APPENDIX O: Biological Resources

ADDENDUM

24-MARCH-2022

APPENDIX O – BIOLOGICAL RESOURCES – Proposed ROW Change

SPUR 399 EXTENSION EIS - US 75 to US 380, Collin County
CSJs 0364-04-051, 0047-05-058, and 0047-10-002; Dallas District

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PURPOSE OF ADDENDUM:

Changes were made to the proposed right-of-way (ROW) limits for the Spur 399 Extension in the 60% Geometric Schematic Design submittal made on 3-JAN-2022. A copy of that submittal is included in Appendix B of this DEIS. This addendum describes where the changes occurred and summarizes how those changes affected the impacts and findings disclosed in the previously approved technical reports that make up this appendix. The revised impacts based on the proposed ROW changes are disclosed in the DEIS.

UPDATED SPUR 399 EXTENSION PROJECT DESCRIPTION:

With submittal of the 60% Geometric Schematic Design on 3-JAN-2022, the description of the proposed Spur 399 Extension has been updated as follows:

> *The proposed Spur 399 Extension is comprised of improvements within the existing section of SH 5 between US 75 and Stewart Road, and new location improvements from Stewart Road to US 380 east of McKinney. Within the section of SH 5 between US 75 and Stewart Road, one new travel lane in each direction would be striped and ramping improvements would be constructed within the existing ROW and roadway pavement section to be established by the recently cleared SH 5 project (CSJs 0135-03-046 and 0135-04-033).*
>
> *From Stewart Road to US 380, the Spur 399 Extension would be constructed on new location as an 8-lane, access-controlled freeway with 2-lane, one-way frontage roads on each side, starting east of Couch Drive, within an anticipated average ROW width of 400 feet, but with areas of ROW ranging from 165 feet to 696 feet wide depending on location. Frontage roads may be eliminated, and the primary travel lanes may be elevated on structure to minimize impacts on sensitive resources. The freeway facility would also include ramps, frontage roads, and arterial roadways to support connectivity to the existing roadway network along with safety lighting/signage/ITS. Grade-separated interchanges would be constructed at major crossroads.*

DESCRIPTION OF THE PROPOSED ROW CHANGE

To streamline and accelerate the NEPA process for this project, technical studies were initiated at an early stage in schematic development. Initial technical report submittals were based on the proposed ROW established in JUL-2021. Consideration of a 'Purple 2 Option' was also dismissed. In OCT-2021, to strengthen the independent utility of the Spur 399 Extension, excess proposed ROW adjacent to US 380 was removed along with other modifications along both alignments, further reducing the total amount of ROW required. The JAN-2022 Geometric Schematic Design submittal reflects the continued refinement of the alternatives and consideration of input received during the 21-OCT-2021, public meeting and ongoing

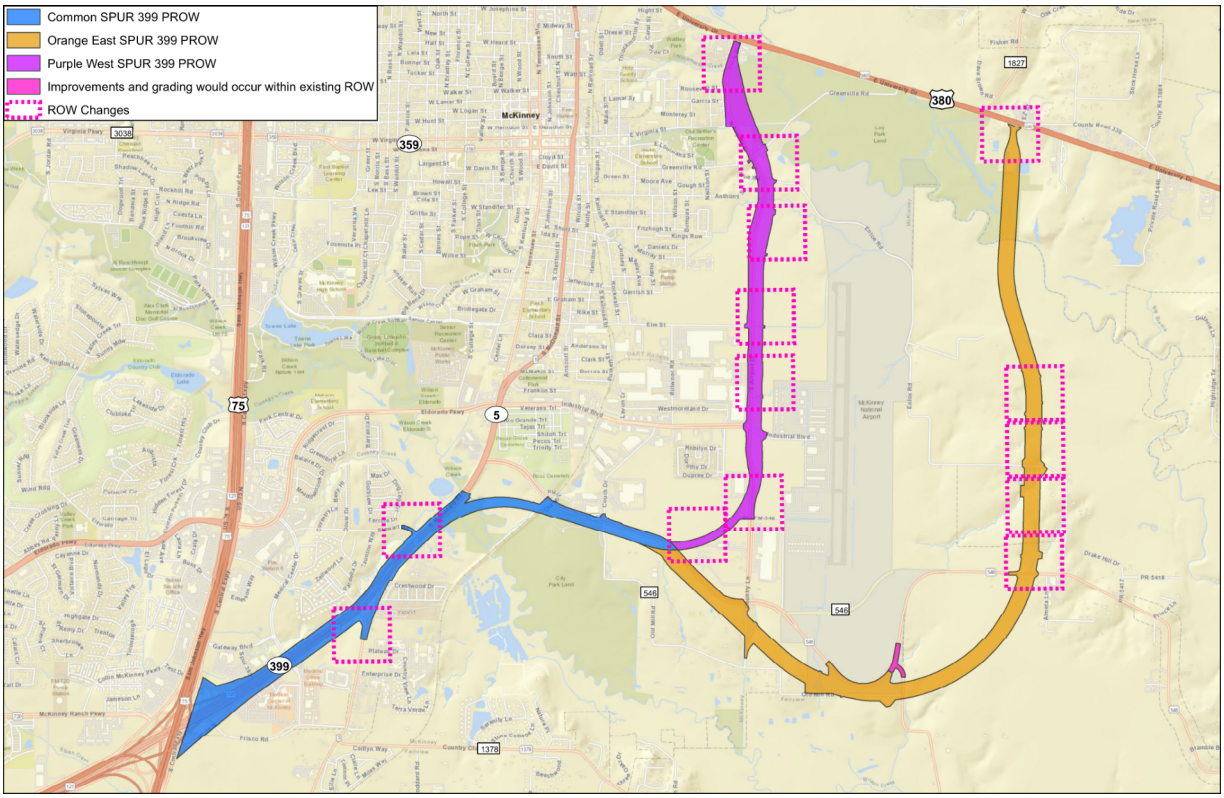
coordination with stakeholders including the City of McKinney, Collin County, and the North Texas Municipal Water District.

The January 2022 submittal made minor adjustment to the proposed ROW limits throughout the length of the new location sections of both build alternatives to account for drainage, access, and geometric improvements. The following table summarizes the proposed ROW changes.

Proposed ROW Change – July 2021 to January 2022

Build Alternative	July 2021 Proposed ROW	October 2021 Proposed ROW	January 2022 Proposed ROW
PURPLE ALTERNATIVE	303.9 acres 340 acres (Purple Option 2)	259.7 acres	263. 4 acres
ORANGE ALTERNATIVE	396.0 acres	366.4 acres	366.1 acres

Illustration of the January 2022 Proposed ROW Changes



EFFECTS OF THE JANUARY ROW CHANGE ON BIOLOGICAL RESOURCES ANALYSES AND FINDINGS

The following table summarizes the changes in the observed EMST vegetation types within the proposed ROW for the Purple and Orange Alternatives. Because more changes were made along the portion of the Purple Alternative following Airport Drive, increases are seen in the Urban High and Low Intensity categories and row crop and grassland areas that dominate that corridor. Most of the categories under the Orange Alternative decreased slightly, with minor upticks in floodplain, riparian, and deciduous woodland categories to accommodate minor drainage and side road access changes particularly in the East Fork of the Trinity River floodplain. All stream and river crossings and forested areas (including those identified as potential

mussel and habitats), water features, and floodplain/floodway areas would still be bridged to the extent practicable.

The changes in ROW anticipated for either alternative would not change the findings made to date. All TPWD BMPs previously considered would remain valid for either alternative.

0364-04-051, 0047-05-058, 0047-10-002 - SPUR 399 EXTENSION - EMST PROPOSED ROW UPDATE COMPARISION

PURPLE ALTERNATIVE (WEST)

Veg_ID	EMST Common Name	PROW Acres 60% Schematic (JAN-2022) DEIS	PROW Acres Update (OCT-2021)	Original PROW Acres (JUL-2021)
9000	Barren	1.3	1.0	0.9
207	Blackland Prairie: Disturbance or Tame Grassland	9.1	8.3	23.2
1804	Central Texas: Floodplain Hardwood Forest	7.5	7.9	11.3
1807	Central Texas: Floodplain Herbaceous Vegetation	5.8	5.8	7.3
1904	Central Texas: Riparian Hardwood Forest	1.5	1.5	1.3
1907	Central Texas: Riparian Herbaceous Vegetation	2.3	2.2	2.1
9104	Native Invasive: Deciduous Woodland	15.1	14.9	14.8
9307	Row Crops	41.4	41.2	40.1
9410	Urban High Intensity	10.2	9.8	36.4
9411	Urban Low Intensity	169.2	167.2	166.4
	TOTAL PROW ACRES	**263.4**	**259.7**	**303.9**
	Option Purple 2 Alignment			**340.0**

ORANGE ALTERNATIVE (EAST)

Veg_ID	EMST Common Name	PROW Acres 60% Schematic (JAN-2022) DEIS	PROW Acres Update (OCT-2021)	Original PROW Acres (JUL-2021)
207	Blackland Prairie: Disturbance or Tame Grassland	53.6	53.5	64.2
1103	Edwards Plateau: Deciduous Oak - Evergreen Motte and Woodland	0.6	0.6	0.6
1104	Edwards Plateau: Oak - Hardwood Motte and Woodland	5.9	5.9	5.6
1107	Edwards Plateau: Savanna Grassland	0.6	0.6	0.6
1804	Central Texas: Floodplain Hardwood Forest	10.5	10.6	9.5
1807	Central Texas: Floodplain Herbaceous Vegetation	13.9	13.8	13.8
1904	Central Texas: Riparian Hardwood Forest	8.1	7.4	5.3
9104	Native Invasive: Deciduous Woodland	42.2	42.0	40.8
9307	Row Crops	78.3	78.3	81.6
9410	Urban High Intensity	7.2	7.2	13.9
9411	Urban Low Intensity	143.6	144.9	158.9
9600	Open Water	1.5	1.5	1.2
	TOTAL PROW ACRES	**366.1**	**366.4**	**396.0**

Appendix O-1: Species Analysis Spreadsheet

SPECIES ANALYSIS SUMMARY

Project Name: Spur 399

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?
Collin	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 (*Juncus* sp.), or, in more upland saltbush communities along marsh edges. Typical freshwater habitat includes species such as cattail (*Typha*) and bulrush (*Scirpus* sp.). Non-breeding habitat is thought to be similar to breeding habitat.	N/A	In Texas, the Black Rail breeds and winters in high quality coastal marsh and prairie. The project area is outside the breeding and wintering ranges of this species. Suitable habitat for migratory Black Rails may be present; however, any use of that habitat would be incidental and ephemeral.	T	No effect or take	T	No impact	The project area does not contain suitable breeding or wintering habitat for the Black Rail. Any use of potential migratory stopover habitat within the project area would be incidental and ephemeral.	N
Collin	Birds	Least Tern - Migratory	*Sternula (=Sterna) antillarum*	The interior population (subspecies *athalassos*) 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.	N/A	The project area is outside the breeding and wintering range of this species. Although suitable stopover habitat may be present, Least Tern is not expected to regularly occur and any use of this habitat would be incidental.	—	N/A	E	No impact	The project area does not contain suitable breeding or wintering habitat for the Least Tern.	N

SPECIES ANALYSIS SUMMARY
Project Name: Spur 399

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?
Collin	Birds	Piping Plover - Migratory	*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.	N/A	The list of federally threatened and endangered species indicates that based on the project location within the migratory route, effects to Piping Plover only need be considered for wind energy projects. The project area is outside the breeding and wintering range of this species. Although suitable stopover habitat may be present, Piping Plover is not expected to regularly occur and any use of this habitat would be incidental.	T	No effect or Take	T	No impact	The project is not a wind energy project within the migratory route and does not contain suitable breeding and wintering habitat for the Piping Plover.	N

SPECIES ANALYSIS SUMMARY

Project Name: Spur 399

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Collin	Birds	Red Knot - Migratory	*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.	N/A	The list of federally threatened and endangered species indicates that based on the project location within the migratory route, effects to Red Knot only need be considered for wind energy projects. The project area is outside the breeding and wintering range of this species. Although suitable stopover habitat may be present, Red Knot is not expected to regularly occur and any use of this habitat would be incidental.	T	No effect or Take	T	No impact	The project is not a wind energy project within the migratory route and does not contain suitable breeding and wintering habitat for the Red Knot.	N
Collin	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	Edges of creeks, small ponds, wet meadows, and flooded cropland would provide suitable habitat in the project area and vicinity for this species during migration. Such habitat was observed during field visits in August 2020 and June 2021 by Derek Green.	—	N/A	T	May impact	Suitable habitat is present in the project area for the White-faced Ibis. Bird BMPs would be implemented.	N

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Collin	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.	Y	The project lies at the edge of the Whooping Crane migration corridor within the zone that encompasses 95 percent of known sightings. Suitable stopover habitat, such as flooded croplands, dry croplands, emergent wetlands, and small ponds were observed in the project area and vicinity by Derek Green during the August 2020 and 2021 field visits.	E	No effect or take	E	No impact	Suitable habitat is present in the project area for the Whooping Crane. Migratory stopover occurrence would be incidental and ephemeral.	N
Collin	Birds	Wood Stork	*Mycteria americana*	The species breeds in Mexico, and nesting sites have not been recorded in Texas since 1960. However, post-breeding migrants disperse into Texas in the summer. Foraging habitat includes freshwater prairie ponds, flooded pastures or fields, ditches, and other shallow standing water with an open canopy, occasionally including brackish wetlands. The species typically roosts communally in tall snags, sometimes in association with other wading birds (i.e. active heronries).	Y	Edges of creeks with an open canopy, small ponds, flooded meadows, and flooded cropland would provide suitable habitat in the project area and vicinity for this species during post-breeding migration. Such habitat was observed by Derek Green during field visits in August 2020 and June 2021 .	—	N/A	T	May impact	Suitable habitat is present in the project area for the Wood Stork. Bird BMPs would be implemented.	N

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Collin	Insects	Monarch Butterfly	*Danaus plexippus*	Found statewide. Adults are found in a variety of habitats including native prairies, pastures, open woodlands and savannas, desert scrub, roadsides, and other habitats with abundant nectar plants, including urbanized areas. Although adults may be present year round, they are primarily encountered between March and November, and are most commonly observed in the summer and fall during breeding and migration. Caterpillars are found on various species of the family Asclepiadaceae (occasionally treated as a subfamily of Apocynaceae). Common host plants in Texas include milkweeds (Asclepias spp.) milkweed vines (Matelea spp.), climbing milkweed (Funastrum spp.), swallowworts (Cynanchum spp.) and Anglepod (Gonolobus suberosus). Caterpillars are most frequently observed between April and September."	Y	Prairie, grassland, pastureland, open woodland, and roadside habitats were observed in the project area during field visits by Derek Green in August 2020 and June 2021. Milkweed was also observed in the project area. Several recent sightings of the monarch butterfly have been recorded from the McKinney area and from the project vicinity -- for example Erwin Park (iNaturalist, 2022).	C	May affect	—	N/A	The project may affect the monarch butterfly. While TxDOT is a Partner in the Nationwide Candidate Conservation Agreement for Monarch Butterfly on Energy and Transportation Lands, the project involves new location and would not be completed before FY 2024, when USFWS intends to propose listing. If this species is proposed for listing during the life of this project, the effects to monarch butterflies will be reevaluated to determine the appropriate course of action, which may include conference or consultation with USFWS.	N

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Collin	Mammals	Tricolored Bat	*Perimyotis subflavus*	In Texas, Tricolored Bats may be found year round. In the spring, summer, and fall they primarily nest on leaves or bark of live and dead trees, or epiphytic vegetation such as Spanish moss (*Tillandsia usneoides*). They may also roost among ferns and crevices on limestnoe and sandstone bluffs and cliffs during this time. From late winter to early spring they may roost in culverts, abandoned buildings, and large hollow trees. In central Texas caves serve as important roost sites. Tricolored bats typically roost alone or in small groups. During the winter they may go into periods of torpor during colder temperatures however they will emerge to feed on warm evenings. Foraging habitat consists of open woodlands, riparian corridors, and forest edge.	N/A	A habitat assessment was not performed for this species.	PE	Undetermined	—	N/A	Suitable habitat may be present within the project area. Effects to the species are currently undetermined. The Tricolored bat has been proposed as a federally andangered species, and consultation with USFWS is not required at this time. If the species is listed, effects to the Tricolored Bat will be re-evaluated to determine the appropriate course of action which may include consultation with the USFWS.	N
Collin	Mollusks	Louisiana Pigtoe	*Pleurobema 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	Wilson Creek (purple and orange), East Fork Trinity River (purple [east alternative] and orange) and tributaries of East Fork Trinty River (purple and orange) may provide habitat for this species.	—	N/A	T	May impact	Suitable habitat is present in the project area, and the Freshwater Mussel BMPs would be implemented. Note: Federal status update is presented in the Addendum tab.	N

SPECIES ANALYSIS SUMMARY
Project Name: Spur 399

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Collin	Mollusks	Texas Fawnsfoot	*Truncilla macrodon*	A freshwater mussel that is currently limited to the Brazos, Colorado, and Trinity River basins in Texas. The species occupies large streams to medium rivers and is intolerant of impoundment. Little is known about the species due to lack of representative specimens, however it is thought that the species prefers protected areas near shore in water with a moderate current over mud, sandy mud, and gravel substrates. It is also found in perennial irrigation canals for rice.	Y	Wilson Creek (purple and orange), East Fork Trinity River (purple [east alternative] and orange) and tributaries of East Fork Trinty River (purple and orange) may provide habitat for this species.	PT	May affect	T	May impact	Suitable habitat is present in the action area, and the Texas fawnsfoot may be affected. The species is proposed threatened, and section 7 consultation is not required at this time. If the species is listed, the project would be re-evaluated to determine the appropriate course of action which may include section 7 consultation. Freshwater Mussel BMPs would be implemented.	N
Collin	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	Wilson Creek (purple and orange), East Fork Trinity River (purple [east alternative] and orange) and tributaries of East Fork Trinty River (purple and orange) may provide habitat for this species.	—	N/A	T	May impact	Suitable habitat is present in the project area, and the Freshwater Mussel BMPs would be implemented. Note: Federal status update is presented in the Addendum tab.	N

SPECIES ANALYSIS SUMMARY
Project Name: Spur 399

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?
Collin	Reptiles	Alligator Snapping Turtle	*Macrochelys temminckii*	Occurs in East Texas where it inhabits perennial water bodies such as the deep water of rivers, canals, lakes, and oxbows, along with swamps, bayous, and ponds near deep running water. Preferred habitat is usually in water with a mud bottom and abundant aquatic vegetation, but the species may use sand-bottomed creeks.	Y	Suitable habitat is present in East Fork Trinity River and Wilson Creek.	PT	May affect	T	May impact	Suitable habitat is present in the project area. Species-specific BMPs would be implemented. Alligator snapping turtle is proposed threatened, and section 7 consultation is not required at this time. If the species is listed, the project would be re-evaluated to determine the appropriate course of action which may include section 7 consultation.	N
Collin	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.	N	The loose sandy or loamy soils with cacti/yucca/bunchgrass vegetation associated with this species were not observed in the project area during field visits in August 2020 and June 2021 by Derek Green.	—	N/A	T	No impact	No suitable habitat is present in the project area	N

SPECIES ANALYSIS SUMMARY (ADDENDUM)
Project Name: Spur 399
CSJ(s): 0364-04-051, 0047-05-058, 0047-10-002

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?
Collin	Mollusk	Louisiana Pigtoe	*Pleurobema 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	According to USFWS' Species Status Assessment Report (February, 2022) and the Mussels of Texas, the current distribution for this species does not include Collin County. Furthermore, this species does not show up on USFWS Official Species List for this project; although it is on TPWD's RTEST list for Collin County. Historically, Wilson Creek (purple and orange), East Fork Trinity River (purple [east alternative] and orange) and tributaries of East Fork Trinty River (purple and orange) provided habitat for this species and may	PT	May affect	T	May impact	Historically suitable habitat is present in the action area. Louisiana pigtoe is proposed threatened, and section 7 consultation is not required at this time. If the species is listed, the project would be re-evaluated to determine the appropriate course of action which may include section 7 consultation. Freshwater Mussel BMPs would be implemented.	

Collin	Mollusk	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	According to USFWS' Species Status Assessment Report (February, 2022) and the Mussels of Texas, the current distribution for this species does not include Collin County. Furthermore, this species does not show up on USFWS' IPaC for this project, although it is on TPWD's RTE list for Collin County. Historically, Wilson Creek (purple and orange), East Fork Trinity River (purple [east alternative] and orange) and tributaries of East Fork Trinty River (purple and orange) provided habitat for this species and may still do so.	PE	May affect	T	May impact	Historically suitable habitat is present in the action area. Texas heelsplitter is proposed endangered, and section 7 consultation is not required at this time. If the species is listed, the project would be re-evaluated to determine the appropriate course of action which may include section 7 consultation. Freshwater Mussel BMPs would be implemented.	

SPECIES ANALYSIS SUMMARY (SGCN)
Project Name: Spur 399

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?
Collin	Amphibian	Southern crawfish frog	*Lithobates areolatus areolatus*	Terrestrial and aquatic: The terrestial habitat is primarily grassland and can vary from pasture to intact prairie; it can also include small prairies in the middle of large forested areas. Aquatic habitat is any body of water but preferred habitat is ephemeral wetlands (TPWD, 2022).	Y	Grasslands in the project area could provide terrestrial habitat, while creeks, other waterbodies, and wetlands in the project area could provide habitat for reproduction. Such habitat was observed during field visits in August 2020 and June 2021 by Derek Green.	May impact	Suitable habitat is present in the project area. Species-specific BMPs would be implemented and include the following: 1) Minimize impacts to wetland habitats including isolated ephemeral pools, 2) Aquatic Amphibian and Reptile BMPs, 3) Terrestrial Amphibian and Reptile BMPs, 4) Water Quality BMPs, and 5) Vegetation BMPs.	N
Collin	Amphibian	Strecker's chorus frog	*Pseudacris streckeri*	Terrestrial and aquatic: Wooded floodplains and flats, prairies, cultivated fields and marshes. Likes sandy substrates (TPWD, 2022).	Y	Wooded floodplains in the project area could provide terrestrial habitat, while creeks, other waterbodies, and wetlands in the project area could provide habitat for reproduction. Such habitat was observed during field visits in August 2020 and June 2021 by Derek Green.	May impact	Suitable habitat is present in the project area. Species-specific BMPs would be implemented and include the following: 1) Aquatic Amphibian and Reptile BMPs, 2) Terrestrial Amphibian and Reptile BMPs, 3) Water Quality BMPs, and 4) Vegetation BMPs.	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?
Collin	Amphibian	Woodhouse's toad	*Anaxyrus woodhousii*	This species uses a wide variety of terrestrial habitats, including forests, grasslands, and barrier island sand dunes; it requires aquatic habitats for reproduction, which are equally varied (TPWD, 2022).	Y	Forested areas and grasslands in the project area could provide terrestrial habitat, while creeks, other waterbodies, and wetlands in the project area could provide habitat for reproduction. Such habitat was observed during field visits in August 2020 and June 2021 by Derek Green. Several records in vicinity of project (TPWD, 2021; iNaturalist, 2022).	May impact	Suitable habitat is present in the project area. Species-specific BMPs would be implemented and include the following: 1) Aquatic Amphibian and Reptile BMPs, 2) Terrestrial Amphibian and Reptile BMPs, 3) Water Quality BMPs, and 4) Vegetation BMPs.	N

SPECIES ANALYSIS SUMMARY (SGCN)
Project Name: Spur 399

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?
Collin	Bird	Bald eagle	*Haliaeetus leucocephalus*	Found primarily near rivers and large lakes; nests in tall trees or on cliffs near water; communally roosts, especially in winter; hunts live prey, scavenges, and pirates food from other birds (2022).	Y	Recent sightings have been reported for this species from several waterbodies, including Towne Lake and Lavon Lake, in the vicinity of the project (eBird, 2022; iNaturalist, 2022). An inactive nest is located along the East Fork Trinity River approximately 0.6 mile east of the orange alternative. An adult bald eagle was observed carrying nesting material by BMcD ecolgists Derek Green and Gary Newgord on March 31, 2021. The nest is thought to be farther east of the inactive nest. Upstream of the nest where the alternatives cross the river, trees may provide roosting habitat; the trees in this area are probably too far from large waterbodies.	May impact	Roosting habitat occurs in the project area at the crossing of the East Fork Trinity River. TxDOT would comply with the BGEPA and implement the Bird BMPs.	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?
Collin	Bird	Chestnut-collared longspur	*Calcarius ornatus*	Occurs in open shortgrass settings, especially in patches with some bare ground. Also occurs in grain sorghum fields and Conservation Reserve Program lands (TPWD, 2022).	Y	"ROW Crops" were commonly observed in the project area during field visits by Derek Green in August 2020 and June 2021. After harvesting, these areas provide the shortgrass settings interspersed with bare ground favored by this species during the winter. Some areas containing "Central Texas: Floodplain Herbaceous Vegetation" and "Blackland Prairie: Disturbance or Tame Grassland" that were observed during the site visits would also provide habitat.	May impact	Suitable habitat is present in the project area. The Bird BMPs would be implemented.	N
Collin	Bird	Franklin's gull	*Leucophaeus pipixcan*	Uncommon to common migrant in all areas of Texas, and rare winter visitors along the coast and to inland reservoirs and landfills (Lockwood and Freeman, 2014). 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 (TPWD, 2022).	N	Recent sightings have been reported for this species from several waterbodies, including Towne Lake and Lavon Lake, in the vicinity of the project (eBird, 2022; iNaturalist, 2022). However, migratory stopover habitat was not observed within the project area during field visits by Derek Green in August 2020 and June 2021.	No impact	No suitable habitat in action area.	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?
Collin	Bird	Sprague's pipit	*Anthus spragueii*	The county distribution for this species includes geographic areas that the species may use during migration. Time of year should be factored into evaluations to determine potential presence of this species in a specific county. Habitat during migration and in winter consists of pastures and weedy fields (AOU 1983), including grasslands with dense herbaceous vegetation or grassy agricultural fields. (TPWD, 2022).	Y	Suitable wintering habitat, such as pastures, weedy fields, grasslands with dense herbaceous vegetation, or grassy agricultural fields was observed in the project area during field visits by Derek Green in August 2020 and June 2021.	May impact	Suitable habitat is present in the project area. The Bird BMPs would be implemented.	N
Collin	Bird	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 (TPWD, 2022).	Y	Suitable wintering habitat, such as open grasslands and savannas, was observed in the project area during field visits by Derek Green in August 2020 and June 2021.	May impact	Suitable habitat is present in the project area. The Bird BMPs would be implemented.	N
Collin	Crustacean	A cave obligate isopod	*Caecidotea bilineata*	A spring obligate. *Caecidotea bilineata* is known only from non-cave groundwater habitats in deposits of Cretaceous age. It is presumably a phreatobite. Fine-scale habitat requirements unknown (TPWD, 2022).	Y	Cretaceous-age deposits (Austin Group [Kau]) occur in the project area.	May impact	Suitable habitat may be present in the project area. Aquatic Invertebrate BMPs would be implemented.	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?
Collin	Crustacean	Parkhill prairie crayfish	*Procambarus steigmani*	Burrower in long-grass prairie; all animals were collected with traps, thus there is no knowledge of depths of burrows; herbivore; crepuscular, nocturnal (TPWD, 2022).	Y	During a site visit in August 2020 by Derek Green, crayfish burrows/chimneys were observed in the project vicinity in a grassland (EMST "Floodplain Herbaceous Vegetation"). Given the recent sightings of the Parkhill prairie crayfish in the McKinney area (iNaturalist, 2022) and that the only other prairie crayfish in Texas (*Procambarus gracilis*) occurs in a county bordering Oklahoma, the burrows were likely those of the Parkhill prairie crayfish.	May impact	Suitable habitat is present in the project area.	N
Collin	Mammal	Big brown bat	*Eptesicus fuscus*	Any wooded areas or woodlands except south Texas. Riparian areas in west Texas (TPWD, 2022).	Y	Suitable woodland habitat was observed in the project area during field visits by Derek Green in August 2020 and June 2021.	May impact	Suitable habitat is present in the project area. Bat BMPs would be implemented.	N
Collin	Mammal	Eastern red bat	*Lasiurus borealis*	Red bats are migratory bats that are common across Texas. They are most common in the eastern and central parts of the State, due to their requirement of forests for foliage roosting. West Texas specimens are associated with forested areas (cottonwoods). These bats are highly mobile, seasonally migratory, and practice a type of "wandering migration." Associations with specific habitat is difficult unless specific migratory stopover sites or wintering grounds are found. Likely associated with any forested area in East, Central, and North Texas but can occur Statewide (TPWD, 2022).	Y	Suitable woodland habitat was observed in the project area during field visits by Derek Green in August 2020 and June 2021.	May impact	Suitable habitat is present in the project area. Bat BMPs would be implemented.	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?
Collin	Mammal	Eastern spotted skunk	*Spilogale putorius*	A generalist; open fields, prairies, croplands, fence rows, farmyards, forest edges, and woodlands. Prefers wooded, brushy areas; tallgrass prairies (TPWD, 2022).	Y	Open fields, prairies, croplands, fence rows, farmyards, forest edges, and woodlands were observed in the project area and vicinity during field visits by Derek Green in August 2020 and June 2021. Has been recorded from the project vicinity (TPWD, 2021).	May impact	Suitable habitat is present in the project area. General Design and Construction BMPs would be implemented.	N
Collin	Mammal	Hoary bat	*Lasiurus cinereus*	Hoary bats are highly migratory, high-flying bats that have been noted throughout the State. Females are known to migrate to Mexico in the winter, males tend to remain further north and may stay in Texas year-round. Commonly associated with forests (foliage-roosting species) but are also found in unforested parts of the State and lowland deserts. Tend to be captured over water and large, open flyways (TPWD, 2022).	Y	Suitable woodland habitat was observed in the project area during field visits by Derek Green in August 2020 and June 2021.	May impact	Suitable habitat is present in the project area. Bat BMPs would be implemented.	N
Collin	Mammal	Long-tailed weasel	*Mustela frenata*	Includes brushlands, fence rows, upland woods and bottomland hardwoods, forest edges and rocky desert scrub. Usually live close to water (TPWD,2022).	Y	Suitable woodland habitat and fence rows were observed in the project area and vicinity during field visits by Derek Green in August 2020 and June 2021.	May impact	Suitable habitat is present in the project area. General Design and Construction BMPs would be implemented.	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?
Collin	Mammal	Mountain lion	*Puma concolor*	Generalist; found in a wide range of habitats Statewide. Found most frequently in rugged mountains and riparian zones (TPWD, 2022).	Y	Known to occur in the general vicinity (landowner showed BMcD ecologist Derek Green cell phone photos of mountain lion footprints [scaled against his hand] on his property along Honey Creek during a site visit on August 24, 2020). This animal was passing through the area and was observed farther east at a later date. Riparian and woodland habitat along Wilson Creek and East Fork Trinity River in the project area may provide a travel corridor.	May impact	Suitable habitat is present in the project area. General Design and Construction BMPs would be implemented.	N
Collin	Mammal	Muskrat	*Ondatra zibethicus*	Found in fresh or brackish marshes, lakes, ponds, swamps, and other bodies of slow-moving water. Most abundant in areas with cattail. Dens in bank burrow or conical house of vegetation in shallow vegetated water (TPWD, 2022).	Y	Emergent wetlands and ponds were observed in the project area during field visits by Derek Green in August 2020 and June 2021. East Fork of the Trinity River, Wilson Creek, and other creeks also occur in the project area.	May impact	Suitable habitat is present in the project area. General Design and Construction BMPs, Water Quality BMPs, and Vegetation BMPs would be implemented.	N
Collin	Mammal	Swamp rabbit	*Sylvilagus aquaticus*	Inhabits poorly drained river bottoms and coastal marshes (Schmidly and Bradley, 2016). Primarily found in lowland areas near water including: cypress bogs and marshes, floodplains, creeks, and rivers (TPWD, 2022).	Y	Flooded bottomland forests were observed within the project area during field visits by Derek Green in August 2020 and June 2021.	May impact	Suitable habitat is present in the project area. General Design and Construction BMPs would be implemented.	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?
Collin	Mammal	Western hog-nosed skunk	*Conepatus leuconotus*	Habitats include woodlands, grasslands, and deserts to 7,200 feet; most common in rugged, rocky canyon country (TPWD, 2022).	Y	This species has been recorded from Collin County (Schmidly and Bradley, 2016) and from the project vicinity (TPWD, 2021). Wooded areas and grasslands were observed in the project area during field visits by Derek Green in August 2020 and June 2021 and would provide habitat.	May impact	Suitable habitat is present in the project area. General Design and Construction BMPs would be implemented.	N
Collin	Reptile	Eastern box turtle	*Terrapene carolina*	Eastern box turtles inhabit forests, fields, forest-brush, and forest ecotones. In some areas they move seasonally from fields in spring to forest in summer (TPWD, 2022).	Y	Several records of this species occur in the vicinity of the project (iNaturalist, 2022). Wooded areas and grasslands observed in the project area during field visits by Derek Green in August 2020 and June 2021 would provide habitat.	May impact	Suitable habitat is present in the project area. The Terrestrial Reptile BMPs and Vegetation BMPs would be implemented.	N
Collin	Reptile	Slender glass lizard	*Ophisaurus attenuatus*	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 (TPWD, 2022).	Y	Grasslands and woodlands were observed in the project area during field visits by Derek Green in August 2020 and June 2021 and may provide habitat; however, the soils may not be sandy enough.	May impact	Suitable habitat is present in the project area. The Terrestrial Reptile BMPs and Vegetation BMPs would be implemented.	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?
Collin	Reptile	Texas garter snake	*Thamnophis sirtalis annectens*	Terrestrial and aquatic. Habitats 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 (TPWD, 2022).	Y	Several records of this species occur in the vicinity of the project (TPWD, 2021; iNaturalist, 2022). Grasslands and aquatic features such as creeks, ponds, and wetlands were observed in and near the project area during field visits by Derek Green in August 2020 and June 2021 and would provide habitat.	May impact	Suitable habitat is present in the project area. The Terrestrial Reptile BMPs and Vegetation BMPs would be implemented.	N
Collin	Reptile	Timber (canebrake) rattlesnake	*Crotalus horridus*	Swamps, floodplains, upland pine and deciduous woodland, riparian zones, and abandoned farmland. Limestone bluffs, sandy soil, or black clay. Prefers dense ground cover -- e.g., grapevines, palmetto (TPWD, 2022).	Y	Bottomland and upland hardwood forest, riparian areas, and agricultural lands were observed in and near the project area during field visits by Derek Green in August 2020 and June 2021 and would provide habitat.	May impact	Suitable habitat is present in the project area. The Terrestrial Reptile BMPs and Vegetation BMPs would be implemented.	N
Collin	Reptile	Western box turtle	*Terrapene ornata*	Ornate or western box turtles inhabit prairie grassland, pasture, fields, sandhills, and open woodland (TPWD, 2022).	Y	Pastureland, grassland, and open woodland were observed in and near the project area during field visits by Derek Green in August 2020 and June 2021 and would provide habitat.	May impact	Suitable habitat is present in the project area. The Terrestrial Reptile BMPs and Vegetation BMPs would be implemented.	N
Collin	Plant	Engelmann's bladderpod	*Physaria engelmannii*	Grasslands and calcareous rock outcrops in a band along the eastern edge of the Edwards Plateau, ranging as far north as the Red River (TPWD, 2022).	N	Calcareous rock outcrops not observed in the project area during field visits by Derek Green in August 2020 and June 2021.	No impact	No suitable habitat.	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?
Collin	Plant	Glandular gay-feather	*Liatris glandulosa*	Occurs in herbaceous vegetation on limestone outcrops (TPWD,2022).	N	Limestone outcrops not observed in the project area during field visits by Derek Green in August 2020 and June 2021.	No impact	No suitable habitat.	N
Collin	Plant	Red yucca	*Hesperaloe parviflora*	Shrublands on dry limestone slopes; perennial; flowering April-May; fruiting May-June (TPWD, 2022).	N	Dry limestone slopes not observed in the project area during field visits by Derek Green in August 2020 and June 2021.	No impact	No suitable habitat.	N
Collin	Plant	Sutherland hawthorn	*Crataegus viridis* var. *glabriuscula*	In mesic soils of woods or on edge of woods, treeline/fenceline, or thicket. Above/near creeks and draws, in river bottoms. Flowering Mar-Apr; fruiting May-Oct (TPWD, 2022).	Y	Wooded areas and creeks observed in the project area during field visits by Derek Green in August 2020 and June 2021.	May impact	Suitable habitat is present in the project area. Vegetation BMPs would be implemented.	N

References:

eBird. (2022). *eBird: An online database of bird distribution and abundance.* Web application. Ithaca, New York: Cornell Lab of Ornithology. Retrieved November and December 2022 from http://www.ebird.org

iNaturalist. (2022). *Observations.* Retrieved Retrieved November and December 2022 from https://www.inaturalist.org/observations?place_id=3024

Lockwood, M.W. and B. Freeman. (2014). *The TOS handbook of Texas birds* . College Station: Texas A&M University Press.

Schmidly, D.J. and R. D. Bradley. (2016). *The mammals of Texas, 7th edition* . Austin: University of Texas Press.

Texas Parks and Wildlife Department (TPWD). (2021). *Texas Natural Diversity Database (TXNDD) Rare species, shapefiles, and element of occurrence records* . Received October 12, 2021.

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?
				Texas Parks and Wildlife Department (TPWD). (2022). Rare, threatened, and endangered species of Texas by county. Updated July 12, 2022. Retrieved December 20, 2022, from https://tpwd.texas.gov/gis/rtest/ U.S. Fish and Wildlife Service (USFWS). (2022). *IPaC – Information, Planning, and Conservation System* . Retrieved December 20, 2022, from http://ecos.fws.gov/ipac/					

Appendix O-2: Species Analysis Form

Form
Species Analysis

Project Name: **Spur 399 Extension**

CSJ(s): **0364-04-051, 0047-05-058, 0047-10-002**

County(ies):**Collin**

Date Analysis Completed: **1/20/2023**

Prepared by: **Derek Green, Burns & MacDonnell**

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 project-specific species analysis spreadsheet:

☒ This project does not 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 requires a new environmental assessment (EA) or environmental impact statement (EIS), and therefore must be coordinated with TPWD under the 2021 TxDOT/TPWD MOU.

☐ This project involves a re-evaluation of an EA or EIS that was previously coordinated with TPWD and triggers for re-coordination were met, therefore the re-evaluation must be coordinated with TPWD under the 2021 TxDOT/TPWD MOU.

☐ This project involves a re-evaluation of an EA or EIS that was previously coordinated with TPWD and triggers for re-coordination were not met, therefore the re-evaluation will not be coordinated with TPWD under the TxDOT/TPWD MOU.

☐ This project is a categorical exclusion (CE)-level project; therefore coordination with TPWD under the 2021 TxDOT/TPWD MOU is not required; however, it will be coordinated with TPWD under the 2021 TxDOT/TPWD MOU at the TxDOT district's discretion.

☐ This project is a categorical exclusion (CE)-level project; therefore coordination with TPWD under the 2021 TxDOT/TPWD MOU is not required and it will not be coordinated with TPWD under 2021 TxDOT/TPWD MOU at the TxDOT district's discretion.

For any project that will be coordinated with TPWD, complete the **Documentation of Texas Parks and Wildlife Department Best Management Practices Form**.

For more information regarding TPWD Coordination, see **ENV's Guidance: TPWD Coordination Under the 2021 Memorandum of Understanding**.

III. Bald and Golden Eagle Protection Act (BGEPA)

Select the appropriate statement below:

☒ This project is not 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 is within 660 feet of an active or inactive Bald or Golden Eagle nest, and construction within 660 feet will occur during the nesting season or the project will not 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:

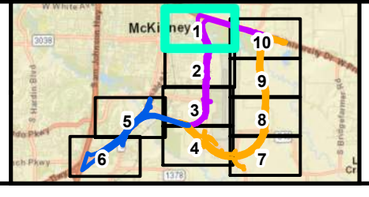
- use measures to prevent or discourage birds from building nests on man-made structures within portions of the project area planned for construction, and
- schedule construction activities outside the typical nesting season.

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**.

EMST Classification

- Blackland Prairie: Disturbance or Tame Grassland
- Central Texas: Floodplain Hardwood Forest
- Central Texas: Floodplain Herbaceous Vegetation
- Central Texas: Riparian Hardwood Forest
- Native Invasive: Deciduous Woodland
- Native Invasive: Juniper Shrubland
- Native Invasive: Mesquite Shrubland
- Row Crops
- Urban High Intensity
- Urban Low Intensity

- Common SPUR 399 PROW
- Orange East SPUR 399 PROW
- Purple West SPUR 399 PROW



NORTH

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Feet

TPWD EMST Classification
Spur 399 Extension EIS
Page 1 of 10

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EMST Classification

- Blackland Prairie: Disturbance or Tame Grassland
- Central Texas: Riparian Hardwood Forest
- Native Invasive: Deciduous Woodland
- Native Invasive: Juniper Shrubland
- Row Crops
- Urban High Intensity
- Urban Low Intensity

GOUGH ST
MILLER ST
NEILSON ST
BEVOE ST
ROAD ST
STANDIFER ST
KINCAIDE ST
EVELYN ST
WILSON ST
PALOMA DR
TENISON LN
JOYCE WAY
ENLOE RD
WALNUT ST
WOLFE ST
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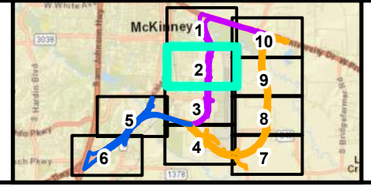
SHORT ST
IDA ST
MURRAY PL
KINGS ROW
BUMPAS ST
DANIELS DR
CHRISTIAN ST
WILCOX ST
MURRAY ST
MURRAY CT
COLORADO ST
MAPLES AVE
HEALY AVE
HAMILTON ST
ROCKWALL ST
LINDSEY ST
JEFFERSON ST
S AIRPORT DR
GERRISH ST
GRAHAM ST
RIKE ST
ELM ST
AMSCOTT ST
ANDERSON ST
FOWLER ST
PUCKET ST
CLARK ST
MILLWOOD RD

Common SPUR 399 PROW
Orange East SPUR 399 PROW
Purple West SPUR 399 PROW



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Spur 399 Extension EIS
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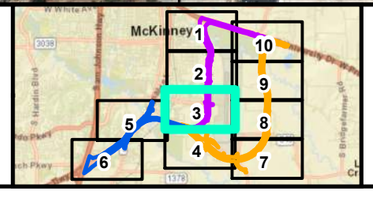
EMST Classification

- Blackland Prairie: Disturbance or Tame Grassland
- Central Texas: Riparian Herbaceous Vegetation
- Native Invasive: Deciduous Woodland
- Row Crops
- Urban High Intensity
- Urban Low Intensity

FRANKLIN ST
LAVON DR
MILLWOOD RD
WESTMORELAND DR
546
INDUSTRIAL BLVD
S AIRPORT DR
ROBILYN DR
KATIE LOOP
DOROTHY DR
DUPREE DR
KEVIN DR
Couch Dr.
COUCH DR
OLD MILL RD
COUNTRY LN
McKinney National Airport

- Common SPUR 399 PROW
- Orange East SPUR 399 PROW
- Purple West SPUR 399 PROW



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TPWD EMST Classification
Spur 399 Extension EIS
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EMST Classification

- Blackland Prairie: Disturbance or Tame Grassland
- Central Texas: Riparian Hardwood Forest
- Central Texas: Riparian Herbaceous Vegetation
- Edwards Plateau: Oak / Hardwood Motte and Woodland
- Native Invasive: Deciduous Woodland
- Row Crops
- Urban Low Intensity

COUNTRY LN

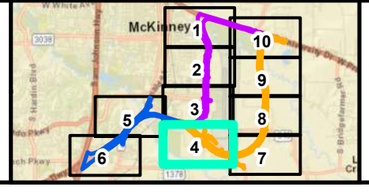
546

Old Mill Rd.

OLD MILL RD

FM 546

- Common SPUR 399 PROW
- Orange East SPUR 399 PROW
- Purple West SPUR 399 PROW



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TPWD EMST Classification
Spur 399 Extension EIS
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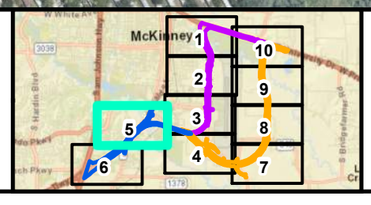
EMST Classification

- Blackland Prairie: Disturbance or Tame Grassland
- Central Texas: Floodplain Hardwood Forest
- Central Texas: Floodplain Herbaceous Vegetation
- Central Texas: Floodplain Live Oak Forest
- Central Texas: Riparian Hardwood Forest
- Edwards Plateau: Oak / Hardwood Slope Forest
- Native Invasive: Deciduous Woodland
- Urban High Intensity
- Urban Low Intensity

- Common SPUR 399 PROW
- Orange East SPUR 399 PROW
- Purple West SPUR 399 PROW



NORTH

0 250 500

Feet

TPWD EMST Classification
Spur 399 Extension EIS
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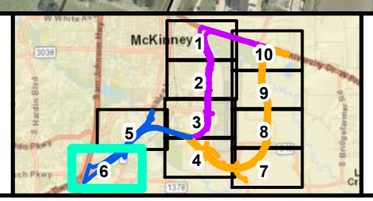
EMST Classification

- Blackland Prairie: Disturbance or Tame Grassland
- Central Texas: Riparian Hardwood Forest
- Native Invasive: Deciduous Woodland
- Row Crops
- Urban High Intensity
- Urban Low Intensity

COUNTRY CLUB DR
VALCOUR BAY
TICONDEROGA
HOBKIRKS HILL
COLLIN MCKINNEY PKWY
TEST DR
75
GATEWAY BLVD
399
MEDICAL CENTER DR
PLATEAU DR
COUNTRY VIEW LN
ENTERPRISE DR
RIVER HILLS CT
SEA BREEZE CT
TERRA VERDE LN
5
MCKINNEY RANCH PKWY
121
Addison Airport Toll Tunnel
FRISCO RD
GREEN APPLE LN
1378
STODDARD RD

- Common SPUR 399 PROW
- Orange East SPUR 399 PROW
- Purple West SPUR 399 PROW



NORTH
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Feet

TPWD EMST Classification
Spur 399 Extension EIS
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EMST Classification

- Blackland Prairie: Disturbance or Tame Grassland
- Central Texas: Riparian Hardwood Forest
- Edwards Plateau: Deciduous Oak / Evergreen Motte and Woodland
- Edwards Plateau: Oak / Hardwood Motte and Woodland
- Edwards Plateau: Savanna Grassland
- Native Invasive: Deciduous Woodland
- Native Invasive: Juniper Shrubland
- Row Crops
- Urban Low Intensity

FM 546

OLD MILL RD

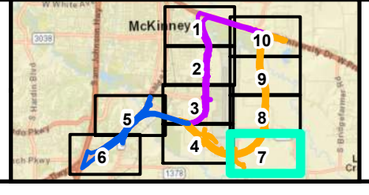
ORR

COUNTY ROAD 327

COUNTY ROAD 317

546

- Common SPUR 399 PROW
- Orange East SPUR 399 PROW
- Purple West SPUR 399 PROW



NORTH

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Feet

TPWD EMST Classification
Spur 399 Extension EIS
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EMST Classification

- Blackland Prairie: Disturbance or Tame Grassland
- Central Texas: Floodplain Hardwood Forest
- Central Texas: Riparian Hardwood Forest
- Native Invasive: Deciduous Woodland
- Row Crops
- Urban Low Intensity

ENLOE RD

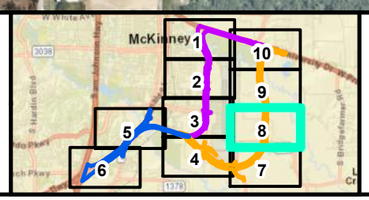
COUNTY ROAD 722

546

546

FM 546

- Common SPUR 399 PROW
- Orange East SPUR 399 PROW
- Purple West SPUR 399 PROW



NORTH

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Feet

TPWD EMST Classification
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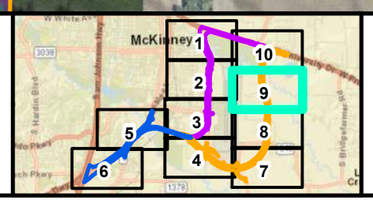
EMST Classification

- Blackland Prairie: Disturbance or Tame Grassland
- Central Texas: Floodplain Hardwood Forest
- Central Texas: Floodplain Herbaceous Vegetation
- Native Invasive: Deciduous Woodland
- Row Crops

ENLOE RD

COUNTY ROAD 327

- Common SPUR 399 PROW
- Orange East SPUR 399 PROW
- Purple West SPUR 399 PROW



NORTH

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Feet

TPWD EMST Classification
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EMST Classification

- Blackland Prairie: Disturbance or Tame Grassland
- Central Texas: Floodplain Hardwood Forest
- Central Texas: Floodplain Herbaceous Vegetation
- Open Water
- Urban Low Intensity

1827

380

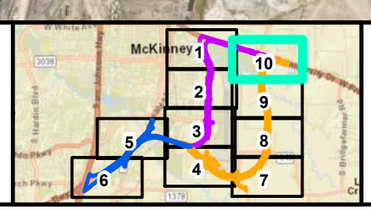
COUNTY ROAD 330

COUNTY ROAD 1084

380

ENLOE RD

- Common SPUR 399 PROW
- Orange East SPUR 399 PROW
- Purple West SPUR 399 PROW



NORTH

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Feet

TPWD EMST Classification
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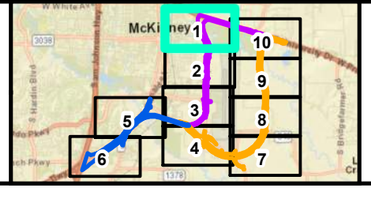
Field Verified Classification

- Blackland Prairie: Disturbance or Tame Grassland
- Central Texas: Floodplain Hardwood Forest
- Central Texas: Riparian Hardwood Forest
- Native Invasive: Deciduous Woodland
- Row Crops
- Urban High Intensity
- Urban Low Intensity

- Common SPUR 399 PROW
- Orange East SPUR 399 PROW
- Purple West SPUR 399 PROW



NORTH

0 250 500

Feet

Field-Verified Habitat Clasification Spur 399 Extension EIS Page 1 of 10

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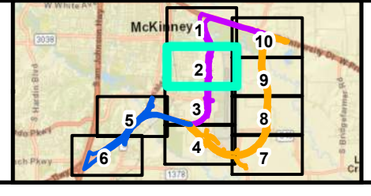
Field Verified Classification

- Blackland Prairie: Disturbance or Tame Grassland
- Central Texas: Riparian Herbaceous Vegetation
- Native Invasive: Deciduous Woodland
- Row Crops
- Urban Low Intensity

GOUGH ST
MILLER ST
NIELSON ST
BEVOE ST
RAILROAD ST
STANDIFER ST
KINCAIDE ST
EVELYN ST
WILSON ST
PALOMA DR
TENISON LN
JOYCE WAY
ENLOE RD
WALNUT ST
WOLFE ST
FITZHUGH ST
SHORT ST
IDA ST
MURRAY PL
KINGS ROW
BUMPAS ST
DANIELS DR
CHRISTIAN ST
WILCOX ST
MURRAY ST
MURRAY CT
COLORADO ST
MAPLES AVE
HEALY AVE
HAMILTON ST
ROCKWALL ST
LINDSEY ST
JEFFERSON ST
GERRISH ST
GRAHAM ST
RIKE ST
S AIRPORT DR
ELM ST
AMSCOTT ST
ANDERSON ST
FOWLER ST
PUCKET ST
CLARK ST
MILLWOOD RD
5

- Common SPUR 399 PROW
- Orange East SPUR 399 PROW
- Purple West SPUR 399 PROW



NORTH

0 250 500

Feet

Field-Verified
Habitat Clasification
Spur 399 Extension EIS
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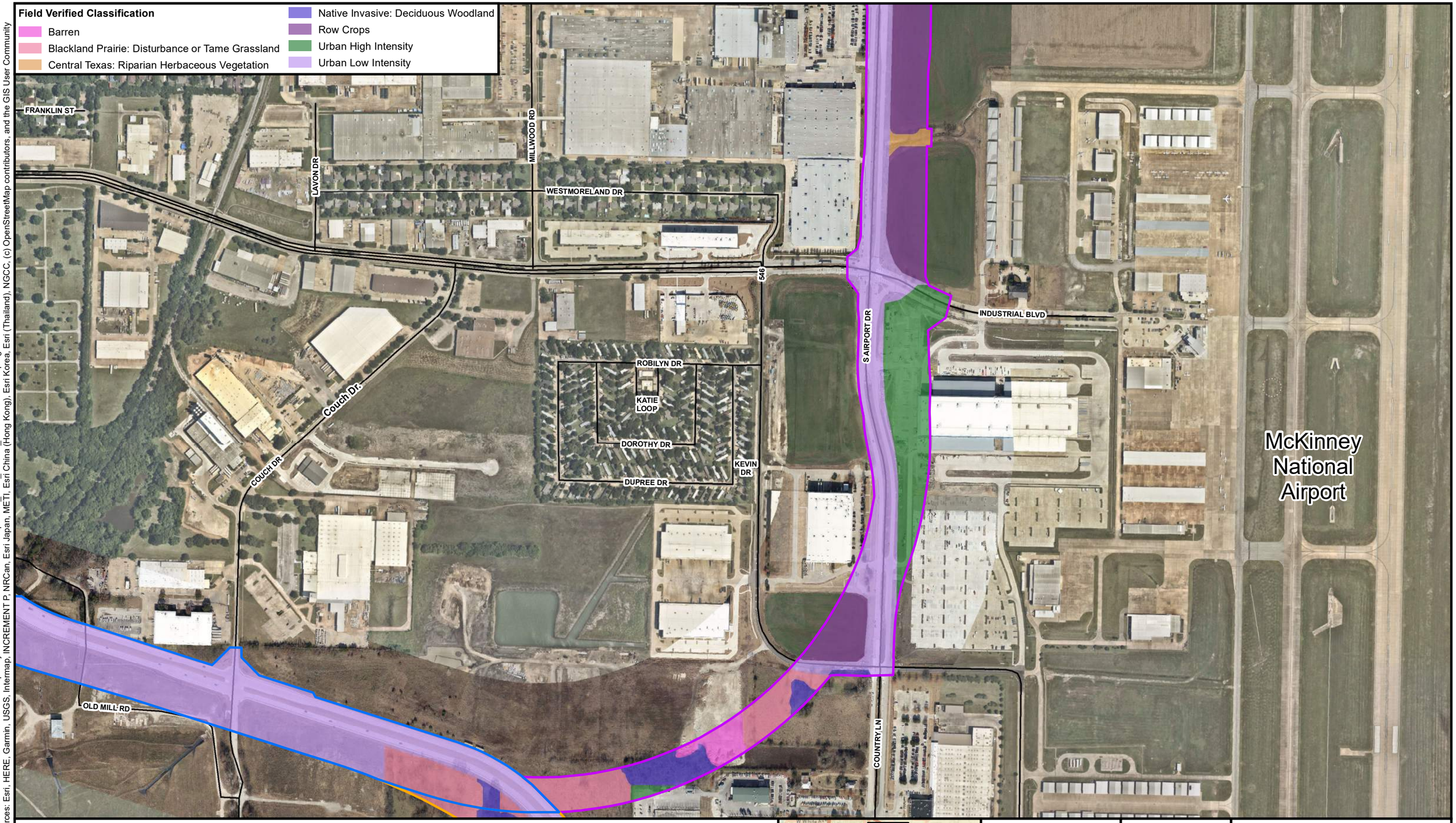
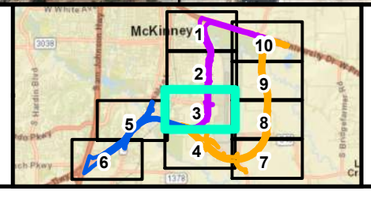


Common SPUR 399 PROW

Orange East SPUR 399 PROW

Purple West SPUR 399 PROW



NORTH

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Feet

Field-Verified
Habitat Clasification
Spur 399 Extension EIS
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Field Verified Classification

- Blackland Prairie: Disturbance or Tame Grassland
- Central Texas: Riparian Hardwood Forest
- Native Invasive: Deciduous Woodland
- Open Water
- Urban High Intensity
- Urban Low Intensity

COUNTRY LN

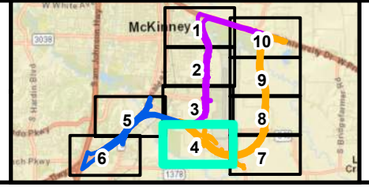
546

Old Mill Rd.

OLD MILL RD

FM 546

- Common SPUR 399 PROW
- Orange East SPUR 399 PROW
- Purple West SPUR 399 PROW



NORTH

0 250 500

Feet

Field-Verified
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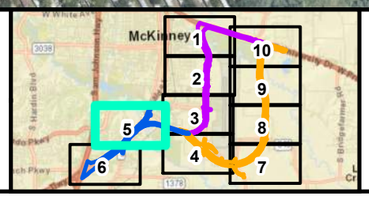
Field Verified Classification

- Central Texas: Floodplain Hardwood Forest
- Central Texas: Floodplain Herbaceous Vegetation
- Central Texas: Riparian Hardwood Forest
- Native Invasive: Deciduous Woodland
- Urban Low Intensity

PING ST
BARRANCA WAY
TEE DR
ROUGH WAY
BARKRIDGE DR
KINGSBURY
WINDYMEADOW LN
GREENBRIAR LN
BELAIRE DR
COLD STREAM DR
DOG LEG TRL
MAX DR
SETTING SUN TRL
GOLDEN NUGGET DR
HARDWOOD DR
FERRULE DR
CHIP ST
GOLFVIEW DR
75
SANDY RIDGE DR
COURTLAND LN
SUMMERCREST LN
MEADOWBROOK DR
ELDORADO PKWY
BERRY HILL
DOVER DR
COVENTRY LN
MEDICAL CENTER
STEWART RD
MARKETPLACE DR
MEDICAL CENTER DR
546
OLD MILL RD
5
6
399

Common SPUR 399 PROW
Orange East SPUR 399 PROW
Purple West SPUR 399 PROW



NORTH

0 250 500

Feet

Field-Verified
Habitat Clasification
Spur 399 Extension EIS
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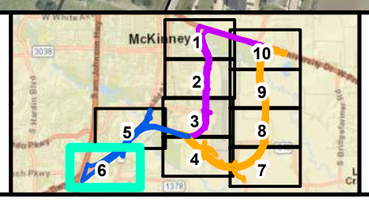
Field Verified Classification

- Native Invasive: Deciduous Woodland
- Urban Low Intensity

GERMANTOWN
COUNTRY CLUB DR
VALCOUR BAY
TICONDEROGA
HOBKIRKS HILL
COLLIN MCKINNEY PKWY
CRAIG DR
75
GATEWAY BLVD
399
MEDICAL CENTER DR
TEST DR
MCKINNEY RANCH PKWY
121
Addison Airport Toll Tunnel
FRISCO RD
PLATEAU DR
COUNTRY VIEW LN
ENTERPRISE DR
RIVER HILLS CT
SEA BREEZE CT
TERRA VERDE LN
GREEN APPLE LN
1378
STODDARD RD
5

- Common SPUR 399 PROW
- Orange East SPUR 399 PROW
- Purple West SPUR 399 PROW



NORTH

0 250 500

Feet

Field-Verified
Habitat Clasification
Spur 399 Extension EIS
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Field Verified Classification

- Blackland Prairie: Disturbance or Tame Grassland
- Central Texas: Riparian Hardwood Forest
- Edwards Plateau: Deciduous Oak - Evergreen Motte and Woodland
- Edwards Plateau: Oak - Hardwood Motte and Woodland
- Edwards Plateau: Savanna Grassland
- Native Invasive: Deciduous Woodland
- Open Water
- Row Crops
- Urban Low Intensity

FM 546

OLD MILL RD

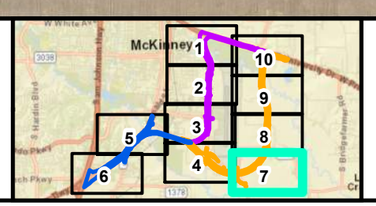
ORR

COUNTY ROAD 327

COUNTY ROAD 317

546

- Common SPUR 399 PROW
- Orange East SPUR 399 PROW
- Purple West SPUR 399 PROW



NORTH

0 250 500

Feet

Field-Verified
Habitat Clasification
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Field Verified Classification

- Blackland Prairie: Disturbance or Tame Grassland
- Central Texas: Floodplain Hardwood Forest
- Central Texas: Riparian Hardwood Forest
- Native Invasive: Deciduous Woodland
- Row Crops
- Urban Low Intensity

ENLOE RD

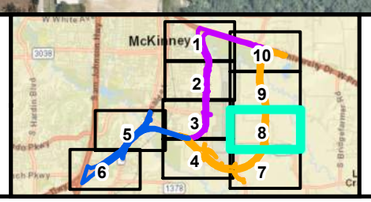
COUNTY ROAD 722

546

546

FM 546

- Common SPUR 399 PROW
- Orange East SPUR 399 PROW
- Purple West SPUR 399 PROW



NORTH

0 250 500

Feet

Field-Verified
Habitat Clasification
Spur 399 Extension EIS
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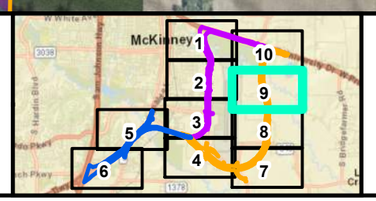
Field Verified Classification

- Blackland Prairie: Disturbance or Tame Grassland
- Central Texas: Floodplain Hardwood Forest
- Central Texas: Floodplain Herbaceous Vegetation
- Native Invasive: Deciduous Woodland
- Row Crops

ENLOE RD

COUNTY ROAD 327

- Common SPUR 399 PROW
- Orange East SPUR 399 PROW
- Purple West SPUR 399 PROW



NORTH

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Field-Verified
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Spur 399 Extension EIS
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- Open Water
- Row Crops
- Urban Low Intensity

380

1827

380

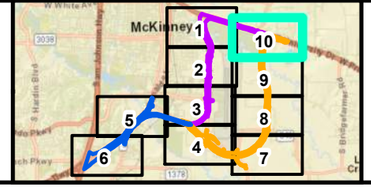
COUNTY ROAD 330

COUNTY ROAD 1084

380

ENLOE RD

- Common SPUR 399 PROW
- Orange East SPUR 399 PROW
- Purple West SPUR 399 PROW



NORTH

0 250 500

Feet

Field-Verified
Habitat Clasification
Spur 399 Extension EIS
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0364-04-051 etc. SPUR 399 EXTENSION - EMST comparision

PURPLE ALTERNATIVE (WEST)

Veg_ID	EMST Common Name	PROW Update acres (Oct-2021)	Original acres (Jul-2021)
9000	Barren	1.04	0.94
207	Blackland Prairie: Disturbance or Tame Grassland	8.31	23.2
1804	Central Texas: Floodplain Hardwood Forest	7.86	11.32
1807	Central Texas: Floodplain Herbaceous Vegetation	5.75	7.26
1904	Central Texas: Riparian Hardwood Forest	1.53	1.31
1907	Central Texas: Riparian Herbaceous Vegetation	2.23	2.13
9104	Native Invasive: Deciduous Woodland	14.89	14.8
9307	Row Crops	41.15	40.05
9410	Urban High Intensity	9.76	36.42
9411	Urban Low Intensity	167.22	166.42
	TOTAL	259.74	303.86

ORANGE ALTERNATIVE (EAST)

Veg_ID	EMST Common Name	PROW Update acres (Oct-2021)	Original acres (Jul-2021)
207	Blackland Prairie: Disturbance or Tame Grassland	53.54	64.21
1103	Edwards Plateau: Deciduous Oak - Evergreen Motte and Woodland	0.58	0.58
1104	Edwards Plateau: Oak - Hardwood Motte and Woodland	5.90	5.64
1107	Edwards Plateau: Savanna Grassland	0.64	0.64
1804	Central Texas: Floodplain Hardwood Forest	10.56	9.51
1807	Central Texas: Floodplain Herbaceous Vegetation	13.82	13.78
1904	Central Texas: Riparian Hardwood Forest	7.43	5.32
9104	Native Invasive: Deciduous Woodland	41.97	40.77
9307	Row Crops	78.34	81.55
9410	Urban High Intensity	7.16	13.93
9411	Urban Low Intensity	144.93	158.87
9600	Open Water	1.53	1.22
	TOTAL	366.40	396.03

Photograph 1: View of project area at northeast corner of the intersection of Airport Dr. and US 380, showing conversion from Urban High Intensity (TPWD EMST) to Central Texas: Floodplain Hardwood Forest (observed/field-verified) vegetation type.

Photograph 2: View of project area at northeast corner of the intersection of Airport Dr. and US 380, showing conversion from Urban High Intensity (TPWD EMST) to Blackland Prairie: Disturbance or Tame Grassland (observed/field-verified) vegetation type.

Photograph 3: View of project area along Airport Dr., showing conversion from Row Crop (TPWD EMST) to Central Texas Riparian Herbaceous Vegetation (observed/field-verified) vegetation type.

Photograph 4: View of project area along Airport Dr., showing conversion from Row Crop (TPWD EMST) to Central Texas Riparian Herbaceous Vegetation (observed/field-verified) vegetation type.

Photograph 5: View of project area along Airport Dr., showing conversion from Row Crop (TPWD EMST) to Central Texas Riparian Herbaceous Vegetation (observed/field-verified) vegetation type.

Photograph 6: View of project area near intersection of Harry McKillop Blvd. (546) and South McDonald St. (Highway 5) showing conversion from Edwards Plateau: Oak-Hardwood Slope Forest (TPWD EMST) to Central Texas: Riparian Hardwood Forest (observed/field-verified) vegetation type.

Photograph 7: View of project area at southeast corner of the intersection of Airport Dr. and Industrial Dr., showing conversion from Row Crop (TPWD EMST) to Urban High Intensity (observed/field-verified) vegetation type.

Photograph 8: View of project area near intersection of Harry McKillop Blvd. and Airport Dr., showing conversion from Blackland Prairie: Disturbance or Tame Grassland (TPWD EMST) to Urban High Intensity (observed/field-verified) vegetation type.

Photograph 9: View of project area along Harry McKillop Blvd. near intersection with CR 722, showing conversion from Native Invasive: Deciduous Woodland (TPWD EMST) to Central Texas: Riparian Hardwood Forest (observed/field-verified) vegetation type.

Photograph 10: View of project area along CR 722, showing conversion from Native Invasive: Deciduous Woodland (TPWD EMST) to Blackland Prairie: Disturbance or Tame Grassland (observed/field-verified) vegetation type.

Photograph 11: View of project area along Airport Dr. near its intersection with Enloe Rd., showing conversion from Urban Low Intensity (TPWD EMST) to Central Texas Riparian Herbaceous Vegetation (observed/field-verified) vegetation type.

Photograph 12: View of project area near north end of the Orange Alternative, showing conversion from Central Texas: Floodplain Herbaceous (TPWD EMST) to Row Crop (observed/field-verified) vegetation type.

Photograph 13: View of project area along Airport Dr. showing conversion from Native Invasive: Juniper Shrubland (TPWD EMST) to Row Crop (observed/field-verified) vegetation type.

Appendix O-3: Documentation of Texas Parks and Wildlife Department Best Management Practices (TPWD BMPs)

Form
Documentation of Texas Parks and Wildlife Department Best Management Practices

Project Name: **Spur 399 Extension**

CSJ(s): **0364-04-051, 0047-05-058, 0047-10-002**

County(ies): **Collin**

Date Form Completed: **01/20/2023**

Prepared by: **Derek Green, Burns & McDonnell**

Information on state-listed species, SGCN, water resources, and other natural resources can be found in the ECOS documents tab under the filenames specified in the e-mail sent to WHAB_TXDOT@tpwd.texas.gov.

1. Does the project impact any state parks, wildlife management areas, wildlife refuges, or other designated protected areas?

   ☒ No

   ☐ Yes

2. Does TxDOT need TPWD assistance in identifying and locating Section 404 mitigation opportunities for this project?

   ☒ No / N/A / Not yet determined

   ☐ Yes

3. Is there a species or resource challenge that TPWD can assist with additional guidance? If so, describe below:

   There are no species or resource challenges known at this time.

4. List all BMP that will be applied to this project per the document *Beneficial Management Practices: Avoiding, Minimizing, and Mitigating Impacts of Transportation Projects on State Natural Resources*.

***Note, these are BMP that TxDOT commits to implement at the time this form is completed. This list may change prior to or during construction based on changes to project impacts, design, etc.**

BMP to be Implemented:

- Minimize impacts to wetland and riverine habitat.
- Minimize impacts to wetland habitats including isolated ephemeral pools.

Freshwater Mussel BMP

The following Freshwater Mussel BMP apply to projects within the range and in suitable habitat for mussel SGCN found below and that are also listed on TPWD's RTEST online application.

- In addition to Water Quality and Stream Crossing BMP, follow the most recent, "TPWD–TxDOT Annual Work Plan for Pre-Construction Surveys, Aquatic Resources Relocations, and Other Best Management Practices to Avoid, Minimize, and Mitigate Impacts to Freshwater Resources."
- When work is adjacent to the water: Water Quality BMP implemented as part of the Texas Commission on Environmental Quality (TCEQ) Stormwater Pollution Prevention Plan (SWPPP) for a construction general permit or any conditions of the 401 Water Quality Certification for the project will be implemented. (Note: SWPPP and 401 BMP are not listed in this document).

Water Quality BMP

In addition to BMP required for a TCEQ Storm Water Pollution Prevention Plan and/or 401 Water Quality Certification:

- Minimize the use of equipment in streams and riparian areas during construction. When possible, equipment access should be from banks, bridge decks, or barges.
- When temporary stream crossings are unavoidable, remove stream crossings once they are no longer needed and stabilize banks and soils around the crossing.
- Wet-Bottomed detention ponds are recommended to benefit wildlife and downstream water quality. Consider potential wildlife-vehicle interactions when siting detention ponds.
- Rubbish found near bridges on TxDOT ROW should be removed and disposed of properly to minimize the risk of pollution. Rubbish does not include brush piles or snags.

Stream Crossing BMP

- Use spanning bridges rather than culverts.
- If using a culvert, staggered culverts that concentrate low flows but provide conveyance of higher flows through staggered culverts placed at higher elevations is recommended.
- Bottomless culverts are recommended to allow for fish and other aquatic wildlife passage in the low flow channel. If bottomless culverts are not used, making a low flow channel for fish passage is recommended.
- Avoid placing riprap across stream channels and instead use alternative stabilization such as biotechnical stream bank stabilization methods including live native vegetation or a combination of vegetative and structural materials. When riprap or other bank stabilization devices are necessary, their placement should not impede the movement of aquatic and terrestrial wildlife underneath the bridge. In some instances, rip rap may be buried, back-filled with topsoil and planted with native vegetation.
- Incorporate bat-friendly design into bridges and culverts.
- Design bridges for adequate vertical and horizontal clearances under the roadway to allow for terrestrial wildlife to safely pass under the road.
- A span wide enough to cross the stream and allow for dry ground and a natural surface path under the roadway is encouraged. For culverts, incorporation of an artificial ledge inside the culvert on one or both sides for use by terrestrial wildlife is recommended.
- Riparian buffer zones should remain undisturbed.

Bird BMP

In addition to complying with the Migratory Bird Treaty Act (MBTA) and Chapter 64 of the Parks and Wildlife Code (PWC) regarding nongame bird protections, perform the following BMP:

- Avoid vegetation clearing activities during the general bird nesting season, March through August, to minimize adverse impacts to birds.

- 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. If active nests are observed during surveys, TPWD recommends a 150-foot buffer of vegetation remain around the nests until the young have fledged or the nest is abandoned.
- Do not disturb, destroy, or remove active nests, including ground nesting birds, during the nesting season.
- If unoccupied, inactive nests will be removed, ensure that nests are not protected under the Endangered Species Act (ESA), MBTA, or BGEPA.
- Prevent the establishment of active nests during the nesting season on TxDOT owned and operated facilities and structures proposed for replacement or repair.
- Do not collect, capture, relocate, or transport birds, eggs, young, or active nests without a permit.
- Minimize extended human presence near nesting birds during construction and maintenance activities. Protect sensitive habitat areas with temporary barriers or fencing to limit human foot-traffic and off-road vehicle use to alert and discourage contractors from causing any unintentional impacts.
- Minimize construction noise above ambient levels during general bird nesting season to minimize adverse impacts on birds.
- Minimize construction lighting during the general bird nesting season by scheduling work activities between dawn and dusk.

Aquatic Amphibian and Reptile BMP

- For projects within existing right-of-way (ROW) when work is in water or will permanently impact a water feature and potential habitat exists for the target species complete the following:
    - Minimize impacts to wetlands, temporary and permanent open water features, including depressions, and riverine habitats.
    - Maintain the existing hydrologic regime and any connections between wetlands and other aquatic features.
    - Use barrier fencing to direct animal movements away from construction activities and areas of potential wildlife-vehicle collisions in construction areas directly adjacent, or that may directly impact, potential habitat for the target species.
    - Apply hydromulching and/or hydroseeding in areas for soil stabilization and/or revegetation of disturbed areas around wetlands and in riparian areas. If erosion control blankets or mats will be used, the product should not contain netting, but should only contain loosely woven natural fiber netting in which the mesh design allows the threads to move, therefore allowing expansion of the mesh openings. Plastic netting should be avoided.
    - Project specific locations (PSLs) proposed within state-owned ROW should be located in uplands away from aquatic features.
    - When work is directly adjacent to the water, minimize impacts to shoreline basking sites (e.g., downed trees, sand bars, exposed bedrock) and refugia/overwinter sites (e.g., brush and debris piles, crayfish burrows, aquatic logjams, and leaf packs).
    - If gutters and curbs are part of the roadway design, install gutters that do not include the side box inlet and include sloped (i.e., mountable) curbs to allow small animals to leave roadway. If this modification to the entire curb system is not possible, install sections of sloped curb on either side of the storm water drain for several feet to allow small animals to leave the roadway. Priority areas for these design recommendations are those with nearby wetlands or other aquatic features.
- For projects that require acquisition of additional ROW and work within that new ROW is in water or will permanently impact a water feature, implement BMP for projects within existing ROW above plus those below:
    - For sections of roadway adjacent to wetlands or other aquatic features, install wildlife barriers that prevent climbing. Barriers should terminate at culvert openings in order to funnel animals under the road. The barriers should be of the same length as the adjacent feature or 80 feet long in each direction, or whichever is the lesser of the two.
    - For culvert extensions and culvert replacement/installation, incorporate measures to funnel animals toward culverts such as concrete wingwalls and barrier walls with overhangs.
    - When riprap or other bank stabilization devices are necessary, their placement should not impede the movement of terrestrial or aquatic wildlife through the water feature. Biotechnical streambank stabilization methods using live native vegetation or a combination of vegetative and structural materials should be used.

Terrestrial Amphibian and Reptile BMP

- 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

- Avoid or minimize disturbing or removing cover objects, such as downed trees, rotting stumps, brush piles, and leaf litter. If avoidance or minimization is not practicable, consider removing cover objects prior to the start of the project and replace them at project completion.
- Examine heavy equipment stored on site before use, particularly after rain events when reptile and amphibian movements occur more often, to ensure use will not harm individuals that might be seeking temporary refuge.
- Due to increased activity (mating) of reptiles and amphibian during the spring, construction activities like clearing or grading should attempt to be scheduled outside of the spring (March-May) season. Also, timing ground disturbing activities before October when reptiles and amphibians become less active and may be using burrows in the project area is also encouraged.
- When designing roads with curbs, consider using Type I or Type III curbs to provide a gentle slope to enable turtles and small animals to get out of roadways.
- If Texas tortoises (*Gopherus berlandieri*) or box turtles (*Terrepene spp.*) are present in a project area, they should be removed from the area and relocated between 100 and 200 meters from the project area. After removal of the individuals, the area that will be disturbed during active construction and project specific locations should be fenced off to exclude reentry by turtles, tortoises, and other reptiles. The exclusion fence should be constructed and maintained as follows:
    - The exclusion fence should be constructed with metal flashing or drift fence material.
    - Rolled erosion control mesh material should not be used.
    - The exclusion fence should be buried at least 6 inches deep and be at least 24 inches high.
    - The exclusion fence should be maintained for the life of the project and only removed after the construction is completed and the disturbed site has been revegetated.
- After project is complete, revegetate disturbed areas with an appropriate locally sourced native seed mix. If erosion control blankets or mats will be used, the product should not contain netting, but should only contain loosely woven natural fiber netting in which the mesh design allows the threads to move, therefore allowing expansion of the mesh openings. Plastic netting should be avoided.

Vegetation BMP

- Minimize the amount of vegetation cleared. Removal of native vegetation, particularly mature native trees and shrubs should be avoided. Impacted vegetation should be replaced with in-kind onsite replacement/restoration of native vegetation.
- To minimize adverse effects, activities should be planned to preserve mature trees, particularly acorn, nut or berry producing varieties. These types of vegetation have high value to wildlife as food and cover.
- It is strongly recommended that trees greater than 12 inches in diameter at breast height (DBH) that are removed be replaced. TPWD's experience indicates that for ecologically effective replacement, a ratio of three trees for every one (3:1) lost should be provided to either on-site or off-site. Trees less than 12 inches DBH should be replaced at a 1:1 ratio.
- Replacement trees should be of equal or better wildlife quality than those removed and be regionally adapted native species.
- When trees are planted, a maintenance plan that ensures at least an 85 percent survival rate after three years should be developed for the replacement trees.
- The use of any non-native vegetation in landscaping and revegetation is discouraged. Locally adapted native species should be used.
- The use of seed mix that contains seeds from only regional ecotype native species is recommended.

Aquatic Invertebrate BMP

- For projects within the range of a SGCN or state-listed species and work is adjacent to water: Water Quality and Stream Crossing BMP.
- For projects within the range of a SGCN or state-listed species and work is in the water: Water Quality, Stream Crossing, and Dewatering BMP.
- For spring-seep associated caddisflies (*Cheumatopsyche morsei*, *Chimarra holzenthali*, and *Hydroptila ouachita)*: Avoid or minimize impacts to the natural riparian buffer along stream channel including native shrubs and trees.

Bat BMP

The following Bat BMP apply to projects within the range and in suitable habitat for all bat SGCN and that are also listed on TPWD's RTEST online application. Review the habitat descriptions for species of interest on RTEST and other trusted resources to determine the appropriate beneficial management practice to avoid or minimize impacts to bats. All bat surveys and other activities that include direct contact with bats shall comply with TPWD-recommended white-nose syndrome protocols located on the TPWD Wildlife Habitat Assessment Program website under "Project Design and Construction". The following survey and exclusion protocols should be followed prior to

commencement of construction activities. For the purposes of this document, structures are defined as bridges, culverts (concrete or metal), wells, and buildings.

- Inform TPWD WHAB during initial collaborative review phase for projects that may impact the following bat species:
  - Any Myotis spp.
  - Tricolored bat (*Perimyotis subflavus*)
- If identification of a bat species is in question, consult with TPWD or a qualified TxDOT biologist during initial collaborative review phase.
- For activities that have the potential to impact structures, cliffs or caves, or trees; a qualified biologist will perform a habitat assessment and occupancy survey of the feature(s) with roost potential as early in the planning process as possible or within one year before project letting.
- For roosts where occupancy is strongly suspected but unconfirmed during the initial survey, revisit feature(s) at most four weeks prior to scheduled disturbance to confirm absence of bats.
- If bats are present or recent signs of occupation (i.e., piles of guano, distinct musky odor, or staining and rub marks at potential entry points) are observed, take appropriate measures to ensure that bats are not harmed, such as implementing non-lethal exclusion activities or timing or phasing of construction.
- Exclusion devices can be installed by a qualified individual between September 1 and March 31. Exclusion devices should be used for a minimum of seven days when minimum nighttime temperatures are above 50°F AND minimum daytime temperatures are above 70°F. Prior to exclusion, ensure that alternate roosting habitat is available in the immediate area. If no suitable roosting habitat is available, installation of alternate roosts is recommended to replace the loss of an occupied roost. If alternate roost sites are not provided, bats may seek shelter in other inappropriate sites, such as buildings, in the surrounding area.
- If feature(s) used by bats are removed as a result of construction, replacement structures should incorporate bat-friendly design or artificial roosts should be constructed to replace these features.
- Conversion of property containing cave or cliff features to transportation purposes should be avoided.
- Avoid unnecessary removal of dead fronds on native and ornamental palm trees in south Texas (Cameron, Hidalgo, Willacy, Kenedy, Brooks, Kleberg, Nueces, and San Patricio counties) from April 1 through October 31. If removal of dead fronds is necessary at other times of the year, limit frond removal to extended warms periods (nighttime temperatures ≥ 55°F for at least two consecutive nights), so bats can move away from the disturbance and find new roosts.
- Large hollow trees, snags (dead standing trees), and trees with shaggy bark should be surveyed for colonies and, if found, should not be disturbed until the bats are no longer occupying these features. Post-occupancy surveys should be conducted by a qualified biologist prior to tree removal from the landscape.
- Retain mature, large diameter hardwood forest species and native/ornamental palm trees.
- If gating a cave or abandoned mine is desired, consult with TPWD before installing gates. Gating should only be conducted by qualified groups with a history of successful gating operations. Gate designs must be approved by TPWD.
- In all instances, avoid harm or death to bats. Bats should only be handled as a last resort and after communication with TPWD.
- Coordinate with TPWD about the latest bat handling restrictions and protocols involving COVID19 and bat handling. In general, all staff must follow the guidelines listed below:
  - Do not handle bats if not part of a critical or time-sensitive research project. Contact TPWD to discuss your project needs before beginning work.
  - All participants must follow CDC social-distancing guidelines.
  - Wear a face mask to minimize the exchange of respiratory droplets such as a surgical mask, dust mask, or cloth mask when within 6 feet of a living bat.
  - Use disposable exam gloves or other reusable gloves (e.g., rubber dish-washing gloves) that can be decontaminated to prevent spread of pathogens. Do not touch your face or other potentially contaminated surfaces with your gloves prior to handling bats.
  - Limit handling to as few handlers as possible.
  - Do not blow on bats for any reason.
  - Use separate temporary holding containers for each bat such as disposable paper bags.
  - Caves housing bats should be avoided unless absolutely necessary.
  - Implement additional disinfection, quarantine, and cleaning procedures.
- Bat surveys of structures should include visual inspections of structural fissures (cracked or spalled concrete, damaged or split beams, split or damaged timber railings), crevices (expansion joints, space between parallel beams, spaces above supports piers), and alternative structures (drainage pipes, bolt cavities, open sections between support beams, swallow nests) for the presence of bats.
- Before excluding bats from any occupied structure, bat species, weather, temperature, season, and geographic location must be incorporated into any exclusion plans to avoid unnecessary harm or death to

bats. Winter exclusion must entail a survey to confirm either, 1) bats are absent or 2) present but active (i.e., continuously active – not intermittently active due to arousals from hibernation).
    - Avoid using materials that degrade quickly, like paper, steel wool or rags, to close holes.
    - Avoid using products or making structural modifications that may block natural ventilation, like hanging plastic sheeting over an active roost entrance, thereby altering roost microclimate.
    - Avoid using chemical and ultrasonic repellents.
    - Avoid use of silicone, polyurethane or similar non-water-based caulk products.
    - Avoid use of expandable foam products at occupied sites.
    - Avoid the use of flexible netting attached with duct tape.
- In order to avoid entombing bats, exclusion activities should be only implemented by a qualified individual. A qualified individual or company should possess at least the following minimum qualifications:
    - Experience in bat exclusion (the individual, not just the company).
    - Proof of rabies pre-exposure vaccinations.
    - Demonstrated knowledge of the relevant bat species, including maternity season date range and habitat requirements.
    - Demonstrated knowledge of rabies and histoplasmosis in relation to bat roosts.
- Contact TPWD for additional resources and information to assist in executing successful bat exclusions that will avoid unnecessary harm or death in bats.

General Design and Construction BMP

- Employees and contractors will be provided information prior to start of construction to educate personnel of the potential for all state-listed threatened species or other SGCN to occur within the project area and should be advised of relevant rules and regulations to protect plants, fish, and wildlife.
- Contractors will be informed to avoid harming all wildlife species if encountered and allow them to safely leave the project site. Due diligence should be used to avoid killing or harming any wildlife species in the implementation of transportation projects.
- Direct animals away from the construction area with the judicious use and placement of sediment control fencing to exclude wildlife. Exclusion fence should be buried at least 6 inches and be at least 24 inches high, maintained for the life of the project, and removed after construction is completed. Contractors should examine the inside of the exclusion area daily to determine if any wildlife species have been trapped inside the area of impact and provide safe egress opportunities prior to initiation of construction activities.
- Apply hydromulching and/or hydroseeding in areas for soil stabilization and/or revegetation of disturbed areas around wetlands and in riparian areas.
- If erosion control blankets or mats will be used, the product should not contain netting, but should only contain loosely woven natural fiber netting in which the mesh design allows the threads to move, therefore allowing expansion of the mesh openings. Plastic netting should be avoided.
- Project staging areas, stockpiles, temporary construction easements, and other project related sites should be situated in previously disturbed areas to avoid or minimize impacts to sensitive or unique habitats including intact native vegetation, floodplains, riparian corridors, wetlands, playa lakes, and habitat for wildlife species.
- When lighting is added, consider wildlife impacts from light pollution and incorporating dark-sky practices into design strategies. Minimize sky glow by focusing light downward, with full cutoff luminaries to avoid light emitting above the horizontal. The minimum amount of night-time lighting needed for safety and security should be used.

Rare Plant BMP

- Survey project area during appropriate seasons to allow for correct species identification. Habitat and survey seasons are usually during the flowering and/or fruiting period listed on the RTEST website, if available. Surveys should be performed within suitable habitat for the species. Survey effort is project-, species- and habitat-dependent. Botanical field surveys should be conducted by qualified individual(s) with botanical experience and according to commonly accepted survey protocols. Ensure that any equipment, tools, footwear and clothing are clean prior to entering the project site area to avoid introducing invasive species. Prior to surveying, TPWD Staff is available to provide assistance with species identification and appropriate survey effort.
- If SGCN plants are located, the surveyor should attempt to determine the complete extent of the occurrence and the approximate number of individuals within the occurrence. Suitable GPS equipment should be used to map the boundaries of the population. Photographs should be taken and/or voucher specimens should be collected (if sufficient plants are present, i.e., more than 10 reproductive plants). Please note that a state collection permit is required from TPWD to collect voucher specimens of state-listed species and a federal collection permit is required from U.S. Fish and Wildlife Service (USFWS) to collect federally listed species. Photographs should capture diagnostic characters of the species for

verification and should be discussed with TPWD Staff prior to surveys if surveyor is unfamiliar with the species. Vouchers should be deposited with TPWD Staff or in one of Texas' major herbaria (e.g., University of Texas at Austin, Botanical Research Institute of Texas, Texas A&M University, Sul Ross State University, etc.).

- If there is a known TXNDD SGCN plant population within the project area and project timing or other constraints do not allow for surveys, contact TPWD Transportation Staff as soon as possible to discuss other options.
- If an SGCN plant species is located during surveys of the project area, then complete the following during the construction phase:
  a. Avoid impacts and minimize unavoidable impacts. Plant locations should be protected with temporary barrier fencing and contractors should be instructed to avoid protected areas. Conducting construction outside of the growing season or after a plant has produced mature fruit is the preferred way to avoid/minimize impacts to SGCN plant populations. Staging areas, stockpiles, and other project related sites on TxDOT ROW should not impact SGCN plant populations. After construction begins, minimize herbicide use near SGCN plant populations (if possible, use hand-held spot sprayers, several meters from rare plants, on still or days with little wind).
  b. If there are unintended impacts to SGCN populations, these impacts should be reported to TPWD Transportation Staff.
  c. If the project footprint is finalized or is subject to change AND impacts to SGCN plants cannot be avoided, notify TPWD Transportation Staff as soon as possible. Early notification will allow adequate time and opportunity to seed bank or otherwise conserve populations prior to construction.
- Submit observation(s) of SGCN plant populations and associated data to the TXNDD and WHAB_TxDOT@tpwd.texas.gov. A TXNDD Reporting Form with shapefiles delineating the outer boundary of the population are preferable. Include detailed information on who identified and how a species was identified (resources/references used; diagnostic characters observed). If an SGCN plant population is located near non-native invasive plants, this should be recorded and reported in TXNDD Reporting Form.
- Although these BMP do not apply to federally listed species, the observation of federally listed species should also be submitted to TPWD.
- During project period, conduct work during times of the year when plants are dormant and/or conditions minimize disturbance of the habitat.
- Develop a plan based on growing season, mower height/season, etc. for protecting sites into future. Maps should also be developed for rare plant area, which includes no mow areas. Known rare plant sites on ROWs and/or new sites found in future projects can be added to this map/plan.
- Conducting maintenance outside of the growing season or after a plant has produced mature fruit is the preferred way to avoid/minimize impacts to habitat.

<u>Invasive Species BMP: Avoiding, Minimizing, and Mitigating Impacts of Transportation Projects on State Natural Resources</u>

- For all work in water bodies designated as 'infested' or 'positive' for invasive zebra (*Dreissena polymorpha*) or quagga mussels (*Dreissena bugensis*) on http://texasinvasives.org/zebramussels/ as well as waters downstream of these lakes, all machinery, equipment, vessels, or vehicles coming in contact with such waters should be cleaned prior to leaving the site to remove any mud, plants, organisms, or debris, water drained (if applicable), and dried completely before use in another water body to prevent the potential spread of invasive mussels.
- Care should be taken to prevent the spread of aquatic and terrestrial invasive plants during construction activities. Educate contractors on how to identify common invasive plants and the importance of proper equipment cleaning, transport, and disposal of invasive plants in a manner and location that prevents spread when invasive plants are removed during construction.
- Care should be taken to avoid the spread of aquatic invasive plants such as giant Salvinia (*Salvinia molesta*), common salvinia (Salvinia minima), hydrilla (*Hydrilla verticillata*), water hyacinth (*Eichhornia spp.*), Eurasian watermilfoil (*Myriophyllum spicatum*), water lettuce (*Pistia stratiotes*), and alligatorweed (*Alternanthera philoxeroides*) from infested water bodies into areas not currently infested. All machinery, equipment, vessels, boat trailers, or vehicles coming in contact with waters containing aquatic invasive plant species should be cleaned prior to leaving the site to remove all aquatic plant material and dried completely before use on another water body to prevent the potential spread of invasive plants. Removed plants should be transported for disposal in a secure manner to prevent dispersal.
- Colonization by invasive plants should be actively prevented on disturbed sites in terrestrial habitats. Vegetation management should include removing or chemically treating invasive species as soon as practical while allowing the existing native plants to revegetate the disturbed areas; repeated removal or treatment efforts may be needed. Only native or non-invasive plants should be planted. Care should be taken to avoid mowing invasive giant reed (*Arundo donax*), which spreads by fragmentation, and to clean

equipment if inadvertently mowed to prevent spread. If using hay bales for sediment control, use locally grown weed-free hay to prevent the spread of invasive species. Leave the hay bales in place and allow them to break down, as this acts as mulch assisting in revegetation.

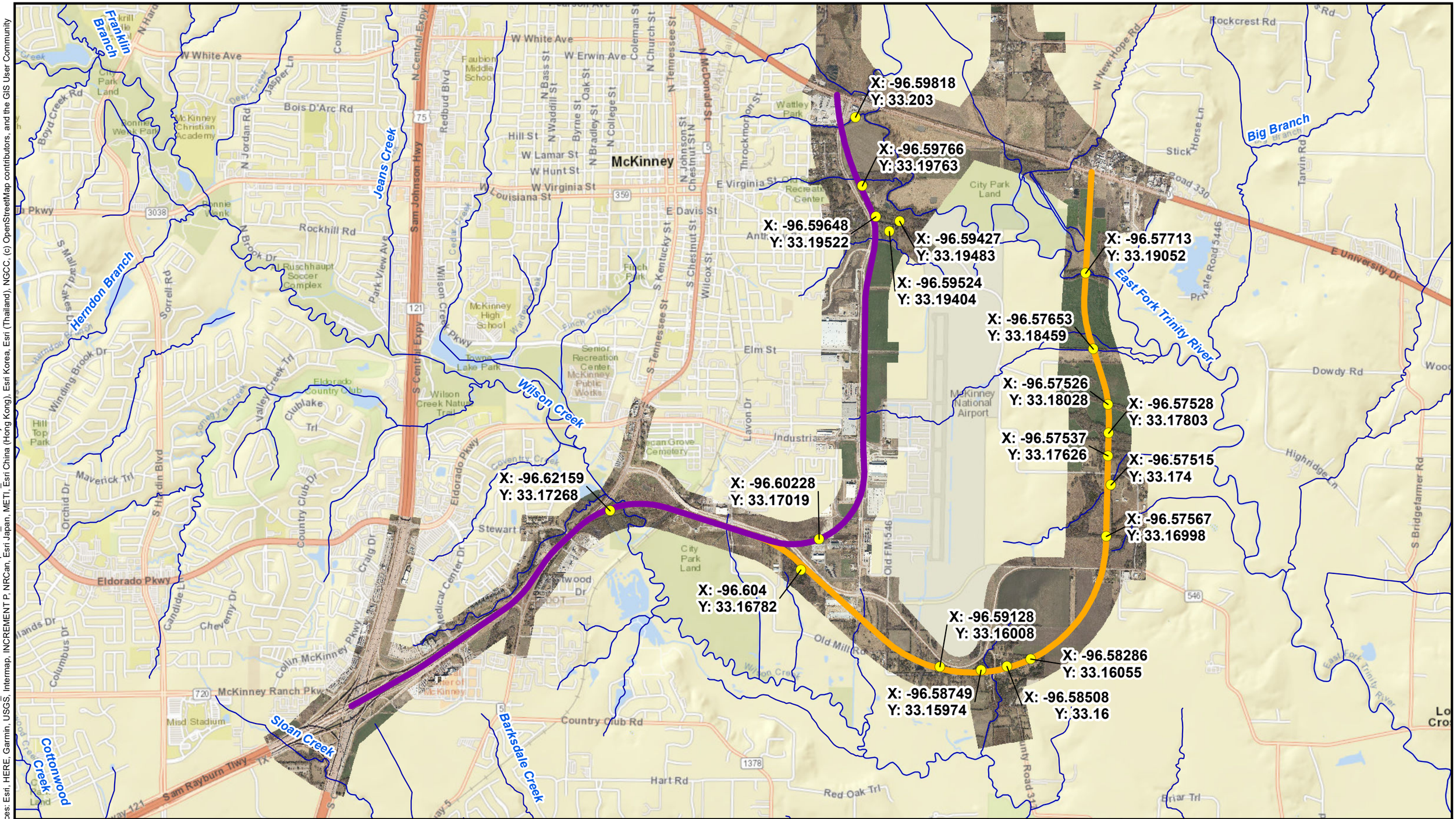
- Aquatic invasive species (e.g., tilapias (*Oreochromis spp., Tilapia zillii*), suckermouth armored catfish (*Hypostomus plecostomus, Pterigoplichthys spp.*), Asian clams (*Corbicula fluminea*), zebra mussels (*Dreissena polymorpha*)) or those not native to the subwatershed should not be relocated but rather should be dispatched. Invasive mussels attached to native mussels should be removed and destroyed or disposed prior to relocation of the native mussels. Prohibited aquatic invasive species, designated as such in 31 TAC §57.112, should be killed upon possession.

5. List all TxDOT species protection specifications that will be applied to this project (e.g., Amphibian and Reptile Exclusion Fence, Bat Houses, etc.)

Species protection specifications to be Implemented:

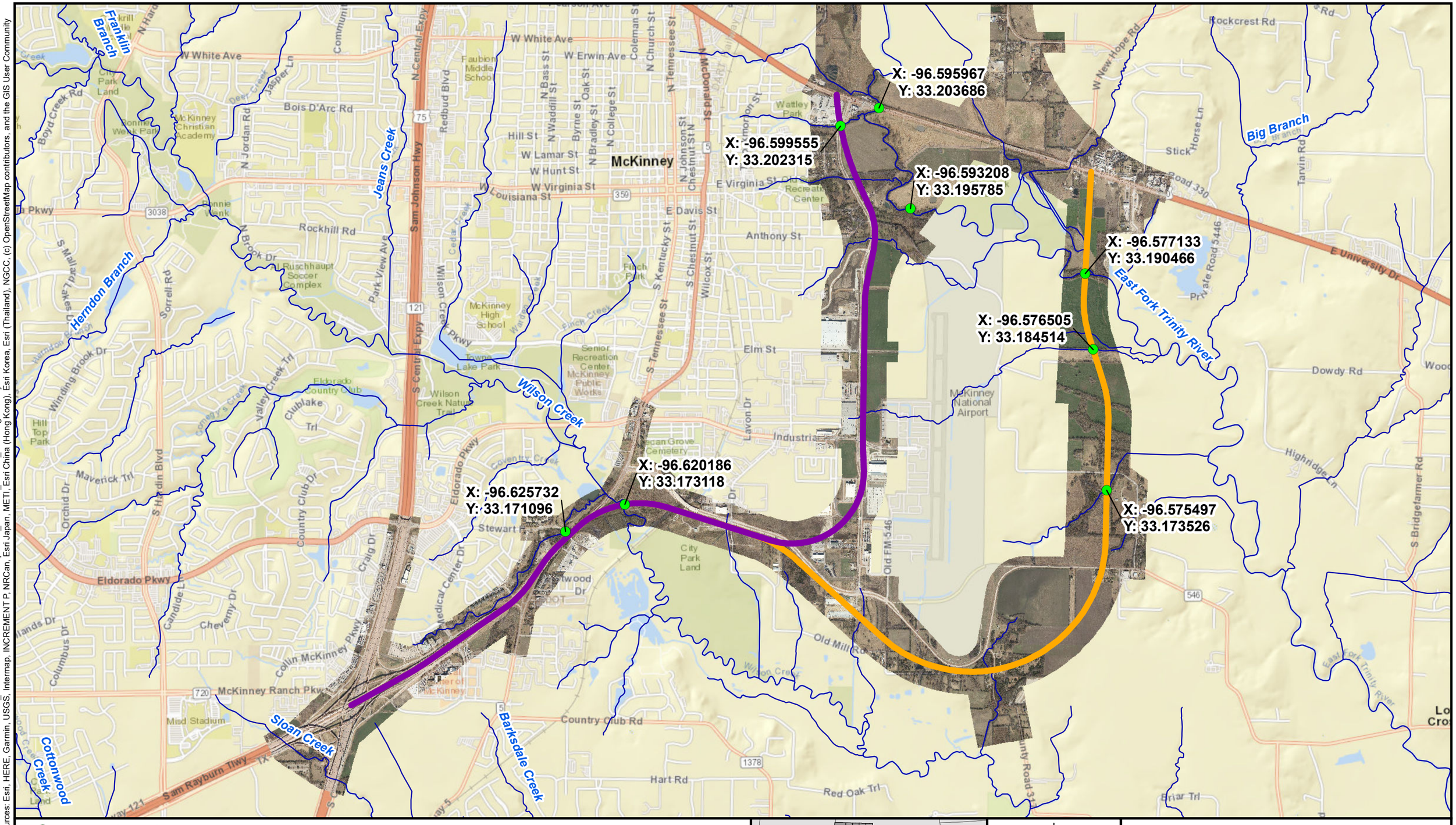
None at present time.

Appendix O-4: Woodland and Stream Crossing Maps



Path: Z:\Resources\Local\Clients\KCMTRNTXDOT\99436_US380\ArcGIS\DataFiles\ArcDocs\Spur399_Woodland_Habitat.mxd jaclaussen 6/18/2021
Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

Source: ESRI, Burns & McDonnell Engineering Company, Inc.



Path: Z:\Resources\Local\Clients\KCM\TRN\TXDOT\99436_US380\ArcGIS\DataFiles\ArcDocs\Spur399_Perennial_Stream_Crossings.mxd jaclaussen 6/18/2021
Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

Source: ESRI, Burns & McDonnell Engineering Company, Inc.

Issued: 6/18/2021

Appendix O-5: Information for Planning and Consultation (IPaC) and Rare, Threatened, and Endangered Species of Texas (RTEST)

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Arlington Ecological Services Field Office
501 West Felix Street
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Fort Worth, TX 76115-3410
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In Reply Refer To:
Project Code: 2022-0060449
Project Name: Spur 399

March 27, 2023

Subject: List of threatened and endangered species that may occur in your proposed project location 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 to listed species or critical habitat 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 consequence of the proposed action, and the effect is not discountable or insignificant. This determination requires formal section 7 consultation.

The Service has performed up-front analysis for certain project types and species in your project area. These analyses have been compiled into *determination keys*, which allows an action agency, or its designated non-federal representative, to initiate a streamlined process for determining a proposed project's potential effects on federally listed species. The determination keys can be accessed through IPaC.

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 at: https://www.fws.gov/service/section-7-consultations

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 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 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 (https://www.fws.gov/library/collections/bald-and-golden-eagle-management). Additionally, wind energy projects should follow the wind energy guidelines (https://www.fws.gov/media/land-based-wind-energy-guidelines) 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: https://www.fws.gov/media/recommended-best-practices-communication-tower-design-siting-construction-operation. The Federal Aviation Administration (FAA) released specifications for and made mandatory flashing L-810 lights on new towers 150-350 feet AGL, and the elimination of L-810 steady-burning side lights on towers above 350 feet AGL. While the FAA made these changes to reduce the number of migratory bird collisions (by as much as 70%), extinguishing steady-burning side lights also reduces maintenance costs to tower owners. 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
- USFWS National Wildlife Refuges and Fish Hatcheries
- Migratory Birds
- Wetlands

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
501 West Felix Street
Suite 1105
Fort Worth, TX 76115-3410
(817) 277-1100

PROJECT SUMMARY

Project Code: 2022-0060449
Project Name: Spur 399
Project Type: New Constr - Above Ground
Project Description: New road project
Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@33.18023685,-96.5752637869299,14z

Counties: Collin County, Texas

ENDANGERED SPECIES ACT SPECIES

There is a total of 7 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 Fisheries[1], 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.

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

MAMMALS

NAME	STATUS
Tricolored Bat *Perimyotis subflavus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

BIRDS

NAME	STATUS
Piping Plover *Charadrius melodus* 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 does not overlap the critical habitat. This species only needs to be considered under the following conditions: ▪ Wind Energy Projects Species profile: https://ecos.fws.gov/ecp/species/6039	Threatened
Red Knot *Calidris canutus rufa* There is **proposed** critical habitat for this species. This species only needs to be considered under the following conditions: ▪ Wind Energy Projects Species profile: https://ecos.fws.gov/ecp/species/1864	Threatened
Whooping Crane *Grus americana* Population: Wherever found, except where listed as an experimental population There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/758	Endangered

REPTILES

NAME	STATUS
Alligator Snapping Turtle *Macrochelys temminckii* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4658	Proposed Threatened

CLAMS

NAME	STATUS
Texas Fawnsfoot *Truncilla macrodon* There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8965	Proposed Threatened

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

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

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

MIGRATORY BIRDS

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

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1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Sep 1 to Jul 31
Chimney Swift *Chaetura pelagica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25

NAME	BREEDING SEASON
Henslow's Sparrow *Ammodramus henslowii* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3941	Breeds elsewhere
Lesser Yellowlegs *Tringa flavipes* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Little Blue Heron *Egretta caerulea* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Mar 10 to Oct 15
Prothonotary Warbler *Protonotaria citrea* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 1 to Jul 31
Red-headed Woodpecker *Melanerpes erythrocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence

in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

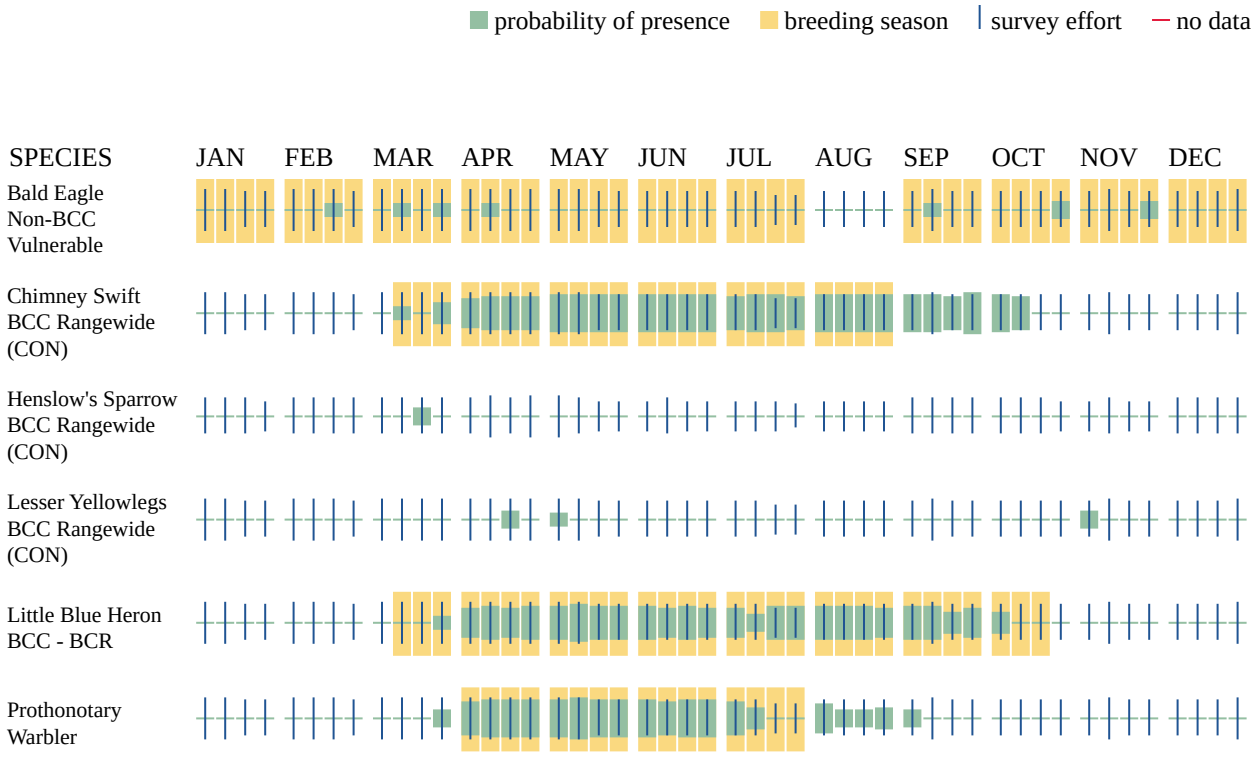
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

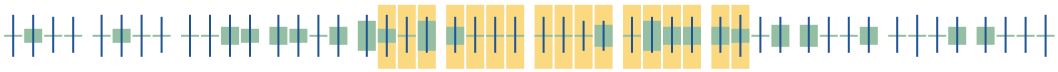
No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



BCC Rangewide (CON)

Red-headed Woodpecker
BCC Rangewide (CON)



Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

MIGRATORY BIRDS FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?
The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?
To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?
Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects
For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?
If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report
The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

WETLANDS

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

THERE ARE NO WETLANDS WITHIN YOUR PROJECT AREA.

IPAC USER CONTACT INFORMATION

Agency: Burns & McDonnell
Name: Derek Green
Address: 8911 Capital of Texas Highway, Building 3, Suite 3100
City: Austin
State: TX
Zip: 78759
Email djgreen@burnsmcd.com
Phone: 7372360111

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Texas Department of Transportation

Last Update: 1/4/2023

COLLIN COUNTY

AMPHIBIANS

southern crawfish frog *Lithobates areolatus areolatus*

Terrestrial and aquatic: The terrestial habitat is primarily grassland and can vary from pasture to intact prairie; it can also include small prairies in the middle of large forested areas. Aquatic habitat is any body of water but preferred habitat is ephemeral wetlands.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4T4	State Rank: S3

Strecker's chorus frog *Pseudacris streckeri*

Terrestrial and aquatic: Wooded floodplains and flats, prairies, cultivated fields and marshes. Likes 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 variety of terrestrial habitats are used by this species, including forests, grasslands, and barrier island sand dunes. Aquatic habitats are equally varied.

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 lakes; nests in tall trees or on cliffs near water; communally roosts, especially in winter; hunts live prey, scavenges, and pirates food from other birds

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3B,S3N

black rail *Laterallus jamaicensis*

The county distribution for this species includes geographic areas that the species may use during migration. Time of year should be factored into evaluations to determine potential presence of this species in a specific county. Salt, brackish, and freshwater marshes, pond borders, wet meadows, and grassy swamps; nests in or along edge of marsh, sometimes on damp ground, but usually on mat of previous years dead grasses; nest usually hidden in marsh grass or at base of Salicornia

Federal Status: LT	State Status: T	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S2

chestnut-collared longspur *Calcarius ornatus*

Occurs in open shortgrass settings especially in patches with some bare ground. Also occurs in grain sorghum fields and Conservation Reserve Program lands

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3

COLLIN COUNTY

BIRDS

Franklin's gull *Leucophaeus pipixcan*

The county distribution for this species includes geographic areas that the species may use during migration. Time of year should be factored into evaluations to determine potential presence of this species in a specific county. 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.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S2N

piping plover *Charadrius melodus*

The county distribution for this species includes geographic areas that the species may use during migration. Time of year should be factored into evaluations to determine potential presence of this species in a specific county. 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*

The county distribution for this species includes geographic areas that the species may use during migration. Time of year should be factored into evaluations to determine potential presence of this species in a specific county. Habitat: Primarily seacoasts on tidal flats and beaches, herbaceous wetland, and Tidal flat/shore. Bolivar Flats in Galveston County, sandy beaches Mustang Island, few on outer coastal and barrier beaches, tidal mudflats and salt marshes.

Federal Status: LT	State Status: T	SGCN: Y
Endemic: N	Global Rank: G4T2	State Rank: S2N

Sprague's pipit *Anthus spragueii*

The county distribution for this species includes geographic areas that the species may use during migration. Time of year should be factored into evaluations to determine potential presence of this species in a specific county. Habitat during migration and in winter consists of pastures and weedy fields (AOU 1983), including grasslands with dense herbaceous vegetation or grassy agricultural fields.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3G4	State Rank: S3N

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

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4T4	State Rank: S2

COLLIN COUNTY

BIRDS

white-faced ibis *Plegadis chihi*

The county distribution for this species includes geographic areas that the species may use during migration. Time of year should be factored into evaluations to determine potential presence of this species in a specific county. Prefers freshwater marshes, sloughs, and irrigated rice fields, but will attend brackish and saltwater habitats; currently confined to near-coastal rookeries in so-called hog-wallow prairies. Nests in marshes, in low trees, on the ground in bulrushes or reeds, or on floating mats.

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S4B

whooping crane *Grus americana*

The county distribution for this species includes geographic areas that the species may use during migration. Time of year should be factored into evaluations to determine potential presence of this species in a specific county. Small ponds, marshes, and flooded grain fields for both roosting and foraging. Potential migrant via plains throughout most of state to coast; winters in coastal marshes of Aransas, Calhoun, and Refugio counties.

Federal Status: LE	State Status: E	SGCN: Y
Endemic: N	Global Rank: G1	State Rank: S1S2N

wood stork *Mycteria americana*

The county distribution for this species includes geographic areas that the species may use during migration. Time of year should be factored into evaluations to determine potential presence of this species in a specific county. Prefers to nest in large tracts of baldcypress (Taxodium distichum) or red mangrove (Rhizophora mangle); forages in prairie ponds, flooded pastures or fields, ditches, and other shallow standing water, including salt-water; usually roosts communally in tall snags, sometimes in association with other wading birds (i.e. active heronries); breeds in Mexico and birds move into Gulf States in search of mud flats and other wetlands, even those associated with forested areas; formerly nested in Texas, but no breeding records since 1960.

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: SHB,S2N

CRUSTACEANS

No accepted common name *Caecidotea bilineata*

Spring obligate. Caecidotea bilineata is known only from non-cave groundwater habitats in deposits of Cretaceous age. It is presumably a phreatobite. Fine scale habitat requirements unknown.

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G2G3	State Rank: S1

Parkhill Prairie crayfish *Procambarus steigmani*

Burrower in long-grass prairie; all animals were collected with traps, thus there is no knowledge of depths of burrows; herbivore; crepuscular, nocturnal

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G1G2	State Rank: S1S2

COLLIN COUNTY

INSECTS

American bumblebee *Bombus pensylvanicus*

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Y
Endemic:	Global Rank: G3G4	State Rank: SNR

MAMMALS

big brown bat *Eptesicus fuscus*

Any wooded areas or woodlands except south Texas. Riparian areas in west Texas.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S5

eastern red bat *Lasiurus borealis*

Red bats are migratory bats that are common across Texas. They are most common in the eastern and central parts of the state, due to their requirement of forests for foliage roosting. West Texas specimens are associated with forested areas (cottonwoods). Also common along the coastline. These bats are highly mobile, seasonally migratory, and practice a type of "wandering migration". Associations with specific habitat is difficult unless specific migratory stopover sites or wintering grounds are found. Likely associated with any forested area in East, Central, and North Texas but can occur statewide.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3G4	State Rank: S4

eastern spotted skunk *Spilogale putorius*

Generalist; open fields prairies, croplands, fence rows, farmyards, forest edges & 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.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: S1S3

hoary bat *Lasiurus cinereus*

Hoary bats are highly migratory, high-flying bats that have been noted throughout the state. Females are known to migrate to Mexico in the winter, males tend to remain further north and may stay in Texas year-round. Commonly associated with forests (foliage roosting species) but are found in unforested parts of the state and lowland deserts. Tend to be captured over water and large, open flyways.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3G4	State Rank: S4

long-tailed weasel *Mustela frenata*

Includes brushlands, fence rows, upland woods and bottomland hardwoods, forest edges & rocky desert scrub. Usually live close to water.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S5

COLLIN COUNTY

MAMMALS

mountain lion *Puma concolor*

Generalist; found in a wide range of habitats statewide. Found most frequently in rugged mountains & riparian zones.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S2S3

muskrat *Ondatra zibethicus*

Found in fresh or brackish marshes, lakes, ponds, swamps, and other bodies of slow-moving water. Most abundant in areas with cattail. Dens in bank burrow or conical house of vegetation in shallow vegetated water. It is primarily found in the Rio Grande near El Paso and in SE Texas in the Houston area.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S5

swamp rabbit *Sylvilagus aquaticus*

Primarily found in lowland areas near water including: cypress bogs and marshes, floodplains, creeks and rivers.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S5

tricolored bat *Perimyotis subflavus*

Forest, woodland and riparian areas are important. Caves are very important to this species.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3G4	State Rank: S2

western hog-nosed skunk *Conepatus leuconotus*

Habitats include woodlands, grasslands & deserts, to 7200 feet, most common in rugged, rocky canyon country; little is known about the habitat of the ssp. telmalestes

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: S4

MOLLUSKS

Louisiana pigtoe *Pleurobema riddellii*

Occurs in small streams to large rivers in slow to moderate currents in substrates of clay, mud, sand, and gravel. Not known from impoundments (Howells 2010f; Randklev et al. 2013b; Troia et al. 2015). [Mussels of Texas 2019]

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G1G2	State Rank: S1

COLLIN COUNTY

MOLLUSKS

Texas heelsplitter *Potamilus amphichaenus*

Occurs in small streams to large rivers in standing to slow-flowing water; most common in banks, backwaters and quiet pools; adapts to some reservoirs. Often found in soft substrates such as mud, silt or sand (Howells 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

alligator snapping turtle *Macrochelys temminckii*

Aquatic: Perennial water bodies; rivers, canals, lakes, and oxbows; also swamps, bayous, and ponds near running water; sometimes enters brackish coastal waters. Females emerge to lay eggs close to the waters edge.

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S2

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 enters 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.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3

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.

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 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.

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G5T4	State Rank: S1

Texas horned lizard *Phrynosoma cornutum*

Terrestrial: Open habitats with sparse vegetation, including grass, prairie, cactus, scattered brush or scrubby trees; soil may vary in texture from sandy to rocky; burrows into soil, enters rodent burrows, or hides under rock when inactive. Occurs to 6000 feet, but largely limited below the pinyon-juniper zone on mountains in the Big Bend area.

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G4G5	State Rank: S3

COLLIN COUNTY

REPTILES

timber (canebrake) rattlesnake *Crotalus horridus*

Terrestrial: Swamps, floodplains, upland pine and deciduous woodland, riparian zones, abandoned farmland. Limestone bluffs, sandy soil or black clay. Prefers dense ground cover, i.e. grapevines, palmetto.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: S4

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.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3

PLANTS

glandular gay-feather *Liatris glandulosa*

Occurs in herbaceous vegetation on limestone outcrops (Carr 2015)

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3	State Rank: S2

Sutherland hawthorn *Crataegus viridis var. glabriuscula*

In mesic soils of woods or on edge of woods, treeline/fenceline, or thicket. Above\near creeks and draws, in river bottoms. Flowering Mar-Apr; fruiting May-Oct.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5T3T4	State Rank: S3