WETLANDS, WATERBODIES, and THREATENED, ENDANGERED, and SPECIES OF SPECIAL CONCERN SURVEY REPORT
DRAFT

GRAZING YAK SOLAR PROJECT
EL PASO COUNTY, COLORADO

Prepared for:

NextEra Energy Resources
700 Universe Boulevard
Juno Beach, FL 33408

Prepared by:

CORE Consultants, Inc.
1950 W. Littleton Blvd., Suite 109
Littleton, CO 80120
Phone: 303-703-4444
CORE Project Number: 18-082

September 2018

TABLE OF CONTENTS

Figures

Tables

Appendices

1 INTRODUCTION

CORE Consultants (CORE) was retained by NextEra Energy Resources, Inc. (NextEra) to conduct a natural resources survey of the proposed Grazing Yak Solar Project (Project) located in El Paso County, Colorado. The natural resources survey consisted of a waters of the U.S. (WOUS) assessment and documentation of any potential occurrences or associated habitat for federally or state threatened or endangered species (TES), and state species of concern (SC). The proposed Project is a 35-megawatt (MW) ground-based solar facility consisting of a single-axis tracking system (solar array) and a one-mile underground collection line corridor that will tie in to the existing Golden West Wind Farm substation. Golden West Wind Farm surrounds the Project to the north, east, west, and south. The wind/solar energy overlay would consist of approximately 270 acres for the solar array (identified on Figure 1.1 as the array boundary), approximately 12 acres for the underground collection line corridor, and a 40-acre parcel containing the existing Golden West substation, for a total of 322 acres, and includes 6 parcels.

The Project is located to the east of the intersection of McQueen Road and Washington Road, approximately four miles southeast of the Town of Calhan, Colorado on Section 29, Township 12 South, Range 61 West (Figure 1.1). The Project is situated on the U.S. Geological Survey (USGS) 7.5-minute Peoria, Colorado quadrangle (USGS 2010).

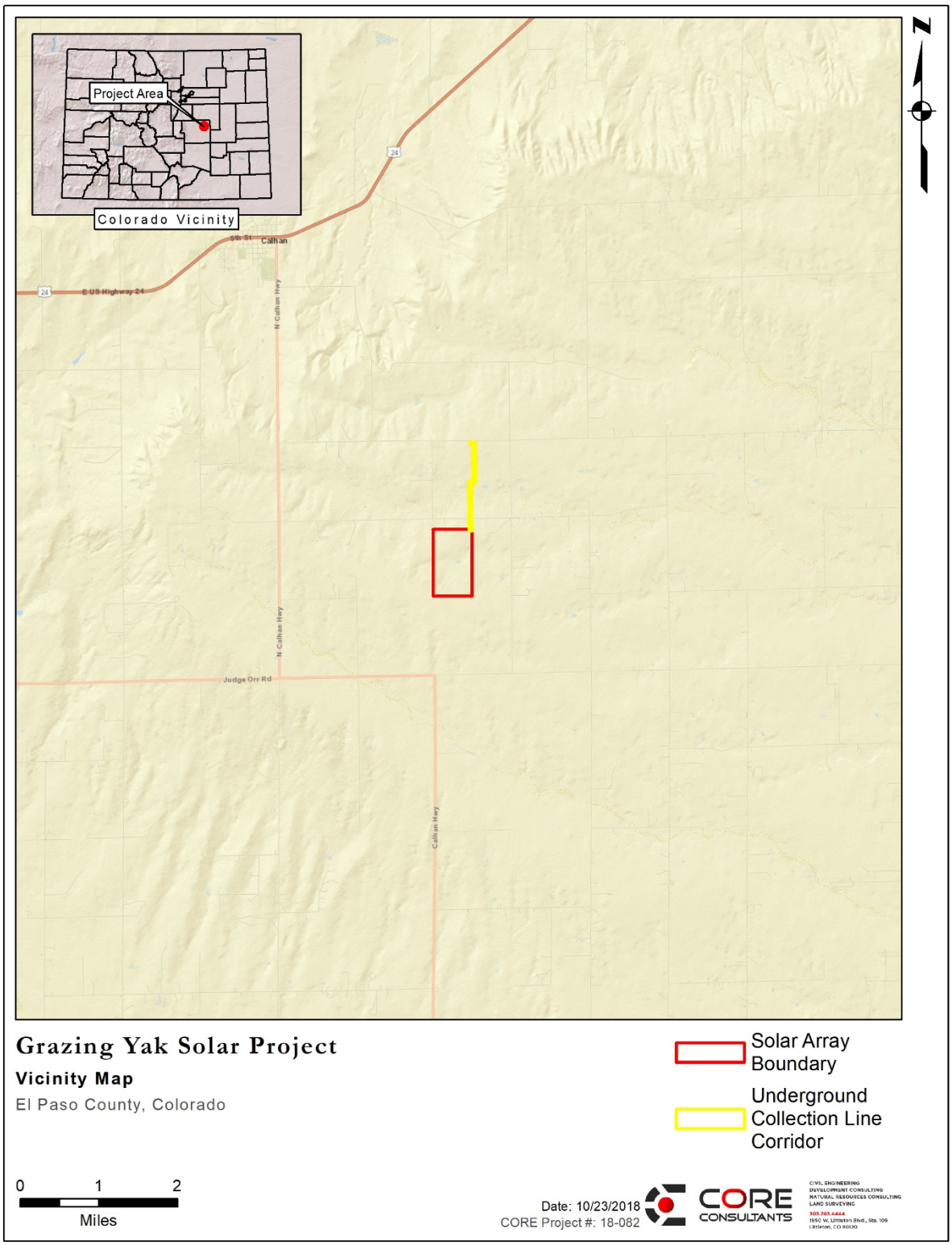

Figure 1.1 Vicinity Map, Grazing Yak Solar, El Paso County, Colorado

2 METHODS

CORE conducted a desktop review and natural resources survey for wetlands and other potential WOUS, and state and federal TES within the array boundary and the underground collection line corridor, hereinafter collectively referred to as the Study Area.

2.1 Desktop Review

CORE completed a desktop review of the Study Area for the following natural resources and potential biological constraints:

- Significant topographic features;
- Potentially jurisdictional water features and floodplains;
- Potential for occurrence of federal and state TES and their associated habitats;
- Federally-designated Critical Habitat for TES; and
- Potential for occurrence of state SC, and their associated habitats, and big game migratory routes and species-specific concentration areas.

Publicly-available data sources reviewed via desktop included the U.S. Fish and Wildlife Service's (USFWS) Information Planning and Conservation (IPaC) System (USFWS 2018a), the USFWS Critical Habitat Portal (USFWS 2018b), species profiles and spatial data from Colorado Parks and Wildlife (CPW; CPW 2018), the USFWS National Wetland Inventory (NWI; USFWS 2017), the USGS National Hydrography Dataset (NHD; USGS 2017), Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM; FEMA 1997), aerial imagery (U.S. Department of Agriculture [USDA] 2016), and El Paso County Soil Survey data (NRCS 2018). Results of the desktop review are described below.

2.2 Natural Resources Survey

A natural resources survey was conducted on August 21, 2018. A CORE biologist walked the Study Area to confirm or refute the results of the desktop review. Results of the survey are described below.

3 RESULTS

3.1 Desktop Results

3.1.1 Study Area Ecological Description

Topography of the Study Area consists of multiple grasslands within the Foothills Grasslands level IV ecoregion of the Great Plains level III ecoregion (Chapman et al. 2006). Dominant species within the Foothills Grasslands include little bluestem (*Schizachyrium scoparium*), big bluestem (*Andropogon gerardii*), switch grass (*Panicum virgatum*), and yellow Indiangrass (*Sorghastrum nutans*).

3.1.2 Wetlands and Waters of the U.S.

The USFWS NWI (USFWS 2017) and USGS NHD (USGS 2017) datasets were reviewed for the presence of potentially jurisdictional wetlands and other WOUS within the Study Area. Aerial imagery was reviewed to locate water features not included within the NWI and NHD datasets. Spatial data indicates that a branched unnamed tributary to Horse Creek drains the array boundary in an easterly direction (Figure 3.1). NWI maps depict one palustrine, unconsolidated bottom, temporary flooded wetland (PUSA) situated across the unnamed tributary to Horse Creek within the array boundary (USFWS 2017). The underground collection line corridor traverses the main channel of Horse Creek, north of the array boundary.

3.1.3 FEMA Zone-A Floodplains

The Study Area is located within the boundaries of FEMA FIRM panels 08041C0625G and 08041C0650G (FEMA 1997). Zone-A floodplains are mapped within and adjacent to the main channel of Horse Creek, north of the array boundary within the underground collection line corridor (Figure 3.2). No Zone-A floodplains are located within the array boundary. Zone-A floodplains (also referred to as 100-year floodplains) are defined as those areas subject to an annual 1% chance of flooding (FEMA 1997).

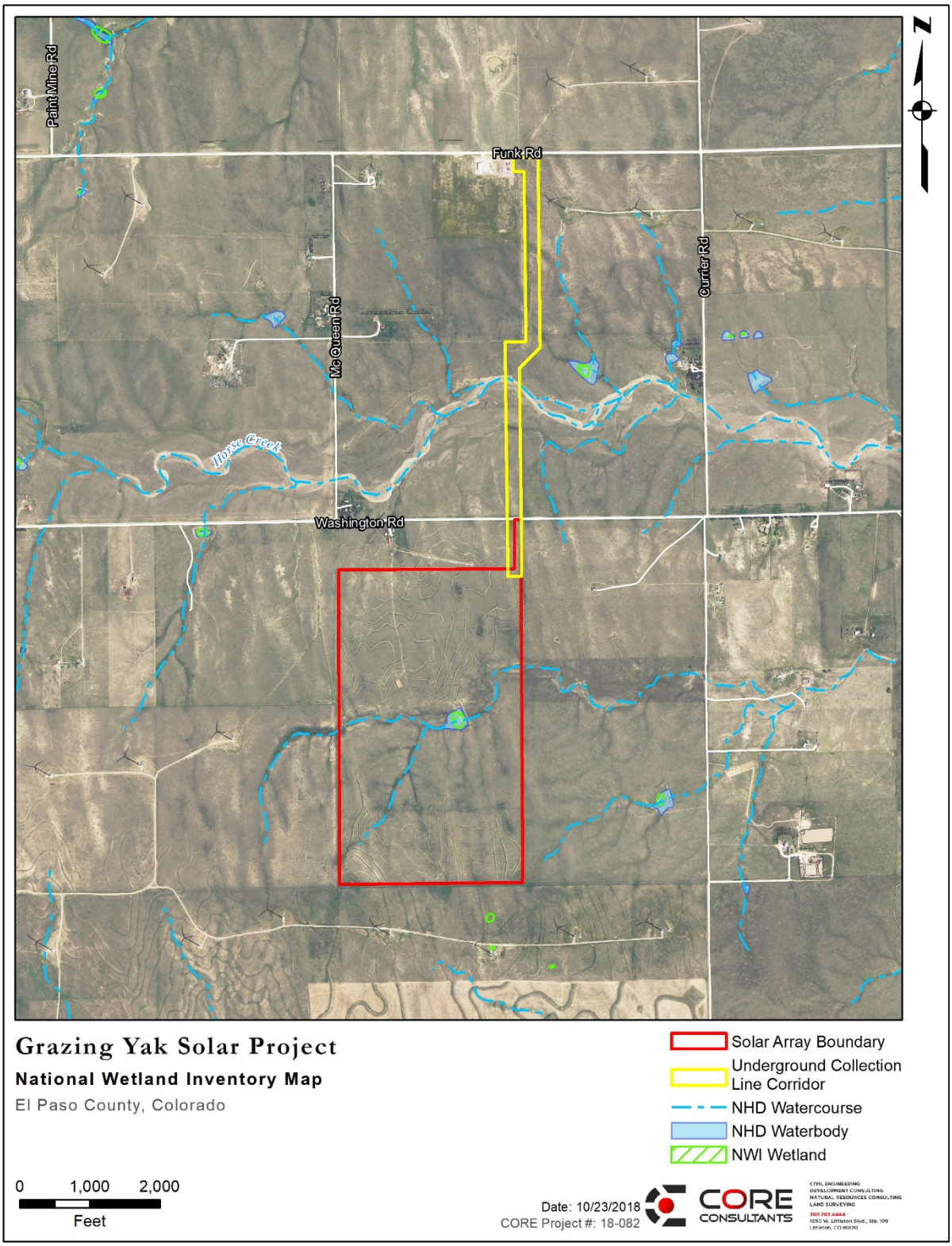

Figure 3.1 National Wetland Inventory Map

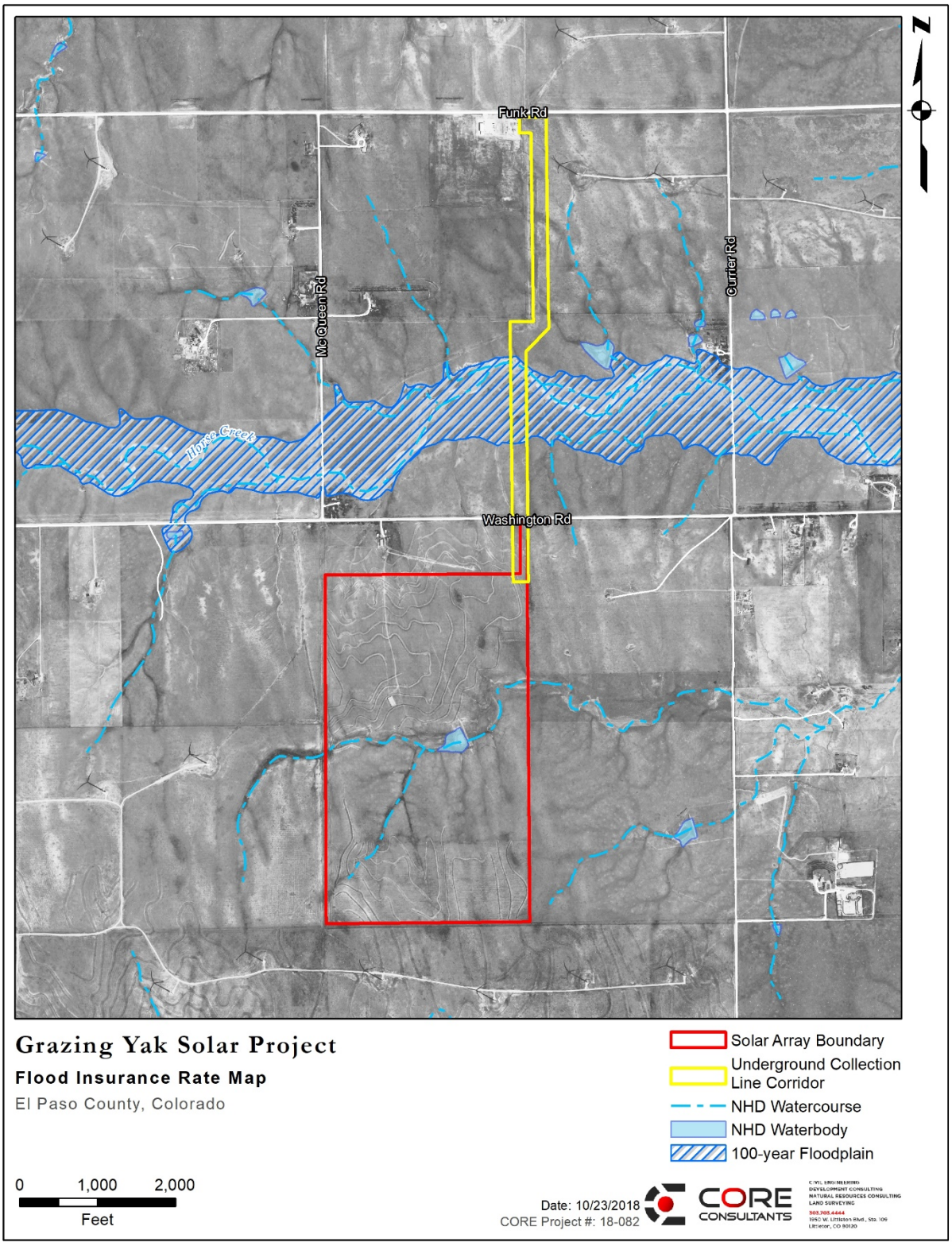

Figure 3.2 FEMA Flood Insurance Rate Map

3.1.4 Federally Threatened and Endangered Species

The USFWS IPaC database (USFWS 2018a) was queried to determine the potential of occurrence for federally listed TES within the Study Area. The IPaC query identified nine species including one mammal, four birds, two fish, and two plants, as having potential to occur within the Study Area. Five of the identified species are listed as "conditional effects" species that should be considered if the Project would affect water within the South Platte River watershed (Table 3.1). Conditional effects species are not considered in this report since the Project will not affect water within the South Platte River watershed. A CPW list of state TES are included. No federally designated critical habitat occurs within the Study Area (USFWS 2018b).

TABLE 3.1 TES POTENTIAL FOR OCCURRENCE WITHIN THE STUDY AREA.

Common Name	Scientific Name	Status	Potential to Occur
Wolverine	*Gulo gulo*	PT, SE	NA: no known population in Colorado; restricted to high elevation alpine areas where snow persists into summer months (CPW 2015a)
Least Tern	*Sterna antillarum*	FE	Conditional Effects
Mexican Spotted Owl	*Strix occidentalis lucida*	FT	NA: requires mixed-conifer stands and/or narrow canyons (Gutierrez et al. 1995)
Piping Plover	*Chardrius melodus*	FT	Conditional Effects
Whooping Crane	*Grus Americana*	FE	Conditional Effects
Greenback Cutthroat	*Oncorhynchus clarkia stomias*	FT	NA: historically occupied steep, cold, high mountain streams and rivers in the South Platte and Arkansas River watersheds (Young 2009). A single, genetically pure population remains in Bear Creek, El Paso County (Martin et al. 2015). No potential for occurrence in the Project.
Pallid Sturgeon	*Scaphirhynchus albus*	FE	Conditional Effects
Ute Ladies'-tresses	*Spiranthes diluvialis*	FT	Very Low: See discussion below
Western Prairie Fringed Orchid	*Platanthera praeclara*	FT	Conditional Effects

Source: USFWS 2018a; CPW 2015a
PT=Proposed Threatened; FT=Federally Threatened; FE=Federally Endangered; SE=State Endangered

Ute Ladies'-tresses

Ute ladies'-tresses orchid (ULTO) is a perennial orchid listed as federally threatened. This forb has ivory flower clusters arranged in a spike growing approximately 8-20 inches tall. ULTO is known to occur in parts of Colorado, Wyoming, Idaho, Montana, Nebraska, Utah, and Washington. The plant typically occurs within features associated with major river floodplains including riparian edges, gravel bars, old oxbows, high flow channels, and moist to wet meadows associated with perennial streams; it is found under 6,500 feet AMSL in Colorado (USFWS 2014). Surveys have indicated that the species may also inhabit groundwater-fed springs or sub-irrigated meadows, seeps, and human-influenced riparian habitats that receive reliable and stable spring inundation (Fertig et al. 2005; NRCS 2009). Soils in areas of suitable habitat have a high micronutrient and organic matter content and display gley features when sampled (NRCS 2009).

A review of spatial data and aerial imagery indicates that the Study Area is not located at elevations appropriate to sustain ULTO within Colorado; Study Area elevations range between 6,715 and 6,830 feet. It is not anticipated that Project development would impact ULTO or its associated habitat.

3.1.5 Migratory Birds of Conservation Concern

The USFWS IPaC database (USFWS 2018a) was queried to determine the potential for occurrence of migratory birds within the Study Area that are protected under the Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. §§ 703–712). The IPaC query listed three migratory birds of conservation concern that have the potential to breed in the Study Area including horned lark (*Eremophila alpestris*), McCown's longspur (*Rhynchophanes mccownii*), and burrowing owl (*Athene cunicularia*). Breeding migratory birds, and the parts, nests, or eggs of such a bird receive statutory protection under the MBTA and intentionally disturbing these species during the migratory bird breeding season (defined at 16 U.S.C. §§ 703–712) is prohibited.

3.1.6 State Species of Concern

The CPW Species Activity Mapping (CPW 2018) spatial data were reviewed to determine the potential for the occurrence of SC and general wildlife, including big game species (Table 3.2). Potential for avian species was assessed using habitat preferences listed in literature and known observations (eBird 2017).

TABLE 3.2 STATE THREATENED AND SPECIES OF CONCERN WITH THE POTENTIAL FOR OCCURRENCE IN THE STUDY AREA.

Common Name	Scientific Name	Potential to Occur
Northern Leopard Frog	*Rana pipiens*	Low: requires wet meadows, shallows of marshes, ponds, lakes; available habitat for species is limited (CPW 2015b)
Ferruginous Hawk	*Buteo regalis*	Low: prefers flat and gentle terrain in grassland or shrub-steppe habitats; strongly associated with black-tailed prairie dogs (Ng et al. 2017)
Long-billed Curlew	*Numenius americanus*	Low: nests primarily in short-grass or mixed-grass prairie in flat to gentle terrain (Dugger and Dugger 2002)

Common Name	Scientific Name	Potential to Occur
Mountain Plover	*Chardrius montanus*	Low: strongly associated with short-grass prairie dominated by blue grama (*Bouteloua gracilis*); requires mostly flat, well irrigated landscapes (Knopf and Wunder 2006)
Black-tailed Prairie Dog	*Cynomys ludovicianus*	High: inhabit prairies forages on grasses and insects (CPW 2015b)
Northern Pocket Gopher	*Thomomys talpoides*	Moderate: prefer deep soils along streams and meadows, and cultivated fields (Cassola 2016)
Swift Fox	*Vulpes velox*	Very low: occupies short-grass prairies, grassland, deserts; density and distribution of dens important to avoid predators (Moehrenschlager and Sovada 2016)
Massasauga	*Sistrurus catenatus*	Very low: inhabits dry plains grasslands and sandhill areas, prefers sandy soils; at elevations below 5,500 feet (CPW 2015b); Study Area elevations preclude species' occurrence

Source: USFWS 2018a, CPW 2015b

The review of CPW SC profiles indicated the potential for the occurrence of three state SC and one state threatened species in the Study Area including black-tailed prairie dog, northern pocket gopher, swift fox, and burrowing owl (state threatened). State SC do not receive statutory protection. However, Project construction would practice appropriate avoidance measures to avoid impacts to state SC and state threatened observed in the Study Area. The Study Area does not intersect with big game migratory routes, concentration areas, or important seasonal habitat areas (Figure 3.3). The closest important big game habitat is a mule deer (*Odocoileus heminous*) concentration area located approximately 1.5 miles northwest of the Project (Figure 3.3). Two great horned owl (*Bubo virginianus*) nests have been documented within five miles of the Project (Figure 3.3) and are protected under the MBTA from intentional take. Great horned owls do not demonstrate nest fidelity during subsequent nesting seasons. Generally, a nest deteriorates during one season of use. Therefore, few nests are used in subsequent years (Artuso et al. 2013).

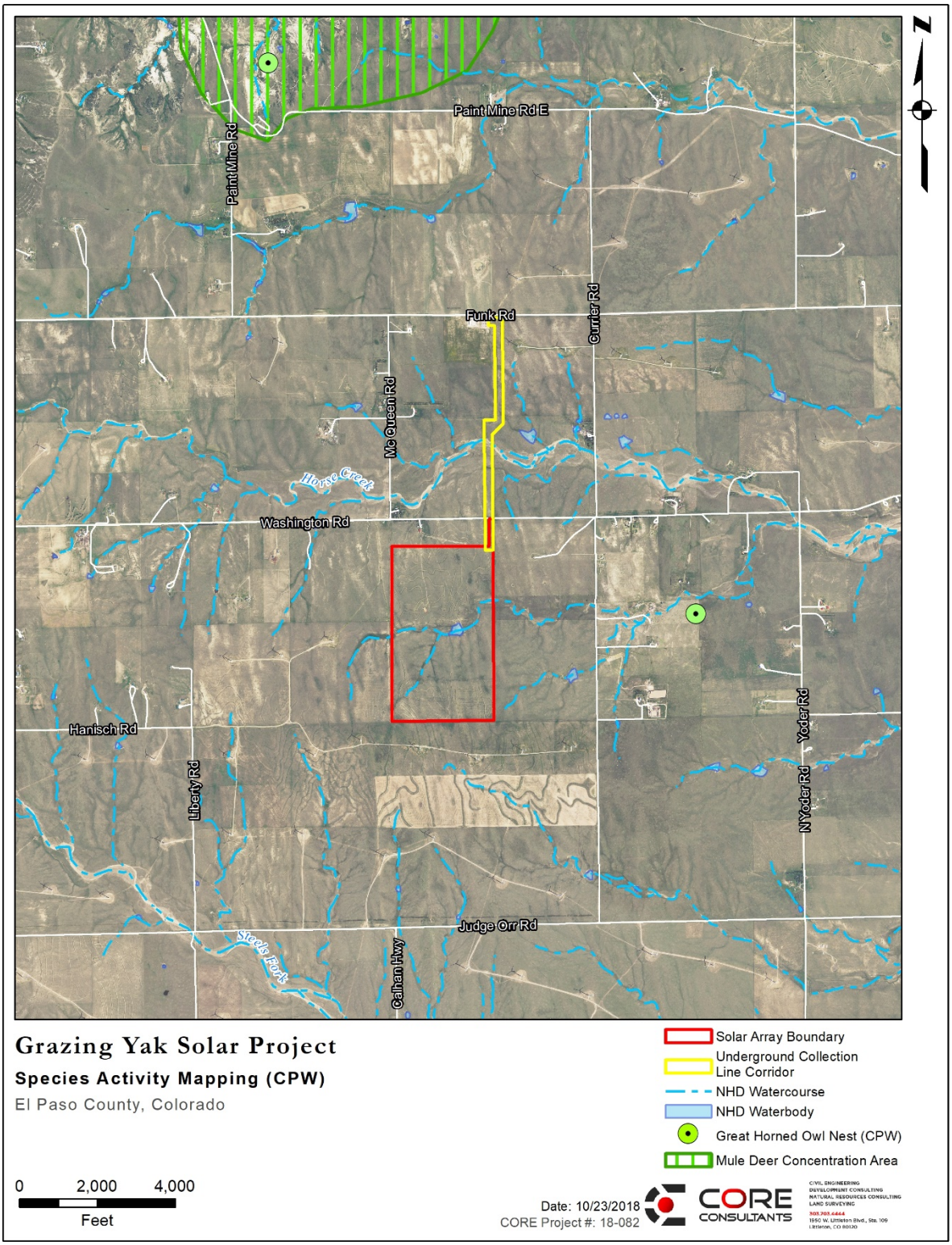

Figure 3.3 Species Activity Map

3.2 Natural Resources Survey

CORE completed a natural resources survey of the Study Area on August 21, 2018. The objectives of the survey were to confirm or refute the findings of the desktop review, and to identify the likelihood of occurrence for federal TES, and state SC and ST, and the occurrence of potentially jurisdictional wetlands and other WOUS in the Study Area.

3.2.1 Federally Threatened and Endangered Species and State Species of Concern

A CORE biologist surveyed the Study Area for the presence of swift fox, black-tailed prairie dog, northern pocket gopher, burrowing owl, and their associated habitat. CORE did not observe burrows that would indicate the presence of swift fox or black-tailed prairie dog, although the Study Area contains suitable habitat for both species. The survey determined that no suitable habitat occurs in the Study Area for burrowing owl, since no black-tailed prairie dog burrows are present that would provide the owl's preferred nesting medium. CORE observed several rodent burrows that could be occupied by northern pocket gopher, although the gopher was not observed during the survey. CORE did not observe suitable habitat in the Project for federally listed TES identified in the USFWS IPAC query. General wildlife species observed during the survey include turkey vulture (*Cathartes aura*), Swainson's hawk (*Buteo swainsonii*), and pronghorn antelope (*Antilocapra americana*).

3.2.2 Vegetation

A CORE biologist surveyed the Study Area to confirm the absence of suitable ULTO habitat, and to record general plant species. No TES plant species were observed during the survey. Dominant vegetation consisted of common plants of the Foothills Grasslands. Species observed included blue grama (*Bouteloua gracilis*), fringed sage (*Artemesia frigida*), needle-and-thread (*Hesperotipa comata*), meadow barley (*Hordeum brachyantherum*), soapweed yucca (*Yucca glauca*), squirreltail (*Elymus elymoides*), scaly blazing star (*Liatris squarrosa*), scartlet Indian paintbrush (*Castilleja coccinea*), sweetclover (*Melilotus officinalis*), American vetch (*Vicia Americana*), bentgrass (*Agrostis spp.*), intermediate wheatgrass (*Thinopyrum intermedium*), and sulfur buckwheat (*Eriogonum umbellatum*). No noxious weeds were observed.

3.2.3 Wetlands and Waters of the U.S.

A CORE biologist surveyed the Study Area for the presence of potentially jurisdictional wetlands and other WOUS. The branching unnamed tributary to Horse Creek, and the main channel of Horse Creek within the Study Area were surveyed to identify the presence or absence of indicators of wetlands or jurisdictional channels, including wetlands vegetation and a defined bed and bank. The branching unnamed tributary to Horse Creek presented as a broad drainage swale with inconsistent and intermittent erosional features demonstrating inconsistent drainage patterns from adjacent uplands. The stock pond located along the unnamed tributary in the central portion of the array boundary shows evidence of saturation during precipitation events and could be considered an isolated wetland; a berm is present on the downstream border of the pond and no evidence of a sub-surface hydrologic connection was observed downstream of the berm. The main channel of Horse Creek presented as a wide, sandy swale with intermittent erosional features along the north and south flanks of the floodplain within the Study Area.

CORE assessed the unnamed tributary to Horse Creek, and Horse Creek crossings of Currier Road, approximately 0.5 miles east of the Study Area. The unnamed tributary maintains a swale-like configuration as it crosses Currier Road, downstream of the Project. The main channel of Horse Creek presented as a wide, broad floodplain as it crosses Currier Road. No defined bed and bank was observed across Horse Creek as it crosses Currier Road.

4 CONCLUSIONS AND RECOMMENDATIONS

The desktop review and natural resources survey indicate a low likelihood for the presence of federal or state TES and their associated habitat. There is suitable habitat for black-tailed prairie dog, swift fox, and burrowing owl, although no black-tailed prairie dog burrows or swift fox dens were observed during the survey. As such, there is a low likelihood for the presence of nesting burrowing owl since no nesting habitat is present in the form of prairie dog burrows. There is potential for the state SC northern pocket gopher since rodent burrows were observed in the Study Area. CORE did not observe suitable habitat for federally listed TES identified in the USFWS IPAC query.

It is CORE's opinion that no potentially jurisdictional wetlands or WOUS occur in the Study Area. The main channel of Horse Creek traverses the underground collection line corridor, and an unnamed branching tributary traverses the array boundary. CORE's observations of both the main channel of Horse Creek and its unnamed tributary indicate that no characteristics of jurisdictional channels or wetlands are present in the Study Area. The Project is located relatively close to the headwaters of Horse Creek, and it is likely that a defined channel is present further downstream of the Project. CORE recommends requesting an Approved Jurisdictional Determination from the USACE Southern Colorado Regulatory Office to confirm the absence of jurisdictional wetlands and other WOUS in the Study Area.

5 LITERATURE CITED

Artuso, C., C.S. Houstin, D.G. Smith, and C. Rohner. 2013. Great Horned Owl (Bubo virginianus), version 2.0. *The Birds of North America* (A.F. Poole, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA.

Cassola, F. 2016. *Thomomys talpoides* (errata version published in 2017). *The IUCN Red List of Threatened Species 2016.*

Chapman, S.S., G.E. Griffith, J.M. Omernik, A.B. Price, J. Freeouf, and D.L. Schrupp. 2006. Ecoregions of Colorado (color poster with map, descriptive text, summary tables, and photographs). Reston, Virginia, U.S. Geological Survey (map scale 1:1,200,000).

CPW (Colorado Parks and Wildlife). 2018. CPW Species Activity Mapping Data. Available online at: https://www.arcgis.com/home/item.html?id=190573c5aba643a0bc058e6f7f0510b7

CPW. 2015a. Colorado's 2015 State Wildlife Action Plan. Available online at: https://cpw.state.co.us/Documents/WildlifeSpecies/SWAP/CO_SWAP_MainDocOnly.pdf

CPW. 2015b. Colorado Parks and Wildlife Species Profile. Available online at: http://cpw.state.co.us/learn/Pages/SpeciesProfiles.aspx

Dugger, B.D. and K.M. Dugger. 2002. Long-billed Curlew (*Numenius americanus*), version 2.0. *The Birds of North America* (A.F. Poole and F.B. Gill, Editors). Cornell Lab of Ornithology, Ithaca, NY, USA. Available online at: https://birdsna.org/Species-Account/bna/species/lobcur/distribution

eBird. 2017. eBird: An online database of bird distribution and abundance [web application]. eBird, Cornell Lab of Ornithology, Ithaca, New York. Available online at: http://www.ebird.org.

FEMA (Federal Emergency Management Agency). 1997. El Paso County, Colorado FEMA Flood Insurance Rate Maps. Map 08041C0625G and 08041C0650G.

Fertig, W., R. Black and P. Wolken. 2005. Rangewide Status Review of Ute's Ladies'-Tresses (*Sprianthes diluvialis*). Available online at: https://www.fws.gov/mountain-prairie/es/uteLadiestress.php

Gutierrez, R.J., A.B. Franklin, and W.S. Lahaye (1995). Spotted Owl (*Strix occidentalis*), version 2.0. In The Birds of North America (A.F. Poole and F.B. Gill, Editors). Cornell Lab of Ornithology, Ithaca, NY, USA.

Knopf, F.L. and M.B. Wunder. 2006. Mountain Plover (*Charadrius montanus*), version 2.0. *The Birds of North America* (A.F. Poole, Editor), Cornell Lab of Ornithology, Ithaca, NY, USA. Available online at: https://birdsna.org/Species-Account/bna/species/mouplo/distribution

Martin, A., J. Metcalf, C. Kennedy, and K. Rigers. 2015. Comparison Between Modern and Historical Distribution and Diversity of Cutthroat Trout in Colorado. Abstract from American Fisheries Society 145th Annual Meeting.

Moehrenschlager, A. and M. Sovada. 2016. Vulpes velox. The IUCN Red List of Threatened Species 2016. Available online at: http://www.iucnredlist.org/details/23059/0

Ng, J., M.D. Giovanni, M.J. Bechard, J.K. Schmutz, and P. Pyle. 2017. Ferruginous Hawk (*Buteo regalis*), version 2.0. In The Birds of North America (P.G. Rodewald, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA. Available online at: https://birdsna.org/Species-Account/bna/species/ferhaw/distribution

NRCS. (National Resources Conservation Service). 2018. Soils Survey Spatial Data. Available online at: https://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/survey/

NRCS. 2009. Ute Ladies'-Tresses (*Spiranthes diluvialis*) Plant Guide. Available online at: https://plants.usda.gov/plantguide/pdf/pg_spdi6.pdf

U.S. Department of Agriculture. 2016. National Agriculture Imagery Program. Available online at: https://www.fsa.usda.gov/programs-and-services/aerial-photography/imagery-programs/naip-imagery/

USFWS (U.S. Fish and Wildlife Service). 2018a. Information for Planning and Conservation Online System. Available online at https://ecos.fws.gov/ipac/.

USFWS. 2018b. Critical Habitat Portal. Available online at https://fws.maps.arcgis.com/home/webmap/viewer.html?webmap=9d8de5e265ad4fe09893cf75b8dbfb77

USFWS. 2017. National Wetlands Inventory (NWI). Available online at: https://www.fws.gov/wetlands/data/state-downloads.html.

USFWS. 2014. Species Profile for Ute ladies'-tresses (Spiranthes diluvialis). Available online at: https://ecos.fws.gov/ecp0/profile/speciesProfile?sId=2159

USFWS. 2009. September 21, 2009. News Release: U.S. Fish and Wildlife Service and Colorado Department of Wildlife block clear eastern Colorado's black-tailed prairie dog habitat. Available online at: https://www.fws.gov/mountain-prairie/pressrel/09-60.html

USGS. 2017. (United States Geological Survey). National Hydrography Dataset (NHD) and Watershed Boundary Dataset (WBD). Available online at: https://nhd.usgs.gov/.

USGS. 2010. U.S. Geological Survey 7.5-Minute Topographic Maps. Peoria Quadrangle – Colorado.

Young, M.K. 2009. Greenback Cutthroat Trout (Oncorhynchus clarkia stomias): a technical conservation assessment. USDA Forest Service, Rocky Mountain Region. Available online at: https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5206801.pdf

APPENDIX A
REPRESENTATIVE SITE PHOTOS

Photo 1: Horse Creek, facing east from the collection line corridor.

Photo 2. Horse Creek, facing west from the collection line corridor.

Photo 3. Collection line corridor from southern portion, facing north.

Photo 4. Unnamed tributary to Horse Creek, facing west at the eastern boundary of the array boundary.

Photo 5. Erosional feature facing south, southeast of stock pond.

Photo 6. South of stock pond, facing north; berm located along eastern edge.