



SMITH ENVIRONMENTAL AND ENGINEERING
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NATURAL FEATURES REPORT
COTTAGES AT MESA RIDGE
EL PASO COUNTY, COLORADO



WWW.SMITHDELIVERS.COM

250 Perry Lane Dacono, CO 80514 phone: 720.887.4928 fax: 720.887.4680

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EL PASO COUNTY, COLORADO

Prepared for:

Goodwin Knight, LLC
8605 Explorer Drive, #250
Colorado Springs, CO 80920

Prepared by:

Smith Environmental and Engineering
250 Perry Lane
Dacono, CO 80514
(720) 887-4928

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1.0 INTRODUCTION

Smith Environmental and Engineering (SMITH) has prepared this natural features resources report for the proposed Cottages at Mesa in El Paso County, Colorado in July 2021. The assessment includes a review of the topography, soils, hydrology, and vegetation on the property. This report was written to support the PUD submittal to El Paso County and will serve as a guide for further action, if needed, to comply with City, State, and Federal regulations or policy.

1.1 LOCATION

The Study Area (Figure 1) consists of approximately 13 acres located northwest of the intersection of Mesa Ridge Parkway and S Powers Boulevard in unincorporated El Paso County, Colorado. The Study Area occurs at the corner where Sections 20, 21, 28, and 29 of Township 15 South, Range 65 West meet. It is located on the Fountain US Geological Survey (USGS) quadrangle at 38.721538 degrees north, 104.683862 degrees west with an elevation range from approximately 5,765 to 5,800 ft. The Study Area is currently vacant, but it has been subject to ongoing disturbance during development in the local area, most notably in 2019 during the construction of apartments to the southwest. The surrounding area is primarily residential with some remaining vacant land east of S Powers Boulevard.



2.0 NATURAL FEATURES

2.1 LANDFORM

Historically, the Study Area sloped to the southeast towards the Jimmy Camp Creek drainage, and this same general topographic setting persists (Appendix B). The area is characterized by rolling hills, but no notable geologic or topographic features occur. From higher points within the Study Area, there are significant views to the southeast, an area that remain relatively undeveloped (Photo 1 in Appendix A).

The local topography has been substantially altered over time by staging and stockpiling for construction on adjacent properties (Photo 7 in Appendix A and Appendix C). There are areas on the southern end that were used for construction vehicle and equipment staging, and it maintains a very planar surface with some gravel remaining. In other areas, specifically in the northwest and central portions of the Study Area, there is evidence of soil stockpiling that has altered drainage patterns, soil conditions, and vegetation (discussed below). There is also evidence of dumping throughout the site (e.g., landscaping, household, and construction materials), but no obvious signs of hazardous materials.

2.2 HYDROLOGY

Waters of the US (WOTUS) are protected under Section 404 of the Clean Water Act (CWA). The US Army Corps of Engineers and the Environmental Protection Agency are responsible for implementation and have defined aquatic features that fall under the jurisdiction of the CWA. In general, water features, including wetlands, are considered to be WOTUS if they have a surface water or groundwater connection to traditionally navigable waters, though many exclusions exist for ditches, wastewater treatment systems, converted cropland, etc.

There are no mapped natural drainages (Appendix B), and the only irrigation feature present is the Fountain Ditch, an aboveground concrete-lined structure (Photo 3 in Appendix A and Appendix D). The ditch is unlikely to be considered a WOTUS, and segments of the feature have already been piped, buried, or otherwise modified within and adjacent to the Study Area. The ditch does not support hydrophytic vegetation or hydric soils due to the concrete lining, and therefore, the feature is not considered a wetland.

There are several drainage indicators throughout the Study Area, mostly due to the haphazard nature of the current topography. At the north end of the Study Area, where slopes are steep and the surface is largely unvegetated, stormwater runoff is cutting informal channels that convey surface flows south, approximately following a two-track road (Photo 5 in Appendix A). During the site visit, there was ponding in one area along this road, likely representing a low-spot or impermeable soil profile. Additionally, at the southeastern edge of the Study Area, there is vegetation that indicates wetter conditions are present (i.e., willows, cottonwoods, saltcedars). This area is likely receiving stormwater runoff from adjacent areas, but it is also close to the Fountain Ditch. It is possible that seepage from the ditch is also contributing to the wetter conditions. However, there is still not sufficient moisture to support the development of wetlands, and therefore the area would not represent a jurisdictional WOTUS.

2.3 SOILS

Soils within the Study Area are mapped primarily as Nelson-Tassel fine sandy loams, 3 to 18 percent slopes, with a small amount of Stoneham sandy loam, 3 to 8 percent slopes, in the northern extent (NRCS 2021b, Appendix E). Nelson-Tassel soils are found in hills and are well drained. Available water capacity is low, and it does not carry a hydric soil indicator status, meaning it is unlikely to support wetlands. Minor incursions of Pleasant soils can occur in depressions, which do support wetlands. Stoneham soils are similar in that they are found in hills, are well drained, and are not hydric, but they have a high available water capacity. They also can include minor incursions of Pleasant soils. Most notably, neither soil has a farmland classification and as such would not be afforded any protections or special status for agricultural production.

However, NRCS soil mapping is done at a coarse scale and does not always accurately represent soil conditions on small properties. This effect becomes more significant for properties that have experienced significant disturbance over time. While deeper soil horizons may retain some characteristics of the original soil types, topsoil conditions throughout the Study Area have been substantially altered by construction use, notably for staging and stockpiling.

2.4 VEGETATION

The NRCS uses the concept of Ecological Sites to describe the ecological potential and ecosystem dynamics of land areas. The Ecological Site that encompasses the majority of the Study Area is the Shaly Plains. The reference condition for the Shaly Plains Ecological Site is characterized by warm-season bunchgrasses (e.g., alkali sacaton, blue grama, sideoats grama) and cool-season midgrasses (e.g., western wheatgrass, green needlegrass). While grasses are dominant, shrubs and forbs can comprise of up to 35 percent of the total vegetation biomass (NRCS 2021a).

The current condition of the Study Area no longer represents a reference condition; per the Ecological Site Description, the Study Area most closely resembles the Increased Bare Ground state (NRCS 2021a). Vegetation in the Study Area consists of an abundance of weedy forbs (mostly nonnative) with a mix of native and nonnative grasses (Table 1). Blue grama (*Bouteloua gracilis*), sideoats grama (*Bouteloua curtipendula*), and western wheatgrass (*Pascopyrum smithii*) were the only grasses expected from the reference condition. Nonnative grasses, most notably smooth brome (*Bromus inermis*), and forbs that favor highly disturbed areas have assumed dominance. There were only a handful of trees and shrubs, including a small patch of cottonwoods (*Populus deltoides*) and saltcedar (*Tamarisk* spp.) in a low spot where runoff collects, and Siberian elms (*Ulmus pumila*), rabbitbrush (*Ericameria nauseosa*), and saltbrush (*Atriplex canescens*) scattered in drier areas.

Table 1. Plant Species Observed in the Study Area

Scientific Name	Common Name	Native (Y/N)	Noxious Weed List
Graminoids			
<i>Agropyron cristatum</i>	Crested wheatgrass	N	-
<i>Bouteloua curtipendula</i>	Sideoats grama	Y	-
<i>Bouteloua gracilis</i>	Blue grama	Y	-
<i>Bromus inermis</i>	Smooth brome	N	-

Scientific Name	Common Name	Native (Y/N)	Noxious Weed List
<i>Hesperostipa comata</i>	Needle and thread	Y	-
<i>Hordeum jubatum</i>	Foxtail barley	Y	-
<i>Pascopyrum smithii</i>	Western wheatgrass	Y	-
Forbs			
<i>Ambrosia trifida</i>	Ragweed	Y	-
<i>Carduus nutans</i>	Musk thistle	N	B
<i>Centaurea diffusa</i>	Diffuse knapweed	N	B
<i>Chenopodium album</i>	Lambsquarters	Y	-
<i>Cirsium arvense</i>	Canada thistle	N	B
<i>Convolvulus arvensis</i>	Field bindweed	N	C
<i>Dipsacus fullonum</i>	Common teasel	N	B
<i>Grindelia squarrosa</i>	Curlycup gumweed	Y	-
<i>Helianthus</i> spp.	Sunflower	Y	-
<i>Kochia scoparia</i>	Kochia	N	-
<i>Lactuca serriola</i>	Prickly lettuce	N	-
<i>Medicago sativa</i>	Alfalfa	N	-
<i>Melilotus officinalis</i>	Sweetclover	N	-
<i>Oenothera curtiflora</i>	Velvetweed	Y	-
<i>Rumex crispus</i>	Curly dock	N	-
<i>Salsola tragus</i>	Russian thistle	N	-
<i>Tragopogon dubius</i>	Salsify	N	-
Shrubs/trees/cacti			
<i>Atriplex canescens</i>	Fourwing saltbrush	Y	-
<i>Ericameria nauseosa</i>	Rabbitbrush	Y	-
<i>Opuntia polyacantha</i>	Prickly pear	Y	-
<i>Populus deltoides</i>	Plains cottonwood	Y	-
<i>Salix</i> spp.	Willow	Y	-
<i>Tamarix</i> spp.	Saltcedar	N	B
<i>Ulmus pumila</i>	Siberian elm	N	-
<i>Yucca glauca</i>	Yucca	Y	-

2.5 WILDFIRE RISK

SMITH utilized the Colorado Forest Atlas (2021), specifically the Wildfire Risk Viewer and Risk Reduction Planner, to analyze the potential for wildfires (and their severity) within the Study Area. Three datasets were analyzed: Wildfire Risk, Fire Intensity Scale, and Surface Fuels. During the site investigation, SMITH assessed the existing vegetation, surface fuels, and topography of the Study Area to verify the accuracy of the information contained the atlas and make other site-specific observations.

The Colorado Forest Atlas mapped the surface fuels as predominantly “low load, dry climate grass” (Appendix F). SMITH was generally able to verify this mapping designation, though weeds were more abundant than would be expected in an undisturbed grassland. Though some shrubs and trees were

present, most do not contribute significantly to surface fuels. Notably, no conifers or oaks were present, which can yield high loads of inflammable material.

The Wildfire Risk and Fire Intensity Scale maps (Appendix F) expand upon the fuel map and describe the fire regime for this area. Both wildfire risk and fire intensity are expected to be moderate for the Study Area. This is common for a grassland ecosystem. Historically, fires in this area would have been common with low to moderate intensity. Many grasses and forbs in these systems are adapted to fire and can actually become more abundant and robust following a ground fire. Because the Study Area lacks a tree canopy, fires would remain low to the ground and have little chance to become severe.

Additionally, the Study Area has ready vehicle access and no barriers to movement such as cliffs or steep embankments. Fire crews could easily access this site and would have few impediments to firefighting or containment measures. Mesa Ridge Parkway and S Powers Boulevard would provide fuel breaks as well. Any fire would likely remain a low to moderate intensity burn that could be appropriately managed under good weather conditions.

3.0 SUMMARY

After evaluating the Study Area, SMITH makes the following conclusions:

1. The topography in the Study Area has been altered over time by land use, most notably by construction of the ditch, roadway, and housing developments. In recent years, staging and stockpiling associated with construction activities have resulted in significant changes.
2. The only hydrologic feature mapped in the Study Area is the Fountain Ditch, which is a concrete-lined irrigation structure unlikely to have jurisdictional status under the Clean Water Act. Drainage features formed by surface flows and a small area supporting some hydrophytic plant species were observed, but none met the criteria to be mapped as wetlands or water bodies.
3. Soils within the Study Area are mapped as Nelson-Tassel fine sandy loams, 3 to 18 percent slopes and Stoneham sandy loam, 3 to 8 percent slopes (NRCS 2021b). Land use in the Study Area has likely altered many of the characteristics of the topsoil.
4. The vegetation within the Study Area represents an altered state from the reference condition for the local area. While some native grasses and forbs occur, much of the Study Area is dominated by naturalized grasses and weedy forbs.
5. The wildfire risk and expected wildfire intensity in the Study Area are moderate. The surface fuels consist of grasses and few shrubs. The Study Area has access for emergency vehicles and the adjacent roadways provide significant fuel breaks.

4.0 REFERENCES

Colorado State Forest Service. 2021. Colorado Forest Atlas (Information Portal). Risk Reduction Planner. Available online at <https://coloradoforestatlas.org/>. Accessed August 5, 2021.

NRCS. 2021a. Ecological site R067BY045CO, Shaly Plains. Available online at: <https://edit.jornada.nmsu.edu/catalogs/esd/067B/R067BY045CO#physiography>. Accessed August 5, 2021.

NRCS. 2021b. Web Soil Survey. Available online at <http://websoilsurvey.nrcs.usda.gov/>. Accessed August 5, 2021.

APPENDIX A – PHOTOS



Photo 1. View looking south across the Study Area. Stockpiled soils (mounds) are visible adjacent to the two-track. The view to the southeast is just visible at the top right of the photo.



Photo 2. View looking west across the Study Area. The darker green vegetation is kochia, a weedy forb.



Photo 3. View looking northeast along the Fountain Ditch.



Photo 4. View looking northwest towards a small, treed area with cottonwoods and saltcedar.



Photo 5. View of a drainage feature observed near the center of the Study Area.

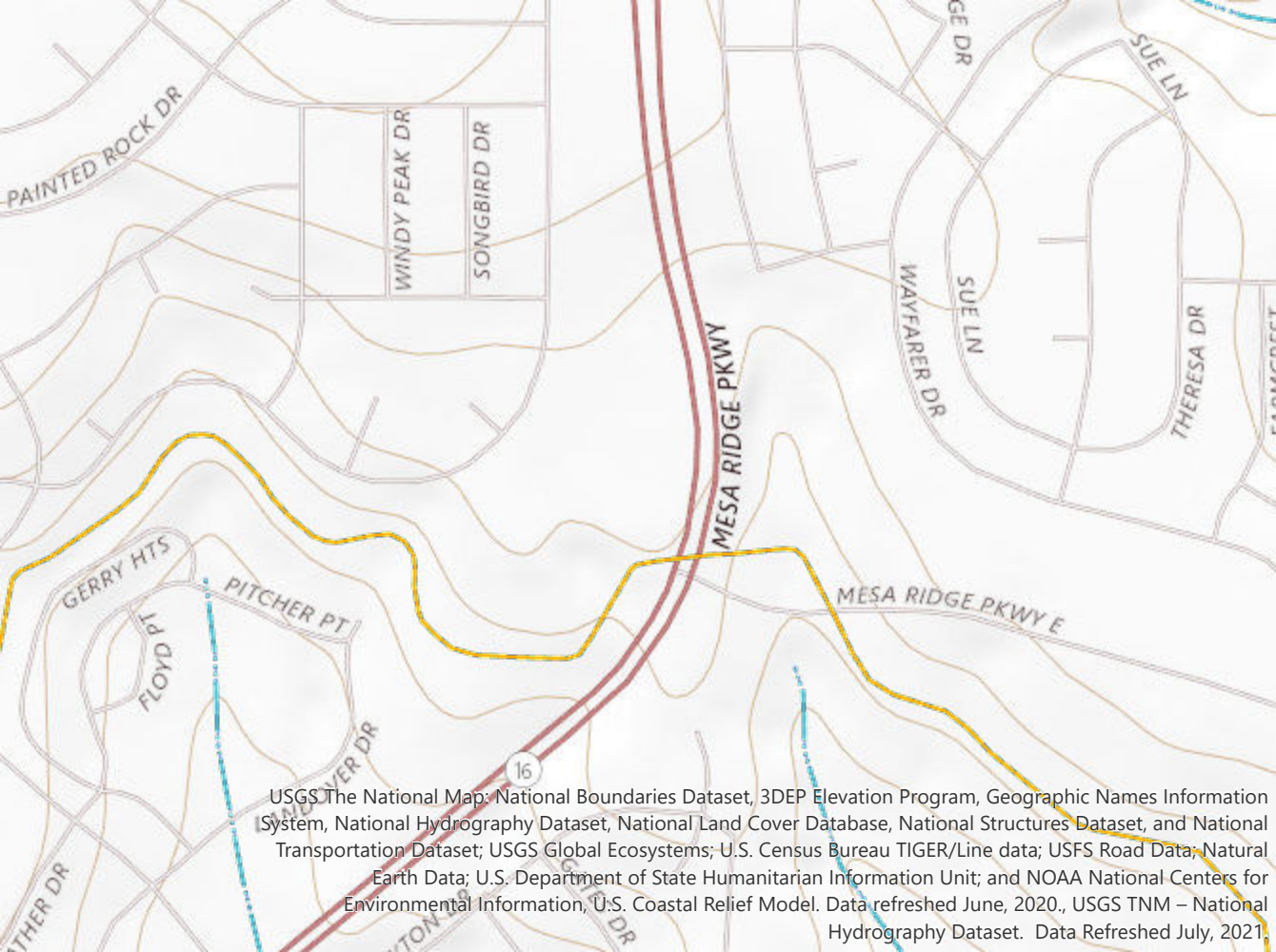


Photo 6. View of a ponded area along the two-track near the south-central portion of the Study Area.



Photo 7. A 2019 aerial image of the Study Area showing active use for construction staging and significant surface disturbance.

APPENDIX B: TOPOGRAPHIC MAP



USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed June, 2020., USGS TNM – National Hydrography Dataset. Data Refreshed July, 2021.

APPENDIX C: CURRENT SITE PLAN WITH CONTOURS

Total Site Area (ac)	10.218
Density DU/Ac	11.94
Max Density (RM-12) DU/Ac	12



APPENDIX D: NATIONAL WETLAND INVENTORY MAP



U.S. Fish and Wildlife Service

National Wetlands Inventory

Cottages at Mesa Ridge



August 5, 2021

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond

- Lake
- Other
- 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.

APPENDIX E: WEB SOIL SURVEY MAP

Soil Map—El Paso County Area, Colorado (Cottages at Mesa Ridge)



Soil Map—El Paso County Area, Colorado
(Cottages at Mesa Ridge)

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 18, Jun 5, 2020

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

Date(s) aerial images were photographed: Aug 14, 2018—Sep 23, 2018

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

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
31	Fort Collins loam, 3 to 8 percent slopes	0.8	1.1%
56	Nelson-Tassel fine sandy loams, 3 to 18 percent slopes	51.1	65.4%
75	Razor-Midway complex	1.6	2.1%
86	Stoneham sandy loam, 3 to 8 percent slopes	24.6	31.5%
Totals for Area of Interest		78.2	100.0%

APPENDIX F – COLORADO FOREST ATLAS RESULTS



Colorado Wildfire Risk Public Viewer

<https://co-pub.coloradoforestatlas.org>

Wildfire Risk

The overall composite risk occurring from a wildfire derived by combining Burn Probability and Values at Risk Rating.

Created On:

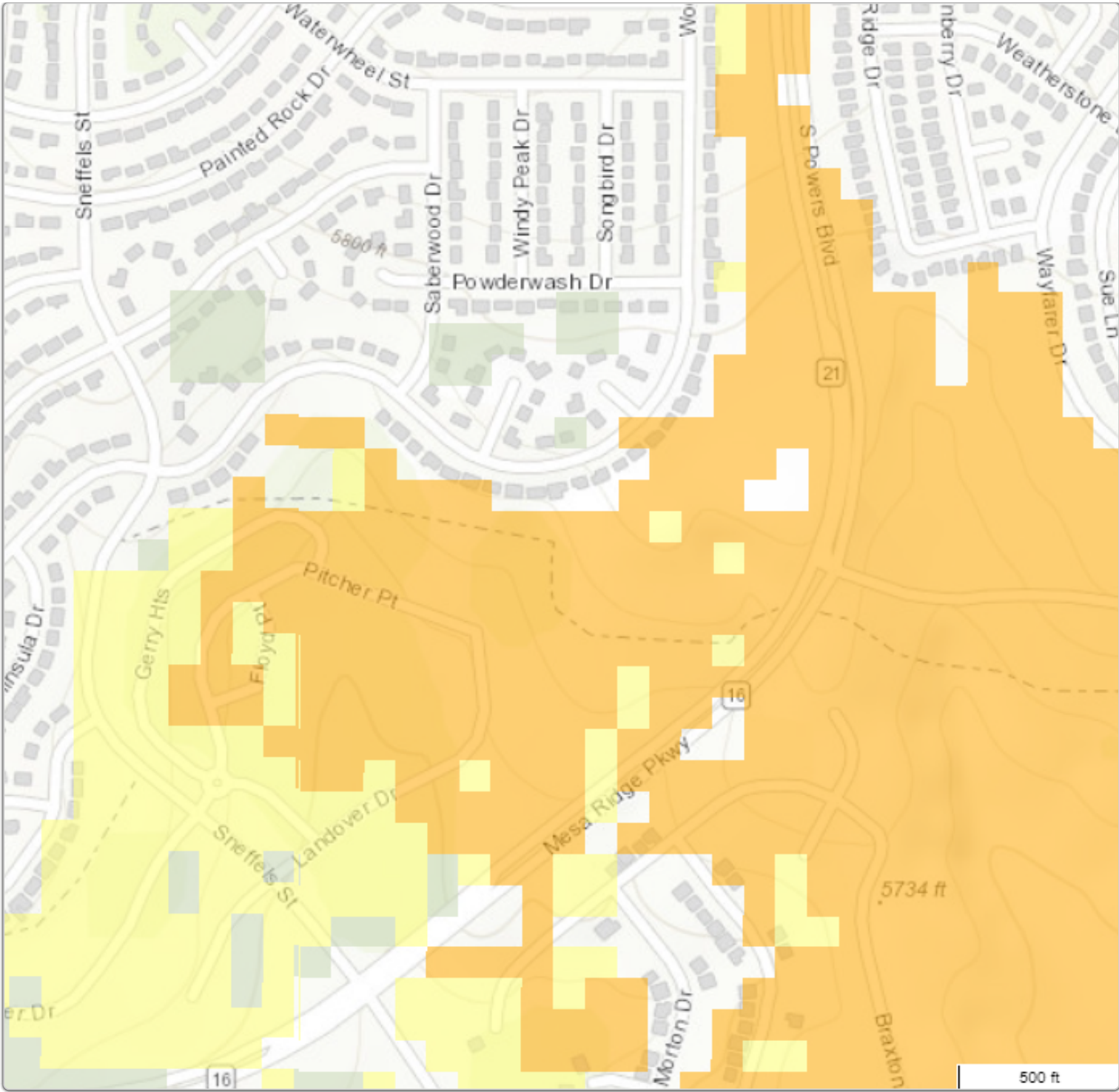
8/5/2021, 8:05 PM

Disclaimer

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Legend

<https://co-pub.coloradoforestatlas.org>

Wildfire Risk

-  Lowest Risk
-  Low Risk
-  Moderate Risk
-  High Risk
-  Highest Risk

County Boundaries

-  < 1:1,500,000



Colorado Wildfire Risk Public Viewer

<https://co-pub.coloradoforestatlas.org>

Surface Fuels

Characterization of surface fuel models that contain the parameters for calculating fire behavior outputs.

Created On:

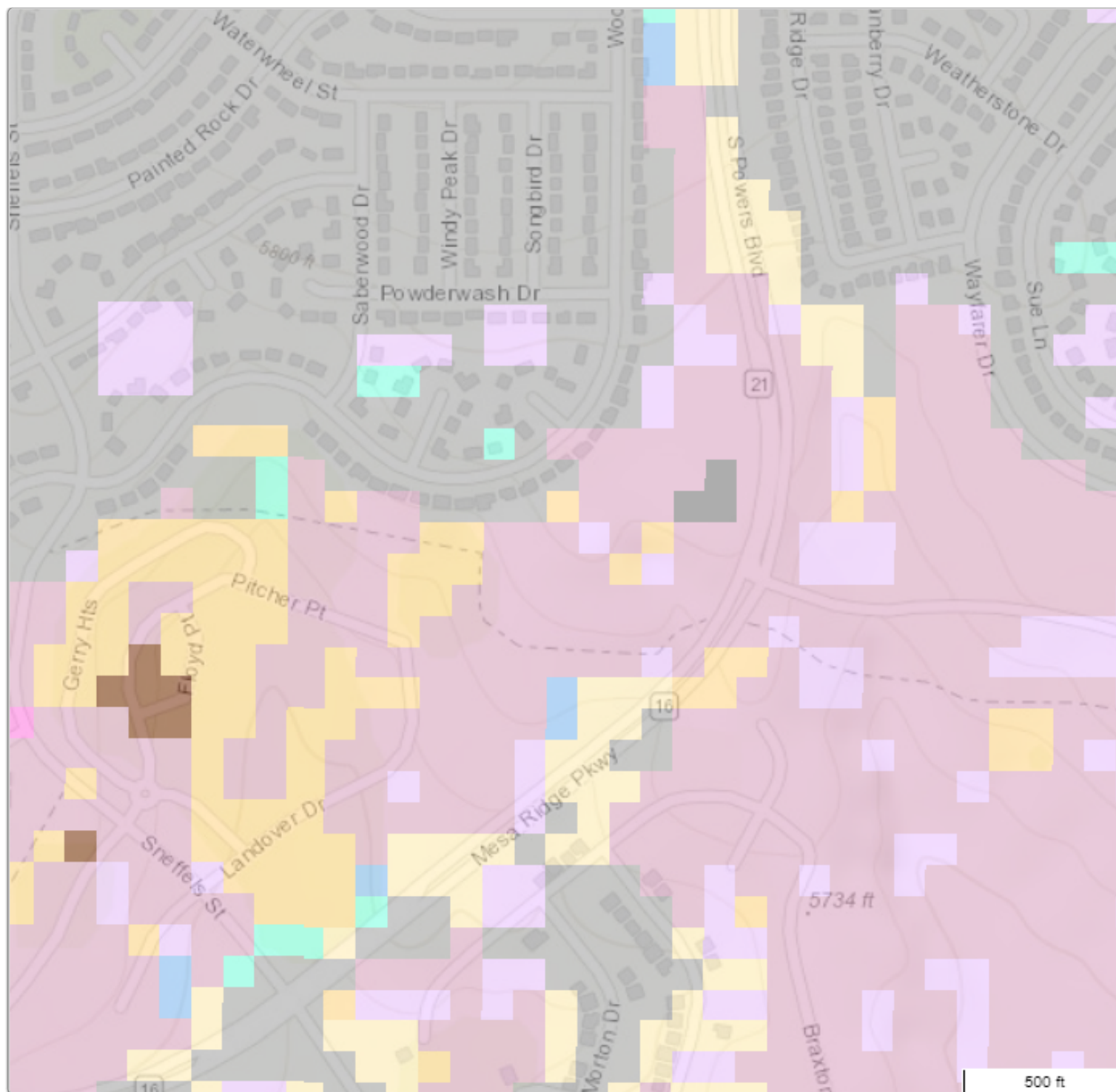
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Surface Fuels

- NB 91 - Urban/Developed
- NB 92 - Snow/Ice
- NB 93 - Agriculture
- NB 98 - Water
- NB 99 - Barren
- GR 1 - Short, sparse, dry climate grass
- GR 2 - Low load, dry climate grass
- GR 3 - Low load, very coarse, humid climate grass
- GR 4 - Moderate load, dry climate grass
- GR 1 - GT 10,000 ft elevation
- GR 2 - GT 10,000 ft elevation
- GS 1 - Low load, dry climate grass-shrub
- GS 2 - Moderate load, dry climate grass-shrub
- GS 1 - GT 10,000 ft elevation
- SH 1 - Low load, dry climate shrub
- SH 2 - Moderate load, dry climate shrub
- SH 3 - Moderate load, humid climate shrub
- SH 5 - High load, humid climate shrub
- SH 7 - Very high load, dry climate shrub
- SH 7 - Oak Shrubland without changes
- TU 1 - Light load, dry climate timber-grass-shrub
- TU 2 - Moderate load, humid climate timber-shrub
- TU 5 - Very high load, dry climate timber-shrub
- TL 1 - Low load, compact conifer litter
- TL 2 - Low load, broadleaf litter
- TL 3 - Moderate load, conifer litter
- TL 4 - Small downed logs
- TL 5 - High load, conifer litter
- TL 6 - Moderate load, broadleaf litter
- TL 7 - Large downed logs
- TL 8 - Long-needle litter
- TL 9 - Very high load, broadleaf litter

County Boundaries

 < 1:1,500,000



Colorado Wildfire Risk Public Viewer

<https://co-pub.coloradoforestatlas.org>

Fire Intensity Scale

Quantifies the potential fire intensity by orders of magnitude.

Created On:

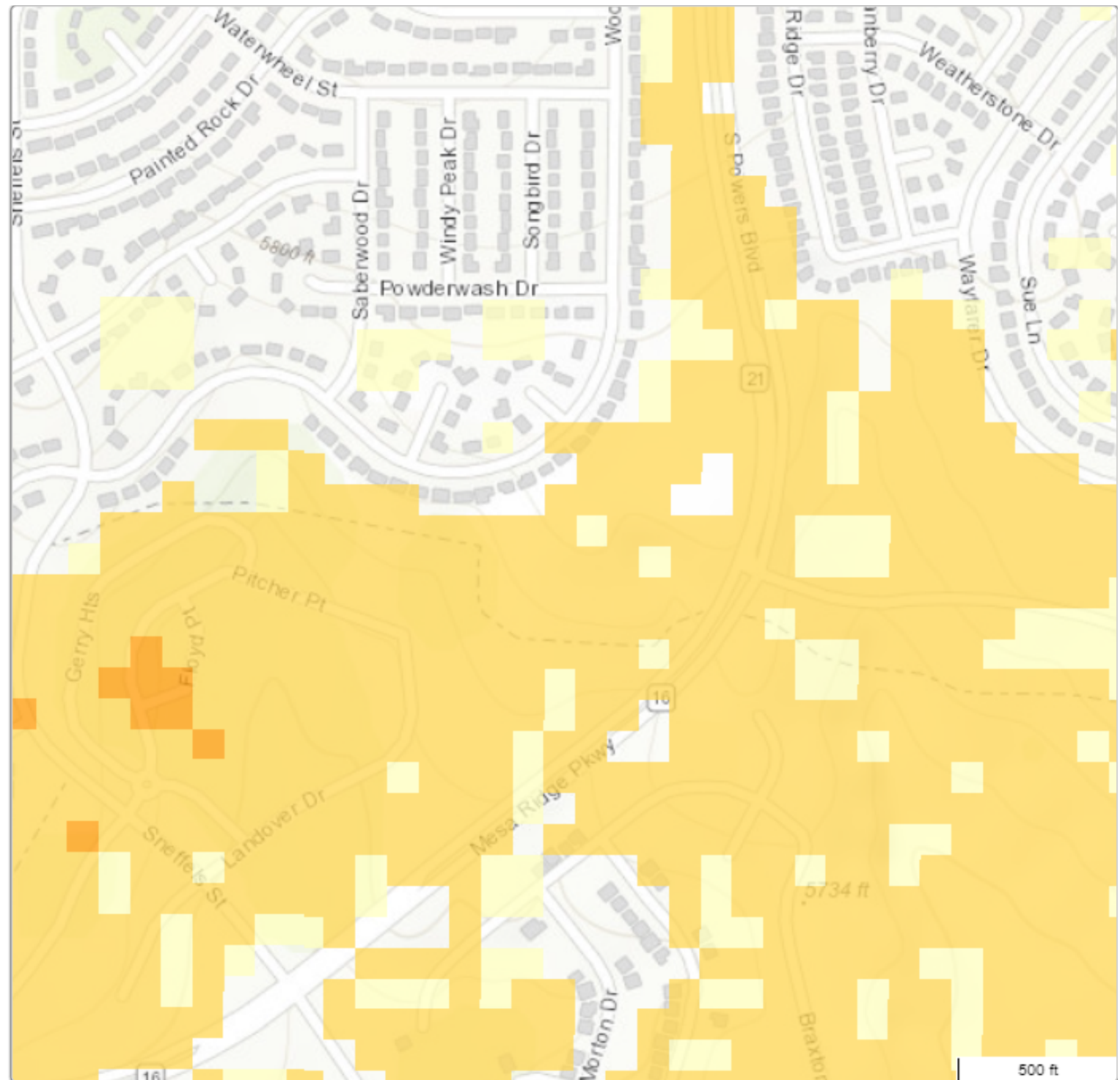
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Legend

<https://co-pub.coloradoforestatlas.org>

Fire Intensity Scale

-  1 Lowest Intensity
-  2 Low
-  3 Moderate
-  4 Moderate to High Intensity
-  5 Highest Intensity

County Boundaries

 < 1:1,500,000