Preble's mouse was listed as a threatened species under the ESA in May 1998 due to habitat loss and degradation caused by agricultural, residential, commercial and industrial development.

Currently, any ground-disturbing activities within El Paso County that occur within 300 feet of a stream or the edge of the 100-year floodplain, whichever is greater, must address the Preble's mouse. Project proponents planning work within these areas should contact the U.S. Fish and Wildlife Service's office in Denver with details regarding the proposed project.



Mexican Spotted Owl

(Threatened)

The Mexican spotted owl (*Strix occidentalis lucida*) (Spotted owl) is a large bird ranging in size from 16-19 inches long. As in many owl species, females tend to be larger than males. The Spotted owl is mottled with irregular brown and white spots on its head, back and abdomen. This is the only species of large owl with dark eyes.



Spotted owl habitat consists of rocky canyons and old-growth forested mountains. The species ranges in scattered areas from southern Utah and Colorado to central Mexico. Colorado Breeding Bird Atlas historical records indicate possible breeding populations occurring in the southern base of Pikes Peak.

The Spotted owl was listed as a threatened species under the ESA in 1993 due to low population numbers and habitat loss. Proposed projects in the southwestern portion of El Paso County that may disturb forested mountains or rocky canyons should be assessed for the presence of Spotted owls.



Greenback Cutthroat Trout (Threatened)

The greenback cutthroat trout (*Oncorhynchus clarki stomias*) (Greenback trout) was named as Colorado's state fish in 1994. The species has dark, round spots on its sides and tail and gets its name from the blood-red stripes on each side of the throat.



Due to the introduction of non-native trout species, overharvest and habitat alternation, the Greenback trout was listed as an endangered species in 1973. Successful breeding projects led to the downlisting of the species from endangered to threatened in 1978.

Currently, Bear Creek in El Paso County contains the only known naturally reproducing population of genetically pure Greenback trout. Efforts are underway to repopulate this species in its historical range in the South Platte river system. El Paso County's Bear Creek greenbacks are integral to the success of these efforts.



Other Federally Listed Species in El Paso County



As well as the previous three species, the U.S. Fish and Wildlife Service lists several additional threatened species for El Paso County. Although these are uncommon species occupying very specialized environments and the likelihood of encountering them is minimal, all protections afforded under the ESA are still extended to them. These species include the Pawnee montane mountain skipper (*Hesperia leonardus montana*), Ute-ladies' tresses orchid (*Spiranthes diluvialis*) and western prairie fringed orchid (*Platanthera praeclara*).

