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ENVIRONMENTAL
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COLORADO

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May 7, 2019

PROJECT NO: 0224-CS19

Client: Challenger Communitis

Reference: Summary Letter, Initial Wildlife/Biological Assessment for Mouse Habitat & Initial Wetlands Assessment, Proposed residential development, Bentgrass Meadows St, Falcon, CO

Dear Ms. Barry,

At your request, we have completed the initial wildlife/biological assessment for mouse habitat and initial wetlands assessment for the referenced project. Results of our evaluation are summarized below.

PURPOSE and SCOPE

The purpose of this initial wildlife/biological assessment is to determine the likely effects of the proposed development on the mouse species listed as threatened, endangered, proposed, or candidate species under the Endangered Species Act (ESA) of 1973, that potentially occur in the area. Our scope of services did not include a detailed biological assessment of any kind.

The purpose of the initial wetland assessment was to survey and delineate the boundaries of potentially jurisdictional water features within the project boundaries, as defined under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. Prior to the field survey, a preliminary desktop analysis was performed to evaluate overall water resource characteristics of the project and determine the presence of potentially jurisdictional watercourses. A site visit and an initial wetland delineation were conducted in April 2019. The initial wetland assessment was performed in general accordance with the Rocky Mountains, Valleys, and Coasts Regional Supplement to the 1987 USACE Wetland Delineation Manual (USACE 1987).

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STUDY AREA

The location and the extent of the study area is located as shown in Figure 1 and Figure 2. The proposed development consists of building a residential neighborhood in a partially developed residential and commercial area of El Paso County, Colorado. Besides nominal earthwork for building lot grading and neighborhood roadways, we do not anticipate significant site grading or site topography alterations or vegetation alterations for this project. Site surface conditions are as shown in the attached photographs.

The study area is located in a partially urban, partially developed, residential and commercial areas at an elevation of approximately 6,920-7,010 feet. The general habitat types within the study area include upland grassy/weedy habitat, riparian habitat, and minor adjacent landscaped areas. The area has an average annual precipitation of approximately 16-17 inches, an annual max temperature of 62 degrees, and an average minimum temperate of 36 degrees Fahrenheit.

PREBLE'S MEADOW JUMPING MOUSE HABITAT

Preble's or PMJM is a small mammal approximately 9-inches in length with large hind feet adapted for jumping, a long bicolor tail (which accounts for 60% of its length), and a distinct dark stripe down the middle of its back, bordered on either side by gray to orange-brown fur. This largely nocturnal mouse lives primarily in heavily vegetated, shrub dominated riparian (streamside) habitats and immediately adjacent upland habitats along the foothills of southeastern Wyoming south to Colorado Springs along the eastern edge of the Front Range of Colorado. The Preble's mouse enters hibernation in September or October and doesn't emerge until May. Its diet changes seasonally and consists of insects, seeds, fungus, fruit and more.

The Preble's is a small mouse with an extremely long tail, large hind feet, and long hind legs, which allow the mouse to escape from predators by making incredible jumps. The distinctive long tail is bicolored, lightly furred, and often twice as long as the body, occupying more than 60 percent of the total body length. The Preble's has a dark broad stripe on its back that runs from head to tail and is bordered on either side by gray to orange-brown fur. Population trends and density are not well known and there is no reliable abundance estimates for the Preble's.

Preble's meadow jumping mouse habitat consists of dense, well-developed wetland and riparian areas with dense vegetation, as well as the adjoining uplands containing undisturbed shrub and grass uplands up to 300 feet beyond the 100-year floodplain. Upland areas are used to hibernate, forage, and escape flooding. Hibernation occurs underground or beneath logs or other similar shelters from mid-October through early May. The Preble's may travel more than 2.3 miles along linear riparian habitats.

As noted in the attached Figure 3, the entire study area is located in a block clearance zone for Preble's. Block clearance zones are areas that the USFWS has determined, through analysis of species survey data and occurrence information, that there is a very low probability of the species occurring in an area and that it is likely extirpated from that area.

The current Preble's block clearance zone shows the entire site area as block-cleared. We understand that Preble's absence in the site vicinity has been confirmed through field surveys, trapping surveys conducted by regulatory agencies. These surveys were reportedly negative for the presence of Preble's. Habitat for Preble's in the site area has been highly degraded due to the presence of adjacent development that have impacted and removed riparian habitat over the years. Culverts that convey streams and ditches under adjacent and nearby major public roadways or streets were not designed for wildlife passage and, therefore, they fragment habitat for many riparian species such as Preble's. The adjacent residential and commercial developments likely prohibit movement and connectivity of the species. Adjacent and nearby vegetation do not necessarily contain appropriate denning habitat for Preble's.

The entirety of project construction activities would occur within the block clearance zone for Preble's. There would be no direct impacts to riparian habitat in occupied Preble's habitat that has not been block cleared. Construction activities may temporarily affect Preble's in the vicinity of the site area if construction activities are conducted during the Preble's active season (May 1 through November 1). Construction activities are expected to occur year-round. Although temporary disturbance from construction activities may occur, the effect is expected to be minor and temporary because it is likely that the species, if present in the vicinity area, would avoid the area during construction activities. It is unlikely there are any occupied burrows in the action area riparian areas due to the high levels of human disturbance and degraded adjacent upland habitat. However, if occupied burrows were present, construction activities, such as heavy equipment operation could impact burrows through ground vibration and loud noise. In addition, Preble's could be crushed or smothered by construction equipment or workers.

INITIAL WETLANDS ASSESSMENT

A site visit and an initial wetland assessment/delineation was conducted in general accordance with the Rocky Mountains, Valleys, and Coasts Regional Supplement to the 1987 USACE Wetland Delineation Manual (USACE). The determination of a wetland depends on the presence or absence of three parameters: 1) hydrophytic vegetation, 2) hydric soils, and 3) wetland hydrology during the wettest season. Vegetation, soils, and hydrology were analyzed for the determination of the presence of wetlands, watercourses, and other special aquatic features. Photographs were recorded depicting field conditions at the time of the site visit (see Appendix). Initial summary results of the field assessment and desk study are detailed below.

National Wetlands Inventory Maps: A review of NWI maps (USFWS) was conducted to determine the potential presence, location, size, and type of wetlands located within the Project boundaries. The USFWS generates NWI maps through aerial photograph interpretation. NWI maps may not accurately depict the extent or existence of wetland systems in a specific area, nor do maps consistently and accurately identify wetland type. As such, the maps were utilized for preliminary analysis only. Field reconnaissance was conducted to determine the true extent and type of wetlands located within the Project, and to verify the information gathered through NWI data review. NWI data did not depict any wetlands within the project boundaries (Figure 5).

FEMA Maps: A review of FEMA FIRM floodplain maps (FEMA) was conducted to determine the existence, location, and extent of floodplains located within the project boundaries. The FIRM maps depict floodplain areas along rivers and tributaries. The maps record the following data: 100-year floodplains (1% chance of annual flooding) and 500-year floodplains (0.2% annual chance of flooding), the height of the base flood (Base Flood Elevations), and the risk premium zones developed from topographical information across a floodplain. The FEMA generates FIRM floodplain maps for flood insurance purposes. A review of El Paso County FEMA FIRM panels indicate portions of the project area adjacent to an unnamed tributary to Black Squirrel Creek No. 2 are at risk of inundation by a 100-year flood (Figure 10 and 11). The remainder of the property is identified as Zone X flood zone, which consists of areas of minimal flood risk “outside the 1-percent and 0.2-percent-annual-chance floodplains” (FEMA 2005). The Project is located within FEMA FIRM panel 08041C0553G, El Paso County.

Soil Survey Maps: The El Paso County Soil Survey indicates the project area traverses three soil associations including Blackland loamy sand (1 to 9 percent slopes), Blackland-Fluvaquentic Haplaquolls, and Columbine gravelly sandy loam (Figure 4). None of these soils are classified as a hydric soil in El Paso County by the Natural Resources Conservation Service (NRCS).

Wetlands: Potentially jurisdictional wetlands were not observed within the project boundaries at the time of the site visit. Soils, hydrologic indicators, and vegetation were examined on site to determine the presence or absence of wetlands. Potentially jurisdictional wetlands were not observed within and adjacent to the riverine within project boundaries. Field indicators did not include any narrowly defined bed and bank and wetland vegetation within and abutting the riverine. Wetland vegetation was not present within project boundaries or adjacent to the riverine or ponds. This is not to say that a very small limited area of wetlands are not present immediately adjacent to the edges of the existing ponds (within 10 feet) present adjacent to the north-central project boundary (Meadows Filing No. 3). Soil saturation and some ponding was evident at the locations of the ponds present in this area. It should be noted that a detailed wetlands delineation was beyond our scope of services.

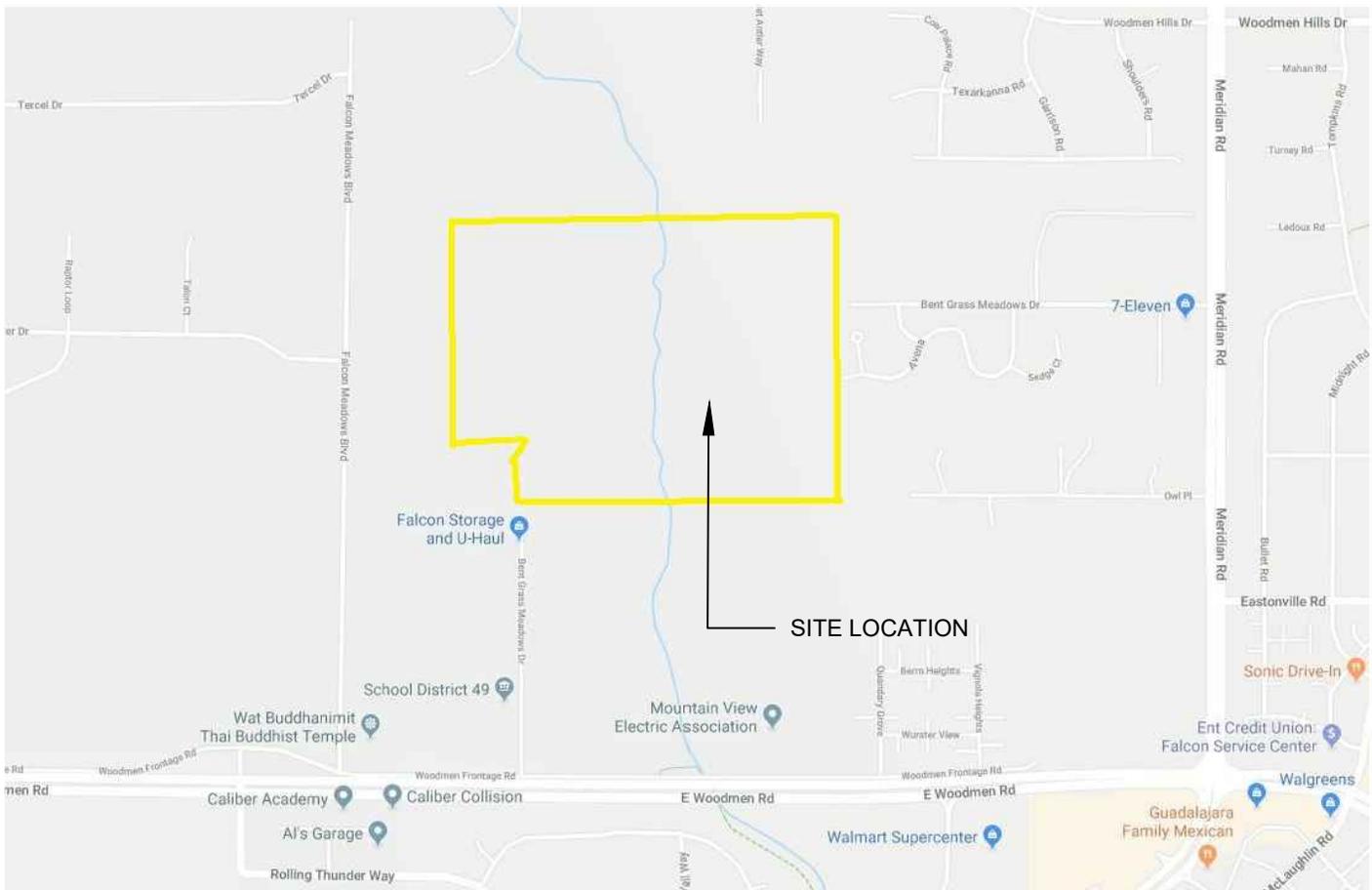
This report has been prepared exclusively for the client, its' consultant, engineers and subcontractors for the purpose of design and construction of the proposed structures. No other engineer, consultant, or contractor shall be entitled to rely on information, conclusions or recommendations presented in this document without the prior written approval of AGS.

We appreciate the opportunity to be of service to you on this project. If we can provide additional assistance or observation and testing services during design and construction phases, please call us at 1 888 276 4027.

Sincerely,
Sam Adettiwar, MS, PE, GE, P.Eng, M.ASCE
Senior Engineer

Attachments

FIGURES



REFERENCE:
GOOGLE MAPS
USGS TOPOGRAPHIC MAPS



FIGURE 1: SITE LOCATION MAP



PROJECT BOUNDARY

NOTE:
SCHEMATIC PLAN TO SHOW APPROXIMATE SUBSURFACE EXPLORATION LOCATION ONLY; NOT SURVEYED.



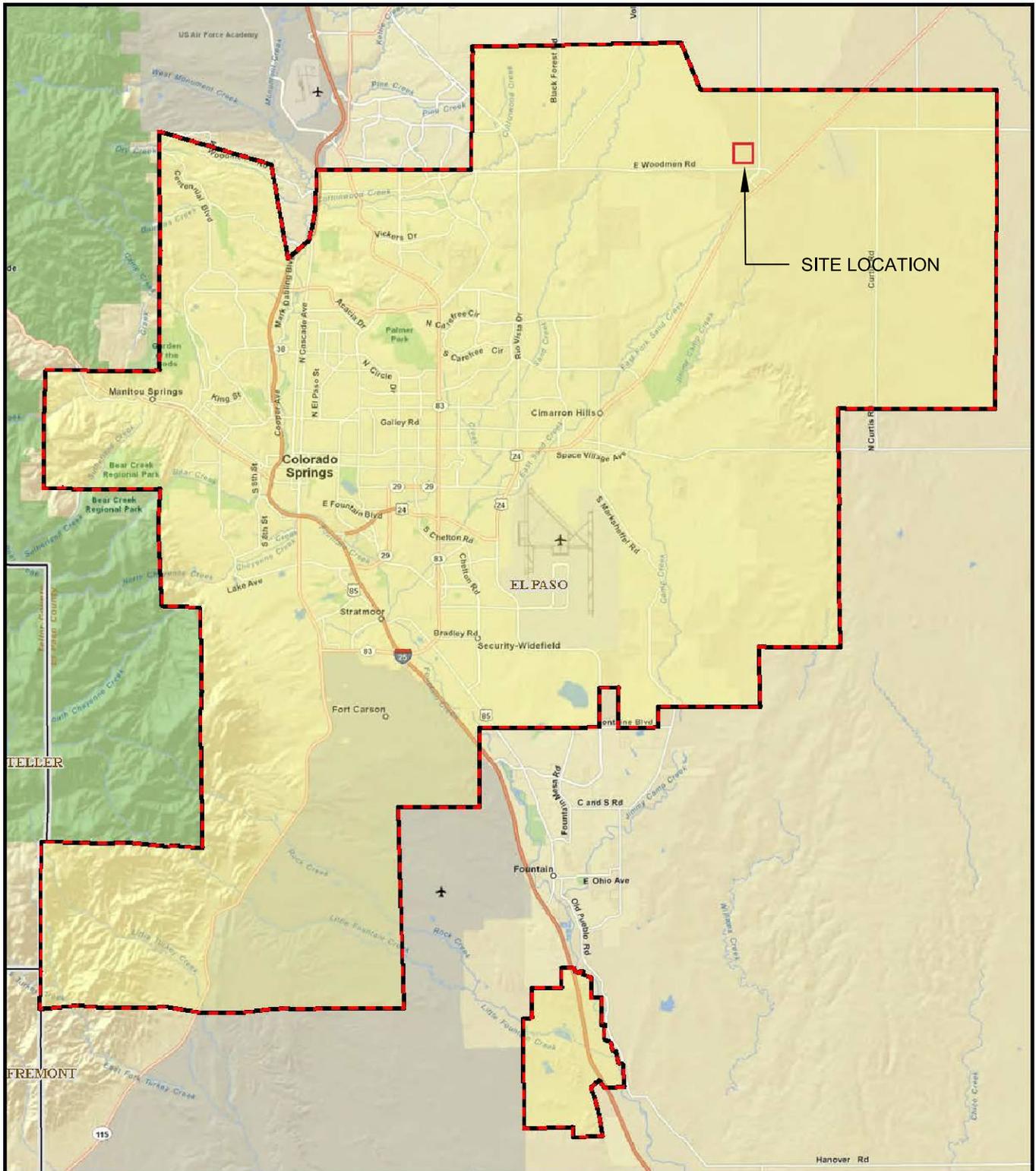
LEGEND:

 DESIGNATES SUBSURFACE INFILTRATION LOCATION, BY AMERICAN GEOSERVICES, LLC. , NOVEMBER 2018 SEE EXPLORATION LOG IN APPENDIX FOR FURTHER DETAILS.

REFERENCE:
ELPASO COUNTY
COLORADO GIS



FIGURE 2: SCHEMATIC SITE PLAN



PREBLE'S MEADOW JUMPING MOUSE BLOCK CLEARANCE MAP: COLORADO SPRINGS



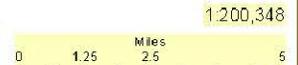
Please contact the U.S. Fish & Wildlife Service, Colorado Field Office, at (303) 236-4773 for assistance using this map. Visit <http://1.usa.gov/n5r48y> for more information on Preble's and the Block Clearance.



Block Clearance Area



County Boundaries

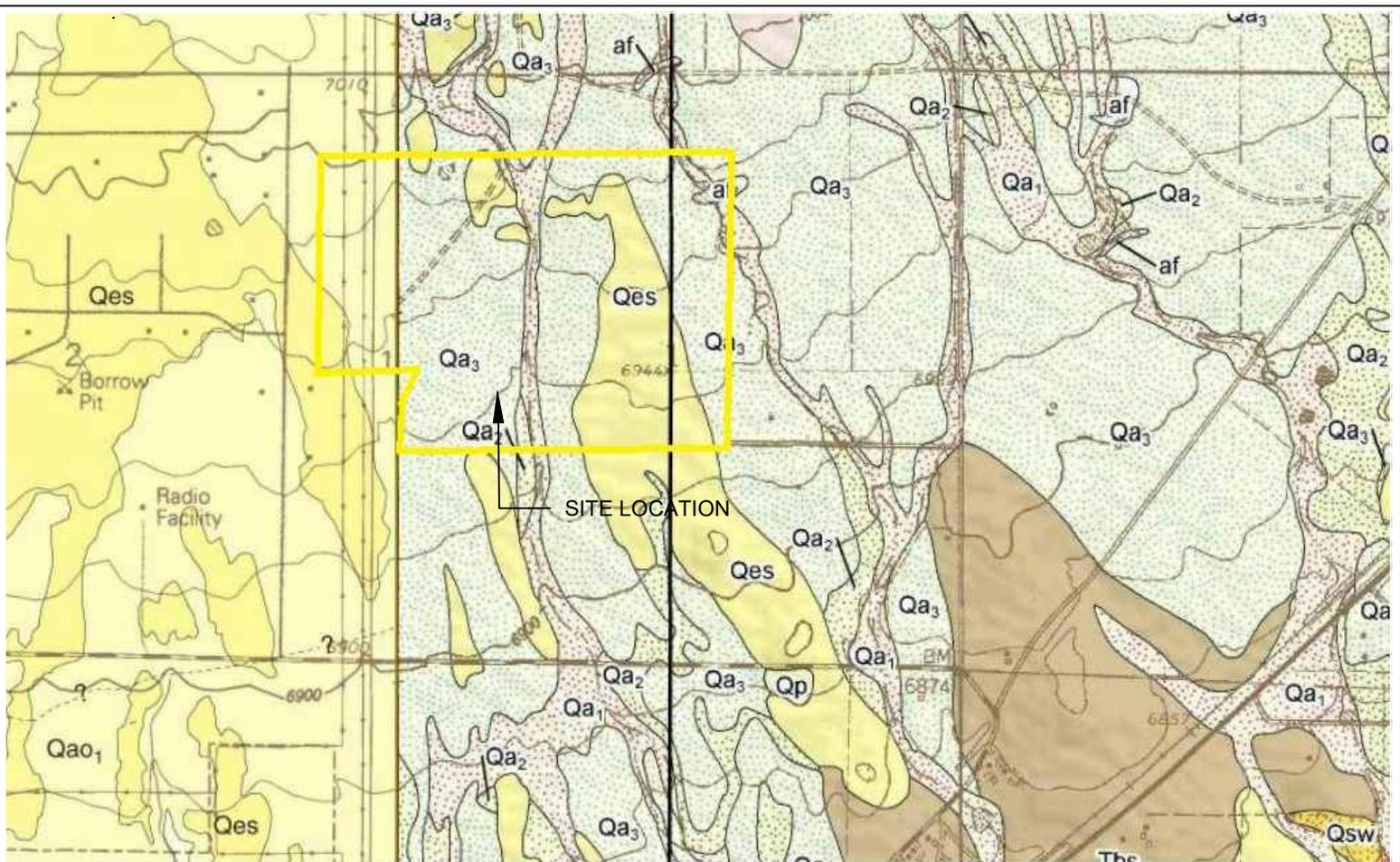


23 FEB 2012 | NAD83 UTM Z13N
Basemap: World Street Map, ESRI Services



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FIGURE 2A: BLOCK CLEARANCE MAP



LEGEND

Qa₂ Alluvium two (lower Holocene) — Dark gray to brown, poorly to well sorted, moderately consolidated, silt, sand, gravel, and minor clay and occasional boulders in stream terrace deposits approximately 6-12 feet above the modern flood plain or as non-terrace forming alluvium in valley headwaters. Clasts are subrounded to well rounded and the dominant sediment is sandy gravel with a silty sand matrix. Clay seams are poorly to moderately stratified. The unit correlates with the Piney Creek Alluvium described by Hunt (1954) in the Denver area and of Maberry and Lindvall (1972). The unit is subject to occasional flooding and is a potential source of sand and gravel. Maximum exposed thickness of the unit locally exceeds 20 feet.

Qes Eolian sand (Holocene to upper Pleistocene) — Yellowish-brown to tan, fine- to coarse-grained, frosted sand and silt deposited by wind. Typically this unit is faintly stratified and non-cohesive; dune forms are not present. The unit is likely deposited as a sandsheet by winds capable of moving very fine gravel-sized clasts. Eolian sand is moderately compacted, easily excavated, and drains well. Unit locally may exceed 5 feet in thickness.

Qa₃ Alluvium three (upper Pleistocene) — Tan to reddish brown to grayish brown, poorly sorted, moderately consolidated poorly to moderately stratified silt, sand, gravel, and cobby gravel and occasional boulders in stream terrace deposits approximately 10-20 feet above the modern flood plain or as non-terrace forming alluvium in valley headwaters that underlies the younger alluviums. The unit contains dark gray clay beds that may be expansive. Clasts are subrounded to well rounded and the dominant sediment is sandy gravel with a sandy matrix. The unit correlates with the Broadway Alluvium described by Hunt (1954) in the Denver area and of Maberry and Lindvall (1972). The unit is a potential source of sand and gravel. Maximum exposed thickness of the unit locally exceeds 20 feet.



REFERENCE:
U.S. GEOLOGICAL MAPS



FIGURE 3: GEOLOGIC MAP



LEGEND

El Paso County Area, Colorado (C0625)

El Paso County Area, Colorado (C0625)

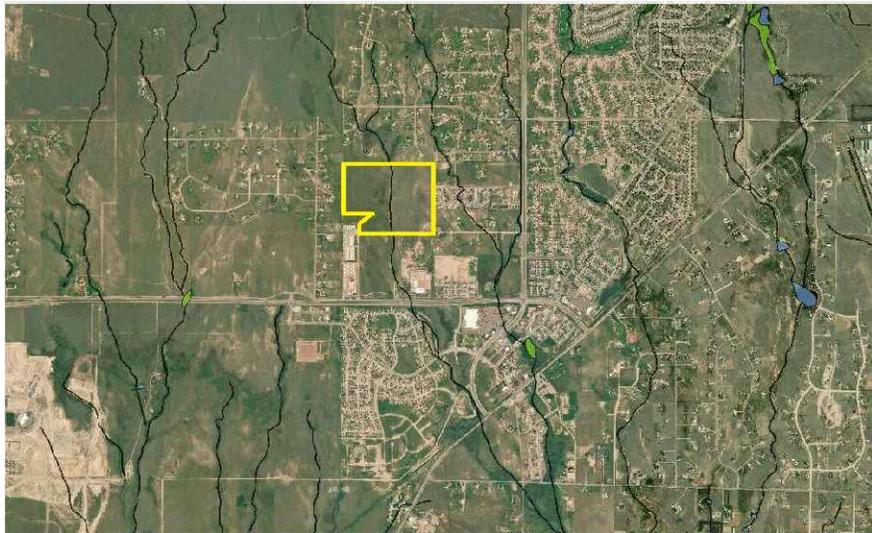
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
8	Blakeland loamy sand, 1 to 9 percent slopes	157.2	25.2%
9	Blakeland-Fluvaquentic Haplaquolls	77.1	12.3%
19	Columbine gravelly sandy loam, 0 to 3 percent slopes	390.3	62.5%
Totals for Area of Interest		624.5	100.0%



REFERENCE:
WEB SOIL SURVEY



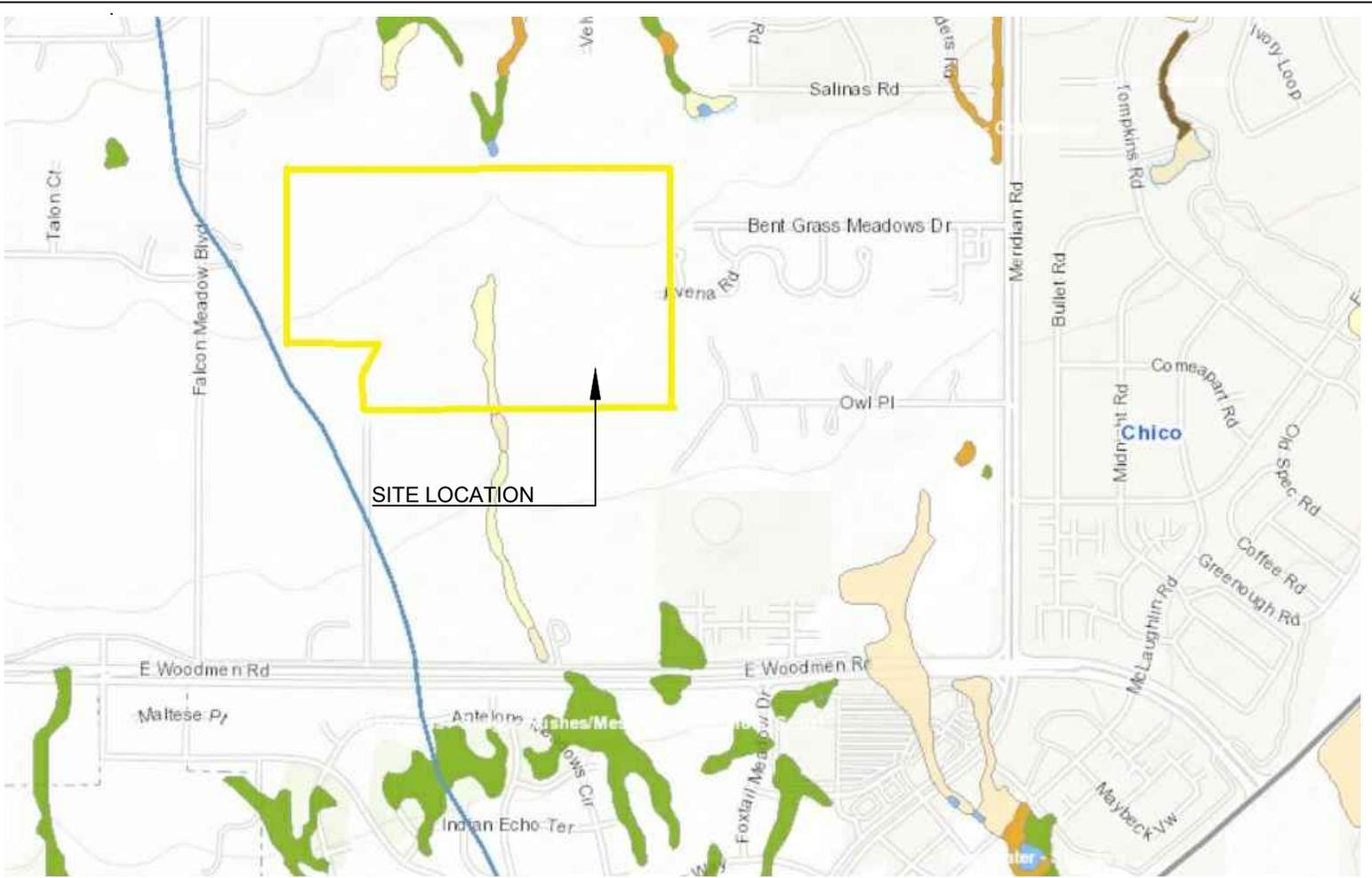
FIGURE 4: SOIL SURVEY MAP



REFERENCE:
NATIONAL WETLANDS
INVENTORY



**FIGURE 5:
NATIONAL WETLANDS INVENTORY
MAP**



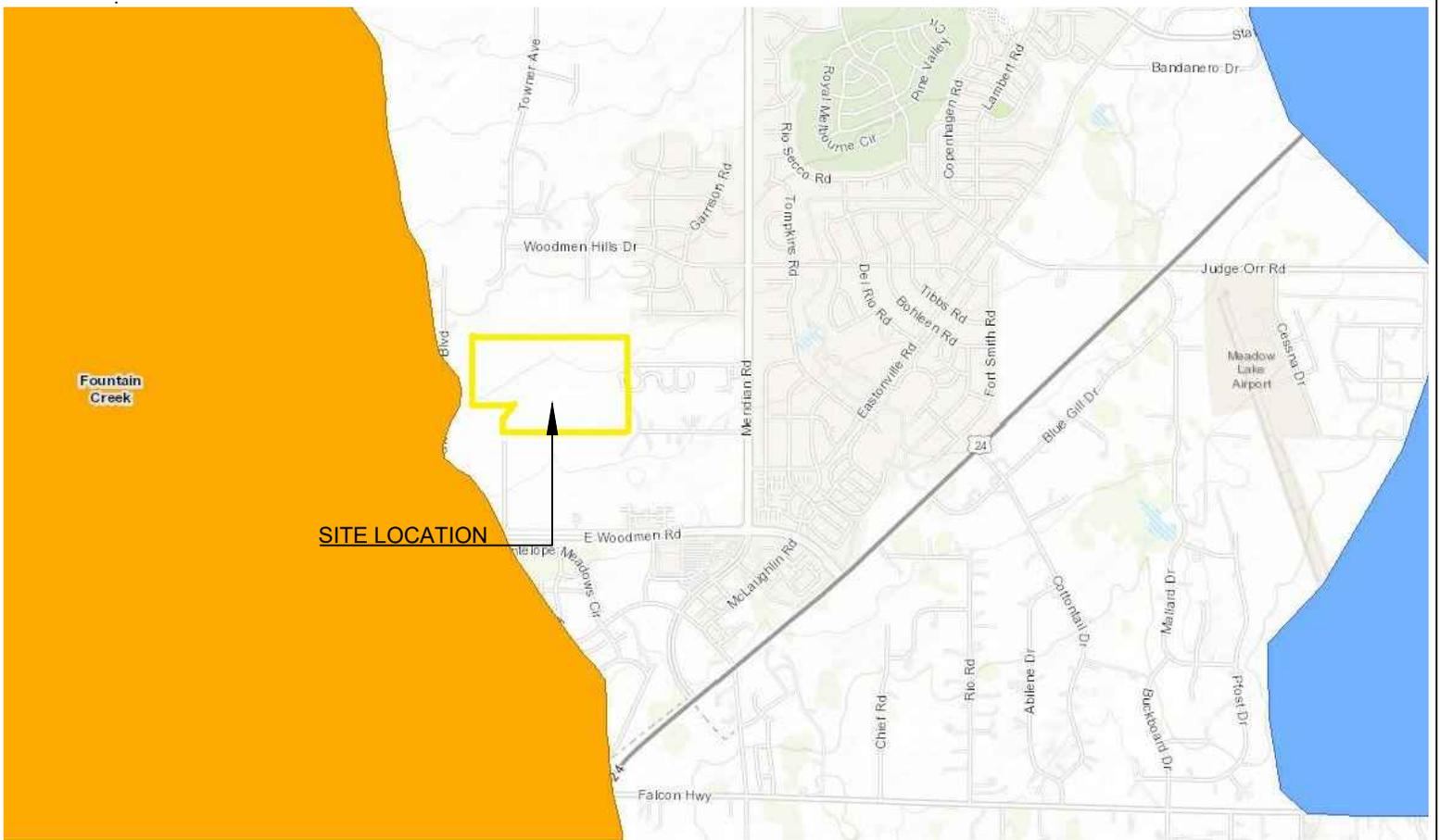
- ### Riparian Mapping
- CPW Riparian
- Forested Deciduous
 - Forested Evergreen
 - Shrub
 - Herbaceous
 - Irrigated Agriculture
 - Open Water
 - Upland Vegetation
 - Sandbar
 - Unvegetated
- CPW Riparian Status
- Digital Data
 - No Data



REFERENCE:
 COLORADO SPRINGS
 HAZARD VICINITY AND
 ARC GIS MAPS



FIGURE 6: RIPARIAN MAP



CNHP Potential Wetland Conservation Areas

CNHP Potential Wetland Conservation Areas

- B1: Outstanding Biodiversity Significance
- B2: Very High Biodiversity Significance
- B3: High Biodiversity Significance
- B4: Moderate Biodiversity Significance
- B5: General Biodiversity Interest



N

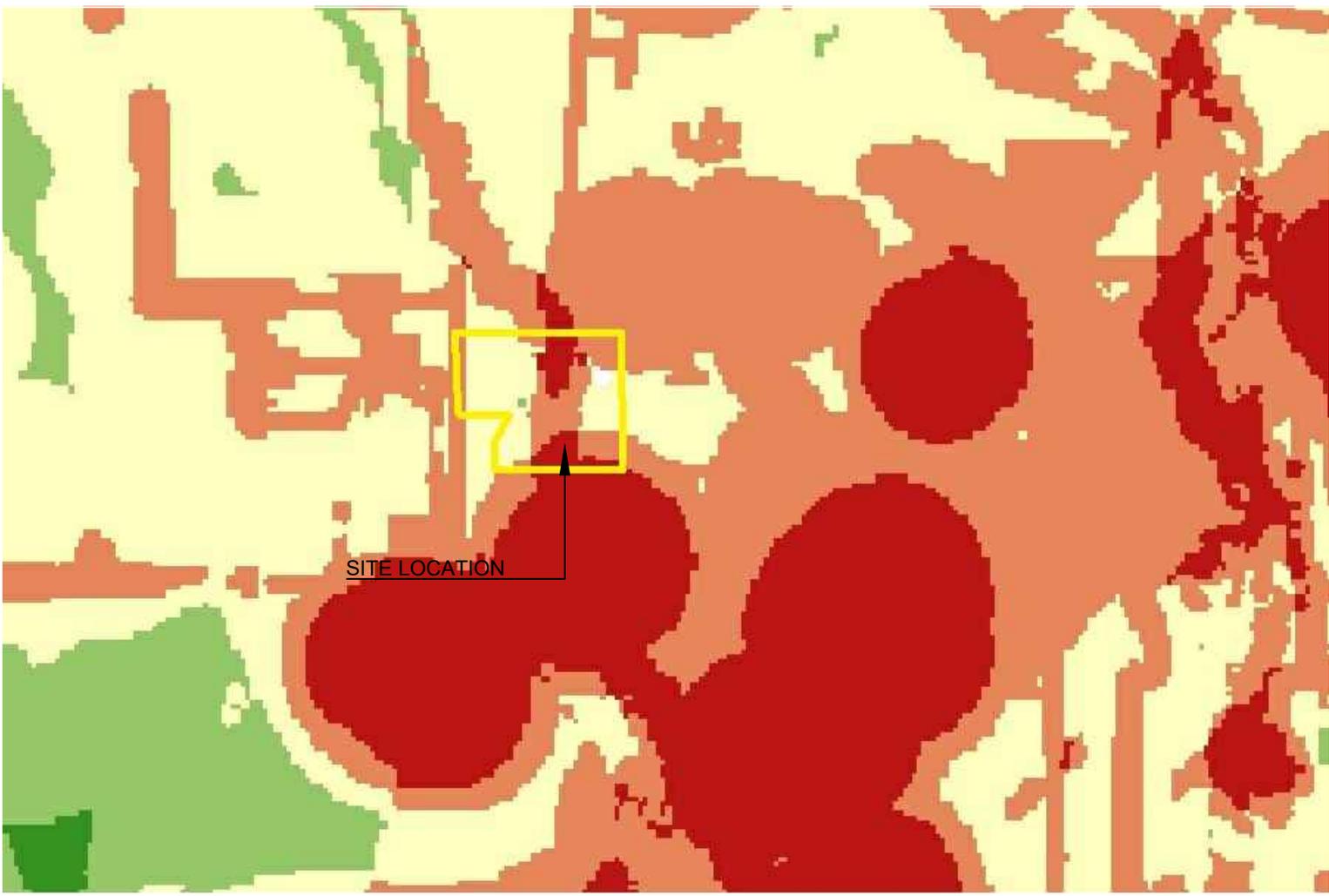
REFERENCE:

COLORADO GEOLOGICAL SURVEY



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FIGURE 7: WETLAND CONSERVATION



Wetland Stressors

CNHP Wetland Stressors

-  None
-  Low
-  Moderate
-  High
-  Severe



REFERENCE:
 COLORADO GEOLOGICAL
 SURVEY



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FIGURE 8: WETLAND STRESSOR



REFERENCE:

ELPASO COUNTY
 COLORADO PLANNING
 DEPARTMENT



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FIGURE 9: FLOOD HAZARD MAP





Flood Hazard Zones:

-  1% Annual Chance Flood Hazard
-  Regulatory Floodway
-  Special Floodway
-  Area of Undetermined Flood Hazard
-  0.2% Annual Chance Flood Hazard
-  Future Conditions 1% Annual Chance Flood Hazard
-  Area with Reduced Risk Due to Levee

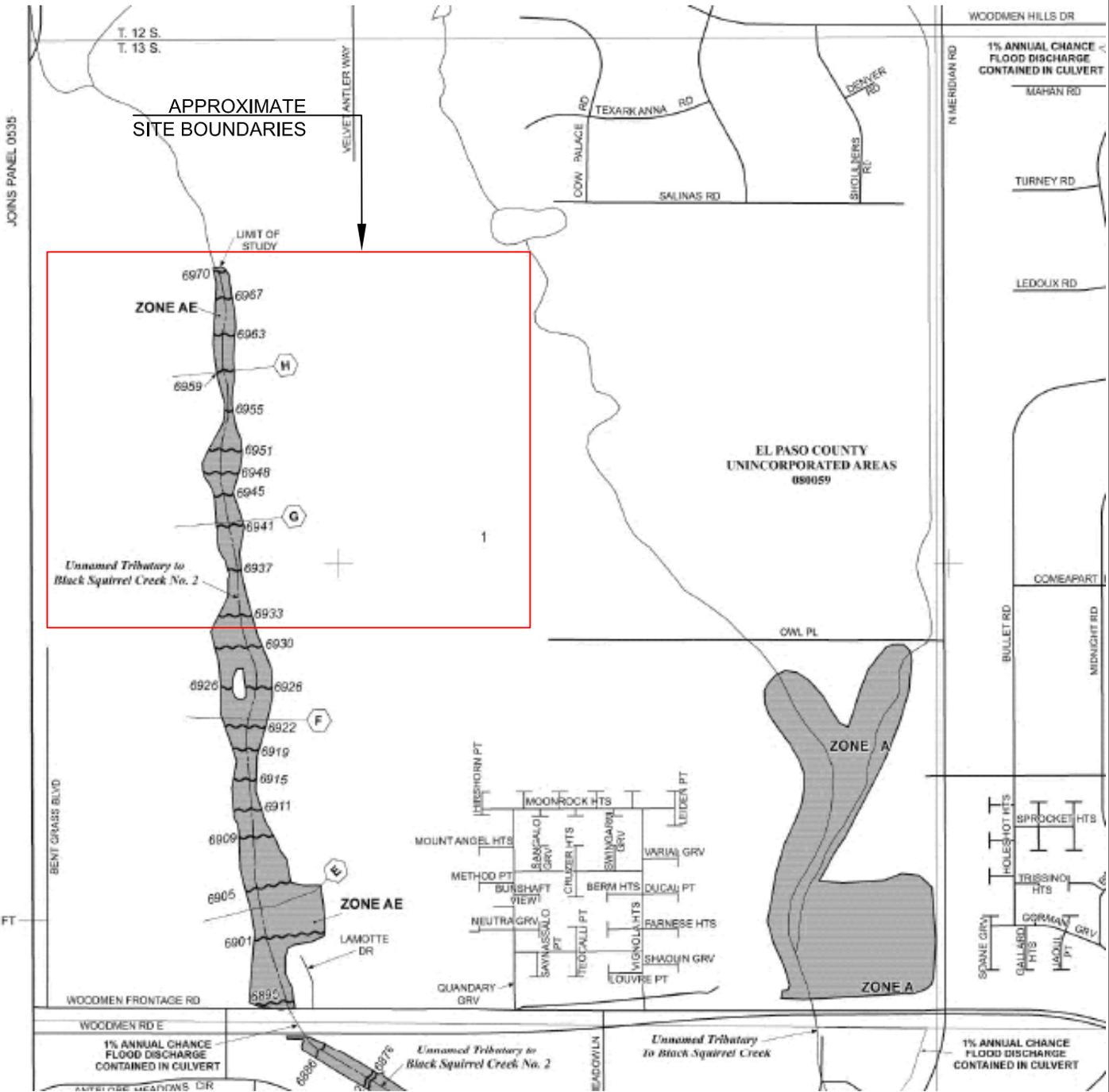


REFERENCE:

FEMA.GOV



FIGURE 10: FEMA MAP



ZONE A No Base Flood Elevations determined.
ZONE AE Base Flood Elevations determined.

- Floodplain boundary
- - - Floodway boundary
- - - Zone D Boundary
- CBRS and OPA boundary
- █ Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- ~ 513 ~ Base Flood Elevation line and value; elevation in feet*
(EL 987) Base Flood Elevation value where uniform within zone; elevation in feet*
- * Referenced to the North American Vertical Datum of 1988 (NAVD 88)
- ⬢ — ⬢ Cross section line



REFERENCE:
 FLOOD INSURANCE RATE
 MAP

FIGURE 11: FIRM MAP DETAILS

PHOTOGRAPHIC DOCUMENTATION





























































APPENDIX

El Paso County Area, Colorado

8—Blakeland loamy sand, 1 to 9 percent slopes

Map Unit Setting

National map unit symbol: 369v

Elevation: 4,600 to 5,800 feet

Mean annual precipitation: 14 to 16 inches

Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 125 to 145 days

Farmland classification: Not prime farmland

Map Unit Composition

Blakeland and similar soils: 85 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Blakeland

Setting

Landform: Hills, flats

Landform position (three-dimensional): Side slope, talf

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Alluvium derived from sedimentary rock and/or eolian deposits derived from sedimentary rock

Typical profile

A - 0 to 11 inches: loamy sand

AC - 11 to 27 inches: loamy sand

C - 27 to 60 inches: sand

Properties and qualities

Slope: 1 to 9 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Somewhat excessively drained

Runoff class: 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

Calcium carbonate, maximum in profile: 5 percent

Available water storage in profile: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): 3e

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: A

Ecological site: Sandy Foothill (R049BY210CO)

Hydric soil rating: No

Minor Components

Other soils

Percent of map unit:

Hydric soil rating: No

Pleasant

Percent of map unit:

Landform: Depressions

Hydric soil rating: Yes

Data Source Information

Soil Survey Area: El Paso County Area, Colorado

Survey Area Data: Version 16, Sep 10, 2018

El Paso County Area, Colorado

9—Blakeland-Fluvaquentic Haplaquolls

Map Unit Setting

National map unit symbol: 36b6
Elevation: 3,500 to 5,800 feet
Mean annual precipitation: 13 to 17 inches
Mean annual air temperature: 46 to 55 degrees F
Frost-free period: 110 to 165 days
Farmland classification: Not prime farmland

Map Unit Composition

Blakeland and similar soils: 60 percent
Fluvaquentic haplaquolls and similar soils: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Blakeland

Setting

Landform: Hills, flats
Landform position (three-dimensional): Side slope, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy alluvium derived from arkose and/or eolian deposits derived from arkose

Typical profile

A - 0 to 11 inches: loamy sand
AC - 11 to 27 inches: loamy sand
C - 27 to 60 inches: sand

Properties and qualities

Slope: 1 to 9 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat excessively drained
Runoff class: 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
Calcium carbonate, maximum in profile: 5 percent
Available water storage in profile: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Ecological site: Sandy Foothill (R049BY210CO)
Hydric soil rating: No

Description of Fluvaquentic Haplaquolls

Setting

Landform: Swales
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

H1 - 0 to 12 inches: variable

Properties and qualities

Slope: 1 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat):
Moderately high to high (0.20 to 6.00 in/hr)
Depth to water table: About 0 to 24 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)

Interpretive groups

Land capability classification (irrigated): 6w
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: D
Hydric soil rating: Yes

Minor Components

Other soils

Percent of map unit:
Hydric soil rating: No

Pleasant

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

Data Source Information

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 16, Sep 10, 2018

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

Description of Columbine

Setting

Landform: Flood plains, fan terraces, fans
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
Natural 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 storage in profile: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Ecological site: Gravelly Foothill (R049BY214CO)
Hydric soil rating: No

Minor Components

Fluvaquentic haplaquolls

Percent of map unit:
Landform: Swales

Hydric soil rating: Yes

Pleasant

Percent of map unit:

Landform: Depressions

Hydric soil rating: Yes

Other soils

Percent of map unit:

Hydric soil rating: No

Data Source Information

Soil Survey Area: El Paso County Area, Colorado

Survey Area Data: Version 16, Sep 10, 2018