

Main CSJ: 1059-01-047 & 1059-02-002	il Associatore luce
Form Prepared By: Jonathan Stewart and Chris Hagar, Civ	II Associates, Inc.
Date of Evaluation: June 2, 2020	
Proposed Letting Date: January 2022	Project not assigned to TxDOT under the NEPA Assignment MOU
District(s): Dallas	
County(ies): Denton	
Roadway Name: Farm-to-Market Road (FM) 1173	
Limits From: FM 156	
Limits To: Interstate Highway (IH) 35	
Project Description: Please see the project description avai	ilable in ECOS in the Work Plan Development Section I.

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried-out by TxDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated December 9, 2019, and executed by FHWA and TxDOT.

- No
 Is the project limited to a maintenance activity exempt from coordination?

 http://txdot.gov/inside-txdot/division/environmental/maintenance-program.html
- 2. No Has the project previously completed coordination with TPWD?
- 3. Yes Is the project within range of a state threatened or endangered species or SGCN and suitable habitat is present?

*Explain:

There is suitable habitat present within the proposed project area for the following state threatened species: White-faced Ibis (Plegadis chihi), Louisiana pigtoe (Pleurobema riddellii), sandbank pocketbook (Lampsilis satura), and Texas Heelsplitter (Potamilus amphichaenus).

SGCN were analyzed and only those included on the Tier 1 form may be impacted. All other SGCN would not be impacted by the project.

There is suitable habitat present within the proposed project area for the following SGCN species: Strecker's chorus frog (Pseudacris strecker), Woodhouse's toad (Anaxyrus woodhousii), Western Burrowing Owl (Athene cunicularia hypugaea), American badger (Taxidea taxus), eastern spotted skunk (Spilogale putorius), long-tailed weasel (Mustela frenata), mink (Neovison vison), thirteen-lined ground squirrel (Ictidomys tridecemlineatus), eastern box turtle (Terrapene carolina), slender glass lizard (Ophisaurus attenuatus), smooth softshell turtle (Apolone mutica), Texas garter snake (Thamnophis sirtalis annectens), and western box turtle (Terrapene ornata).

Date TPWD County List Accessed:	May 13, 2020
Date that the NDD was accessed:	May 14, 2020
What agency performed the NDD sea	rch? TPWD



EOID Number	Common Name	Scientific Name	Listing Status	Buffer Zone
3741	Little Bluestem-indiangrass Series	Schizachyrium scoparium- sorghastrum nutans series	N/A	10 Mile
434	Texas garter snake	Thamnophis sirtalis annectens	N/A	10 Mile
11567	Mollisol Blackland Prairie	Schizachyrium scoparium- Andropogon gerardii- Sorghastrum nutans- Bifora americana Mollisol Grassland	N/A	1.5 Mile

NDD Search Results for EOIDs and Tracked Managed Areas

No Does the BMP PA eliminate the requirement to coordinate for all species?

Comments:

Species-specific BMPs are present in the BMP PA for the following species: Western Burrowing Owl, White-faced Ibis, eastern spotted skunk (using plains spotted skunk BMPs by TPWD approval), Louisiana pigtoe, sandbank pocketbook, Texas heelsplitter, and Texas garter snake. These are listed in full at the end of this form.

There are no species-specific BMPs for Stecker's chorus frog, Woodhouse's toad, American badger, long-tailed weasel, mink, thirteen-lined ground squirrel, eastern box turtle, slender glass lizard, smooth softshell turtle, and western box turtle.

4. Yes NDD and TCAP review indicates adverse impacts to remnant vegetation?

*Explain:

According to the MOU, important remnant vegetation includes 1) rare vegetation communities and 2) those that are suitable habitat for SGCNs.

To address the first component, TXNDD data obtained from TPWD on May 13, 2020, was reviewed along with the RTEST for Denton County, dated April13, 2020. The TXNDD search radii was 1.5 miles and 10 miles from the project area (see table above). These specific species and plant community detections are located outside of the project area and would not be impacted by the proposed project.

To address important remnant vegetation's second component, general habitat types of those SGCNs that may be impacted by the proposed project include riparian, grassland, agricultural, urban, and woodland. These habitat types are located immediately adjacent to the existing and proposed FM 1173, and each include an edge component. Impacts to these habitats were quantified, based on the MOU type that best fits vegetation present in the given habitat, by using EMST correcting for discrepancies using actual observed vegetation types as discussed below. None of these areas that include habitat for SGCNs are considered rare or remnant vegetation communities.

5. Yes Does the project require a NWP with PCN or IP by USACE?

Explain:

A NWP 14 with a PCN would be required at Crossing 2 (unnamed tributary to Dry Fork Hickory Creek and wetland area) and Crossing 3 (Dry Fork Creek, tributary to Dry Fork Hickory Creek, and wetland area).

6. No Does the project include more than 200 linear feet of stream channel for each single and complete crossing of one or more of the following that is not already channelized or otherwise maintained:



- 7. No Does the project contain known isolated wetlands outside the TxDOT ROW that will be directly impacted by the project?
- 8. Yes Would the project impact at least 0.10 acre of riparian vegetation?

*Explain:

Proposed project would impact approximately 0.7 acre of riparian vegetation.

9. Yes Does project disturb a habitat type in an area equal to or greater than the area of disturbance indicated in the Threshold Table Programmatic Agreement?

*Explain:

The approximately 20.3 acres of Agriculture MOU Type habitat disturbance exceeds the 10-acre area of threshold indicated in the Cross Timbers Threshold Table PA for Agriculture.

The approximately 3.7 acres of Disturbed Prairie MOU Type habitat disturbance exceeds the 3-acre area of threshold indicated by the Cross Timbers Threshold Table PA for Disturbed Prairie.

The approximately 0.7 acre of Riparian MOU Type habitat disturbance exceeds the 0.1-acre area of threshold indicated in the Cross Timbers Threshold Table PA for Riparian.

The approximately 15.8 acres of Tallgrass Prairie, Grassland MOU Type habitat disturbance exceeds the 0.1-acre area of threshold indicated in the Cross Timbers Threshold Table PA for Tallgrass Prairie, Grassland.

*Attach associated file of EMST output (Mapper Report or other Excel File which includes MOU Type, Ecosystem Name, Common/Vegetation Type Name) in ECOS

Excel File Name:

1059-01-047 & 1059-02-002 FM 1173 EMSTandObservedVegTable 6-2-20.xls

9.1. Yes Is there a discrepancy between actual habitat(s) and EMST mapped habitat(s)?

*Explain:			
MOU Type	Actual Area (ac)	EMST Area (ac)	
Agriculture	20.3	20.1	
Crosstimbers Woodland and Forest	0.5	2.5	
Disturbed Prairie	19.5	0.1	
Open Water	0.2	N/A	
Riparian	0.7	0.5	
Urban	51.4	34.9	

Attach file showing discrepancy between actual and EMST mapped habitat(s). File Name:

1059-01-047 & 1059-02-002 FM 1173 EMSTandObservedVegTable 6-2-20.xls 1059-01-047 & 1059-02-002 FM 1173 EMSTFigures 6-2-20.pdf 1059-01-047 & 1059-02-002 FM 1173 ObservedVegFigures 6-2-20.pdf 1059-01-047 & 1059-02-002 FM 1173 Veg Photos 6-2-20.pdf



Is TPWD Coordination Required?

Yes

Early Coordination

Administrated Coordination - Must be conducted through ENV-NRM

BMPs Implemented or EPICs included (as necessary):

The implementation of the following BMPs by TxDOT eliminates the need for coordination for species impacts under section 2.206(i) of the MOU:

Sandbank pocketbook, Louisiana pigtoe, and Texas heelsplitter: Freshwater Mussel BMPs:

1) When work is in the water, survey project footprints for state listed species where appropriate habitat exists. 2) When work is in the water and mussels are discovered during surveys, relocate state listed and SGCN mussels under TPWD authorization and implement Water Quality BMPs.

3) When work is adjacent to the water, Water Quality BMPs implemented as part

of the SWPPP for a construction general permit or any conditions of the 401 water quality certification for the project will be implemented.

Water Quality BMPs: In addition to BMPs required for a TCEQ Storm Water Pollution Prevention Plan and/or 401 water quality permits:

1) Minimize the use of equipment in streams and riparian areas during construction.

When possible, equipment access should be from banks, bridge decks, or barges.

2) When temporary stream crossings are unavoidable, remove stream crossings once they are no longer needed and stabilize banks and soils around the crossing.

Texas garter snake: Terrestrial Reptile BMPs:

a) Apply hydro-mulching and/or hydroseeding in areas for soil stabilization and/or revegetation of disturbed areas where feasible. If hydro-mulching and/or hydroseeding are not feasible due to site conditions, utilize erosion control blankets or mats that contain no netting or contain loosely woven, natural fiber netting is preferred. Plastic netting should be avoided to the extent practicable.

b) For open trenches and excavated pits, install escape ramps at an angle of less than 45 degrees (1:1) in areas left uncovered. Visually inspect excavation areas for trapped wildlife prior to backfilling.

c) Inform contractors that if reptiles are found on project site allow species to safely leave the project area.

d) Avoid or minimize disturbing or removing downed trees, rotting stumps, and leaf litter where feasible.

e) Contractors will be advised of potential occurrence in the project area, and to avoid harming the species if encountered.

White-faced Ibis and Western Burrowing Owl - Bird BMPs:

In addition to complying with the Migratory Bird Treaty Act perform the following BMPs:

a) Prior to construction, perform daytime surveys for nests including under bridges and in culverts to determine if they are active before removal. Nests that are active should not be disturbed.

b) Do not disturb, destroy, or remove active nests, including ground nesting birds, during the nesting season.

c) Avoid the removal of unoccupied, inactive nests, as practicable.

d) Prevent the establishment of active nests during the nesting season on TxDOT owned and operated facilities and structures proposed for replacement or repair.

e) Do not collect, capture, relocate, or transport birds, eggs, young, or active nests without a permit.

Eastern spotted skunk - Contractors would be advised of potential occurrence in the project area, to avoid harming the species if encountered, and to avoid unnecessary impacts to dens.

TxDOT proposes the following for species with no species-specific BMPs included in the BMP PA:



American badger, long-tailed weasel, mink, and thirteen-lined ground squirrel - Contractors would be advised of potential occurrence in the project area, to avoid harming the species if encountered.

Eastern box turtle, western box turtle, smooth softshell turtle, and slender glass lizard - Terrestrial Reptile BMPs.

Woodhouse's toad and Strecker's chorus frog - Amphibian BMPs.

TxDOT Contact Information

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Phone Number: (214) 320-6162

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Aerial Map (with delineated project boundaries) USFWS T&E List TPWD T&E List Species Analysis Summary NDD EOID List and Tracked Managed Areas (Required for TPWD Coordination) EMST Project MOU Summary Table (Required for TPWD Coordination) TPWD SGCN List Photos (Required for TPWD Coordination) Previous TPWD Coordination Documentation (if applicable)



United States Department of the Interior

FISH AND WILDLIFE SERVICE Arlington Ecological Services Field Office 2005 Ne Green Oaks Blvd Suite 140 Arlington, TX 76006-6247 Phone: (817) 277-1100 Fax: (817) 277-1129 <u>http://www.fws.gov/southwest/es/arlingtontexas/</u> http://www.fws.gov/southwest/es/EndangeredSpecies/lists/



In Reply Refer To: Consultation Code: 02ETAR00-2019-SLI-2078 Event Code: 02ETAR00-2020-E-03967 Project Name: 2645 FM 1173 May 13, 2020

Subject: Updated list of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed, and candidate species, as well as proposed and final designated critical habitat, which may occur within the boundary of your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under section 7(a)(1) of the Act, Federal agencies are directed to utilize their authorities to carry out programs for the conservation of threatened and endangered species. Under and 7(a)(2) and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to determine whether their actions may affect threatened and endangered species and/or designated critical habitat. A Federal action is an activity or program authorized, funded, or carried out, in whole or in part, by a Federal agency (50 CFR 402.02).

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For Federal actions other than major construction activities, the Service suggests that a biological evaluation (similar to a Biological Assessment) be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

After evaluating the potential effects of a proposed action on federally listed species, one of the following determinations should be made by the Federal agency:

- 1. *No effect* the appropriate determination when a project, as proposed, is anticipated to have no effects to listed species or critical habitat. A "no effect" determination does not require section 7 consultation and no coordination or contact with the Service is necessary. However, the action agency should maintain a complete record of their evaluation, including the steps leading to the determination of affect, the qualified personnel conducting the evaluation, habitat conditions, site photographs, and any other related information.
- 2. *May affect, but is not likely to adversely affect* the appropriate determination when a proposed action's anticipated effects are insignificant, discountable, or completely beneficial. Insignificant effects relate to the size of the impact and should never reach the scale where "take" of a listed species occurs. Discountable effects are those extremely unlikely to occur. Based on best judgment, a person would not be able to meaningfully measure, detect, or evaluate insignificant effects, or expect discountable effects to occur. This determination requires written concurrence from the Service. A biological evaluation or other supporting information justifying this determination should be submitted with a request for written concurrence.
- 3. *May affect, is likely to adversely affect* the appropriate determination if any adverse effect to listed species or critical habitat may occur as a direct or indirect result of the proposed action, and the effect is not discountable or insignificant. This determination requires formal section 7 consultation.

The Service recommends that candidate species, proposed species, and proposed critical habitat be addressed should consultation be necessary. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at: http://www.fws.gov/endangered/ esa-library/pdf/TOC-GLOS.PDF

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.), and projects affecting these species may require development of an eagle conservation plan (<u>http://www.fws.gov/windenergy/</u> <u>eagle_guidance.html</u>). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/corre

For additional information concerning migratory birds and eagle conservation plans, please contact the Service's Migratory Bird Office at 505-248-7882.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Arlington Ecological Services Field Office

2005 Ne Green Oaks Blvd Suite 140 Arlington, TX 76006-6247 (817) 277-1100

Project Summary

Consultation Code:	02ETAR00-2019-SLI-2078

Event Code: 02ETAR00-2020-E-03967

Project Name: 2645 FM 1173

Project Type: TRANSPORTATION

Project Description: Realignment and Widening

Project Location:

Approximate location of the project can be viewed in Google Maps: <u>https://www.google.com/maps/place/33.261779923621454N97.23874559858399W</u>



Counties: Denton, TX

Endangered Species Act Species

There is a total of 4 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Note that 2 of these species should be considered only under certain conditions.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

1. <u>NOAA Fisheries</u>, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Birds

NAME	STATUS
Least Tern <i>Sterna antillarum</i>	Endangered
Population: interior pop.	
No critical habitat has been designated for this species.	
Species profile: <u>https://ecos.fws.gov/ecp/species/8505</u>	
Piping Plover <i>Charadrius melodus</i>	Threatened
Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except	
those areas where listed as endangered.	
There is final critical habitat for this species. Your location is outside the critical habitat.	
This species only needs to be considered under the following conditions:	
 Wind Energy Projects 	
Species profile: <u>https://ecos.fws.gov/ecp/species/6039</u>	
Red Knot <i>Calidris canutus rufa</i>	Threatened
No critical habitat has been designated for this species.	
This species only needs to be considered under the following conditions:	
 Wind Energy Projects 	
Species profile: <u>https://ecos.fws.gov/ecp/species/1864</u>	
Whooping Crane Grus americana	Endangered
Population: Wherever found, except where listed as an experimental population	
There is final critical habitat for this species. Your location is outside the critical habitat.	
Species profile: https://ecos.fws.gov/ecp/species/758	
- L L	

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

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Last Update: 4/13/2020

DENTON COUNTY

AMPHIBIANS

Strecker's chorus frog	Pseudacris streckeri	
Terrestrial and aquatic: Wooded floo	dplains and flats, prairies, cultivated fields and marshes. Like	es sandy substrates.
Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3
Woodhouse's toad	Anaxyrus woodhousii	
Terrestrial and aquatic: A wide varie Aquatic habitats are equally varied.	ty of terrestrial habitats are used by this species, including fo	rests, grasslands, and barrier island sand dunes.
Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: SU
	BIRDS	
bald eagle	Haliaeetus leucocephalus	
Found primarily near rivers and large scavenges, and pirates food from oth	e lakes; nests in tall trees or on cliffs near water; communally er birds	roosts, especially in winter; hunts live prey,
Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3B,S3N
Black Rail	Laterallus jamaicensis	
Salt, brackish, and freshwater marshe ground, but usually on mat of previo	es, pond borders, wet meadows, and grassy swamps; nests in us years dead grasses; nest usually hidden in marsh grass or a	or along edge of marsh, sometimes on damp at base of Salicornia
Federal Status: PT	State Status: T	SGCN: Y
Endemic: N	Global Rank: G3G4	State Rank: S2
Franklin's gull	Leucophaeus pipixcan	
This species is only a spring and fall or a few individuals at a given site (e down to wetlands, lake shore, or islas	migrant throughout Texas. It does not breed in or near Texas specially along the Gulf coastline). During migration, these g nds to roost for the night.	. Winter records are unusual consisting of one gulls fly during daylight hours but often come
Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S2N
interior least tern	Sternula antillarum athalassos	
Sand beaches, flats, bays, inlets, lago and gravel bars within braided stream mines, etc); eats small fish and crusta	oons, islands. Subspecies is listed only when inland (more than ns, rivers; also know to nest on man-made structures (inland aceans, when breeding forages within a few hundred feet of c	n 50 miles from a coastline); nests along sand beaches, wastewater treatment plants, gravel olony
Federal Status: LE	State Status: E	SGCN: Y
Endemic: N	Global Rank: G4T3Q	State Rank: S1B

DISCLAIMER

BIRDS

mountain plover Charadrius montanus Breeding: nests on high plains or shortgrass prairie, on ground in shallow depression; nonbreeding: shortgrass plains and bare, dirt (plowed) fields; primarily insectivorous SGCN: Y Federal Status: State Status: Endemic: N Global Rank: G3 State Rank: S2 Charadrius melodus piping plover Beaches, sandflats, and dunes along Gulf Coast beaches and adjacent offshore islands. Also spoil islands in the Intracoastal Waterway, Based on the November 30, 1992 Section 6 Job No. 9.1, Piping Plover and Snowy Plover Winter Habitat Status Survey, algal flats appear to be the highest quality habitat. Some of the most important aspects of algal flats are their relative inaccessibility and their continuous availability throughout all tidal conditions. Sand flats often appear to be preferred over algal flats when both are available, but large portions of sand flats along the Texas coast are available only during low-very low tides and are often completely unavailable during extreme high tides or strong north winds. Beaches

appear to serve as a secondary habitat to the flats associated with the primary bays, lagoons, and inter-island passes. Beaches are rarely used on the southern Texas coast, where bayside habitat is always available, and are abandoned as bayside habitats become available on the central and northern coast. However, beaches are probably a vital habitat along the central and northern coast (i.e. north of Padre Island) during periods of extreme high tides that cover the flats. Optimal site characteristics appear to be large in area, sparsely vegetated, continuously available or in close proximity to secondary habitat, and with limited human disturbance.

Federal Status: LT	State Status: T	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S2N

Rufa Red Knot

Calidris canutus rufa

Red knots migrate long distances in flocks northward through the contiguous United States mainly April-June, southward July-October. A small plump-bodied, short-necked shorebird that in breeding plumage, typically held from May through August, is a distinctive and unique pottery orange color. Its bill is dark, straight and, relative to other shorebirds, short-to-medium in length. After molting in late summer, this species is in a drab gray-and-white non-breeding plumage, typically held from September through April. In the non-breeding plumage, the knot might be confused with the omnipresent Sanderling. During this plumage, look for the knot's prominent pale eyebrow and whitish flanks with dark barring. The Red Knot prefers the shoreline of coast and bays and also uses mudflats during rare inland encounters. Primary prey items include coquina clam (Donax spp.) on beaches and dwarf surf clam (Mulinia lateralis) in bays, at least in the Laguna Madre. Wintering Range includes-Aransas, Brazoria, Calhoun, Cameron, Chambers, Galveston, Jefferson, Kennedy, Kleberg, Matagorda, Nueces, San Patricio, and Willacy. Habitat: Primarily seacoasts on tidal flats and beaches, herbaceous wetland, and Tidal flat/shore.

Federal Status: LT	State Status: T	SGCN: Y
Endemic: N	Global Rank: G4T2	State Rank: SNRN

western burrowing owl

Endemic: N

Athene cunicularia hypugaea

Global Rank: G5

Open grasslands, especially prairie, plains, and savanna, sometimes in open areas such as vacant lots near human habitation or airports; nests and roosts in abandoned burrows

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4T4	State Rank: S2
white-faced ibis	Plegadis chihi	
Prefers freshwater marshes, sloughs, a rookeries in so-called hog-wallow pra	and irrigated rice fields, but will attend brackish and saltwate iries. Nests in marshes, in low trees, on the ground in bulrus	r habitats; currently confined to near-coastal hes or reeds, or on floating mats.
Federal Status:	State Status: T	SGCN: Y

State Rank: S4B

DISCLAIMER

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DENTON COUNTY

BIRDS

whooping crane	Grus americana	
Small ponds, marshes, and floode winters in coastal marshes of Ara	ed grain fields for both roosting and foraging. ansas, Calhoun, and Refugio counties.	Potential migrant via plains throughout most of state to coast;
Federal Status: LE	State Status: E	SGCN: Y
Endemic: N	Global Rank: G1	State Rank: S1N
	INSECTS	
American bumblebee	Bombus pensylvanicus	
Habitat description is not available	le at this time.	
Federal Status:	State Status:	SGCN: Y
Endemic:	Global Rank: G3G4	State Rank: SNR
No accepted common name	Arethaea ambulator	
Habitat description is not available	le at this time.	
Federal Status:	State Status:	SGCN: Y
Endemic:	Global Rank: GNR	State Rank: SNR
	MAMMALS	
American badger	Taxidea taxus	
Generalist. Prefers areas with soft underground burrows.	t soils that sustain ground squirrels for food.	When inactive, occupies underground burrow. Young are born in
Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S5
big brown bat	Eptesicus fuscus	
Any wooded areas or woodlands	except south Texas. Riparian areas in west Te	exas.
Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S5
big free-tailed bat	Nyctinomops macrotis	
Habitat data sparse but records in reproduction data sparse, gives bi may hibernate in the Trans-Pecos	dicate that species prefers to roost in crevices in to single offspring late June-early July; fe ; opportunistic insectivore	and cracks in high canyon walls, but will use buildings, as well; emales gather in nursery colonies; winter habits undetermined, but

Federal Status:State Status:Endemic:Global Rank: G5

SGCN: Y State Rank: S3

DISCLAIMER

MAMMALS

black-tailed prairie dog	Cynomys ludovicianus	
Dry, flat, short grasslands with	low, relatively sparse vegetation, including are	as overgrazed by cattle; live in large family groups
Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: S3
eastern red bat	Lasiurus borealis	
Found in a variety of habitats in	n Texas. Usually associated with wooded areas	. Found in towns especially during migration.
Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3G4	State Rank: S4
eastern spotted skunk	Spilogale putorius	
Generalist; open fields prairies, prairies. S.p. ssp. interrupta fou	croplands, fence rows, farmyards, forest edge nd in wooded areas and tallgrass prairies, prefe	s & amp; woodlands. Prefer wooded, brushy areas & amp; tallgrass erring rocky canyons and outcrops when such sites are available.
Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: S1S3
hoary bat	Lasiurus cinereus	
Known from montane and ripar	ian woodland in Trans-Pecos, forests and woo	ds in east and central Texas.
Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3G4	State Rank: S4
long-tailed weasel	Mustela frenata	
Includes brushlands, fence rows	s, upland woods and bottomland hardwoods, fo	prest edges & rocky desert scrub. Usually live close to water.
Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S5
Mexican free-tailed bat	Tadarida brasiliensis	
Roosts in buildings in east Texa	as. Largest maternity roosts are in limestone ca	ves on the Edwards Plateau. Found in all habitats, forest to desert
Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S5
mink	Neovison vison	
Intimately associated with wate	r; coastal swamps & marshes, wooded ripariar	a zones, edges of lakes. Prefer floodplains.
Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S4

DISCLAIMER

MAMMALS

mountain lion	Puma concolor				
Generalist; found in a wide range of	of habitats statewide. Found most frequently	y in rugged mountains & amp; riparian zones.			
Federal Status:	State Status:	SGCN: Y			
Endemic: N	Global Rank: G5	State Rank: S2S3			
plains spotted skunk	Spilogale putorius interrupta				
Generalist; open fields, prairies, cruprairie	oplands, fence rows, farmyards, forest edge	es, and woodlands; prefers wooded, brushy areas and tallgrass			
Federal Status:	State Status:	SGCN: N			
Endemic: N	Global Rank: G4T4	State Rank: S1S3			
southern short-tailed shrew	Blarina carolinensis				
Found in East Texas pine forests as sites are probably under logs, stum	nd agricultural land. May favor areas with a ps and other debris.	abundant leaf litter and fallen logs (Baumgardner et al. 1992). Nest			
Federal Status:	State Status:	SGCN: Y			
Endemic: N	Global Rank: G5	State Rank: S4			
swamp rabbit	Sylvilagus aquaticus				
Primarily found in lowland areas n	ear water including: cypress bogs and mars	hes, floodplains, creeks and rivers.			
Federal Status:	State Status:	SGCN: Y			
Endemic: N	Global Rank: G5	State Rank: S5			
thirteen-lined ground squirrel	Ictidomys tridecemlineatus				
Prefers short grass prairies with de-	ep soils for burrowing. Frequently found in	grazed ranchland, mowed pastures, and golf courses.			
Federal Status:	State Status:	SGCN: Y			
Endemic: N	Global Rank: G5	State Rank: S5			
tricolored bat	Perimyotis subflavus				
Forest, woodland and riparian area	s are important. Caves are very important to	o this species.			
Federal Status:	State Status:	SGCN: Y			
Endemic: N	Global Rank: G2G3	State Rank: S3S4			
western hog-nosed skunk	Conepatus leuconotus				
Habitats include woodlands, grassl habitat of the ssp. telmalestes	ands & amp; deserts, to 7200 feet, most con	nmon in rugged, rocky canyon country; little is known about the			
Federal Status:	State Status:	SGCN: Y			
Endemic: N	Global Rank: G4	State Rank: S4			

DISCLAIMER

MAMMALS

woodland vole	Microtus pinetorum	
Include grassy marshes, swamp	p edges, old-field/pine woodland ecotones, ta	allgrass fields; generally sandy soils.
Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3
	MOLLUSK	S
Louisiana pigtoe	Pleurobema riddellii	
Occurs in small streams to larg (Howells 2010f; Randklev et a	ge rivers in slow to moderate currents in subs al. 2013b; Troia et al. 2015). [Mussels of Tex	trates of clay, mud, sand, and gravel. Not known from impoundments as 2019]
Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G1G2	State Rank: S1
sandbank pocketbook	Lampsilis satura	
Occurs in small streams to larg but most common in littoral ha 2014a; Troia et al. 2015). [Mus	ge rivers in slow to moderate current in sandy abitats such as banks or backwaters or in prot ssels of Texas 2019]	y mud to sand and gravel substrate. Can occur in a variety of habitats tected areas along point bars (Randklev et al. 2013b; Randklev et al.
Federal Status:	State Status: T	SGCN: Y
Endemic:	Global Rank: G2?	State Rank: S1
Texas heelsplitter	Potamilus amphichaenus	
Occurs in small streams to larg reservoirs. Often found in soft	ge rivers in standing to slow-flowing water; n substrates such as mud, silt or sand (Howells	nost common in banks, backwaters and quiet pools; adapts to some s et al. 1996; Randklev et al. 2017a). [Mussels of Texas 2019]
Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G1G3	State Rank: S1
	REPTILES	5
common garter snake	Thamnophis sirtalis	
Terrestrial and aquatic: Habita marshes. Damp soils and debri	ts used include the grasslands and modified of is for cover are thought to be critical.	open areas in the vicinity of aquatic features, such as ponds, streams or
Federal Status:	State Status:	SGCN: N
Endemic:	Global Rank: G5	State Rank: S2
eastern box turtle	Terrapene carolina	
Terrestrial: Eastern box turtles spring to forest in summer. The stump holes, or under leaf litte	inhabit forests, fields, forest-brush, and fore ey commonly enters pools of shallow water i rr. They can successfully hibernate in sites th	st-field ecotones. In some areas they move seasonally from fields in in summer. For shelter, they burrow into loose soil, debris, mud, old at may experience subfreezing temperatures.
Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3

DISCLAIMER

The information on this web application is provided "as is" without warranty as to the currentness, completeness, or accuracy of any specific data. The data provided are for planning, assessment, and informational purposes. Refer to the Frequently Asked Questions (FAQs) on the application website for further information.

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REPTILES

slender glass lizard	Ophisaurus attenuatus				
Terrestrial: Habitats include open gra fallow fields, and areas near streams	ussland, prairie, woodland edge, open woodland, oak savanna and ponds, often in habitats with sandy soil.	as, longleaf pine flatwoods, scrubby areas,			
Federal Status:	State Status:	SGCN: Y			
Endemic: N	Global Rank: G5	State Rank: S3			
smooth softshell	Apalone mutica				
Aquatic: Large rivers and streams; in or mud bottom and few aquatic plant and banks close to water, usually wit	some areas also found in lakes and impoundments (Ernst an s. Often basks on sand bars and mudflats at edge of water. Et hin 90 m of water (Fitch and Plummer 1975).	d Barbour 1972). Usually in water with sandy ggs are laid in nests dug in high open sandbars			
Federal Status:	State Status:	SGCN: Y			
Endemic: N	Global Rank: G5	State Rank: S3			
Texas garter snake	Thamnophis sirtalis annectens				
Terrestrial and aquatic: Habitats used marshes. Damp soils and debris for c	l include the grasslands and modified open areas in the vicini over are thought to be critical.	ty of aquatic features, such as ponds, streams or			
Federal Status:	State Status:	SGCN: Y			
Endemic: Y	Global Rank: G5T4	State Rank: S1			
Texas horned lizard	Phrynosoma cornutum				
Texas horned lizard Terrestrial: Open habitats with sparse sandy to rocky; burrows into soil, ent pinyon-juniper zone on mountains in	<i>Phrynosoma cornutum</i> e vegetation, including grass, prairie, cactus, scattered brush o ters rodent burrows, or hides under rock when inactive. Occu the Big Bend area.	or scrubby trees; soil may vary in texture from rs to 6000 feet, but largely limited below the			
Texas horned lizard Terrestrial: Open habitats with sparse sandy to rocky; burrows into soil, ent pinyon-juniper zone on mountains in Federal Status:	Phrynosoma cornutum e vegetation, including grass, prairie, cactus, scattered brush of ters rodent burrows, or hides under rock when inactive. Occu the Big Bend area. State Status: T	or scrubby trees; soil may vary in texture from rs to 6000 feet, but largely limited below the SGCN: Y			
Texas horned lizard Terrestrial: Open habitats with sparse sandy to rocky; burrows into soil, ent pinyon-juniper zone on mountains in Federal Status: Endemic: N	Phrynosoma cornutum e vegetation, including grass, prairie, cactus, scattered brush of ters rodent burrows, or hides under rock when inactive. Occur the Big Bend area. State Status: T Global Rank: G4G5	or scrubby trees; soil may vary in texture from rs to 6000 feet, but largely limited below the SGCN: Y State Rank: S3			
Texas horned lizard Terrestrial: Open habitats with sparse sandy to rocky; burrows into soil, ent pinyon-juniper zone on mountains in Federal Status: Endemic: N timber (canebrake) rattlesnake	Phrynosoma cornutum e vegetation, including grass, prairie, cactus, scattered brush of ters rodent burrows, or hides under rock when inactive. Occur the Big Bend area. State Status: T Global Rank: G4G5 Crotalus horridus	or scrubby trees; soil may vary in texture from rs to 6000 feet, but largely limited below the SGCN: Y State Rank: S3			
Texas horned lizard Terrestrial: Open habitats with sparse sandy to rocky; burrows into soil, ent pinyon-juniper zone on mountains in Federal Status: Endemic: N timber (canebrake) rattlesnake Terrestrial: Swamps, floodplains, upl black clay. Prefers dense ground cove	Phrynosoma cornutum e vegetation, including grass, prairie, cactus, scattered brush o ters rodent burrows, or hides under rock when inactive. Occu the Big Bend area. State Status: T Global Rank: G4G5 <i>Crotalus horridus</i> and pine and deciduous woodland, riparian zones, abandone er, i.e. grapevines, palmetto.	or scrubby trees; soil may vary in texture from rs to 6000 feet, but largely limited below the SGCN: Y State Rank: S3 d farmland. Limestone bluffs, sandy soil or			
Texas horned lizard Terrestrial: Open habitats with sparse sandy to rocky; burrows into soil, ent pinyon-juniper zone on mountains in Federal Status: Endemic: N timber (canebrake) rattlesnake Terrestrial: Swamps, floodplains, upl black clay. Prefers dense ground cover Federal Status:	Phrynosoma cornutum e vegetation, including grass, prairie, cactus, scattered brush of ters rodent burrows, or hides under rock when inactive. Occur the Big Bend area. State Status: T Global Rank: G4G5 <i>Crotalus horridus</i> and pine and deciduous woodland, riparian zones, abandone er, i.e. grapevines, palmetto. State Status:	or scrubby trees; soil may vary in texture from rs to 6000 feet, but largely limited below the SGCN: Y State Rank: S3 d farmland. Limestone bluffs, sandy soil or SGCN: Y			
Texas horned lizard Terrestrial: Open habitats with sparse sandy to rocky; burrows into soil, ent pinyon-juniper zone on mountains in Federal Status: Endemic: N timber (canebrake) rattlesnake Terrestrial: Swamps, floodplains, upl black clay. Prefers dense ground cove Federal Status: Endemic: N	 Phrynosoma cornutum evegetation, including grass, prairie, cactus, scattered brush of the Big Bend area. State Status: T Global Rank: G4G5 Crotalus horridus and pine and deciduous woodland, riparian zones, abandone er, i.e. grapevines, palmetto. State Status: Global Rank: G4 	or scrubby trees; soil may vary in texture from rs to 6000 feet, but largely limited below the SGCN: Y State Rank: S3 d farmland. Limestone bluffs, sandy soil or SGCN: Y State Rank: S4			
Texas horned lizard Terrestrial: Open habitats with sparse sandy to rocky; burrows into soil, ent pinyon-juniper zone on mountains in Federal Status: Endemic: N timber (canebrake) rattlesnake Terrestrial: Swamps, floodplains, upl black clay. Prefers dense ground cove Federal Status: Endemic: N western box turtle	Phrynosoma cornutum e vegetation, including grass, prairie, cactus, scattered brush of ters rodent burrows, or hides under rock when inactive. Occur the Big Bend area. State Status: T Global Rank: G4G5 <i>Crotalus horridus</i> and pine and deciduous woodland, riparian zones, abandone er, i.e. grapevines, palmetto. State Status: Global Rank: G4 <i>Terrapene ornata</i>	or scrubby trees; soil may vary in texture from rs to 6000 feet, but largely limited below the SGCN: Y State Rank: S3 d farmland. Limestone bluffs, sandy soil or SGCN: Y State Rank: S4			
Texas horned lizard Terrestrial: Open habitats with sparse sandy to rocky; burrows into soil, ent pinyon-juniper zone on mountains in Federal Status: Endemic: N timber (canebrake) rattlesnake Terrestrial: Swamps, floodplains, upl black clay. Prefers dense ground cove Federal Status: Endemic: N western box turtle Terrestrial: Ornate or western box tru but sometimes enter slow, shallow st 2002) or enter burrows made by othe	Phrynosoma cornutum e vegetation, including grass, prairie, cactus, scattered brush of ters rodent burrows, or hides under rock when inactive. Occur the Big Bend area. State Status: T Global Rank: G4G5 <i>Crotalus horridus</i> and pine and deciduous woodland, riparian zones, abandone er, i.e. grapevines, palmetto. State Status: Global Rank: G4 <i>Terrapene ornata</i> ttles inhabit prairie grassland, pasture, fields, sandhills, and or reams and creek pools. For shelter, they burrow into soil (e.g. r species.	or scrubby trees; soil may vary in texture from rs to 6000 feet, but largely limited below the SGCN: Y State Rank: S3 d farmland. Limestone bluffs, sandy soil or SGCN: Y State Rank: S4 open woodland. They are essentially terrestrial ., under plants such as yucca) (Converse et al.			
Texas horned lizard Terrestrial: Open habitats with sparse sandy to rocky; burrows into soil, ent pinyon-juniper zone on mountains in Federal Status: Endemic: N timber (canebrake) rattlesnake Terrestrial: Swamps, floodplains, upl black clay. Prefers dense ground cove Federal Status: Endemic: N western box turtle Terrestrial: Ornate or western box tru but sometimes enter slow, shallow st 2002) or enter burrows made by othe Federal Status:	Phrynosoma cornutum e vegetation, including grass, prairie, cactus, scattered brush of the Big Bend area. State Status: T Global Rank: G4G5 <i>Crotalus horridus</i> and pine and deciduous woodland, riparian zones, abandone er, i.e. grapevines, palmetto. State Status: Global Rank: G4 <i>Terrapene ornata</i> ntles inhabit prairie grassland, pasture, fields, sandhills, and or reams and creek pools. For shelter, they burrow into soil (e.g. r species. State Status:	or scrubby trees; soil may vary in texture from rs to 6000 feet, but largely limited below the SGCN: Y State Rank: S3 d farmland. Limestone bluffs, sandy soil or SGCN: Y State Rank: S4 open woodland. They are essentially terrestrial , under plants such as yucca) (Converse et al. SGCN: Y			

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Texas Parks & Wildlife Dept. Annotated County Lists of Rare Species

DENTON COUNTY

REPTILES

western rattlesnake	Crotalus viridis			
Terrestrial: Dry desert and prairie gras	slands, shrub desert rocky hillsides; edges of arid and semi-a	arid river breaks.		
Federal Status:	State Status:	SGCN: Y		
Endemic: N	Global Rank: G5	State Rank: S5		

PLANTS

Glen Rose yucca	Yucca necopina	
Grasslands on sandy soils and limesto	ne outcrops; flowering April-June	
Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G1G2	State Rank: S3

Topeka purple-coneflower

r Echinacea atrorubens

Occurring mostly in tallgrass prairie of the southern Great Plains, in blackland prairies but also in a variety of other sites like limestone hillsides; Perennial; Flowering Jan-June; Fruiting Jan-May

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S3

DISCLAIMER



Scientific Name:	Haliaeetus ler	ucocephalus		Occurrence #:	42	Eo Id:	4276
Common Name:	bald eagle			Track Status:	Track all extant and sele	cted histori	cal EOs
Identification Confi	rmed: Y	/ - Yes		TX Protection S	<u>tatus:</u>		
Global Rank:	35	State Rank:	S3B,S3N	Federal Status:			

Location Information:

Directions

FROM JUNCTION OF ROUTES 372 AND 922 AT MOUNTAIN SPRINGS, GO WEST 5.2 MILES ON 922, TURN LEFT AND GO SOUTH 0.7 MILES ON LIGHT DUTY ROAD, TURN LEFT AND GO EAST 0.4 AIR MILE TO ABANDONED BALD EAGLE NEST ON RAY ROBERTS RESERVOIR

Survey Infor	mation:					
First Observation	<u>on:</u> 199	3-03-18	Survey Date:		Last Observation:	1993-04-13
<u>Eo Type:</u>			<u>Eo Rank:</u>		Eo Rank Date:	
Observed Area	<u>:</u>					
Comments:						
<u>General</u> Description:						
<u>Comments:</u>	A MAJOR (AND EARL DROP IN T ADDITION, VERBALLY THAT A BO	COLD FRONT PA Y MORNING OF EMPERATURE; ALLY, BOATING ' REPORTED TC AT WAS DIREC	ASSED THROUGH CO 14 APRIL THAT PROE NO EAGLE ACTIVITY ACTIVITY WAS OBSE) GAME WARDEN TWO TLY UNDER THE NES	OKE AND DEN DUCED HIGH \ AT NEST SITE RVED WITHIN D OR THREE I T	ITON COUNTIES ON VINDS, HEAVY RAIN, WAS VERIFIED SINC THE BUOYS BY A LA DAYS AFTER THE INC	NIGHT OF 13 APRIL AND A DRAMATIC E THE STORM; NDOWNER AND DOWNER, REPORTING
Protection Comments:						
<u>Management</u> <u>Comments:</u>						
<u>Data:</u>						
EO Data:	ABANDON APRIL 1993 FREQUEN NOTICED	ED NEST; IN MI 3 BIRD WAS INC TLY AND WERE AT NEST SITE	D-MARCH 1993 TWO I CUBATING TWO EGGS LAST SEEN ON THE I	MATURE BIRD 6, BY 10 APRIL NEST ON 13 A	S APPEARED TO BE BIRDS WERE OFF N PRIL, BY 21 APRIL HE	NESTING, BY EARLY EST MORE ERON ACTIVITY WAS
Community I	nformatio	<u>n:</u>				
Scientific Name:		<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	Composition Note:	

Reference:

Citation:

REID, JEFFERY A. 1993. MEMO TO USFWS FIELD SUPERVISOR RE: ABANDONMENT OF BALD EAGLE NEST ON RAY ROBERTS RESERVOIR (INCLUDES MAPS FOR BALD EAGLE AND INTERIOR LEAST TERN NESTING LOCALITIES). MAY 3, 1993.

Specimen:

Scientific Name Common Name Identification Co Global Rank:	<u>:</u> Haliaeetus leu bald eagle onfirmed: Y G5	r- Yes State Rank:	S3B,S3N	Occurrence #:53Eo ld:615Track Status:Track all extant and selected historical EOsTX Protection Status:Federal Status:
Location Info	rmation: I Lake Ray Roe Wolf Creek,	BERTS BETWEE	N MOUNTAIN SI	PRINGS AND TIEGA; INCLUDES ISLE DU BOIS CREEK, IES
Survey Inforr First Observation Eo Type: Observed Area:	<u>nation:</u> on: 1992	<u>Sur</u> Eo F	vey Date: 1999 Rank:	9 Last Observation: 1992 <u>Eo Rank Date:</u>
Comments: General Description: Comments: Protection Comments: Management Comments:	TPWD NEST # ()49-1A		
<u>Data:</u> EO Data:	NEST # 049-1A: 1996 - NEST	1992 - NEST PF AS INACTIVE; 19	RODUCED 2 YOI 997 - NO DATA; 1	UNG; 1993-1994 - NEST WAS INACTIVE; 1995 - NO DATA; 1998-1999 - NEST WAS INACTIVE.

Community Information:

Scientific Name:	Stratum:	Dominant:	Lifeform:	Composition Note:

Reference:

Citation:

MITCHELL, MARK. 1999. PROJECT NO. 30: BALD EAGLE NEST SURVEY AND MANAGEMENT. PERFORMANCE REPORT. AUGUST 31, 1999.

MITCHELL, MARK. 1997. MEMO TO SHANNON BRESLIN OF 30 JULY 1997 PROVIDING BALD EAGLE NESTING DATA, INCLUDING COUNTY MAPS WITH ESTIMATED TERRITORIES.

Scientific Name	•: Potamilus amphichaenus		Occurrence #: 1 Eo Id: 9883
Common Name	: Texas heelsplitter		Track Status: Track all extant and selected historical EOs
Identification C	onfirmed: Y - Yes		TX Protection Status: T
<u>Global Rank:</u>	G1G3 State Rar	1k: S1	Federal Status:
Location Info	ormation:		
Directions			
Mussels were o observations.	bserved at multiple sites in L	ewisville Lake. The directio	ns are generalized as this record consists of multiple
Survey Infor	mation:		
First Observati	on: 1977-WI	Survey Date: 1999-09	-22 Last Observation: 1999-09-22
<u>Eo Type:</u>		<u>Eo Rank:</u> E	Eo Rank Date: 1999-09-22
<u>Observed Area</u>	<u>.</u>		
Comments:			
<u>General</u> Description:			
<u>Comments:</u>	Winter 1977-Fall 1978: Sar reservoir level. Shells were the water edge for varying beyond 70 meters in order Dallas Museum of Natural species was observed on a	mpling coincided with an ex e extremely abundant and re distances. Length of transe to increase sample number History. 31 August and 1, 7 all dates or a subset of dates	ended drought which resulted in substantial lowering of the adily counted. Survey transects were 4 meters wide along cts varied from 50-70 meters, but some were extended 7. Representative specimens have been deposited in the 7, and 22 September1999: The data were unclear if the s.
<u>Protection</u> Comments:			
<u>Management</u> Comments:			
Data:			
EO Data:	Winter 1977-Fall 1978: At I individuals were observed	east 41 shells were observe at one site.	ed at 10 sites. 31 Aug and 1, 7, and 22 Sep 1999: Living
Community I	nformation:		

Scientific Name:	<u>Stratum:</u>	<u>Dominant:</u>	Lifeform:	Composition Note:

Reference:

Citation:

Neck, Raymond W. 1990. Geological substrate and human impact as influences on bivalves of Lake Lewisville, Trinity River, Texas. The Nautilus 104(1):16-25.

Howells, Robert G. 2000. Distributional surveys of freshwater bivalves in Texas: progress report for 1999. Management Data Series No. 170. Texas Parks and Wildlife Dept., Inland Fisheries Division. 49 pp.

Specimen:

Scientific Name	•: Potamilus amphichaenus		Occurrence #:	2 Eo Id: 9884		
Common Name	: Texas heelsplitter		Track Status: Track all ex	xtant and selected historical EOs		
Identification C	onfirmed: Y - Yes		TX Protection Status:	Т		
<u>Global Rank:</u>	G1G3 State Rank	<u>«</u> S1	Federal Status:			
Location Info	ormation:					
Directions						
Mussels were co	ollected from Lake Grapevine).				
Survey Infor	mation:					
First Observatio	<u>on:</u> 1975-10-31	Survey Date: 1975-10-	31 Last Observatio	on: 1975-10-31		
<u>Eo Type:</u>		Eo Rank: H	Eo Rank Date:	1995-10-31		
Observed Area:						
Comments:						
<u>General</u> Description:						
<u>Comments:</u>	Comments: 1975 specimen: The species identification was verified by Raymond W. Neck and Robert G. Howells. Originally the specimen was deposited at Texas Christian University, Fort Worth, TX. Randklev, et al., 2010 lists the specimen in the Joseph Britton Freshwater Mussel Collection, Elm Fork Natural Heritage Museum, University of North Texas					
<u>Protection</u> Comments:						
<u>Management</u> Comments:						
Data:						
EO Data:	31 Oct 1975: Three specime	ens were collected; one wa	s taken alive.			
Community I	nformation:					

Scientific Name:	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	Composition Note:

Reference:

Citation:

Neck, Raymond W. and R. G. Howells. 1995. Interim performance reports and final report for Project No. 47: Status survey for the Texas heelsplitter. TPWD contract no. 333-0208. Submitted to Texas Parks & Wildlife Dept. 30 November 1993, 30 November 1994, and October 1995.

Randklev, Charles R., B. Lundeen, J. H. Kennedy. 2010. Summary of unpublished records for candidate mussel species from four museums in north central Texas.

Specimen:

Joseph Britton Freshwater Mussel Collection, Elm Fork Natural Heritage Museum, University of North Texas, Denton, TX; K. O'Kane (# 1782), Catalog # unknown, 31 Oct 1975, JBFWMC; UNT.

Scientific Name: Common Name: Identification Con Global Rank: Location Inform	Quercus buckleyi series Texas Oak Series firmed: Y - Yes G3 <u>State Rank:</u> nation:	\$3	Occurrence Track Status TX Protectic Federal Stat	#: 1 <u>::</u> Track all extant and <u>on Status:</u> <u>us:</u>	<u>Eo ld:</u> 390 I selected historical EOs	
<u>Directions</u> JUST TO THE WE NORTH 1.5 MILES	ST OF JESSE JAMES HISTOR	RICAL MARKER ON F	HIGHWAY 380,	19.2 MILES WEST O	F DENTON, THEN	
Survey Informa	ition:					
First Observation: Eo Type: Observed Area:	1984-06-25 <u>Sur</u> <u>Eo I</u> 100.00	<u>vey Date:</u> 1984-06 <u>Rank:</u> BC	-25 La <u>E</u>	ast Observation: 1 o Rank Date: 198	1984-06-25 94-06-25	
Comments: General BLUESTEM PRAIRIE UPLANDS AND CANYONLAND WOODLANDS ALONG DRAINS Description: Comments:						
Protection W Comments:	VISHES TO NEGOTIATE CONS	SERVATION EASEME	ENT TO FACILI	TATE TRANSFER TO	TNC	
<u>Management</u> O <u>Comments:</u>	WNER WISHES TO NEGOTIA	TE MANAGEMENT A	GREEMENT N	IOW		
<u>Data:</u> EO Data:						
Community Inf	ormation:					
Scientific Name:	<u>Stratum:</u>	<u>Dominant:</u>	Lifeform:	Composition Note:		

Reference:

Citation:

DIAMOND, D. D. 1984. FIELD SURVEY TO RINGNECK LAKE OF JUNE 25, 1984.

Specimen:

<u>Scientific Name:</u>	Schizachyrium scoparium - And gerardii - Sorghastrum nutans - americana Mollisol Grassland	ropogon Bifora	Occurrence #:	1	<u>Eo ld:</u>	11560
<u>Common Name:</u>	Mollisol Blackland Prairie		Track Status:	Track all extant and se	elected histor	ical EOs
Identification Confi	irmed: Y - Yes		TX Protection S	Status:		
Global Rank:	G1G2 State Rank:	SNR	Federal Status:			

Location Information:

Directions

The sites are located approximately 5.6 air miles northeast of Decatur, southeast of Texas State Highway 51. The directions were created by database staff. The directions are generalized as this record consists of multiple observations.

Survey Infor	mation:				
First Observati	on: 2009-10-09	Survey Date:	2009-10-09	Last Observation:	2009-10-09
Eo Type:		Eo Rank: E		Eo Rank Date:	2009-10-09
Observed Area	<u>.</u>				
Comments:	9 October 2009: This site b	as one draw: Se	e the Composition Tak	o for other species wi	thin the area
Description:					
<u>Comments:</u>					
Protection Comments:					
<u>Management</u> Comments:					
Data:					
<u>EO Data:</u>	9 October 2009: Two plant increasers; Forb species ar of low to moderate density;	communities of 5 e of high quality v Woody cover is	5 percent decreasers with excellent abundar 1-25 percent in botton	of low quality grass s nce, and good diversi nlands.	species, and 45 percent ity; Exotic species include

Community Information:

Scientific Name:	Stratum:	Dominant:	Lifeform:	Composition Note:
Andropogon gerardii	Herb (field)	Y	Graminoid	SFID: 25914, 25915
Bifora americana	Herb (field)	Y	Flowering forb	SFID: 25914, 25915
Schizachyrium scoparium	Herb (field)	Y	Graminoid	SFID: 25914, 25915
Sorghastrum nutans	Herb (field)	Y	Graminoid	SFID: 25914, 25915

Reference:

Citation:

Native Prairies Association of Texas. 2011. Tallgrass prairie survey project that includes shapefiles, excel files, documents, images, and protocol for multiple counties in Texas (2000-2013).

Specimen:

<u>Scientific Name:</u>	Schizachyrium scoparium - And gerardii - Sorghastrum nutans - americana Mollisol Grassland	ropogon Bifora	Occurrence #:	2	<u>Eo ld:</u>	11561
Common Name:	Mollisol Blackland Prairie		Track Status:	Track all extant and	selected histori	ical EOs
Identification Confi	rmed: Y - Yes		TX Protection S	Status:		
Global Rank: G	G1G2 State Rank:	SNR	Federal Status:			

Location Information:

Directions

The site is located approximately 7.8 air miles northeast of Decatur, northwest of Texas State Highway 51. The directions were created by database staff.

Survey Inform	Survey Information:							
First Observatio	o <u>n:</u> 2009-10-09	Survey Date: 2	2009-10-09	Last Observation:	2009-10-09			
Eo Type:		<u>Eo Rank:</u> E		Eo Rank Date:	2009-10-09			
Observed Area:								
Comments:								
<u>General</u> Description:	9 October 2009: This site	has one draw; See t	the Composition Tab	for other species w	thin the area.			
Comments:								
Protection Comments:								
<u>Management</u> Comments:								
Data:								
EO Data:	9 October 2009: One plant increasers; Forb species an 1-5 percent.	community of 75 pe re of medium quality	ercent decreasers of with poor abundance	medium quality gras ce; Exotic species ar	e species, and 25 percent e present; Woody cover is			

Community Information:

Scientific Name:	Stratum:	Dominant:	Lifeform:	Composition Note:
Andropogon gerardii	Herb (field)	Y	Graminoid	SFID: 25916
Bifora americana	Herb (field)	Y	Forb	SFID: 25916
Schizachyrium scoparium	Herb (field)	Y	Graminoid	SFID: 25916
Sorghastrum nutans	Herb (field)	Y	Graminoid	SFID: 25916

Reference:

Citation:

Native Prairies Association of Texas. 2011. Tallgrass prairie survey project that includes shapefiles, excel files, documents, images, and protocol for multiple counties in Texas (2000-2013).

Specimen:

Scientific Name:	Schizachyrium scoparium - And gerardii - Sorghastrum nutans - I americana Mollisol Grassland	ropogon Bifora	Occurrence #:	8	<u>Eo ld:</u>	11567
<u>Common Name:</u>	Mollisol Blackland Prairie		Track Status:	Track all extant and sel	ected histor	ical EOs
Identification Confi	rmed: Y - Yes		TX Protection S	<u>tatus:</u>		
Global Rank: 0	G1G2 State Rank:	SNR	Federal Status:			

Location Information:

Directions

These sites are located outside the northwestern city boundary of Denton, on the south side of County Road 1171/Cross Timbers Road, and on the west side of the Kansas City Southern railroad tracks and Marshall Road. The directions were created by database staff. The directions are generalized as this record consists of multiple observations.

Survey Information	on:				
First Observation:	2009-10-15	Survey Date:	2009-10-15	Last Observation:	2009-10-15
<u>Eo Type:</u>		<u>Eo Rank:</u> E		Eo Rank Date:	2009-10-15
Observed Area:					
Comments:					
General 15 C Description:	October 2009: There is	a pond on one o	f the sites; See the C	omposition Tab for oth	ner species within the area.
Comments:					
Protection Comments:					
<u>Management</u> Comments:					

Data:

EO Data: 15 October 2009: One plant community of high quality grass species consisting of 100 percent and one plant community of low quality grass species consisting of 100 percent low quality; Forb species are poor to low quality; Exotic species are present; Woody cover ranges from less than 1 percent to greater than 75 percent.

Community Information:

Scientific Name:	Stratum:	Dominant:	Lifeform:	Composition Note:
Andropogon gerardii	Herb (field)	Y	Graminoid	SFID: 23572
Bifora americana	Herb (field)	Y	Forb	SFID: 23572
Bothriochloa laguroides	Herb (field)	Ν	Graminoid	SFID: 23572
Prosopis glandulosa	Tree (canopy & subcanopy)	Ν	Small-leaved tree	SFID: 23572
Schizachyrium scoparium	Herb (field)	Y	Graminoid	SFID: 23572
Sorghastrum nutans	Herb (field)	Y	Graminoid	SFID: 23572
Reference:

Citation:

Native Prairies Association of Texas. 2011. Tallgrass prairie survey project that includes shapefiles, excel files, documents, images, and protocol for multiple counties in Texas (2000-2013).

<u>Scientific Name:</u>	Schizachyrium gerardii - Sorg americana Mo	n scoparium - Andr ghastrum nutans - B Ilisol Grassland	opogon ifora	Occurrence #:	11	l	<u>Eo ld:</u>	11570
Common Name:	Mollisol Blackland Prairie			Track Status:	Track all extant	t and selec	cted histori	cal EOs
Identification Confi	rmed: Y	- Yes		TX Protection S	tatus:			
Global Rank: G	61G2	State Rank:	SNR	Federal Status:				

Location Information:

Directions

The site is located outside the northeastern boundary of the Northwest Regional Airport, on the north side of Hampton Road, just to the east of IH-35. The directions were created by database staff.

Survey Infor	mation:				
First Observati	<u>on:</u> 2009-10-15	Survey Date:	2009-10-15	Last Observation:	2009-10-15
<u>Eo Type:</u>		Eo Rank: E		Eo Rank Date:	2009-10-15
Observed Area	<u>:</u>				
Comments:					
<u>General</u> Description:	See the Composition Tab f	or other species	within the area.		
Comments:					
<u>Protection</u> Comments:					
<u>Management</u> Comments:					
Data:					
FO Data:	15 Octobor 2000: Opo plan	t community of m	odium quality grass s	nacios that are 75 no	proopt high quality and 25

EO Data: 15 October 2009: One plant community of medium quality grass species that are 75 percent high quality and 25 percent low quality; Forb species are 100 percent low quality; Exotic species are present; Woody cover is 6-25 percent.

Community Information:

Scientific Name:	Stratum:	Dominant:	Lifeform:	Composition Note:
Andropogon gerardii	Herb (field)	Υ	Graminoid	SFID: 23569
Bifora americana	Herb (field)	Y	Forb	SFID: 23569
Prosopis glandulosa	Tree (canopy & subcanopy)	Ν	Small-leaved tree	SFID: 23569
Schizachyrium scoparium	Herb (field)	Y	Graminoid	SFID: 23569
Sorghastrum nutans	Herb (field)	Y	Graminoid	SFID: 23569

Reference:

Citation:

Native Prairies Association of Texas. 2011. Tallgrass prairie survey project that includes shapefiles, excel files, documents, images, and protocol for multiple counties in Texas (2000-2013).

<u>Scientific Name:</u>	Schizachyrium scoparium - Bouteloua curtipendula - Nassella leucotricha Herbaceous Vegetation			Occurrence #:	7	<u>Eo ld:</u>	12002
<u>Common Name:</u>				Track Status:	Track all extant and sele	ected histori	ical EOs
Identification Confi	rmed: Y	- Yes		TX Protection St	tatus:		
Global Rank: G	SNR	State Rank:	SNR	Federal Status:			

Location Information:

Directions

The sites are located approximately 4.5 air miles east-northeast of Rosston, and 5.0 air miles west-northwest of Era, on both sides of FM 922. The directions were created by database staff. The directions are generalized as this record consists of multiple observations.

Survey Inform	mation	<u>ı:</u>					
First Observation	on:	2007-07-29	Survey Date	<u>:</u> 2	2007-07-29	Last Observation:	2007-07-29
<u>Eo Type:</u>			Eo Rank:	Е		Eo Rank Date:	2007-07-29
Observed Area:	<u>.</u>						
Comments:							
<u>General</u> Description:	29 July within	y 2007: Both sites ha the area.	ve Wheat Cre	ek ar	nd are well drained;	See the Composition	n Tab for other species
<u>Comments:</u>							
<u>Protection</u> Comments:							
<u>Management</u> <u>Comments:</u>							
Data:							
EO Data:	29 July cover i	/ 2007: Two plant cor s less than 1 to 5 per	mmunities of m cent.	nediu	um quality grass spe	cies; Forb species a	re medium quality; Woody

Community Information:

Scientific Name:	<u>Stratum:</u>	Dominant:	Lifeform:	Composition Note:
Bouteloua curtipendula	Herb (field)	Y	Graminoid	SFID: 25781, 25782
Dalea aurea	Herb (field)	Ν	Forb	SFID: 25781
Monarda citriodora	Herb (field)	Ν	Forb	SFID: 25782
Nassella leucotricha	Herb (field)	Y	Graminoid	SFID: 25781, 25782
Quercus marilandica	Tree (canopy & subcanopy)	Ν	Broad-leaved deciduous tree	SFID: 25781, 25782
Quercus stellata	Tree (canopy & subcanopy)	Ν	Broad-leaved deciduous tree	SFID: 25781, 25782
Schizachyrium scoparium	Herb (field)	Y	Graminoid	SFID: 25781, 25782
Sorghastrum nutans	Herb (field)	Ν	Graminoid	SFID: 25781
Stillingia texana	Herb (field)	Ν	Forb	SFID: 25782
Verbena halei	Herb (field)	N	Forb	SFID: 25782

Reference:

Citation:

Native Prairies Association of Texas. 2011. Tallgrass prairie survey project that includes shapefiles, excel files, documents, images, and protocol for multiple counties in Texas (2000-2013).

Scientific Name:	Schizachyrium scoparium-sorghastrum nutans series	Occurrence #: 6 Eo Id: 1718
<u>Common Name:</u>	Little Bluestem-indiangrass Series	Track Status: Track all extant and selected historical EOs
Identification Conf	irmed: Y - Yes	TX Protection Status:
Global Rank:	G2 State Rank: S2	Federal Status:
Location Inform	nation:	

Directions

19.2 MILES WEST OF DENTON ON HWY 380, THEN NORTH 1.5 MILES ON A ROAD JUST WEST OF THE JESSE JAMES HISTORICAL MARKER

Survey Information:

First Observation: 1984-06-25	Survey Date: 1984-06-25	Last Observation: 1984-06-25
<u>Eo Type:</u>	Eo Rank: B	Eo Rank Date: 1984-06-25
Observed Area: 90.00		

Comments:

<u>General</u> Description:	BLUESTEM PRAIRIE, MODERATELY GRAZED
Comments:	
Protection Comments:	WISHES TO NEGOTIATE CONSERVATION EASEMENT TO FACILITATE TRANSFER TO TNC
<u>Management</u> Comments:	OWNER WISHES TO NEGOTIATE MANAGEMENT AGREEMENT NOW
_	

Data:

EO Data:

Community Information:

Scientific Name:	<u>Stratum:</u>	Dominant:	Lifeform:	Composition Note:

Reference:

Citation:

DIAMOND, D. D. 1984. FIELD SURVEY TO RINGNECK LAKE OF JUNE 25, 1984.

Scientific Name:	Schizachyrium scoparium-sorgh series	nastrum nutans	Occurrence #:	78	<u>Eo ld:</u>	3741
<u>Common Name:</u>	Little Bluestem-indiangrass Ser	ies	Track Status:	Track all extant and sele	ected histor	rical EOs
Identification Confin	rmed: Y - Yes		TX Protection S	Status:		
Global Rank: G	2 State Rank:	S2	Federal Status:			
Location Information:						
NORTH SIDE ROUT	E 455, 0.1 TO 1.1 ROAD MIL	ES WEST OF WEST	END OF LAKE R	AY ROBERTS DAM		

Survey Informat	ion:				
First Observation:		Survey Date:	L	ast Observation:	1991
<u>Eo Type:</u>		Eo Rank:	E	Eo Rank Date:	
Observed Area:	420.00				
Comments:					
<u>General</u> Description:					
Comments: DIA	MOND WILL SURVEY	IN SEPTEMBER 1991			
Protection Comments:					
<u>Management</u> Comments:					
Data:					
EO Data:					
Community Info	rmation:				
Scientific Name:	<u>Stratum:</u>	<u>Dominant:</u>	Lifeform:	Composition Note:	
				-	

Reference:

Citation:

DILLARD, J. 1991. MEMO TO DAVID DIAMOND DATED 17 JULY 1991. INTERNAL MEMO, TPWD.

Scientific Name:ThamnophCommon Name:Texas garteIdentification Confirmed:G5T4	is sirtalis annectens er snake Y - Yes <u>State Rank:</u> S1		Occurrence #:20Eo Id:434Track Status:Track all extant and selected historical EOsTX Protection Status:Federal Status:
Location Information:			
<u>Directions</u> LAKE DALLAS			
Survey Information:			
First Observation:	Survey Dat	te:	Last Observation:
<u>Eo Type:</u>	<u>Eo Rank:</u>	U	Eo Rank Date: 2006-12-12
Observed Area:			
Comments:			
<u>General</u> Description:			
Comments:			
Protection Comments:			
<u>Management</u> <u>Comments:</u>			
Data:			
EO Data:			
Community Information:			
Scientific Name:	<u>Stratum:</u>	<u>Dominant:</u> <u>L</u>	Lifeform: Composition Note:
Reference:			
Citation:			
Kirby, H. (s.n.). No date. Spec	imen No. 4644 BCB.		

Specimen:

Baylor University, Bryce C. Brown Collection at Strecker Museum. No Date. H. Kirby, Catalog # 4644 BCB, SM.

Kirby, H. (s.n.). No date. Specimen No. 4644 BCB. (S??KIRXXTXUS)

	F	arm-to-Market (FM) 1173	3		
Present per the Tex	as Ecological Systems Classification P	roject (TESCP) conversion of Common N	ame=>NatureServe Ecological System Na	me=>MOU TYPE	
CommonName	NatureServe_Number	NatureServe_EcoSys	MOU_Type	Area (ac)	Area (ac)
Row Crops	TPW101.005	Agriculture	Agriculture	20.1	20.1
		Crosstimbers Oak Forest and	Crosstimbers Woodland and	0.5	0.5
Crosstimbers: Savanna Grassland	CES205.682	Woodland	Forest	2.5	2.0
		Native Invasive Shrub and		0.1	0.1
Native Invasive: Deciduous Woodland	TPW101.001	Woodland	Disturbed Prairie	0.1	0.1
Central Texas: Riparian Herbaceous		Southeastern Great Plains		0.5	0.5
Vegetation	CES205.709	Riparian Forest	Riparian	0.5	0.5
		Southeastern Great Plains		24.0	24.0
Grand Prairie: Tallgrass Prairie	CES205.685	Tallgrass Prairie	Tallgrass Prairie, Grassland	34.6	34.6
Urban High Intensity	TPW101.003	Urban	Urban	5.3	24.0
Urban Low Intensity	TPW101.003	Urban	Urban	29.6	34.9
-	•	·	Total	92.6	92.6

Actual MOU Type vegetation present po photography	er site visits and aerial		
МОИ Туре	Area (ac)	CRTB Threshold (ac)	Equal to or Greater than PA Threshold?
Agriculture	20.3	10	Yes
Crosstimbers Woodland and Forest	0.5	2	No
Disturbed Prairie	19.5	3	Yes
Open Water	0.2	No Threshold	N/A
Riparian	0.7	0.1	Yes
Urban	51.4	No Threshold	N/A
Total	92.6		

Updated: 58-24-2020

































































FM 1173 Urban Areas Map



August 24, 2020

2010 Census Urbanized Areas



1:72,224 0 0.5 1 2 mi 1 0 1 2 4 km Source: U.S. Census Bureau Sources: Esri, USGS, NOAA

FARMLAND CONVERSION IMPACT RATING FOR CORRIDOR TYPE PROJECTS

PART I (To be completed by Federal Agency) 1. Name of Project 2. Type of Project PART II (To be completed by NRCS)			3. Date of Land Evaluation Request				4. Sheet of		
			5. Federal Agency Involved 6. County and State						
			3. Does the corridor contain prime, unique statewide or local important farmlan						4. Acres Irrigated Average Farm Size
(If no, the PPPA does not apply - Do not complete additional parts of this to 5. Major Crop(s)			d in Government Jurisdiction			7 Amount of Farmland As Defined in FPPA			
	Acros				Acros: 9/				
8 Name Of Land Evaluation System Used	9 Name of Local	9. Name of Local Site Assessment System			10. Date Land			Fvaluation Returned by NRCS	
PART III (To be completed by Federal Agency)			Alternati Corridor A	egment _ Corride	≥gment Corridor C Corridor D				
A. Total Acres To Be Converted Directly									
B. Total Acres To Be Converted Indirectly, Or To Receive	e Services								
C. Total Acres In Corridor									
PART IV (To be completed by NRCS) Land Evaluation	ation Information								
A. Total Acres Prime And Unique Farmland									
B. Total Acres Statewide And Local Important Farmland	I								
C. Percentage Of Farmland in County Or Local Govt. U	nit To Be Converted	1							
D. Percentage Of Farmland in Govt. Jurisdiction With Sar	me Or Higher Relativ	/e Value							
PART V (To be completed by NRCS) Land Evaluation Ir	formation Criterion	Relative							
value of Farmland to Be Serviced or Converted (Scale	e of 0 - 100 Points)								
PART VI (To be completed by Federal Agency) Corri	dor N	laximum							
Assessment Criteria (These criteria are explained in	7 CFR 658.5(c))	Points							
1. Area in Nonurban Use		15						ļ	
2. Perimeter in Nonurban Use		10							
3. Percent Of Corridor Being Farmed		20							
4. Protection Provided By State And Local Governme	ent	20							
5. Size of Present Farm Unit Compared To Average									
6. Creation Of Nonfarmable Farmland		25							
7. Availablility Of Farm Support Services		5							
8. On-Farm Investments		20							
9. Effects Of Conversion On Farm Support Services		25							
		10							
I U I AL CORRIDOR ASSESSMENT POINTS									
PART VII (To be completed by Federal Agency)									
Relative Value Of Farmland (From Part V)		100							
Total Corridor Assessment (From Part VI above or a local site assessment)		160							
TOTAL POINTS (Total of above 2 lines)		260							
1. Corridor Selected: 2. Total Acres of Fa Converted by Pr	armlands to be 3. oject:	. Date Of S	Selection:	4. Was	A Local Sit	te Assessm	ent Usec	1?	

5. Reason For Selection:

NOTE: Complete a form for each segment with more than one Alternate Corridor

NRCS-CPA-106

(Rev. 1-91)

DATE

CORRIDOR - TYPE SITE ASSESSMENT CRITERIA

The following criteria are to be used for projects that have a linear or corridor - type site configuration connecting two distant points, and crossing several different tracts of land. These include utility lines, highways, railroads, stream improvements, and flood control systems. Federal agencies are to assess the suitability of each corridor - type site or design alternative for protection as farmland along with the land evaluation information.

(1) How much land is in nonurban use within a radius of 1.0 mile from where the project is intended?
More than 90 percent - 15 points
90 to 20 percent - 14 to 1 point(s)
Less than 20 percent - 0 points

(2) How much of the perimeter of the site borders on land in nonurban use?
More than 90 percent - 10 points
90 to 20 percent - 9 to 1 point(s)
Less than 20 percent - 0 points

(3) How much of the site has been farmed (managed for a scheduled harvest or timber activity) more than five of the last 10 years?

More than 90 percent - 20 points 90 to 20 percent - 19 to 1 point(s) Less than 20 percent - 0 points

(4) Is the site subject to state or unit of local government policies or programs to protect farmland or covered by private programs to protect farmland?
Site is protected - 20 points

Site is not protected - 0 points

(5) Is the farm unit(s) containing the site (before the project) as large as the average - size farming unit in the County ? (Average farm sizes in each county are available from the NRCS field offices in each state. Data are from the latest available Census of Agriculture, Acreage or Farm Units in Operation with \$1,000 or more in sales.) As large or larger - 10 points

Below average - deduct 1 point for each 5 percent below the average, down to 0 points if 50 percent or more below average - 9 to 0 points

(6) If the site is chosen for the project, how much of the remaining land on the farm will become non-farmable because of interference with land patterns?

Acreage equal to more than 25 percent of acres directly converted by the project - 25 points Acreage equal to between 25 and 5 percent of the acres directly converted by the project - 1 to 24 point(s) Acreage equal to less than 5 percent of the acres directly converted by the project - 0 points

(7) Does the site have available adequate supply of farm support services and markets, i.e., farm suppliers, equipment dealers, processing and storage facilities and farmer's markets?
 All required services are available - 5 points
 Some required services are available - 4 to 1 point(s)
 No required services are available - 0 points

(8) Does the site have substantial and well-maintained on-farm investments such as barns, other storage building, fruit trees and vines, field terraces, drainage, irrigation, waterways, or other soil and water conservation measures? High amount of on-farm investment - 20 points Moderate amount of on-farm investment - 19 to 1 point(s) No on-farm investment - 0 points

(9) Would the project at this site, by converting farmland to nonagricultural use, reduce the demand for farm support services so as to jeopardize the continued existence of these support services and thus, the viability of the farms remaining in the area? Substantial reduction in demand for support services if the site is converted - 25 points Some reduction in demand for support services if the site is converted - 1 to 24 point(s) No significant reduction in demand for support services if the site is converted - 0 points

(10) Is the kind and intensity of the proposed use of the site sufficiently incompatible with agriculture that it is likely to contribute to the eventual conversion of surrounding farmland to nonagricultural use? Proposed project is incompatible to existing agricultural use of surrounding farmland - 10 points Proposed project is tolerable to existing agricultural use of surrounding farmland - 9 to 1 point(s) Proposed project is fully compatible with existing agricultural use of surrounding farmland - 0 points



USDA United States Department of Agriculture

Natural

Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Denton County, Texas



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/? cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.



MAP LEGEND				MAP INFORMATION		
Area of Inte	erest (AOI) Area of Interest (AOI)	8	Spoil Area Stony Spot	The soil surveys that comprise your AOI were mapped at 1:24,000.		
Soils	Soil Map Unit Polygons	Ø V	Very Stony Spot Wet Spot	Please rely on the bar scale on each map sheet for map measurements.		
Special F	Soil Map Unit Points Point Features	۵ ••	Other Special Line Features	Source of Map: Natural Resources Conservation Service Web Soil Survey URL: Coordinate System: Web Mercator (EPSG:3857)		
9 8	Blowout Borrow Pit	Water Feat	tures Streams and Canals ation	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		
~ ~ *	Closed Depression Gravel Pit	~	Rails Interstate Highways	Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.		
:. ©	Gravelly Spot Landfill	Backgroun	Major Roads Local Roads	of the version date(s) listed below.		
۸ بینے ج	Lava Flow Marsh or swamp Mine or Quarry		nd Aerial Photography	Survey Area Data: Version 17, Jun 11, 2020 Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.		
0	Miscellaneous Water Perennial Water			Date(s) aerial images were photographed: Oct 29, 2016—Nov 29, 2017		
× +	Rock Outcrop Saline Spot Sandy Spot			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 upit boundaries may be evident		
⇔ ♦	Severely Eroded Spot Sinkhole			sinning of map unit boundaries may be evident.		
þ Ø	Slide or Slip Sodic Spot					

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
13	Birome-Rayex-Aubrey complex, 2 to 15 percent slopes	1.9	2.1%
22	Burleson clay, 1 to 3 percent slopes	1.0	1.1%
54	Lindale clay loam, 1 to 3 percent slopes	1.5	1.6%
56	Medlin-Sanger clay, 5 to 15 percent slopes	2.4	2.5%
58	Mingo clay loam, 1 to 3 percent slopes	4.8	5.2%
66	Ponder loam, 1 to 3 percent slopes	7.2	7.7%
67	Sanger clay, 1 to 3 percent slopes	59.5	64.0%
68	Sanger clay, 3 to 5 percent slopes	2.4	2.5%
74	Slidell clay, 1 to 3 percent slopes	10.6	11.4%
75	Somervell gravelly loam, 1 to 5 percent slopes	1.7	1.8%
Totals for Area of Interest		93.0	100.0%

Map Unit Descriptions

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 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.

Custom Soil Resource Report

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

Denton County, Texas

13—Birome-Rayex-Aubrey complex, 2 to 15 percent slopes

Map Unit Setting

National map unit symbol: d7rz Elevation: 400 to 1,100 feet Mean annual precipitation: 32 to 43 inches Mean annual air temperature: 63 to 66 degrees F Frost-free period: 220 to 250 days Farmland classification: Not prime farmland

Map Unit Composition

Birome and similar soils: 33 percent Rayex and similar soils: 32 percent Aubrey and similar soils: 29 percent Minor components: 6 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Birome

Setting

Landform: Ridges Landform position (two-dimensional): Summit Down-slope shape: Linear Across-slope shape: Linear Parent material: Loamy residuum weathered from sandstone

Typical profile

H1 - 0 to 8 inches: stony fine sandy loam H2 - 8 to 31 inches: clay H3 - 31 to 60 inches: bedrock

Properties and qualities

Slope: 2 to 15 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 7s Hydrologic Soil Group: C Ecological site: Sandy Loam 37-43 PZ (R084CY194TX) Hydric soil rating: No

Description of Rayex

Setting

Landform: Ridges Landform position (two-dimensional): Shoulder Down-slope shape: Convex Across-slope shape: Convex Parent material: Loamy residuum weathered from sandstone and shale

Typical profile

H1 - 0 to 7 inches: stony fine sandy loam *H2 - 7 to 15 inches:* clay

H3 - 15 to 20 inches: bedrock

Properties and qualities

Slope: 5 to 15 percent
Depth to restrictive feature: 10 to 20 inches to paralithic bedrock
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Very low (about 2.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 7s Hydrologic Soil Group: D Ecological site: Sandstone Hill 37-43 PZ (R084CY192TX) Hydric soil rating: No

Description of Aubrey

Setting

Landform: Ridges Landform position (two-dimensional): Backslope Down-slope shape: Linear Across-slope shape: Convex Parent material: Clayey residuum weathered from shale

Typical profile

H1 - 0 to 8 inches: stony fine sandy loam H2 - 8 to 26 inches: clay H3 - 26 to 66 inches: bedrock

Properties and qualities

Slope: 2 to 15 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 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 2.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 7s Hydrologic Soil Group: D Ecological site: Tight Sandy Loam 37-43 PZ (R084CY195TX) Hydric soil rating: No

Minor Components

Unnamed

Percent of map unit: 6 percent Hydric soil rating: No

22—Burleson clay, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2tbtx Elevation: 120 to 970 feet Mean annual precipitation: 34 to 47 inches Mean annual air temperature: 62 to 69 degrees F Frost-free period: 228 to 239 days Farmland classification: All areas are prime farmland

Map Unit Composition

Burleson and similar soils: 85 percent *Minor components:* 15 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Burleson

Setting

Landform: Stream terraces, stream terraces Landform position (three-dimensional): Tread Microfeatures of landform position: Circular gilgai, circular gilgai Down-slope shape: Linear Across-slope shape: Linear Parent material: Calcareous clayey alluvium of pleistocene age derived from mudstone

Typical profile

Ap - 0 to 5 inches: clay Bss - 5 to 20 inches: clay Bkss - 20 to 43 inches: clay 2Ck - 43 to 60 inches: clay

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Salinity, maximum in profile: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 2.0
Available water storage in profile: Moderate (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): 3e Land capability classification (nonirrigated): 3e Hydrologic Soil Group: D Ecological site: Southern Blackland (R086AY011TX) Hydric soil rating: No

Minor Components

Wilson

Percent of map unit: 8 percent Landform: Stream terraces Landform position (three-dimensional): Tread Down-slope shape: Linear Across-slope shape: Concave Ecological site: Southern Claypan Prairie (R086AY004TX) Hydric soil rating: No

Branyon

Percent of map unit: 7 percent Landform: Stream terraces Landform position (three-dimensional): Tread Microfeatures of landform position: Circular gilgai Down-slope shape: Linear Across-slope shape: Convex Ecological site: Southern Blackland (R086AY011TX) Hydric soil rating: No

54—Lindale clay loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: d7tf Elevation: 500 to 1,050 feet Mean annual precipitation: 32 to 33 inches Mean annual air temperature: 64 to 66 degrees F *Frost-free period:* 220 to 250 days *Farmland classification:* All areas are prime farmland

Map Unit Composition

Lindale and similar soils: 100 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Lindale

Setting

Landform: Ridges Landform position (two-dimensional): Summit Down-slope shape: Linear Across-slope shape: Convex Parent material: Clayey alluvium over limestone

Typical profile

H1 - 0 to 6 inches: clay loam H2 - 6 to 32 inches: clay H3 - 32 to 43 inches: very gravelly clay H4 - 43 to 65 inches: gravelly clay

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 35 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 7.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 3e Hydrologic Soil Group: C Ecological site: Deep Redland 30-38" PZ (R085XY180TX) Hydric soil rating: No

56—Medlin-Sanger clay, 5 to 15 percent slopes

Map Unit Setting

National map unit symbol: d7th Elevation: 500 to 1,500 feet Mean annual precipitation: 26 to 34 inches Mean annual air temperature: 63 to 70 degrees F Frost-free period: 220 to 265 days Farmland classification: Not prime farmland

Map Unit Composition

Medlin and similar soils: 60 percent Sanger and similar soils: 30 percent Minor components: 10 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Medlin

Setting

Landform: Ridges Landform position (two-dimensional): Backslope Down-slope shape: Linear Across-slope shape: Convex Parent material: Clayey residuum weathered from marl

Typical profile

H1 - 0 to 30 inches: clay H2 - 30 to 49 inches: silty clay H3 - 49 to 70 inches: silty clay

Properties and qualities

Slope: 5 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 35 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Moderate (about 7.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 6e Hydrologic Soil Group: D Ecological site: Blackland 30-38" PZ (R085XY177TX) Hydric soil rating: No

Description of Sanger

Setting

Landform: Ridges Landform position (two-dimensional): Backslope Down-slope shape: Linear Across-slope shape: Convex Parent material: Clayey residuum weathered from shale

Typical profile

H1 - 0 to 19 inches: clay H2 - 19 to 55 inches: clay H3 - 55 to 80 inches: clay

Properties and qualities

Slope: 5 to 12 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 40 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 1.0
Available water storage in profile: Moderate (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 6e Hydrologic Soil Group: D Ecological site: Blackland 30-38" PZ (R085XY177TX) Hydric soil rating: No

Minor Components

Unnamed

Percent of map unit: 10 percent Hydric soil rating: No

58—Mingo clay loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: d7tk Elevation: 500 to 1,200 feet Mean annual precipitation: 30 to 33 inches Mean annual air temperature: 64 degrees F Frost-free period: 220 to 230 days Farmland classification: Farmland of statewide importance

Map Unit Composition

Mingo and similar soils: 100 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Mingo

Setting

Landform: Ridges Landform position (two-dimensional): Summit *Down-slope shape:* Linear *Across-slope shape:* Convex *Parent material:* Clayey alluvium over limestone

Typical profile

H1 - 0 to 11 inches: clay loam *H2 - 11 to 29 inches:* clay *H3 - 29 to 33 inches:* bedrock

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: 20 to 34 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 3e Hydrologic Soil Group: D Ecological site: Deep Redland 30-38" PZ (R085XY180TX) Hydric soil rating: No

66—Ponder loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: d7tv Elevation: 600 to 1,000 feet Mean annual precipitation: 26 to 34 inches Mean annual air temperature: 63 to 70 degrees F Frost-free period: 210 to 240 days Farmland classification: All areas are prime farmland

Map Unit Composition

Ponder and similar soils: 100 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Ponder

Setting

Landform: Stream terraces Landform position (three-dimensional): Tread Down-slope shape: Linear Across-slope shape: Convex *Parent material:* Loamy residuum weathered from calcareous shale of the grayson marl formation

Typical profile

H1 - 0 to 7 inches: loam

H2 - 7 to 62 inches: clay

H3 - 62 to 80 inches: clay

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 60 percent
Gypsum, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 9.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 3e Hydrologic Soil Group: C Ecological site: Claypan 35-40 PZ (R085XY003TX) Hydric soil rating: No

67—Sanger clay, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2tc31 Elevation: 500 to 1,200 feet Mean annual precipitation: 33 to 39 inches Mean annual air temperature: 63 to 67 degrees F Frost-free period: 220 to 250 days Farmland classification: All areas are prime farmland

Map Unit Composition

Sanger and similar soils: 90 percent Minor components: 10 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sanger

Setting

Landform: Ridges Landform position (two-dimensional): Footslope Landform position (three-dimensional): Base slope *Down-slope shape:* Linear *Across-slope shape:* Concave *Parent material:* Clayey slope alluvium over residuum weathered from claystone

Typical profile

Ap - 0 to 7 inches: clay Bkss1 - 7 to 38 inches: clay Bkss2 - 38 to 55 inches: silty clay Bk - 55 to 69 inches: silty clay C - 69 to 80 inches: silty clay

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 70 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 5.0
Available water storage in profile: Moderate (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 3e Hydrologic Soil Group: D Ecological site: Blackland 30-38" PZ (R085XY177TX) Hydric soil rating: No

Minor Components

Slidell

Percent of map unit: 4 percent Landform: Ridges Landform position (two-dimensional): Toeslope, footslope Landform position (three-dimensional): Base slope Down-slope shape: Linear Across-slope shape: Convex Ecological site: Blackland 30-38" PZ (R085XY177TX) Hydric soil rating: No

San saba

Percent of map unit: 3 percent Landform: Ridges Landform position (two-dimensional): Footslope, backslope Landform position (three-dimensional): Head slope Down-slope shape: Linear Across-slope shape: Concave Ecological site: Blackland 30-38" PZ (R085XY177TX) Hydric soil rating: No

Ponder

Percent of map unit: 2 percent Landform: Ridges Landform position (two-dimensional): Summit, shoulder, backslope Landform position (three-dimensional): Interfluve Down-slope shape: Convex Across-slope shape: Linear Ecological site: Claypan 35-40 PZ (R085XY003TX) Hydric soil rating: No

Bolar

Percent of map unit: 1 percent Landform: Ridges Landform position (two-dimensional): Shoulder, summit Landform position (three-dimensional): Interfluve Down-slope shape: Linear Across-slope shape: Convex Ecological site: Loamy Slope 30-38 (R085XY379TX) Hydric soil rating: No

68—Sanger clay, 3 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2tc32 Elevation: 500 to 1,200 feet Mean annual precipitation: 33 to 39 inches Mean annual air temperature: 63 to 67 degrees F Frost-free period: 220 to 250 days Farmland classification: All areas are prime farmland

Map Unit Composition

Sanger and similar soils: 90 percent Minor components: 10 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sanger

Setting

Landform: Ridges Landform position (two-dimensional): Backslope Landform position (three-dimensional): Side slope Down-slope shape: Linear Across-slope shape: Linear Parent material: Clayey slope alluvium over residuum weathered from claystone

Typical profile

A - 0 to 10 inches: clay Bkss1 - 10 to 24 inches: clay Bkss2 - 24 to 52 inches: clay Bkss3 - 52 to 70 inches: clay C - 70 to 80 inches: silty clay

Properties and qualities

Slope: 3 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 70 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 5.0
Available water storage in profile: Moderate (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 3e Hydrologic Soil Group: D Ecological site: Blackland 30-38" PZ (R085XY177TX) Hydric soil rating: No

Minor Components

Medlin

Percent of map unit: 4 percent Landform: Ridges Landform position (two-dimensional): Backslope Landform position (three-dimensional): Side slope Down-slope shape: Linear Across-slope shape: Linear Ecological site: Blackland 30-38" PZ (R085XY177TX) Hydric soil rating: No

Bolar

Percent of map unit: 4 percent Landform: Ridges Landform position (two-dimensional): Shoulder, summit Landform position (three-dimensional): Interfluve Down-slope shape: Linear Across-slope shape: Convex Ecological site: Loamy Slope 30-38 (R085XY379TX) Hydric soil rating: No

Slidell

Percent of map unit: 1 percent Landform: Ridges Landform position (two-dimensional): Footslope, toeslope Landform position (three-dimensional): Base slope Down-slope shape: Linear Across-slope shape: Convex Ecological site: Blackland 30-38" PZ (R085XY177TX) Hydric soil rating: No

San saba

Percent of map unit: 1 percent Landform: Ridges Landform position (two-dimensional): Backslope, footslope Landform position (three-dimensional): Head slope Down-slope shape: Linear Across-slope shape: Concave Ecological site: Blackland 30-38" PZ (R085XY177TX) Hydric soil rating: No

74—Slidell clay, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2tc3m Elevation: 400 to 1,700 feet Mean annual precipitation: 29 to 39 inches Mean annual air temperature: 63 to 67 degrees F Frost-free period: 220 to 260 days Farmland classification: All areas are prime farmland

Map Unit Composition

Slidell and similar soils: 85 percent Minor components: 15 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Slidell

Setting

Landform: Ridges Landform position (two-dimensional): Toeslope Landform position (three-dimensional): Base slope Down-slope shape: Concave Across-slope shape: Linear Parent material: Clayey slope alluvium

Typical profile

Ap - 0 to 19 inches: clay Bss - 19 to 32 inches: clay Bkss1 - 32 to 49 inches: clay Bkss2 - 49 to 80 inches: clay

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None

Frequency of ponding: None
Calcium carbonate, maximum in profile: 60 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 6.0
Available water storage in profile: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 3e Hydrologic Soil Group: D Ecological site: Blackland 30-38" PZ (R085XY177TX) Hydric soil rating: No

Minor Components

Denton

Percent of map unit: 7 percent Landform: Ridges Landform position (two-dimensional): Footslope, backslope Landform position (three-dimensional): Side slope, base slope Down-slope shape: Linear Across-slope shape: Linear Ecological site: Clayey Slope 30-38 (R085XY179TX) Hydric soil rating: No

San saba

Percent of map unit: 5 percent Landform: Ridges Landform position (two-dimensional): Backslope, shoulder Landform position (three-dimensional): Interfluve, side slope Down-slope shape: Linear Across-slope shape: Linear Ecological site: Blackland 30-38" PZ (R085XY177TX) Hydric soil rating: No

Purves

Percent of map unit: 3 percent Landform: Ridges Landform position (two-dimensional): Shoulder, backslope Landform position (three-dimensional): Interfluve, side slope Down-slope shape: Convex Across-slope shape: Linear Ecological site: Shallow 30-38" PZ (R085XY185TX) Hydric soil rating: No

75—Somervell gravelly loam, 1 to 5 percent slopes

Map Unit Setting

National map unit symbol: d7v5 *Elevation:* 400 to 1,680 feet Mean annual precipitation: 30 to 34 inches Mean annual air temperature: 64 to 66 degrees F Frost-free period: 220 to 247 days Farmland classification: Not prime farmland

Map Unit Composition

Somervell and similar soils: 100 percent Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Somervell

Setting

Landform: Ridges Landform position (two-dimensional): Backslope Down-slope shape: Linear Across-slope shape: Convex Parent material: Loamy residuum weathered from limestone

Typical profile

H1 - 0 to 15 inches: very gravelly loam *H2 - 15 to 27 inches:* very gravelly clay loam *H3 - 27 to 35 inches:* bedrock

Properties and qualities

Slope: 1 to 5 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 60 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 6s Hydrologic Soil Group: C Ecological site: Gravelly 30-38 (R085XY276TX) Hydric soil rating: No

Soil Information for All Uses

Suitabilities and Limitations for Use

The Suitabilities and Limitations for Use section includes various soil interpretations displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each interpretation.

Land Classifications

Land Classifications are specified land use and management groupings that are assigned to soil areas because combinations of soil have similar behavior for specified practices. Most are based on soil properties and other factors that directly influence the specific use of the soil. Example classifications include ecological site classification, farmland classification, irrigated and nonirrigated land capability classification, and hydric rating.

Farmland Classification

Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. It identifies the location and extent of the soils that are best suited to food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the "Federal Register," Vol. 43, No. 21, January 31, 1978.





Custom Soil Resource Report

Prime farmland if Farmland of statewide Farmland of statewide Farmland of unique Prime farmland if 1 A الريادي -----subsoiled, completely importance, if drained and importance, if irrigated importance subsoiled, completely removing the root either protected from and reclaimed of excess removing the root Not rated or not available $\mathcal{F}^{(1)}(\mathcal{F})$ inhibiting soil layer flooding or not frequently salts and sodium inhibiting soil layer flooded during the Soil Rating Points Prime farmland if irrigated Farmland of statewide Prime farmland if arowina season and the product of I (soil importance, if drained or irrigated and the product Not prime farmland erodibility) x C (climate Farmland of statewide either protected from of I (soil erodibility) x C factor) does not exceed importance, if irrigated flooding or not frequently All areas are prime (climate factor) does not and drained flooded during the farmland exceed 60 60 growing season Prime farmland if irrigated Farmland of statewide Prime farmland if drained Prime farmland if --and reclaimed of excess importance, if irrigated Farmland of statewide irrigated and reclaimed -Prime farmland if salts and sodium and either protected from importance, if warm of excess salts and protected from flooding or flooding or not frequently enough, and either sodium Farmland of statewide ----not frequently flooded flooded during the drained or either Farmland of statewide importance during the growing growing season protected from flooding or importance Farmland of statewide not frequently flooded season a 🖬 Farmland of statewide Farmland of statewide importance, if drained during the growing Prime farmland if irrigated importance, if subsoiled. importance, if drained Farmland of statewide season completely removing the importance, if protected Prime farmland if drained Farmland of statewide root inhibiting soil layer Farmland of statewide from flooding or not and either protected from importance, if protected importance, if warm Farmland of statewide 100 frequently flooded during flooding or not frequently from flooding or not enough importance, if irrigated the growing season flooded during the frequently flooded during and the product of I (soil Farmland of statewide growing season the growing season Farmland of statewide 1990 B erodibility) x C (climate importance, if thawed importance, if irrigated Prime farmland if irrigated Farmland of statewide factor) does not exceed Farmland of local 1000 and drained importance, if irrigated 60 importance Prime farmland if irrigated Farmland of local ----and either protected from importance, if irrigated flooding or not frequently flooded during the growing season

Custom Soil Resource Report

	Farmland of statewide importance, if drained and either protected from flooding or not frequently		Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium		Farmland of unique importance Not rated or not available	The soil surveys that comprise your AOI were mapped at 1:24,000.	
	flooded during the growing season		Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or	Water Features Streams and Canals		Please rely on the bar scale on each map sheet for map measurements.	
	Farmland of statewide importance, if irrigated and drained			Transporta	ation	Source of Map: Natural Resources Conservation Service	
	Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season			+++	Ralls Interstate Highways	Coordinate System: Web Mercator (EPSG:3857)	
				~	US Routes	Maps from the Web Soil Survey are based on the Web Mercator	
				~	Major Roads	projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the	
	Farmland of statewide importance, if subsoiled,		not frequently flooded during the growing	~	Local Roads	Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.	
	completely removing the root inhibiting soil layer		Farmland of statewide	Background Aerial Photography	nd Aerial Photography	This product is generated from the USDA-NRCS certified data	
	Farmland of statewide importance, if irrigated		importance, if warm enough	_		as of the version date(s) listed below.	
	and the product of I (soil erodibility) x C (climate factor) does not exceed 60		Farmland of statewide importance, if thawed			Soil Survey Area: Denton County, Texas	
			Farmland of local importance				
			Farmland of local importance, if irrigated			Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.	
						Date(s) aerial images were photographed: Oct 29, 2016—Nov 29, 2017	

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.

Table—Farmland Classification

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI			
13	Birome-Rayex-Aubrey complex, 2 to 15 percent slopes	Not prime farmland	1.9	2.1%			
22	Burleson clay, 1 to 3 percent slopes	All areas are prime farmland	1.0	1.1%			
54	Lindale clay loam, 1 to 3 percent slopes	All areas are prime farmland	1.5	1.6%			
56	Medlin-Sanger clay, 5 to 15 percent slopes	Not prime farmland	2.4	2.5%			
58	Mingo clay loam, 1 to 3 percent slopes	Farmland of statewide importance	4.8	5.2%			
66	Ponder loam, 1 to 3 percent slopes	All areas are prime farmland	7.2	7.7%			
67	Sanger clay, 1 to 3 percent slopes	All areas are prime farmland	59.5	64.0%			
68	Sanger clay, 3 to 5 percent slopes	All areas are prime farmland	2.4	2.5%			
74	Slidell clay, 1 to 3 percent slopes	All areas are prime farmland	10.6	11.4%			
75	Somervell gravelly loam, 1 to 5 percent slopes	Not prime farmland	1.7	1.8%			
Totals for Area of Intere	est	93.0	100.0%				

Rating Options—Farmland Classification

Aggregation Method: No Aggregation Necessary Tie-break Rule: Lower

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Photograph 2: View looking west along the FM 1173 north ROW near STA. 115+00. The TESCP/EMST Mapper classifies portions of the woody and unmaintained vegetation as Tallgrass Prairie, Grassland and Urban; however, the woody vegetation better fits the Disturbed Prairie classification. The unmaintained vegetation in the foreground better fits the Riparian classification. Date of photograph: 04/16/2020



Photograph 4: View looking north near the FM 1173 south ROW near STA. 115+00. The TESCP/EMST Mapper classifies the vegetation and water as Urban; however, the vegetation and water better fit the Riparian and Open Water classifications. Date of photograph: 04/16/2020


04/16/2020



Photograph 8: View looking west from FM 1173 north ROW near STA. 155+00. The TESCP/EMST Mapper classifies portions of the roadway, mowed-maintained vegetation and parking lot as Tallgrass Prairie, Grassland; however, it better fits the Urban classification. Date of photograph: 04/16/2020



Photograph 10: View looking north along FM 1173 north ROW toward Hopkins Rd in the background, near STA. 156+50. The TESCP/EMST Mapper classifies portions of the water, woody vegetation, unmaintained vegetation, and roadway all as Tallgrass Prairie, Grassland and Urban. The roadway in the background better fits the Urban classification and the woody vegetation better fits the Disturbed Prairie classification. The unmaintained vegetation in the foreground better fits the Riparian classification. The water better fits the Open Water classification. Date of photograph: 04/16/2020



Photograph 12: View looking north along FM 1173 north ROW near STA. 157+00. The TESCP/EMST Mapper classifies the water and unmaintained vegetation as Urban. The unmaintained vegetation better fits the Riparian classification. The water better fits the Open Water classification. Date of photograph: 04/20/2020



classification.



maintained vegetation better fit the Urban classification. Date of photograph: 04/16/2020



Photograph 18: View looking northeast along FM 1173 south ROW near STA 198+00. The TESCP/EMST Mapper classifies portions of the roadway, mowed-maintained vegetation and water as Tallgrass Prairie, Grassland and Riparian. The mowed-maintained vegetation and roadway better fits the Urban classification. The water better fits the Open Water classification. Date of photograph: 04/20/2020



Photograph 20: View looking west along FM 1173 south ROW at Lovers Lane Rd. The TESCP/EMST Mapper classifies portions of roadway and mowed-maintained vegetation, as Tallgrass Prairie, Grassland and Crosstimbers Woodland and Forest. The roadway and mowed-maintained vegetation better fit the Urban classification. Date of photograph: 04/16/2020



Photograph 22: View looking east along Barthold Rd north ROW near STA. 240+00. The TESCP/EMST Mapper classifies portions of the unmaintained and woody vegetation as Tallgrass Prairie, Grassland. The woody vegetation populated by mesquite trees better fits the Disturbed Prairie classification. The areas pf unmaintained vegetation lacking woody vegetation fits the Tallgrass Prairie, Grassland classification. Date of photograph: 04/16/2020



Photograph 24: View looking west along Barthold Rd south ROW near STA. 258+00. The TESCP/EMST Mapper classifies portions of the roadway, mowed-maintained vegetation and woody vegetation as Tallgrass Prairie, Grassland. The roadway and mowed-maintained vegetation better fit the Urban classification. The woody vegetation better fits the Disturbed Prairie classification. Date of photograph: 04/16/2020





Photograph 28: View looking east from Barthold Rd north ROW near STA. 284+00. The TESCP/EMST Mapper classifies the water and unmaintained vegetation as urban. The vegetation better fits the Riparian classification. The water better fits the Open Water classification. Date of photograph: 04/20/2020



Project Name: Farm-to-Market Road (FM) 1173

CSJ(s): 1059-01-047 & 1059-02-002

County(ies): Denton

Date Analysis Completed: 5/14/2020

Prepared by: Chris Hagar, Civil Associates, Inc.

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried-out by TxDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated December 9, 2019, and executed by FHWA and TxDOT.

I. Endangered Species Act

Select the appropriate statement below based on the determinations recorded in the completed projectspecific species analysis spreadsheet:

- This project does <u>not</u> require consultation with or authorization from the USFWS under the Endangered Species Act.
- This project requires consultation with or authorization from the USFWS under the Endangered Species Act.

For a project that requires federal authorization or approval, if the completed project-specific species analysis spreadsheet indicates, "May affect," for any species, then consultation with the USFWS is required under section 7 of the Endangered Species Act and the second checkbox above must be checked.

For more information regarding the Endangered Species Act, see **ENV's Endangered Species Act Handbook**.

II. TPWD Coordination

Select the appropriate statement below:

- This project consists solely of maintenance activities that are of a type or type(s) covered by the Maintenance Program Environmental Assessment, and therefore no coordination with TPWD is required. Do not fill out a separate Tier I Site Assessment Form.
- This project does <u>not</u> consist solely of maintenance activities that are of a type or type(s) covered by the Maintenance Program Environmental Assessment, and therefore a Tier I Site Assessment is required.

III. Bald and Golden Eagle Protection Act (BGEPA)

Select the appropriate statement below:

- This project is <u>not</u> within 660 feet of an active or inactive Bald or Golden Eagle nest. Therefore, no coordination with USFWS is required.
- This project is within 660 feet of an active or inactive Bald or Golden Eagle nest; however, construction activities within 660 feet will not occur during the nesting season, and the project will adhere to the National Bald Eagle Management Guidelines of 2007. Therefore, no coordination with USFWS is required.
- This project <u>is</u> within 660 feet of an active or inactive Bald or Golden Eagle nest, <u>and</u> construction within 660 feet <u>will</u> occur during the nesting season or the project will <u>not</u> adhere to the National Bald Eagle Management Guidelines of 2007. Therefore, coordination with USFWS to obtain a Non-Purposeful Take Permit is required.

For more information regarding BGEPA, see Section 7.0 of **ENV's Ecological Resources Handbook**.

IV. Migratory Bird Protections

This project will comply with applicable provisions of the Migratory Bird Treaty Act (MBTA) and Texas Parks and Wildlife Code Title 5, Subtitle B, Chapter 64, Birds. It is the department's policy to avoid removal and destruction of active bird nests except through federal or state approved options. In addition it is the department's policy to, where appropriate and practicable:

- use measures to prevent or discourage birds from building nests on man-made structures within portions of the project area planned for construction, and
- schedule construction activities outside the typical nesting season.

For more information regarding migratory bird protections, see ENV's Guidance: Avoiding Migratory Birds and Handling Potential Violations and Section 3.0 of ENV's Ecological Resources Handbook.

V. Resources Consulted

Indicate which resources were consulted/actions were taken to make the species analysis determinations recorded in this form (DO NOT ATTACH TO THIS FORM OR UPLOAD TO ECOS ANY RESOURCES CONSULTED – JUST CHECK THE APPROPRIATE BOX(ES)):

⊠ Aerial Photography ⊠ Topographic Map ⊠ Natural Diversity Database (NDD)

 \Box Karst Zone Maps \boxtimes Ecological Mapping System of Texas (EMST)

 \boxtimes Site Visit \square Species Expert Consulted \square Species Habitat or Presence/absence Survey \boxtimes Other: <u>USDA Soil Report of Denton County, TX</u>

County	Taxon	Common Name	Scientific Name	Habitat	Suitable Habitat Present?	Explanation for determination regarding suitable habitat	Federal Status	Effect/Take Determination for Federally Listed Species	State Status	Impact Determination for State-Listed Species	Explanation for Effect/Take and/or Impact Determination	Presence/ Absence survey conducted?
Denton	Birds	Black Rail	Laterallus jamaicensis	Black rails are year-round residents of the central and upper coast and migrants in the eastern part of the state. The species nests in salt, brackish, and freshwater marshes, pond borders, wet meadows, and wetlands with hydrophytic grass species. Water depth is an important and key habitat component, as the species typically is found where water is less than two to four centimeters deep. Other significant habitat factors may include vegetation density, distance to open water, and water regime stability. Nesting typically occurs in the highest sections of the marsh, which have mesic to hydric soils and are flooded by only the highest tides. Nests are built in areas with saturated or shallowly flooded soils and dense vegetation on damp ground, on mat of previous year's dead grasses, or over shallow water. In salt or brackish marshes, typical habitat includes dense stands of cordgrasses (Spartina sp.), spikegrasses (Distichlis sp.), and needlerush (<i>Juncus</i> sp.), or, in more upland saltbush communities along marsh edges. Typical freshwater habitat includes species such as cattail (<i>Typha</i>) and bulrush (<i>Scirpus</i> sp.). Non-breeding habitat is thought to be similar to breeding habitat.	Ν	Salt, brackish or freshwater marshes, pond borders, wet meadows, or wetlands with hydrophytic grass species were not identified within the action area. The action area Ines up with the proposed project area for this species evaluation. Also, the Black Rail now has the Federal Status of ST.	PT	No effect	т	No impact	There is no suitable habitat within the action area. The Black Rail now has the Federal Status of ST.	Ν
Denton	Birds	Least Tern	Sternula (=Sterna) antillarum	The interior population (subspecies <i>athalassos</i>) of the Least Tern nests on bare or sparsely vegetated sand, shell, and gravel beaches, sandbars, islands, and salt flats associated with inland rivers and reservoirs. It occasionally nests on man-made structures such as sand and gravel pits or gravel rooftops. Preferred habitat includes sand and gravel bars within a wide unobstructed river channel, or open flats along shorelines of lakes and reservoirs. Colony sites can move annually, depending on landscape disturbance and vegetation growth at established colonies. It is known to nest at three reservoirs along the Rio Grande River, on the Canadian River in the northern Panhandle, and along the Red River.	Ν	Bare or sparsely vegetated sand, shell, or gravel beaches, sandbars, islands, and salt flats associated with inland rivers and reservoirs were not identified in the action area. The action area lines up with the proposed project area for this species.	E	No effect	E	No impact	There is no suitable habitat within the action area.	Ν

County	Taxon	Common Name	Scientific Name	Habitat	Suitable Habitat Present?	Explanation for determination regarding suitable habitat	Federal Status	Effect/Take Determination for Federally Listed Species	State Status	Impact Determination for State-Listed Species	Explanation for Effect/Take and/or Impact Determination	Presence/ Absence survey conducted?
Denton	Birds	Piping Plover	Charadrius melodus	This migratory species overwinters in Texas, where it occurs on beaches, ephemeral sand flats, barrier islands, sand, mud, algal flats, washover passes, salt marshes, lagoons, and dunes along the Gulf Coast and adjacent offshore islands, including spoil islands in the Intracoastal Waterway. Algal flats appear to be the highest quality habitat because of their relative inaccessibility and their continuous availability throughout all tidal conditions. Sand flats often appear to be preferred over algal flats when both are available, but large portions of sand flats along the Texas coast are available only during low or very low tides and are often completely unavailable during extreme high tides or strong north winds. Beaches appear to serve as a secondary habitat to the flats associated with the primary bays, lagoons, and inter-island passes. Beaches are rarely used on the southern Texas coast, where bayside habitat is always available, and are abandoned as bayside habitats become available on the central and northern coast.	Ν	The proposed action area is not located on the Gulf Coast, offshore islands, or the beach. In addition, the action area does not contain sand, mud, or algal flats. The action area lines up with the proposed project area for this species evaluation.	Т	No effect	т	No impact	There is no suitable habitat within the action area.	Ν
Denton	Birds	Red Knot	Calidris canutus rufa	The species is a winter resident and migrant in Texas. It is primarily found in marine habitats such as sandy beaches, salt marshes, lagoons, mudflats of estuaries and bays, and mangrove swamps during winter months. It primarily occurs along the Gulf coast on tidal flats and beaches and less frequently in marshes and flooded fields. It has occasionally been observed along shorelines of large lakes and freshwater marshes.	Ν	Sandy beaches, salt marshes, lagoons, mudflats of estuaries and bays, mangrove swamps, marshes, or flooded fields were not identified in the action area. The action area lines up with the proposed project area for this species evaluation. Also, the Red Knot now has the Federal Status of ST.	Т	No effect	т	No impact	There is no suitable habitat within the action area. The Red Knot now has the Federal Status of ST.	Ν
Denton	Birds	White-faced Ibis	Plegadis chihi	The species is found in the Western Gulf Coastal Plains ecoregion of Texas. Preferred habitat includes freshwater wetlands, marshes, ponds, rivers, irrigated land, and sloughs, but it occasionally forages in brackish or saltwater marshes. It nests in marshes in low trees, on the ground in bulrushes (Scirpus sp.) or reeds, or on floating mats.	Y	The project area containes two palustrine emergent wetlands. Suitable habitat may also be present, especially near portions of the new location area of the project. No suitable nesting habitat is present and migratory stonover is unlikely.	_	N/A	т	No impact	Potential suitable habitat may be present; however, preferred habitat is located off site at Lake Ray Roberts or Lewisville Lake. No Ibis were observed during the site assessment. Bird BMPs would be implemented as a part of the project.	Ν

County	Taxon	Common Name	Scientific Name	Habitat	Suitable Habitat Present?	Explanation for determination regarding suitable habitat	Federal Status	Effect/Take Determination for Federally Listed Species	State Status	Impact Determination for State-Listed Species	Explanation for Effect/Take and/or Impact Determination	Presence/ Absence survey conducted?
Denton	Birds	Whooping Crane	Grus americana	The species breeds in Canada and winters on the Texas coast at Aransas National Wildlife Refuge. During migration it typically stops to rest and feed in open bottomlands of large rivers and marshes but, like other waterbirds, it may also utilize flooded croplands, playas, large wetlands associated with lakes, small ponds, and various other aquatic features. Typical migration habitat includes sites with good horizontal visibility, water depth of 30 centimeters or less, and minimum wetland size of 0.04 hectare for roosting.	Ν	No suitable habitat such as large rivers, marshes, flooded croplands, playas, or large wetlands were identified within the action area. The action area lines up with the proposed project area for this species evaluation.	E	No effect	E	No impact	There is no suitable habitat within the action area.	Ν
Denton	Mollusks	Louisiana Pigtoe	Pleuroberna riddellii	Freshwater mussel currently found in the Sabine, Neches, and Trinity River basins in Texas. The species occurs in streams to medium-sized rivers with moderate flow. In Texas, the species has only been documented occurring in relatively shallow lotic waters with preferable substrate being sand and sand with gravel and silt. It is not generally known to tolerate impoundments.	Y	The proposed project is located in the Trinity River Basin. Dry Fork Hickory Creek has the potential to support mollusks.	_	N/A	T	No impact	Suitable habitat is present, but no mollusks were observed within the project area during the site assessment. Freshwater Mussel BMPs would be implemented. Presence/ absence surveys, and relocation as applicable, would be conducted prior to the start of construction.	Ν
Denton	Mollusks	Sandbank Pocketbook	Lampsilis satura	A freshwater mussel that is currently limited to the Upper Trinity, Neches, Sabine, and San Jacinto River basins in Texas. The species occurs in flowing small to large rivers with gravel, gravel-sand, and sand substrates. It has been observed in littoral areas with snags, gravel, or sand substrate with slow to moderate currents, as well as lotic waters in substrates of sand, silty sand, and sand and clay mixture.	Y	The proposed project is located in the Trinity River Basin. Dry Fork Hickory Creek has the potential to support mollusks.	_	N/A	т	No impact	Suitable habitat is present, but no mollusks were observed within the project area during the site assessment. Freshwater Mussel BMPs would be implemented. Presence/ absence surveys, and relocation as applicable, would be conducted prior to the start of construction.	Ν

County	Taxon	Common Name	Scientific Name	Habitat	Suitable Habitat Present?	Explanation for determination regarding suitable habitat	Federal Status	Effect/Take Determination for Federally Listed Species	State Status	Impact Determination for State-Listed Species	Explanation for Effect/Take and/or Impact Determination	Presence/ Absence survey conducted?
Denton	Mollusks	Texas Heelsplitter	Potamilus amphichaenus	A freshwater mussel currently known from the Trinity, Neches, and Sabine River basins. The species occurs in small streams to medium rivers with sand or mud substrate. It is found in flowing water but not in riffles or shoals. It prefers quiet waters and can be found in reservoirs.	Y	The proposed project is located in the Trinity River Basin. Dry Fork Hickory Creek has the potential to support mollusks.	_	N/A	т	No impact	Suitable habitat is present, but no mollusks were observed within the project area during the site assessment. Freshwater Mussel BMPs would be implemented. Presence/ absence surveys, and relocation as applicable, would be conducted prior to the start of construction.	Ν
Denton	Reptiles	Texas Horned Lizard	Phrynosoma cornutum	The species is found in semi-arid open areas with scattered vegetation comprised of bunchgrass, cacti, yucca, mesquite, acacia, juniper, or other woody shrubs and small trees commonly found in loose sandy or loamy soils.	Ν	No suitable semi-arid open areas with loose sandy or loamy soils are present in the proposed project area.	_	N/A	т	No impact	There is no suitable habitat within the project area.	Ν

County	Taxon	Common Name	Scientific Name	Habitat	Suitable Habitat Present?	Explanation for determination regarding suitable habitat	Impact Determination for SGCNs	Explanation for Impact Determination	Presence/ Absence survey conducted?
Denton	Amphibians	Strecker's chorus frog	Pseudacris streckeri	Terrestrial and aquatic: Wooded floodplains and flats, prairies, cultivated fields and marshes. Likes sandy substrates.	Y	There is potential suitable habitat present such as streams and wooded floodplains and flats within the proposed project area.	May impact	Suitable habitat present; however, no frogs were observed within the project area during the site assessment.	Ν
Denton	Amphibians	Woodhouse's toad	Anaxyrus woodhousii	Terrestrial and aquatic: A wide variety of terrestrial habitats are used by this species, including forests, grasslands, and barrier island sand dunes.Aquatic habitats are equally varied.	Y	There is potential suitable habitat present such as streams, wooded floodplains, flats and other wet areas within the proposed project area.	May impact	Suitable habitat present; however, no frogs were observed within the project area during the site assessment.	Ν
Denton	Birds	Franklin's gull	Leucophaeus pipixcan	This species is only a spring and fall migrant throughout Texas. It does not breed in or near Texas. Winter records are unusual consisting of one or a few individuals at a given site (especially along the Gulf coastline). During migration, these gulls fly during daylight hours but often come down to wetlands, lake shore, or islands to roost for the night.	Ν	There is no suitable habitat such as marshes or inland lakes within the proposed project area.	No impact	No suitable habitat is present within the project area, and no gulls were observed during the site assessment.	Ν
Denton	Birds	mountain plover	Charadrius montanus	Breeding: nests on high plains or shortgrass prairie, on ground in shallow depression; nonbreeding: shortgrass plains and bare, dirt (plowed) fields; primarily insectivorous.	N	There is no suitable habitat such as high plains or shortgrass prairie within the proposed project area.	No impact	No suitable habitat is present within the project area, and no plovers were observed during the site assessment.	Ν
Denton	Birds	western burrowing owl	Athene cunicularia hypugaea	Open grasslands, especially prairie, plains, and savanna, sometimes in open areas such as vacant lots near human habitation or airports; nests and roosts in abandoned burrows.	Y	There is potential suitable habitat present such as fields with open grassland located within the proposed project area.	No impact	Suitable habitat is present; however, no owls were observed during the site assessment. The Bird BMPs would be implemented.	Ν
Denton	Insects	American bumblebee	Bombus pensylvanicus	Generally, nests in fields of long grass, but may sometimes nest underground. The species utilizes bundles of hay or long grass to create sheltered nests above ground.	N	There is no suitable habitat such as fields of long grass or bundles of hay within the proposed project area.	No impact	No suitable habitat is No suitable habitat is present within the project area, and no bees were observed during the site assessment.	Ν
Denton	Mammals	American badger	Taxidea taxus	Prefers grasslands and open areas with grasslands, which can include parklands, farms, and treeless areas with friable soil and a supply of rodent prey. They may also be found in forest glades and meadows, marshes, brushy areas, hot deserts, and mountain meadows.	Y	There is potential suitable habitat such as fields with open grassland within the proposed project area.	No impact	Suitable habitat present; however, no badgers were observed within the project area during the site assessment.	Ν
Denton	Mammals	big brown bat	Eptesicus fuscus	Any wooded areas or woodlands except south Texas. Riparian areas in west Texas.	Ν	No tree species known to develop hollows, sloughing bark, or other potential bat roosting features are located in the project area.	No impact	No suitable habitat is present within the project area, and no bats were observed during the site assessment.	Ν

County	Taxon	Common Name	Scientific Name	Habitat	Suitable Habitat Present?	Explanation for determination regarding suitable habitat	Impact Determination for SGCNs	Explanation for Impact Determination	Presence/ Absence survey conducted?
Denton	Mammals	big free-tailed bat	Nyctinomops macrotis	Prefers to roost in crevices and cracks in high canyon walls, but will use buildings as well.	Ν	No tree species known to develop hollows, sloughing bark, or other potential bat roosting features are located in the project area.	No impact	No suitable habitat is present within the project area, and no bats were observed during the site assessment.	N
Denton	Mammals	black-tailed prairie dog	Cynomys Iudovicianus	Prefers dry, flat, short grasslands with low, relatively sparse vegetation, including areas overgrazed by cattle.	N	There is no potential suitable habitat present such as dry, flat, short grasslands with low, relatively sparse vegetation, including areas overgrazed by cattle within the project area.	No impact	No suitable habitat is present within the project area, and no prairie dogs were observed during the site assessment.	N
Denton	Mammals	eastern red bat	Lasiurus borealis	Found in a variety of habitats in Texas. Usually associated with wooded areas. Found in towns especially during migration.	Ν	No tree species known to develop hollows, sloughing bark, or other potential bat roosting features are located in the project area.	No impact	No suitable habitat is present within the project area, and no bats were observed during the site assessment.	N
Denton	Mammals	eastern spotted skunk	Spilogale putorius	Generalist; open fields, prairies, croplands, fence rows, farmyards, forest edges and woodlands. Prefer wooded, brushy areas; tallgrass prairies. S.p. ssp. interrupta found in wooded areas and tallgrass prairies, preferring rocky canyons and outcrops when such sites are available.	Y	There is potential suitable habitat present such as open fields, croplands, fence rows, and woodlands in the project area	No impact	Suitable habitat is present. Plains spotted skunk BMPs would be implemented.	N
Denton	Mammals	hoary bat	Lasiurus cinereus	Known from montane and riparian woodland in Trans- Pecos, forests and woods in east and central Texas.	Ν	No tree species known to develop hollows, sloughing bark, or other potential bat roosting features are located in the project area.	No impact	No suitable habitat is present within the project area, and no bats were observed during the site assessment.	N
Denton	Mammals	long-tailed weasel	Mustela frenata	Includes brushlands, fence rows, upland woods and bottomland hardwoods, forest edges & rocky desert scrub. Usually live close to water.	Y	There is potential suitable habitat present such as fence rows within the proposed project area.	May impact	Suitable habitat present; however, no weasels were observed within the proposed project area during the site assessment. There are no species-specific BMPs.	N
Denton	Mammals	Mexican free- tailed bat	Tadarida brasiliensis	Roosts in buildings in east Texas. Largest maternity roosts are in limestone caves on the Edwards Plateau. Found in all habitats, forest to desert.	Ν	The proposed project is located in North Texas. There is no suitable habitat such as caves or buildings within the project area.	No impact	No suitable habitat is present within the project area, and no bats were observed during the site assessment.	N
Denton	Mammals	mink	Neovison vison	Intimately associated with water; coastal swamps & marshes, wooded riparian zones, edges of lakes. Prefer floodplains.	Y	There is potential suitable habitat present such as a stream, a wooded riparian zone, and an associated floodplain within the proposed project area.	No impact	Suitable habitat present; however, no minks were observed within the project area during the site assessment.	Ν

SPECIES ANALYSIS SUMMARY (SGCN)

Project Name: Farm-to-Market Road (FM) 1173 CSJ(s): 1059-01-047 1059-02-002

County	Taxon	Common Name	Scientific Name	Habitat	Suitable Habitat Present?	Explanation for determination regarding suitable habitat	Impact Determination for SGCNs	Explanation for Impact Determination	Presence/ Absence survey conducted?
Denton	Mammals	mountain lion	Puma concolor	Rugged mountains & riparian zones.	Ν	No suitable habitat such as rugged mountains within the proposed project area. A riparian zone is located within the proposed project area; however, the project area is too urbanized to support mountain lions.	No impact	No suitable habitat is present in the project area, and no mountain lions were observed during the site assessmet.	N
Denton	Mammals	southern short- tailed shrew	Blarina carolinensis	Found primarily in pine forests, dry to wet and even swampy habitats, as well as disturbed forests and abandoned agricultural land.	Ν	There are no pine forests in the project area.	No impact	No suitable habitat is present in the project area, and no shrews were observed during the site assessmet.	N
Denton	Mammals	swamp rabbit	Sylvilagus aquaticus	Mainly lives close to lowland water, often in cypress swamps, marshland, floodplain, and river tributaries	N	There is no potential suitable habitat such as cyperus swamps, marshland, large floodplains, or river tributaries in the project area.	No impact	No suitable habitat is present in the project area, and no rabbits were observed during the site assessmet.	N
Denton	Mammals	thirteen-lined ground squirrel	lctidomys tridecemlineatus	Prefers short grass prairies with deep soils for burrowing. Frequently found in grazed ranchland, mowed pastures, and golf courses.	Y	There is potential suitable habitat such as grazed ranchland and mowed pastures within the project area.	May impact	Suitable habitat present; however, no thirteen-lined ground squirrels were observed within the proposed project area during the site assessment. There are no species-specific BMPs.	N
Denton	Mammals	tricolored bat	Perimyotis subflavus	Forest, woodland and riparian areas are important. Caves are very important to this species.	N	No tree species known to develop hollows, sloughing bark, or other potential bat roosting features are located in the project area.	No impact	No suitable habitat is present within the project area, and no bats were observed during the site assessment.	N
Denton	Mammals	western hog- nosed skunk	Conepatus leuconotus	Habitats include woodlands, grasslands, and deserts, to 7,200 feet, most common in rugged, rocky canyon country; little is known about the habitat of the <i>ssp. telmalestes</i>	N	There is no suitable habitat such as woodlands, grasslands, or deserts in rugged, canyon country within the project area.	No impact	No suitable habitat is present within the project area, and no skunks were observed during the site assessment.	N
Denton	Mammals	woodland vole	Microtus pinetorum	Include grassy marshes, swamp edges, old-field/pine woodland ecotones, tallgrass fields; generally sandy soils.	Ν	There is no suitable habitat such as grassy marshes, swamp edges, old-field/pine woodland ecotones, or tallgrass fields associated with sandy soils within the project area.	No impact	No suitable habitat is present within the project area, and no voles were observed during the site assessment.	N

County	Taxon	Common Name	Scientific Name	Habitat	Suitable Habitat Present?	Explanation for determination regarding suitable habitat	Impact Determination for SGCNs	Explanation for Impact Determination	Presence/ Absence survey conducted?
Denton	Reptiles	eastern box turtle	Terrapene carolina	Terrestrial: Eastern box turtles inhabit forests, fields, forest-brush, and forest-field ecotones. In some areas they move seasonally from fields in spring to forest in summer. They commonly enter pools of shallow water in summer. For shelter, they burrow into loose soil, debris, mud, old stump holes, or under leaf litter. They can successfully hibernate in sites that may experience subfreezing temperatures.	Y	There is potential suitable habitat present such as fields, forest-brush, and pools of shallow water located within the project area.	May impact	Suitable habitat present; however, no bix turtles were observed within the proposed project area during the site assessment. There are no species-specific BMPs.	N
Denton	Reptiles	slender glass lizard	Ophisaurus attenuatus	Terrestrial: Habitats include open grassland, prairie, woodland edge, open woodland, oak savannas, longleaf pine flatwoods, scrubby areas, fallow fields, and areas near streams and ponds, often in habitats with sandy soil. tunnels of small mammals (Scalopus, Microtus) (Fitch 1989).	Y	There is potential suitable habitat present such as open grassland, woodland edge, fallow fields, and areas near streams and ponds in the project area.	May impact	Suitable habitat present; however, no lizards were observed within the proposed project area during the site assessment. There are no species-specific BMPs.	N
Denton	Reptiles	smooth softshell	Apolone mutica	Any permanent body of water. Large rivers and streams; in some areas found in lakes, impoundments, and shallow bogs. Usually in water with sandy or mud bottom and few aquatic plants.	Y	There is potential suitable habitat present such as one impoundment associated with Dry Fork of Hickory Creek is in the project area.	May impact	Suitable habitat present; however, no turtles were observed within the proposed project area during the site assessment. There are no species-specific BMPs.	N
Denton	Reptiles	Texas garter snake	Thamnophis sirtalis annectens	Terrestrial and aquatic: Habitats used include the grasslands and modified open areas in the vicinity of aquatic features, such as ponds, streams or marshes. Damp soils and debris for cover are thought to be critical.	Y	There is potential suitable habitat present such as grasslands and modified open areas in the vicinity of aquatic features, such as ponds and streams with damp soils and debris for cover located in the project area.	No impact	Suitable habitat present; however, no snakes were observed within the proposed project area during the site assessment. There is a species-specific BMP. The Terrestrial BMPs will be implemented.	N
Denton	Reptiles	western box turtle	Terrapene ornata	Terrestrial: Ornate or western box trutles inhabit prairie grassland, pasture, fields, sandhills, and open woodland. They are essentially terrestrial but sometimes enter slow, shallow streams and creek pools. For shelter, they burrow into soil (e.g., under plants such as yucca) (Converse et al. 2002) or enter burrows made by other species.	Y	There is potential suitable habitat such as pasture, fields and open woodlands within the project area.	May impact	Suitable habitat present; however, no box turtles were observed within the proposed project area during the site assessment. There are no species-specific BMPs.	N
Denton	Reptiles	western rattlesnake	Crotalus viridis	Terrestrial: Dry desert and prairie grasslands, shrub desert rocky hillsides; edges of arid and semi-arid river breaks.	N	There is no suitable habitat such as dry desert and prairie grasslands, shrub desert rocky hillsides; edges of arid and semi-arid river breaks within the project area.	No impact	No suitable habitat is present within the project area, and no snakes were observed during the site assessment.	N

County	Taxon	Common Name	Scientific Name	Habitat	Suitable Habitat Present?	Explanation for determination regarding suitable habitat	Impact Determination for SGCNs	Explanation for Impact Determination	Presence/ Absence survey conducted?
Denton	Plants	Glen Rose yucca	Yucca necopina	Grassland on sand soils and limestone outcrops.	Ν	There is no suitable habitat such as grassland on sandy soils and limestone outcrops within the project area.	No impact	No suitable habitat is present in the project area. The species was not observed during the site assessment;	Ν
Denton	Plants	Topeka purple- coneflower	Echinacea atrorubens	Tallgrass prairie of the southern Great Plains, in blackland prairies and limestone hillsides.	Ν	There is no suitable habitat such as tallgrass prairie, blackland prairies and limestone hillsides within the project area.	No impact	No suitable habitat is present in the project area. The species was not observed during the site assessment;	N