

Appendix 2-1

Preliminary Jurisdictional Determination of Waters of the U.S.



Dallas North Tollway Extension Phase 4B/5A From FM 428 to FM 121

Preliminary Jurisdictional Determination of
Waters of the U.S.

March 2011

NTTA
NORTH TEXAS TOLLWAY AUTHORITY

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1 **PROJECT DESCRIPTION/PURPOSE**

2 In accordance with Section 404 of the Clean Water Act (CWA), this preliminary jurisdictional
3 determination (PJD) and delineation of potential waters of the U.S., including wetlands, is for the
4 proposed right-of-way (ROW) of the proposed Dallas North Tollway Extension Phase 4B/5A
5 (DNT 4B/5A) between Farm to Market Road (FM) 428 and FM 121 in Collin, Denton, and
6 Grayson counties, Texas. The proposed DNT 4B/5A would extend the proposed Dallas North
7 Tollway Extension Phase 4A north for approximately 12 miles from FM 428, providing a link
8 between downtown Dallas and fast-growing cities in Collin, Denton, and Grayson counties.
9 Maps showing the project vicinity and an outline of the proposed DNT 4B/5A on a topographic
10 base map are provided in **Figures 1 and 2**, and project area photographs are provided in
11 **Appendix A**.

12 The proposed DNT 4B/5A is a regional toll road whose purpose is to address the area's
13 increasing traffic demand related to population growth and employment. The proposed DNT
14 4B/5A would provide transportation improvements for the residents in northern Collin and
15 Denton counties and southern Grayson County.

16 **METHODOLOGY**

17 Potential jurisdictional waters of the U.S., including wetlands, were preliminarily identified prior
18 to field reconnaissance using the U.S. Department of Agriculture (USDA) soil surveys for Collin,
19 Denton, and Grayson counties, U.S. Fish and Wildlife Service (USFWS) National Wetland
20 Inventory Maps (Celina and Marilee, Texas), U.S. Geological Survey (USGS) 7.5-minute
21 topographic maps (Celina [USGS ID 33096-C7, 1960] and Marilee [USGS ID 33096-C7, 1961]
22 quadrangles, Texas), Federal Emergency Management Agency (FEMA) National Flood
23 Insurance Rate Maps, and current aerial photographs (Aerials Express, 2008 and Landiscor,
24 2009). The National Climatic Data Center precipitation data were used after the field
25 reconnaissance to identify ephemeral and intermittent flows. The PJD analyses and wetland
26 delineations were conducted for the proposed DNT 4B/5A ROW and easements October 12 to
27 14, 2010 and December 9, 2010.

28 The U.S. Army Corps of Engineers (USACE) and the Environmental Protection Agency (EPA)
29 jointly define wetlands in 33 Code of Federal Regulations (CFR) 328.3(b) as: *“those areas that*
30 *are inundated or saturated by surface or ground water at a frequency and duration sufficient to*
31 *support, and that under normal circumstances do support, a prevalence of vegetation typically*
32 *adapted for life in saturated soil conditions.”* The PJD analyses were performed using USACE
33 guidance on the limits of Section 404 jurisdiction that resulted from the U.S. Supreme Court
34 ruling in the consolidated cases of *Rapanos v. United States* and *Carabell v. United States* (126
35 S. Ct. 2208 [2006]); the USACE document *Procedures for Jurisdictional Determinations* (March
36 24, 2003); and, the USACE *Regulatory Guidance Letter No. 08-02* (June 26, 2008).

37 The wetland determinations and delineations (typical situations) performed as part of the PJD
38 analyses were conducted in accordance with the *Regional Supplement to the Corps of*
39 *Engineers Wetland Delineation Manual: Great Plains Region*, USACE March 2010 and USACE-

1 required fact specific analysis to ascertain significant nexus with traditional navigable waters
2 (TNW). Examples include tributaries that are not a relatively permanent water (RPW) such as
3 intermittent or ephemeral streams, wetlands adjacent to tributaries that are not RPWs, and
4 wetlands adjacent to, but that do not directly abut a RPW. For each potential water of the U.S.,
5 the significant nexus analysis assessed the following:

- 6 • Flow and function of each water body.
- 7 • Function of adjacent/abutting wetlands (if present).

8
9 *Adjacent wetlands:* According to 33 CFR 328.3(c), adjacent is defined as bordering,
10 contiguous, or neighboring. Adjacent wetlands may have a continuous surface
11 connection to TNWs, but may also be separated from these waters by man-made dikes
12 or barriers, natural river berms, beach dunes, or similar features. By definition, a
13 continuous surface water connection is not required to establish adjacency.

14
15 *Abutting wetlands:* Wetlands that provide a continuous surface connection to RPWs that
16 flow directly or indirectly into TNWs are defined as abutting. The wetland boundary must
17 interface with the ordinary high water mark (OHWM) of the tributary. The OHWM is the
18 line on the shore/bank established by flowing and/or standing water, and is marked by
19 characteristics such as bed and bank, a clear, natural line impressed on the bank,
20 sediment deposition, changes in the character of soil, scour, destruction of terrestrial
21 vegetation, abrupt changes in plant communities, and presence of litter and debris. If the
22 wetland boundary does not abut the OHWM of the tributary, the wetland is adjacent.
23 Abutting wetlands are not separated from tributaries by uplands, berms, dikes, or similar
24 features. It is important to note that a continuous surface connection does not require
25 surface water to be continuously present between the wetland and tributary.

- 26
- 27 • Hydrologic and ecologic factors.
- 28 • The significant effect of a water body on the chemical, physical, and biological integrity
29 of the TNWs.

30 The presence of potential jurisdictional wetlands is determined by the positive indication of three
31 criteria (i.e., hydrophytic vegetation, hydrology, and hydric soils). The presence or absence of
32 one or more of the three wetland criteria has been recorded on Wetland Delineation Data Forms
33 – Great Plains Region (**Appendix B**). Accompanying project area photographs are provided in
34 **Appendix A**, and specific data point locations are shown on aerial maps (**Figure 3**).

35 Waters of the U.S. and wetland determinations were conducted where applicable, along the
36 entire length of the proposed DNT 4B/5A per Section D of the *Regional Supplement to the*
37 *Corps of Engineers Wetland Delineation Manual: Great Plains Region*, USACE March 2010.
38 Waters of the U.S. mapping/boundary data were collected using a Trimble Pathfinder Pro XH
39 Global Positioning System (GPS) receiver and Ranger data logger. Sub-meter accuracy was
40 ensured at each data point through the collection of a minimum of six measurements, with a

1 Precisional Dilution of Position (PDOP) no greater than 4.0 or a minimum of 60 measurements
2 with a PDOP no greater than 6.0. Lines and polygons were mapped using a minimum of five
3 measurements at each point of direction change with similar PDOP restrictions. Although
4 uncommon, some points did not meet the sub-meter accuracy criterion due to restricted satellite
5 reception caused by heavy vegetation or topography. GPS data was differentially corrected
6 using Pathfinder Office 4.0 software (Trimble Inc.) in the office using one USACE base station
7 (Ardmore, Oklahoma) and three Texas Department of Transportation base stations (Kaufman,
8 Paris, and Wichita Falls). The delineation data was overlaid onto aerial photography maps
9 (Aerials Express, 2008) and USGS topographic maps (Texas Natural Resource Information
10 Service) using ArcMap version 9.3 where associated acreage, length, and drainage area were
11 collected.

12 Potential jurisdictional boundaries for the streams were delineated in the field at the OHWM.
13 Potential wetland boundaries were delineated where soil, vegetation, and hydrology exhibited
14 wetland characteristics.

15 **RESULTS**

16 Waters of the U.S. refer to those aquatic features which fall within the jurisdictional authority of
17 the USACE. The proposed DNT 4B/5A crosses potential RPWs (Little Elm Creek) and potential
18 unnamed tributaries thereof (**Table 1**). A significant nexus occurs at several potential crossings
19 based on their proximity to the TNW (Lake Lewisville) and various compatible functions between
20 the streams, associated abutting and adjacent wetlands, and the TNW. These tributaries collect
21 and transport water, sediment, and pollutants from their headwaters to the TNW during
22 precipitation events. The National Weather Service Climatological Data for 1971 through 2000
23 were accessed to determine the mean number of days that precipitation occurs in the three
24 counties encompassing the proposed DNT 4B/5A.

- 25 • Collin County: 54.3 days greater than 0.1 inch, 26.1 days greater than 0.5 inch, and
26 12.6 days greater than 1.0 inch.
- 27 • Denton County: 52.6 days greater than 0.1 inch, 25.2 days greater than 0.5 inch, and
28 11.3 days greater than 1.0 inch.
- 29 • Grayson County: 58.9 days greater than 0.1 inch, 27 days greater than 0.5 inch, and
30 12.6 days greater than 1.0 inch.

31 These precipitation events also transferred nutrients and organic carbon from the streams and
32 tributaries to the TNW. The associated riparian corridors of the perennial and intermittent
33 streams provide habitat to wildlife and aquatic organisms. The associated wetlands provide
34 storage of flood waters and runoff, as well as pollutant trapping and filtration. They facilitate
35 water quality improvements that might affect the integrity of the TNW. The upland areas of the
36 proposed DNT 4B/5A also contain numerous drainage ditches that have no well-defined
37 connection to any RPW. Because the drainage ditches have no normal surface connection to
38 waters of the U.S., there is no significant nexus. Therefore, effects from the upland drainage
39 ditches would be insubstantial or speculative on the chemical, physical, and biological integrity
40 of the TNW.

1 The proposed DNT 4B/5A crosses 22 potential waters of the U.S., including Little Elm Creek,
2 17 tributaries to Little Elm Creek, one stream channel remnant of Little Elm Creek, one tributary
3 to Walnut Fork, one tributary to Buck Creek, two abutting wetlands, two adjacent wetlands, one
4 solitary wetland, and one open water (summarized in **Table 1**). Brief narratives for each stream,
5 tributary, and associated wetland (if applicable) are discussed below and describe vegetation,
6 soil, and hydrological conditions. Soil mapping units are included; however, refer to **Appendix C**
7 for descriptions of the soil mapping units present at each crossing location. This PJD report
8 provides the information requested by the USACE on its PJD application form (**Appendix D**).
9 This PJD will be submitted to the USACE for coordination.

10 **Crossing-1: Water-1**

11 Crossing-1 consists of an intermittent tributary to Little Elm Creek (Water-1) with an OHWM
12 width of approximately 8 feet. Within the proposed DNT 4B/5A ROW and easements,
13 1,131.90 linear feet (0.21 acre) of this tributary flows westerly into Little Elm Creek, a RPW.
14 Little Elm Creek drains into Lake Lewisville, a TNW. The tributary is situated in Zone A, defined
15 as areas within the 100-year floodplain (no base flood elevations determined). The soils at this
16 location are mapped as Houston Black clay, 0 to 1% slopes and Houston Black clay, 2 to 4%
17 slopes, eroded (Collin County soil survey). A riparian corridor exists on each side of the
18 tributary. The vegetation consists of sugarberry (*Celtis laevigata*), black willow (*Salix nigra*),
19 giant ragweed (*Ambrosia trifida*), Johnson grass (*Sorghum halepense*), Virginia wildrye (*Elymus*
20 *virginicus*), poison ivy (*Toxicodendron radicans*), and saw greenbrier (*Smilax bona-nox*). One
21 aquatic organism, the black bullhead catfish (*Ameiurus melas*), was observed within this
22 tributary. There are no wetlands associated with this tributary within the proposed DNT 4B/5A
23 ROW and easements. Refer to **Table 1** for the summary table, **Figure 3 (Sheet 2)** for the 2008
24 aerial map, **Figure 4 (Sheet 1)** for the 1996 aerial map, and **Appendix A (Photo No. 1)** for the
25 project area ground photograph.

26 **Crossing-2: Water-2**

27 Crossing-2 consists of an ephemeral tributary to Little Elm Creek (Water-2) with an OHWM
28 width of approximately 4 feet. Within the proposed DNT 4B/5A ROW and easements,
29 542.63 linear feet (0.05 acre) of this tributary flows southerly into Water-1. As discussed above,
30 Water-1 flows westerly into Little Elm Creek, which drains into Lake Lewisville. The tributary is
31 situated in Zone A. The soils at this location are mapped as Ovan clay, frequently flooded
32 (Denton County soil survey) and Frio clay loam, frequently flooded (Collin County soil survey). A
33 riparian corridor exists on each side of the tributary. The vegetation consists of sugarberry,
34 winged elm (*Ulmus alata*), Osage orange (*Maclura pomifera*), western soapberry (*Sapindus*
35 *saponaria*), eastern red cedar (*Juniperus virginiana*), cottonwood (*Populus deltoides*), poison
36 ivy, and saw greenbrier. The stream bed was dry at the time of the site reconnaissance and no
37 aquatic organisms were observed. There are no wetlands associated with this tributary within
38 the proposed DNT 4B/5A ROW and easements. Refer to **Table 1** for the summary table,
39 **Figure 3 (Sheet 2)** for the 2008 aerial map, **Figure 4 (Sheet 1)** for the 1996 aerial map, and
40 **Appendix A (Photo No. 2)** for the project area ground photograph.

41
42

1 **Crossing-3: Water-3**

2 Crossing-3 consists of a perennial tributary to Little Elm Creek (Water-1) with an average
3 OHWM width of 12 feet. Within the proposed DNT 4B/5A ROW and easements, 1,484.21 linear
4 feet (0.41 acre) of this tributary flows northwesterly into Little Elm Creek, which flows into Lake
5 Lewisville. The tributary is situated in Zone A. The soils at this location are mapped as Ovan
6 clay, frequently flooded and Houston Black clay, 1 to 3% slopes (Denton County soil survey). A
7 riparian corridor exists on each side of the tributary. The vegetation consists of cedar elm
8 (*Ulmus crassifolia*), black willow, Osage orange, green ash (*Fraxinus pennsylvanica*), balloon
9 vine (*Cardiospermum halicacabum*), rough cocklebur (*Xanthium strumarium*), giant goldenrod
10 (*Solidago gigantea*), Bermuda grass (*Cynodon dactylon*), Virginia wildrye, and switchgrass
11 (*Panicum virgatum*). Aquatic organisms observed within this tributary included fish, mollusks,
12 and frogs. There are no wetlands associated with this tributary within the proposed DNT 4B/5A
13 ROW and easements. Refer to **Table 1** for the summary table, **Figure 3 (Sheet 6)** for the 2008
14 aerial map, **Figure 4 (Sheet 2)** for the 1996 aerial map, **Appendix A (Photo Nos. 3 and 4)** for
15 the project area ground photographs, and **Appendix B for the Wetland Determination Data**
16 **(WDD) Form DP1.**

17 **Crossing-4: Water-4**

18 Crossing-4 consists of an intermittent tributary to Little Elm Creek (Water-4) with an OHWM
19 width of approximately 5 feet. Within the proposed DNT 4B/5A ROW and easements,
20 926.13 linear feet (0.11 acre) of this tributary flows southwesterly into Little Elm Creek, which
21 flows into Lake Lewisville. The tributary is situated in Zone A. The soil at this location is mapped
22 as Vertel clay, 3 to 5% slopes (Denton County soil survey). A riparian corridor exists on each
23 side of the tributary. The vegetation consists of Osage orange, prairie broomweed
24 (*Amphiachyris dracunculoides*), switchgrass, and giant sumpweed (*Cyclachaena xanthifolia*).
25 The stream bed was dry at the time of the site reconnaissance and no aquatic organisms were
26 observed. There are no wetlands associated with this tributary within the proposed DNT 4B/5A
27 ROW and easements. Refer to **Table 1** for the summary table, **Figure 3 (Sheet 7)** for the 2008
28 aerial map, **Figure 4 (Sheet 2)** for the 1996 aerial map, and **Appendix A (Photo No. 5)** for the
29 project area ground photograph.

30 **Crossing-5: Water-5**

31 Crossing-5 consists of an intermittent tributary to Little Elm Creek (Water-5) with an OHWM
32 width of approximately 2 feet. Within the proposed DNT 4B/5A ROW and easements,
33 564.91 linear feet (0.03 acre) of this tributary flows northwesterly into Little Elm Creek, which
34 flows into Lake Lewisville. The tributary is situated in Zone X, which are areas determined to be
35 outside the 100-year floodplain. The soil at this location is mapped as Houston Black clay, 2 to
36 4% slopes (Denton County soil survey). Vegetation adjacent to the tributary consists of
37 Bermuda grass, Johnson grass, giant sumpweed, paspalum (*Paspalum hieronymi*), meadow
38 dropseed (*Sporobolus asper var. drummondii*), and balloon vine. No aquatic organisms were
39 observed within this tributary. There are no wetlands associated with this tributary within the
40 proposed DNT 4B/5A ROW and easements. Refer to **Table 1** for the summary table, **Figure 3**
41 **(Sheet 8)** for the 2008 aerial map, **Figure 4 (Sheet 3)** for the 1996 aerial map, and **Appendix A**
42 **(Photo Nos. 6 and 7)** for the project area ground photographs.

1 **Crossing-6: Water-6**

2 Crossing-6 consists of an intermittent tributary to Little Elm Creek (Water-6) with an average
3 OHWM width of 15 feet. Within the proposed DNT 4B/5A ROW and easements, 3,085.77 linear
4 feet (1.06 acre) of this tributary flows northerly into Little Elm Creek, which flows into Lake
5 Lewisville. The tributary is situated in Zone X. The soils at this location are mapped as Houston
6 Black clay, 2 to 4% slopes and Trinity clay, frequently flooded (Collin County soil survey). A
7 riparian corridor exists along portions of the tributary. The vegetation consists of cedar elm,
8 boxelder (*Acer negundo*), sugarberry (*Celtis laevigata*), honey mesquite (*Prosopis glandulosa*),
9 rescuegrass (*Bromus catharticus*), Japanese brome (*Bromus japonicus*), green sprangletop
10 (*Leptochloa dubia*), western wheatgrass (*Agropyron smithii*), meadow dropseed, Johnson grass,
11 and giant ragweed. The stream bed was dry at the time of the site reconnaissance. No aquatic
12 organisms were observed within this tributary. There are no wetlands associated with this
13 tributary within the proposed DNT 4B/5A ROW and easements. Refer to **Table 1** for the
14 summary table, **Figure 3 (Sheet 10)** for the 2008 aerial map, **Figure 4 (Sheet 4)** for the 1996
15 aerial map, **Appendix A (Photo Nos. 8 through 10)** for the project area ground photographs,
16 and **Appendix B** for the **WDD Forms DP2 and DP3**.

17 **Crossing-7: Water-7**

18 Crossing-7 consists of an ephemeral tributary to Little Elm Creek (Water-7) with an OHWM
19 width of approximately 3 feet. Within the proposed DNT 4B/5A ROW and easements,
20 264.47 linear feet (0.02 acre) of this tributary flows northwesterly into Water-6. As discussed
21 above, Water-6 flows northerly into Little Elm Creek, which flows into Lake Lewisville. The
22 tributary is situated in Zone X. The soils at this location are mapped as Burleson clay, 1 to 3%
23 slopes, Ovan clay, frequently flooded, Heiden clay, 1 to 3% slopes (Denton County soil survey),
24 Burleson clay, 2 to 4% slopes, eroded, Houston Black clay, and 2 to 4% slopes (Collin County
25 soil survey). A riparian corridor exists on each side of the tributary. The vegetation consists of
26 cedar elm, sugarberry, and Virginia wildrye. The stream bed was dry at the time of the site
27 reconnaissance and no aquatic organisms were observed. There are no wetlands associated
28 with this tributary within the proposed DNT 4B/5A ROW and easements. Refer to **Table 1** for
29 the summary table, **Figure 3 (Sheet 10)** for the 2008 aerial map, **Figure 4 (Sheet 4)** for the
30 1996 aerial map, and **Appendix A (Photo Nos. 11 and 12)** for the project area ground
31 photographs.

32 **Crossing-8: Water-8**

33 Crossing-8 consists of an ephemeral tributary to Little Elm Creek (Water-7) with an OHWM
34 width of approximately 5 feet. Within the proposed DNT 4B/5A ROW and easements,
35 655.90 linear feet (0.08 acre) of this tributary flows southwesterly into Water-6. As noted above,
36 Water-6 flows northerly into Little Elm Creek, which flows into Lake Lewisville. The tributary is
37 situated in Zone A. The soils at this location are mapped as Ovan clay, frequently flooded
38 (Denton County soil survey) and Trinity clay, frequently flooded (Collin County soil survey). A
39 riparian corridor exists on each side of the tributary. The vegetation consists of cedar elm, giant
40 ragweed, and Virginia wildrye. No aquatic organisms were observed within this tributary. There
41 are no wetlands associated with this tributary within the proposed DNT 4B/5A ROW and
42 easements. Refer to **Table 1** for the summary table, **Figure 3 (Sheet 11)** for the 2008 aerial

1 map, **Figure 4 (Sheet 4)** for the 1996 aerial map, and **Appendix A (Photo No. 13)** for the
2 project area ground photograph.

3 **Crossing-9: Water-9**

4 Crossing-9 consists of Little Elm Creek (Water-9), a perennial stream, with an OHWM width of
5 approximately 25 feet. Within the proposed DNT 4B/5A ROW and easements, 2,762.20 linear
6 feet (1.67 acres) of this creek flows southwesterly into Lake Lewisville. This creek is situated in
7 Zone A. The soils at this location are mapped as Ovan clay, frequently flooded (Denton County
8 soil survey) and Trinity clay, frequently flooded (Collin County soil survey). A riparian corridor
9 exists on each side of the tributary. The vegetation consists of green ash, sugarberry, cedar
10 elm, Osage orange, western soapberry, Eve's necklace (*Styphnolobium affine*), coralberry
11 (*Symphoricarpos orbiculatus*), Indian woodoats (*Chasmanthium latifolium*), giant ragweed, and
12 Virginia wildrye. Aquatic organisms observed within this creek consisted of minnows. There are
13 no wetlands associated with this creek within the proposed DNT 4B/5A ROW and easements.
14 Refer to **Table 1** for the summary table, **Figure 3 (Sheet 11)** for the 2008 aerial map, **Figure 4**
15 **(Sheet 4)** for the 1996 aerial map, and **Appendix A (Photo No. 14)** for the project area ground
16 photograph.

17 **Crossing-10: Water-10 and Wetland-10**

18 Crossing-10 consists of an ephemeral tributary to Little Elm Creek (Water-10) and an abutting
19 wetland area (Wetland-10).

20
21 Water-10 has an OHWM width of approximately 25 feet. Within the proposed DNT 4B/5A ROW
22 and easements, 459.06 linear feet (0.22 acre) of this tributary flows southwesterly into Little Elm
23 Creek. Little Elm Creek drains into Lake Lewisville. The tributary is situated in Zone A. The soils
24 at this location are mapped as Ovan clay, frequently flooded (Denton County soil survey). A
25 riparian corridor exists on a portion of each side of the tributary and is dominated by green ash,
26 Osage orange, honey locust, cedar elm, winged elm, slimleaf panicgrass (*Dichanthelium*
27 *linearifolium*), Virginia wildrye, nutgrass (*Cyperus rotundus*), and ravenfoot sedge (*Carex crus-*
28 *corvi*). No aquatic organisms were observed within this tributary.

29
30 Wetland-10 is 0.06 acre of wetland abutting Water-10. The ravenfoot sedge is the dominant
31 vegetation in this palustrine, emergent, wetland area. Hydric soil and hydrologic indicators
32 observed included depleted matrix soil, saturation, water marks, and crayfish burrows.

33
34 Refer to **Table 1** for the summary table, **Figure 3 (Sheet 11)** for the 2008 aerial map, **Figure 4**
35 **(Sheet 4)** for the 1996 aerial map, **Appendix A (Photo No. 15)** for the project area ground
36 photograph, and **Appendix B** for the **WDD Forms DP13** and **DP14**.

37 **Crossing-11: Water-11 and Wetland-11**

38 Crossing-11 consists of an intermittent tributary to Little Elm Creek (Water-11) and an adjacent
39 wetland area (Wetland-11).

40

1 Water-11 has a varying OHWM width of approximately 6 to 15 feet. Within the proposed DNT
2 4B/5A ROW and easements, 998.30 linear feet (0.24 acre) of this tributary flows south into Little
3 Elm Creek. Little Elm Creek drains into Lake Lewisville. The tributary is situated in Zone A. The
4 soils at this location are mapped as Ovan clay, frequently flooded (Denton County soil survey).
5 A riparian corridor exists on each side of the tributary and is dominated by green ash, cedar
6 elm, Eve's necklace, green hawthorn (*Crataegus viridis*), Virginia wildrye, common greenbrier
7 (*Smilax rotundifolia*), nutsedge (*Cyperus esculentus*), and ravenfoot sedge. No aquatic
8 organisms were observed within this tributary.

9
10 Wetland-11 is 0.12 acre of wetland adjacent to Water-11. The ravenfoot sedge is the dominant
11 vegetation in this palustrine, emergent, wetland area. Hydric soil and hydrologic indicators
12 observed included redox dark surface soil, saturation, and crayfish burrows.

13
14 Refer to **Table 1** for the summary table, **Figure 3 (Sheet 11)** for the 2008 aerial map, **Figure 4**
15 **(Sheet 5)** for the 1996 aerial map, **Appendix A (Photo No. 16)** for the project area ground
16 photograph, and **Appendix B** for the **WDD Forms DP9** and **DP10**.

17 **Crossing-12: Water-12**

18 Crossing-12 consists of an ephemeral tributary to Little Elm Creek (Water-12) with a varying
19 OHWM width of approximately 6 to 20 feet. Within the proposed DNT 4B/5A ROW and
20 easements, 386.06 linear feet (0.12 acre) of this tributary flows south into Little Elm Creek. Little
21 Elm Creek drains into Lake Lewisville. The tributary is situated in Zone A. The soils at this
22 location are mapped as Ovan clay, frequently flooded (Denton County soil survey). A riparian
23 corridor exists on each side of the tributary and is dominated by green ash, sugarberry, and
24 Virginia wildrye. No aquatic organisms were observed within this tributary. Refer to **Table 1** for
25 the summary table, **Figure 3 (Sheet 11)** for the 2008 aerial map, **Figure 4 (Sheet 5)** for the
26 1996 aerial map, and **Appendix A (Photo No. 17)** for the project area ground photograph.

27 **Crossing-13: Water-13 and Wetland-13**

28 Crossing-13 consists of a stream channel remnant (Water-13) within Zone A of the 100-year
29 floodplain of Little Elm Creek and an adjacent wetland area (Wetland-13). The stream channel
30 remnant is approximately 150 feet northwest of Little Elm Creek and is hydrologically connected
31 to Little Elm Creek by overland flow during 100-year flood events.

32
33 Water-13 has an OHWM width of approximately 25 feet. There are 104.54 linear feet (0.06 acre)
34 of this stream channel remnant within the proposed DNT 4B/5A ROW and easements. Water-13
35 is a ponded area with water marks present on adjacent trees and a southwest overland flow
36 connection to a tributary to Little Elm Creek (**Appendix A, Photo No. 18**). The soil at this
37 location is mapped as Trinity clay, frequently flooded (Collin County soil survey). A riparian
38 corridor exists on each side of the stream channel remnant and is dominated by green ash,
39 American elm (*Ulmus americana*), Virginia wildrye, and ravenfoot sedge.

40
41 Wetland-13 is 0.05 acre of wetland adjacent to Water-13. The ravenfoot sedge is the dominant
42 vegetation in this palustrine, emergent, wetland area. Hydric soil and hydrologic indicators

1 observed included redox dark surface soil and saturation. No aquatic organisms were observed
2 within this stream channel remnant or wetland area.

3
4 Refer to **Table 1** for the summary table, **Figure 3 (Sheet 12)** for the 2008 aerial map, **Figure 4**
5 **(Sheet 5)** for the 1996 aerial map, **Appendix A (Photo No. 18)** for the project area ground
6 photograph, and **Appendix B** for the **WDD Forms DP15** and **DP16**.

7 **Crossing-14: Wetland-14**

8 Crossing-14 consists of a wetland area (Wetland-14) within Zone A of the 100-year floodplain of
9 Little Elm Creek. This wetland includes 0.03 acre which is within the proposed DNT 4B/5A ROW
10 and easements. The soils at this location are mapped as Ovan clay, occasionally flooded
11 (Denton County soil survey). A riparian corridor exists on each side of the wetland and is
12 dominated by green hawthorn, honey locust, Virginia wildrye, and nutsedge. The ravenfoot
13 sedge is the dominant vegetation in this palustrine, emergent, wetland area. Hydric soil and
14 hydrologic indicators observed included redox dark surface soil and saturation. No aquatic
15 organisms were observed within this wetland. Refer to **Table 1** for the summary table, **Figure 3**
16 **(Sheet 12)** for the 2008 aerial map, **Figure 4 (Sheet 5)** for the 1996 aerial map, **Appendix A**
17 **(Photo No. 19)** for the project area ground photograph, and **Appendix B** for the **WDD Forms**
18 **DP11** and **DP12**.

19 **Crossing-15: Water-15 and Wetland-15**

20 Crossing-15 consists of an intermittent tributary to Little Elm Creek (Water-15) and an abutting
21 wetland area (Wetland-15).

22
23 Water-15 has a varying OHWM width of approximately 6 to 10 feet. Within the proposed DNT
24 4B/5A ROW and easements, 1,246.49 linear feet (0.21 acre) of this tributary flows
25 southwesterly into Little Elm Creek. Little Elm Creek drains into Lake Lewisville. The tributary is
26 situated in Zone A. The soils at this location are mapped as Ovan clay, frequently flooded;
27 Trinity clay, frequently flooded; and Trinity clay, occasionally flooded (Collin County and Denton
28 County soil surveys). A riparian corridor exists on each side of the tributary and is dominated by
29 sugarberry, green ash, cedar elm, winged elm, meadow dropseed, Virginia wildrye, and
30 ravenfoot sedge. Aquatic organisms observed within this tributary included frogs and crayfish.

31
32 Wetland-15 is 0.04 acre of abutting wetland to Water-15. The ravenfoot sedge is the dominant
33 vegetation in this palustrine, emergent, wetland area. Hydric soil and hydrologic indicators
34 observed included redox dark surface soil, drainage patterns, saturation, and crayfish burrows.

35
36 Refer to **Table 1** for the summary table, **Figure 3 (Sheet 12)** for the 2008 aerial map, **Figure 4**
37 **(Sheet 5)** for the 1996 aerial map, **Appendix A (Photo No. 20)** for the project area ground
38 photograph, and **Appendix B** for the **WDD Forms DP4** and **DP5**.

39 **Crossing-16: Water-16**

40 Crossing-16 consists of an ephemeral tributary to Little Elm Creek (Water-16) with an OHWM
41 width of approximately 12 feet. Within the proposed DNT 4B/5A ROW and easements,

1 1,050.95 linear feet (0.22 acre) of this tributary flows southerly into Little Elm Creek. Little Elm
2 Creek drains into Lake Lewisville. The tributary is situated in Zone X. The soils at this location
3 are mapped as Wilson clay loam, 1 to 3% slopes and Houston clay, 3 to 5% slopes (Collin
4 County and Denton County soil surveys). A riparian corridor exists on each side of the tributary
5 and is dominated by balloon vine, snow-on-the-prairie (*Euphorbia bicolor*), giant ragweed, and
6 seaside goldenrod (*Solidago sempervirens*). The stream bed was dry at the time of the site
7 reconnaissance and no aquatic organisms were observed. There are no wetlands associated
8 with this tributary within the proposed DNT 4B/5A ROW and easements. Refer to **Table 1** for
9 the summary table, **Figure 3 (Sheet 13)** for the 2008 aerial map, **Figure 4 (Sheet 6)** for the
10 1996 aerial map, and **Appendix A (Photo No. 21)** for the project area ground photograph.

11 **Crossing-17: Water-17**

12 Crossing-17 consists of an ephemeral tributary to Little Elm Creek (Water-17) with an OHWM
13 width of approximately 5 feet. Within the proposed DNT 4B/5A ROW and easements,
14 393.21 linear feet (0.05 acre) of this tributary flows southwesterly into Little Elm Creek. Little Elm
15 Creek drains into Lake Lewisville. The tributary is situated in Zone X. The soils at this location
16 are mapped as Wilson clay loam, 1 to 3% slopes (Denton County soil survey). A riparian
17 corridor exists on each side of the tributary and is dominated by honey locust (*Gleditsia*
18 *triacanthos*), Osage orange, cedar elm, saw greenbrier, and Texas croton (*Croton texensis*). No
19 aquatic organisms were observed within this tributary. There are no wetlands associated with
20 this tributary within the proposed DNT 4B/5A ROW and easements. Refer to **Table 1** for the
21 summary table, **Figure 3 (Sheet 15)** for the 2008 aerial map, **Figure 4 (Sheet 7)** for the 1996
22 aerial map, and **Appendix A (Photo No. 22)** for the project area ground photograph.

23 **Crossing-18: Water-18**

24 Crossing-18 consists of an intermittent tributary to Little Elm Creek (Water-18) with a varying
25 OHWM width of approximately 1 to 3 feet. Within the proposed DNT 4B/5A ROW and
26 easements, 612.85 linear feet (0.03 acre) of this tributary flows southeasterly into Little Elm
27 Creek. Little Elm Creek drains into Lake Lewisville. The tributary is situated in Zone X. The soil
28 at this location is mapped as Branyan clay, 1 to 3% slopes (Collin County and Denton County
29 soil surveys). A riparian corridor exists on each side of the tributary, dominated by sugarberry,
30 honey locust, and Johnson grass. Aquatic organisms observed within the tributary included
31 frogs and crayfish. There are no wetlands associated with this tributary within the proposed DNT
32 4B/5A ROW and easements. Refer to **Table 1** for the summary table, **Figure 3 (Sheet 18)** for
33 the 2008 aerial map, **Figure 4 (Sheet 8)** for the 1996 aerial map, and **Appendix A (Photo No.**
34 **23)** for the project area ground photograph.

35 **Crossing-19: Water-19**

36 Crossing-19 consists of an intermittent tributary to Little Elm Creek (Water-19) with an OHWM
37 width of approximately 2 feet. Within the proposed DNT 4B/5A ROW and easements,
38 533.97 linear feet (0.02 acre) of this tributary flows southeasterly into Little Elm Creek. Little Elm
39 Creek drains into Lake Lewisville. The tributary is situated in Zone A. The soil at this location is
40 mapped as Ferris-Houston clay, 5 to 12% slopes (Collin County soil survey). A riparian corridor
41 exists on each side of the tributary and is dominated by black willow. The stream bed was dry at

1 the time of the site reconnaissance and no aquatic organisms were observed. There are no
2 wetlands associated with this tributary within the proposed DNT 4B/5A ROW. Refer to **Table 1**
3 for the summary table, **Figure 3 (Sheet 18)** for the 2008 aerial map, **Figure 4 (Sheet 8)** for the
4 1996 aerial map, and **Appendix A (Photo No. 24)** for the project area ground photograph.

5 **Crossing-20: Water-20 and Open Water-20**

6 Crossing-20 consists of an intermittent tributary to Little Elm Creek (Water-20) and an on-
7 channel pond (Open Water-20). Water-20 has a varying OHWM width of approximately 5 to
8 22 feet. Within the proposed DNT 4B/5A ROW and easements, 642.17 linear feet (0.18 acre) of
9 this tributary flows southeasterly into Walnut Fork, a RPW. Walnut Fork drains into Lake
10 Lewisville. Open Water-20 is 0.30 acre in size and 0.06 acre is within the proposed ROW. The
11 tributary and pond are situated in Zone A. The soil at this location is mapped as Vertel clay,
12 3 to 5% slopes (Grayson County soil survey). No riparian corridor exists within the proposed
13 DNT 4B/5A ROW. Dominant vegetation in the area is ravenfoot sedge and composite dropseed
14 (*Sporobolus compositus*). Aquatic organisms observed within this tributary consisted of crayfish.
15 There are no wetlands associated with this tributary within the proposed DNT 4B/5A ROW and
16 easements. Refer to **Table 1** for the summary table, **Figure 3 (Sheet 23)** for the 2008 aerial
17 map, **Figure 4 (Sheet 9)** for the 1996 aerial map, **Appendix A (Photo No. 25)** for the project
18 area ground photograph, and **Appendix B** for the **WDD Form DP6**.

19 **Crossing-21: Water-21**

20 Crossing-21 consists of an intermittent tributary to Walnut Fork (Water-21) with an OHWM width
21 of approximately 6 feet. Within the proposed DNT 4B/5A ROW and easements, 813.45 linear
22 feet (0.11 acre) of this tributary flows southeasterly into Walnut Fork. Walnut Fork drains into
23 Lake Lewisville. The tributary is situated in Zone A. The soil at this location is mapped as Vertel
24 clay, 3 to 5% slopes (Grayson County soil survey). No riparian corridor exists within the
25 proposed DNT 4B/5A ROW and easements; however, the dominant vegetation in the area is
26 comprised of Japanese brome. The stream bed was dry at the time of the site reconnaissance
27 and no aquatic organisms were observed. There are no wetlands associated with this tributary
28 within the proposed DNT 4B/5A ROW and easements. Refer to **Table 1** for the summary table,
29 **Figure 3 (Sheet 23)** for the 2008 aerial map, **Figure 4 (Sheet 9)** for the 1996 aerial map,
30 **Appendix A (Photo No. 26)** for the project area ground photograph, and **Appendix B** for the
31 **WDD Form DP7**.

32 **Crossing-22: Water-22**

33 Crossing-22 consists of an intermittent tributary to Buck Creek (Water-22) with an OHWM width
34 of approximately 3 feet. Within the proposed DNT 4B/5A ROW and easements, 685.79 linear
35 feet (0.12 acre) of this tributary flows west into Buck Creek, a RPW. Buck Creek drains into
36 Lake Lewisville. The tributary is situated in Zone A. The soil at this location is mapped as Ebon
37 clay, frequently flooded (Grayson County soil survey). No riparian corridor exists within the
38 proposed DNT 4B/5A ROW and easements; however, the dominant vegetation in the area is
39 comprised of Bermuda grass and heath aster (*Aster ericoides*). Aquatic organisms observed
40 within this tributary included frogs and minnows. There are no wetlands associated with this
41 tributary within the proposed DNT 4B/5A ROW and easements. Refer to **Table 1** for the

1 summary table, **Figure 3 (Sheet 27)** for the 2008 aerial map, **Figure 4 (Sheet 10)** for the 1996
2 aerial map, **Appendix A (Photo Nos. 27 and 28)** for the project area ground photographs, and
3 **Appendix B** for the **WDD Form DP8**.

4 **Non-Jurisdictional Water Bodies**

5 There are three non-jurisdictional water bodies (stock ponds) present within the proposed DNT
6 4B/5A ROW:

- 7
- 8 • Non-jurisdictional Water-1 (0.29 acre) is a man-made stock pond located approximately
9 80 feet north of Water-4 within the 100-year floodplain (**Figure 3, Sheet 7 and Appendix**
10 **A, Photo No. 29**).
- 11 • Non-jurisdictional Water-2 (0.20 acre) is an isolated, upland, man-made stock pond
12 (**Figure 3, Sheet 20**).
- 13 • Non-jurisdictional Water-3 (0.13 acre) is an isolated, upland, man-made stock pond
14 (**Figure 3, Sheet 28**).

15 **CONCLUSION**

16 Based on the results of the on-site evaluations along the approximately 12-mile project corridor,
17 it was determined that jurisdictional waters of the U.S. are potentially present within the
18 boundaries of the proposed DNT 4B/5A ROW (**Table 1**). A total of 19,344.96 linear feet
19 (3.66 miles) or 5.28 acres of potentially jurisdictional streams and 0.30 acre of potentially
20 jurisdictional abutting and adjacent wetlands were identified within the proposed DNT 4B/5A
21 ROW, totaling 5.58 acres of potentially jurisdictional waters of the U.S. The analysis indicates
22 that these features are subject to USACE jurisdiction under Section 404 of the CWA.

23

Table 1.
Summary of Delineated Water Bodies along the Proposed DNT 4B/5A

Crossing (Single and Complete)	Name of Associated Water Bodies	Latitude/ Longitude	Approximate OHWM within ROW (LF)	Stream (acres and linear feet)/ Open Water (acres) within ROW	Wetland Area (acres) within ROW	Stream Flow Direction	Cowardin Class	Potential Waters of the U.S.?	Associated Plot ID (App. B)	Sheet No. (Figure 3)
Crossing-1	Water-1: Intermittent tributary to Little Elm Creek	33.31436°N/ -96.81737°W	8	0.21 1,131.90	0	W	PFO1	Yes	None	2
Crossing-2	Water-2: Ephemeral tributary to Little Elm Creek	33.31506°N/ -96.83657°W	4	0.05 542.63	0	S	PFO1	Yes	None	2
Crossing-3	Water-3: Perennial tributary to Little Elm Creek	33.32181°N/ -96.83683°W	12	0.41 1,484.21	0	NW	PFO1	Yes	DP-1	6
Crossing-4	Water-4: Intermittent tributary to Little Elm Creek	33.32752°N/ -96.83666°W	5	0.11 926.13	0	SW	PFO1	Yes	None	7
Crossing-5	Water-5: Intermittent tributary to Little Elm Creek	33.33584°N/ -96.83560°W	2	0.03 564.91	0	NW	PSS1	Yes	None	8
Crossing-6	Water-6: Intermittent tributary to Little Elm Creek	33.34875°N/ -96.83523°W	15	1.06 3,085.77	0	N	PEM1	Yes	DP2, DP3	10
Crossing-7	Water-7: Ephemeral tributary to Little Elm Creek	33.35235°N/ -96.83528°W	3	0.02 264.47	0	NW	PFO1	Yes	None	10

Table 1.

Summary of Delineated Water Bodies along the Proposed DNT 4B/5A

Crossing (Single and Complete)	Name of Associated Water Bodies	Latitude/ Longitude	Approximate OHWM within ROW (LF)	Stream (acres and linear feet)/ Open Water (acres) within ROW	Wetland Area (acres) within ROW	Stream Flow Direction	Cowardin Class	Potential Waters of the U.S.?	Associated Plot ID (App. B)	Sheet No. (Figure 3)
Crossing-8	Water-8: Ephemeral tributary to Little Elm Creek	33.35320°N/ -96.83546°W	5	0.08 655.90	0	SW	PFO1	Yes	None	11
Crossing-9	Water 9*: Little Elm Creek (perennial stream)	33.35407°N/ -96.83536°W	25	1.67 2,762.20	0	SW	PFO1	Yes	None	11
Crossing-10	Water-10*: Ephemeral tributary to Little Elm Creek	33.35445°N/ -96.83683°W	25	0.22 459.06	-	SW	PFO1	Yes	None	11
	Wetland-10: Abutting wetland	33.35436°N/ -96.83645°W	-	-	0.06	-	PEM1	Yes	DP13, DP14	11
Crossing-11	Water-11*: Intermittent tributary to Little Elm Creek	33.35548°N/ -96.83700°W	6 to 15	0.24 998.30	-	S	PFO1	Yes	None	11
	Wetland-11: Adjacent wetland	33.35523°N/ -96.83674°W	-	-	0.12	-	PEM1	Yes	DP9, DP10	11
Crossing-12	Water-12: Ephemeral tributary to Little Elm Creek	33.35589°N/ -96.83456°W	6 to 20	0.12 386.06	-	S	PFO1	Yes	None	11
Crossing-13	Water-13: Stream channel remnant	33.35774°N/ -96.83506°W	25	0.06 104.54	-	-	PFO1	Yes	None	12

Table 1.
Summary of Delineated Water Bodies along the Proposed DNT 4B/5A

Crossing (Single and Complete)	Name of Associated Water Bodies	Latitude/ Longitude	Approximate OHWM within ROW (LF)	Stream (acres and linear feet)/ Open Water (acres) within ROW	Wetland Area (acres) within ROW	Stream Flow Direction	Cowardin Class	Potential Waters of the U.S.?	Associated Plot ID (App. B)	Sheet No. (Figure 3)
	Wetland-13: Adjacent wetland	33.35805°N/ -96.83507°W	-	-	0.05	-	PEM1	Yes	DP15, DP16	12
Crossing-14	Wetland-14: Solitary wetland	33.35816°N/ -96.83594°W	-	-	0.03	-	PEM1	Yes	DP11, DP12	12
Crossing-15	Water-15*: Intermittent tributary to Little Elm Creek	33.35814°N/ -96.83514°W	6 to 10	0.21 1,246.49	-	SW	PFO1	Yes	None	12
Crossing-16	Water-16*: Ephemeral tributary to Little Elm Creek	33.35854°N/ -96.83488°W	-	-	0.04	-	PEM1	Yes	DP4, DP5	12
Crossing-17	Water-17: Ephemeral tributary to Little Elm Creek	33.36657°N/ -96.83434°W	5	0.05 393.21	0	S	PSS1	Yes	None	13
Crossing-18	Water-18: Intermittent tributary to Little Elm Creek	33.37879°N/ -96.83424°W	1 to 3	0.03 612.85	0	SE	PFO1	Yes	None	18
Crossing-19	Water-19: Intermittent tributary to Little Elm Creek	33.39763°N/ -96.81589°W	2	0.02 533.97	0	SE	PFO1	Yes	None	18

Table 1.

Summary of Delineated Water Bodies along the Proposed DNT 4B/5A

Crossing (Single and Complete)	Name of Associated Water Bodies	Latitude/ Longitude	Approximate OHWM within ROW (LF)	Stream (acres and linear feet)/ Open Water (acres) within ROW	Wetland Area (acres) within ROW	Stream Flow Direction	Cowardin Class	Potential Waters of the U.S.?	Associated Plot ID (App. B)	Sheet No. (Figure 3)
Crossing-20	Water-20*: Intermittent tributary to Little Elm Creek	33.41931°N/ -96.81527°W	5 to 22	0.18 642.17	0	SE	PUB	Yes	DP6	23
	Open Water-20 On-channel pond	33.41953°N/ -96.81636°W	-	0.06	-	-	PUB	Yes	None	23
Crossing-21	Water-21: Intermittent tributary to Walnut Fork	33.42179°N/ -96.81492°W	6	0.11 813.45	0	SE	PUB	Yes	DP7	23
Crossing-22	Water-22*: Intermittent tributary to Buck Creek	33.44725°N/ -96.81887°W	3	0.12 685.79	0	W	PUB	Yes	DP8	27
TOTAL POTENTIAL JURISDICTIONAL WATERS				5.28 acres 19,344.96 LF	0.30 acre					
<p>" - " - Not applicable LF - Linear Feet PFO1 - Palustrine Forested Broadleaf Deciduous PEM1 - Palustrine Emergent Persistent PSS1 - Palustrine Scrub-Shrub Broadleaf Deciduous PUB - Palustrine Unconsolidated Bottom</p> <p>W - West S - South NW - Northwest S - Southwest N - North SE - Southeast</p> <p>* Delineated with polygons in addition to linear points (GPS delineation).</p>										

1 **REFERENCES**

2 U.S. Geological Survey. 1960 – 1961. 7.5-Minute Topographic Maps (scale 1:24,000) for
3 Celina, Texas (33096-C7, 1960); and Marilee, Texas (33096-D7, 1961).

4 Natural Resources Conservation Service (formerly Soil Conservation Service), U.S. Department
5 of Agriculture. 1969 – 1980. County Soil Survey for: Collin County (1969), Denton
6 County (1980), and Grayson County (1980). Soil data accessed in October 2010 from:
7 <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>.

8 Federal Emergency Management Agency. 1997 – 2010. Flood Insurance Rate Maps:
9 Collin FM48085C0105J (6/2/2009), Denton FM48121C0280E (4/2/1997), Denton
10 FM48121C0150E (4/2/1997), and Grayson FM48181C0500F (9/29/2010).

11 Aerials Express. 2008. Digital aerial orthophotography.

12 U.S. Fish and Wildlife Service. 1992. National Wetland Inventory Maps (scale 1:24,000) for the
13 following USGS base maps: Celina, Texas, and Marilee, Texas.

14 National Weather Service. 1971 – 2000. Climatological data for Collin, Denton, and Grayson
15 counties. <http://www.ncdc.noaa.gov>.

16 GeoSearch. 1996. Historical aerial photography originally acquired by the U.S. Geological
17 Survey.

18 Landiscor. 2009. Digital color aerial orthophotography (one foot resolution) for the Dallas/Fort
19 Worth Metroplex.

20

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Figure 1
Project Location Map

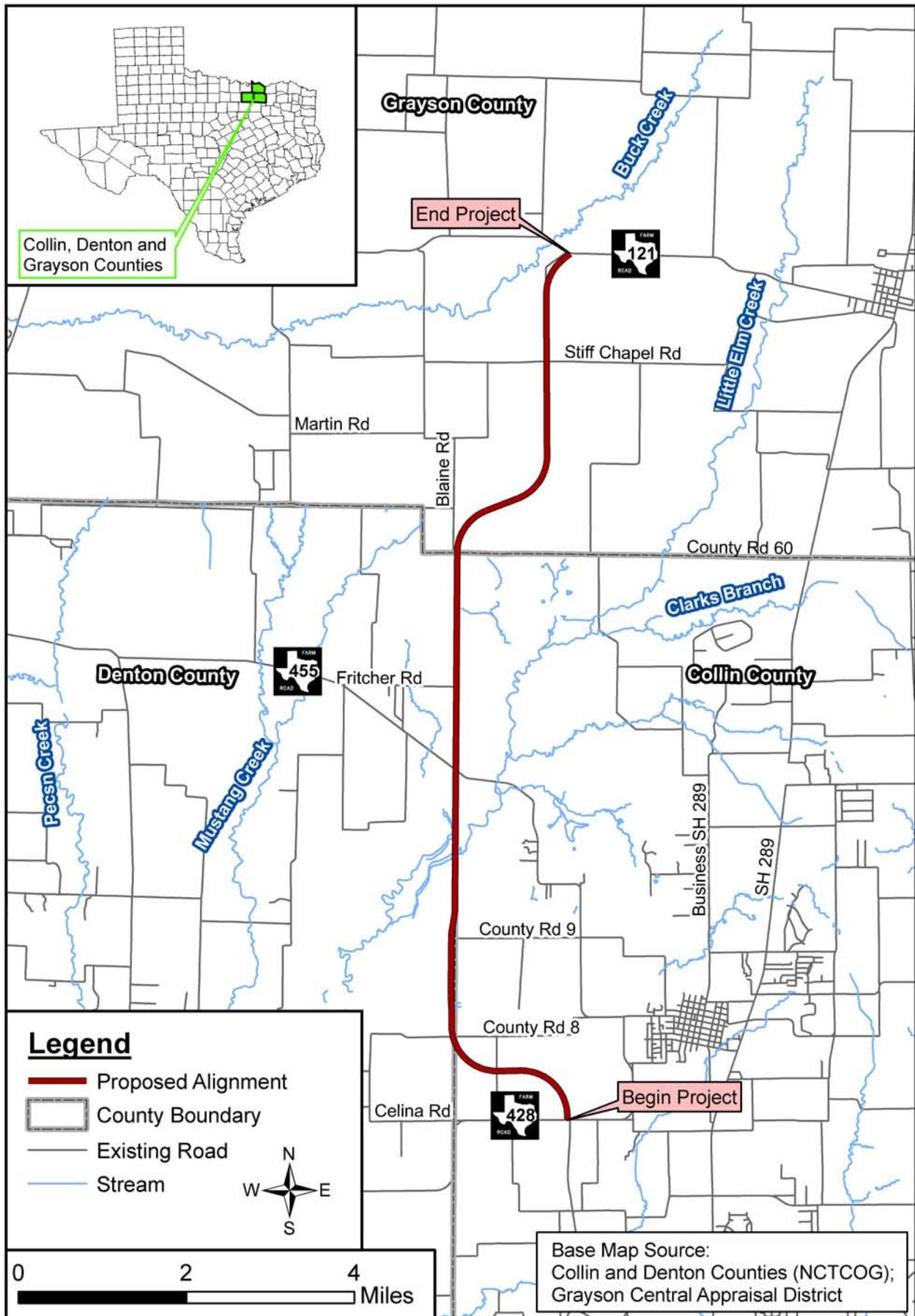


Figure 1: Project Location Map

Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121

Figure 2
Water Crossing Locations on U.S. Geological Survey
Topographic Map

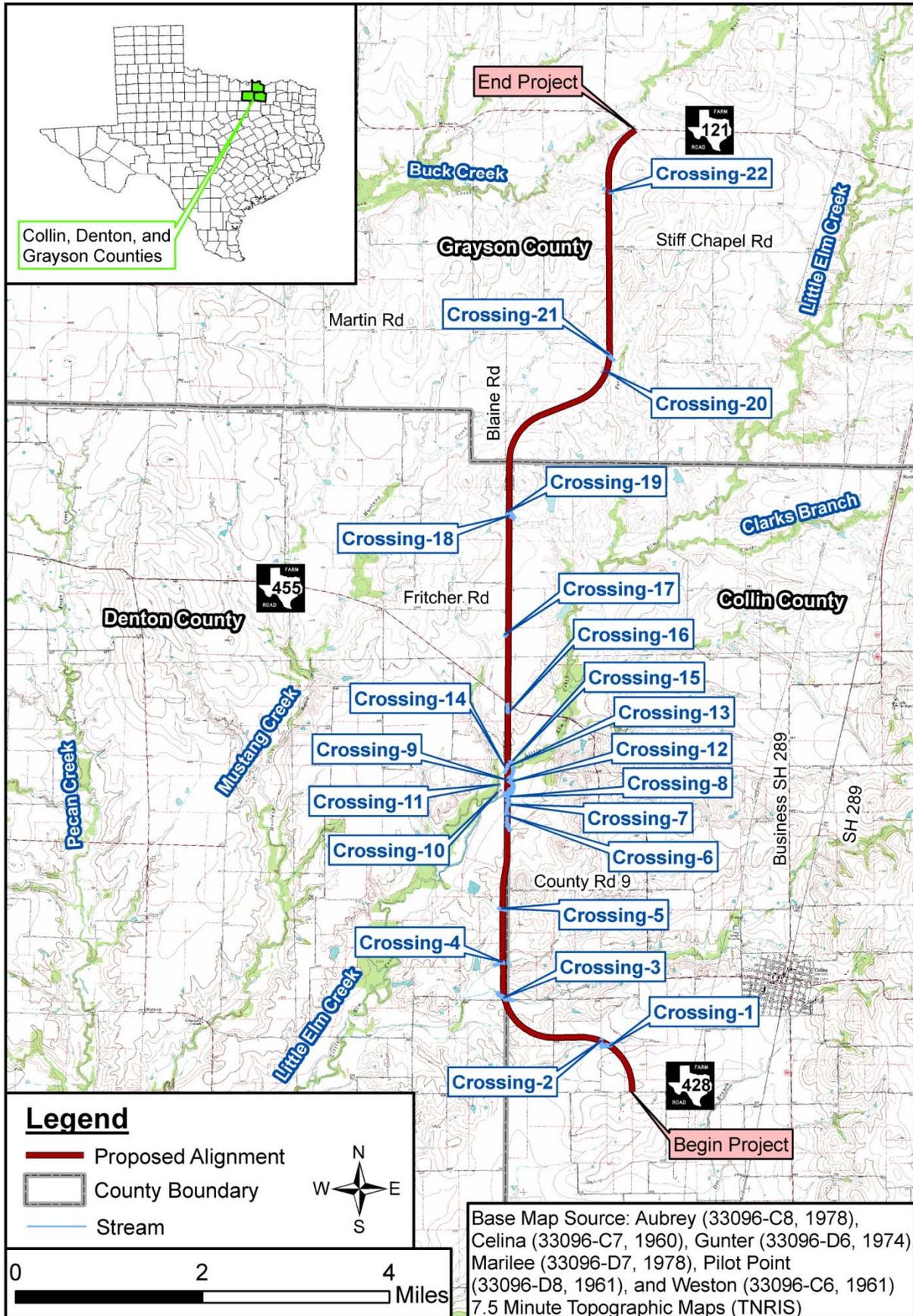


Figure 2: Water Crossing Locations on USGS Topographic Map
 Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121

Figure 3
Waters of the U.S. and Wetlands Aerial Maps

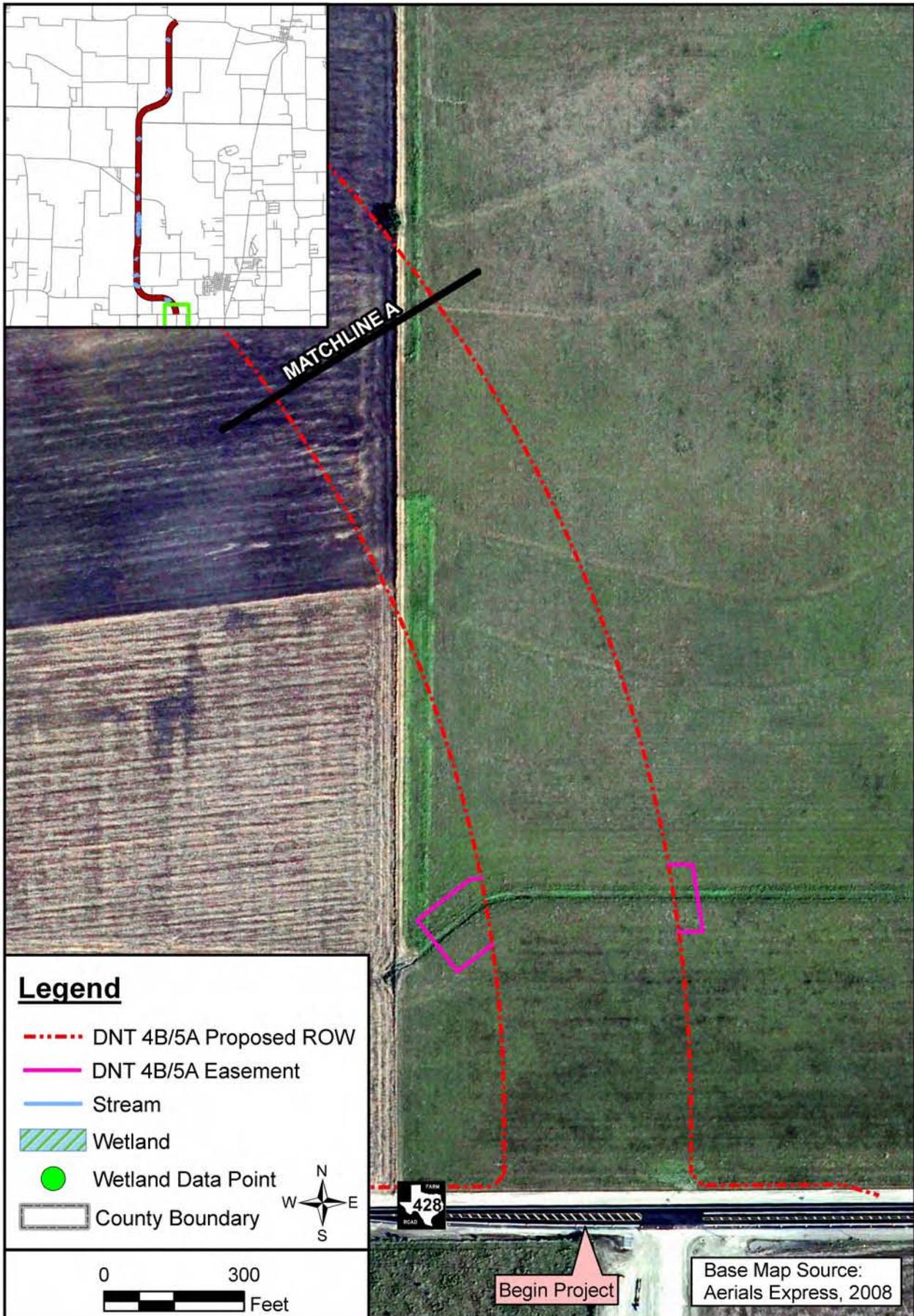


Figure 3: Waters of the U.S. and Wetlands Aerial Map (Sheet 1 of 29)

Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121

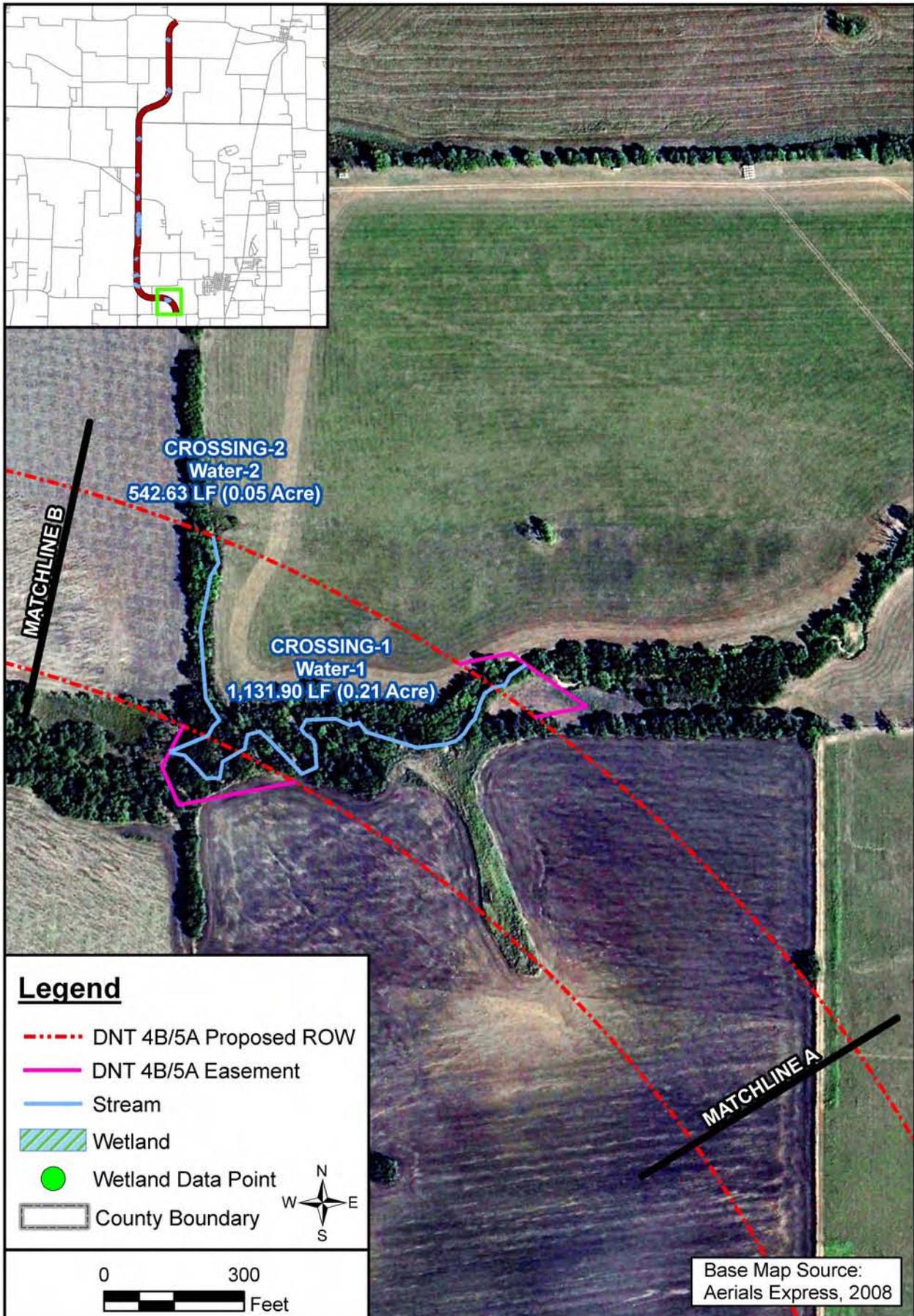


Figure 3: Waters of the U.S. and Wetlands Aerial Map (Sheet 2 of 29)

Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121

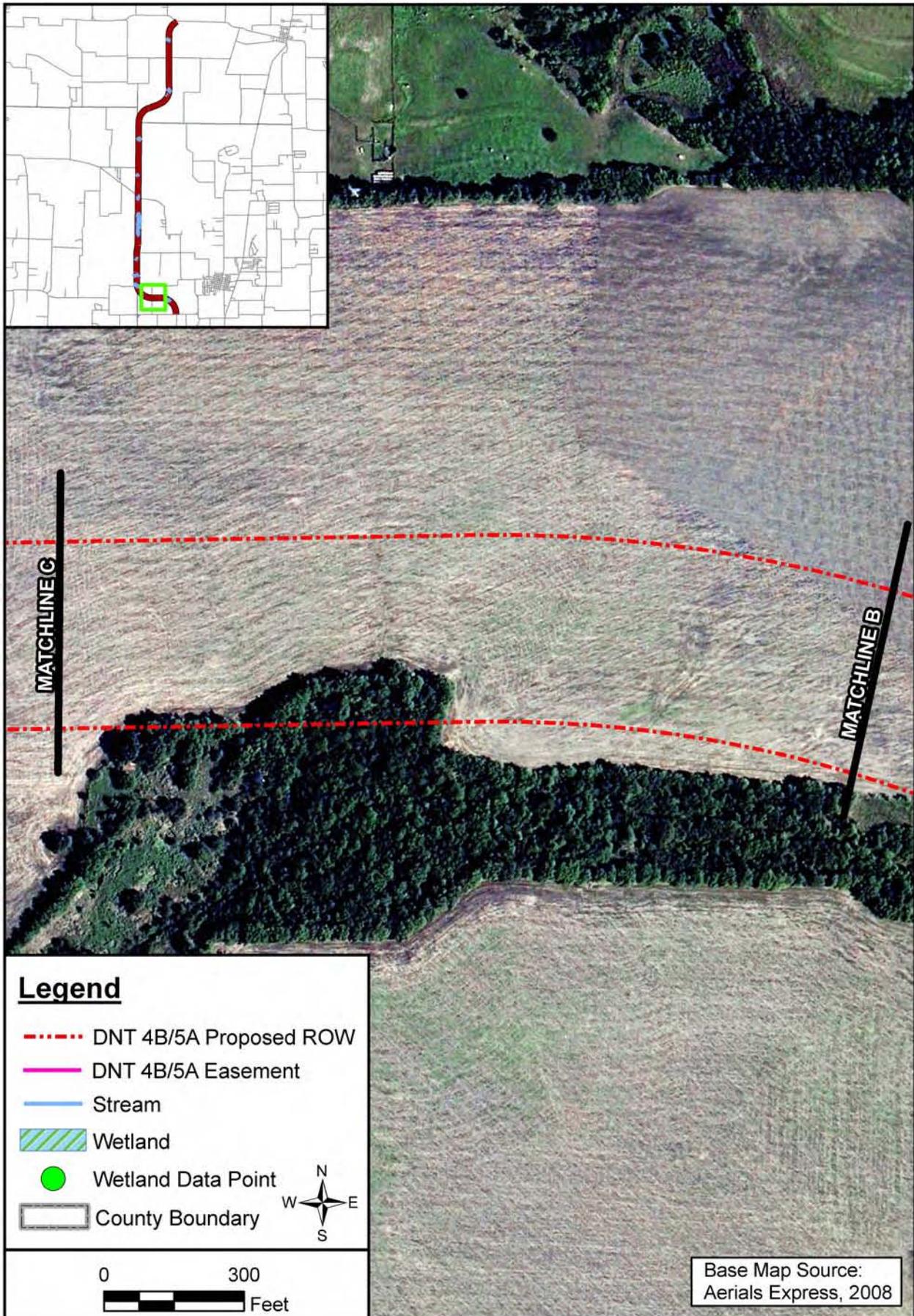


Figure 3: Waters of the U.S. and Wetlands Aerial Map (Sheet 3 of 29)

Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121

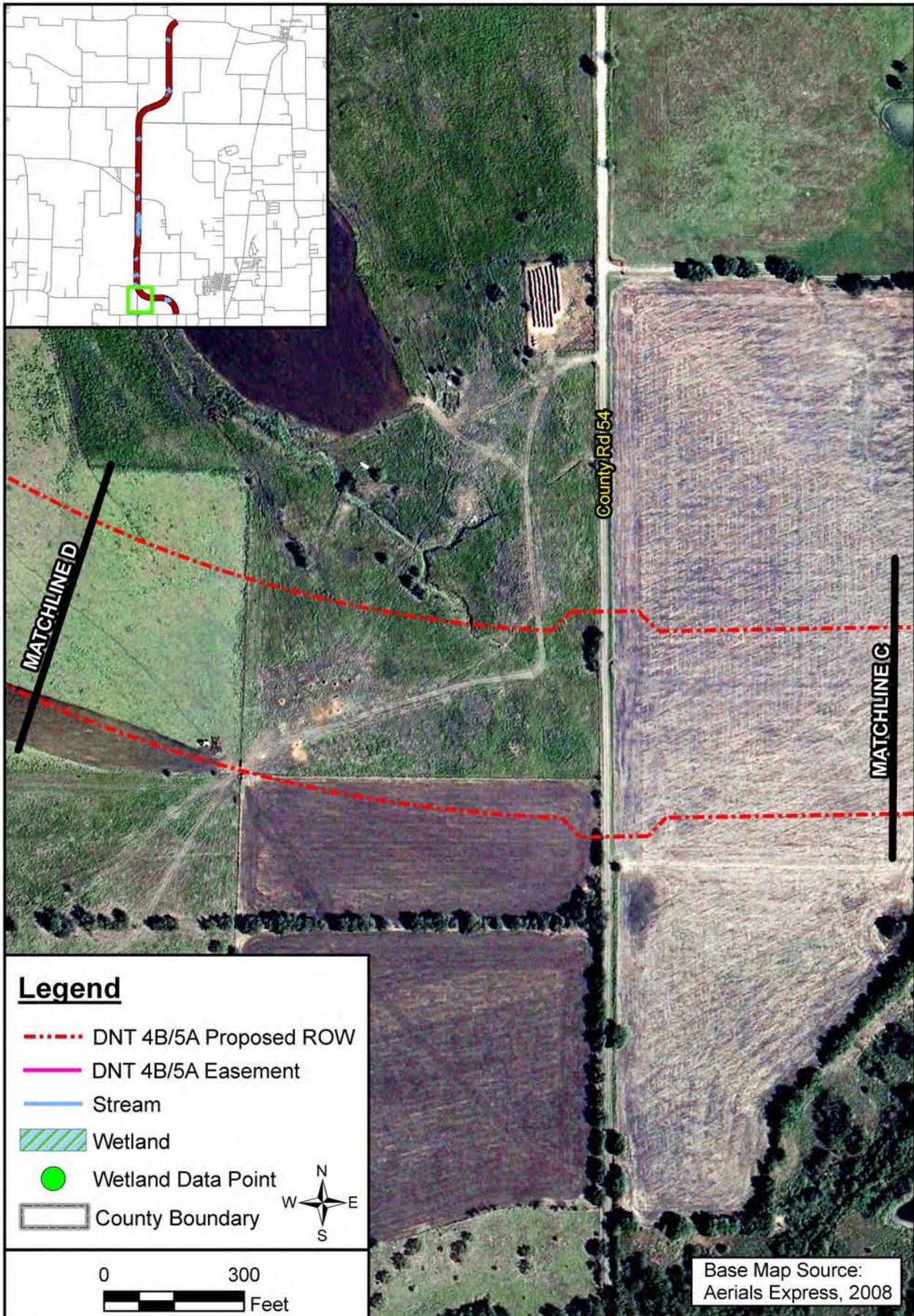


Figure 3: Waters of the U.S. and Wetlands Aerial Map (Sheet 4 of 29)

Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121

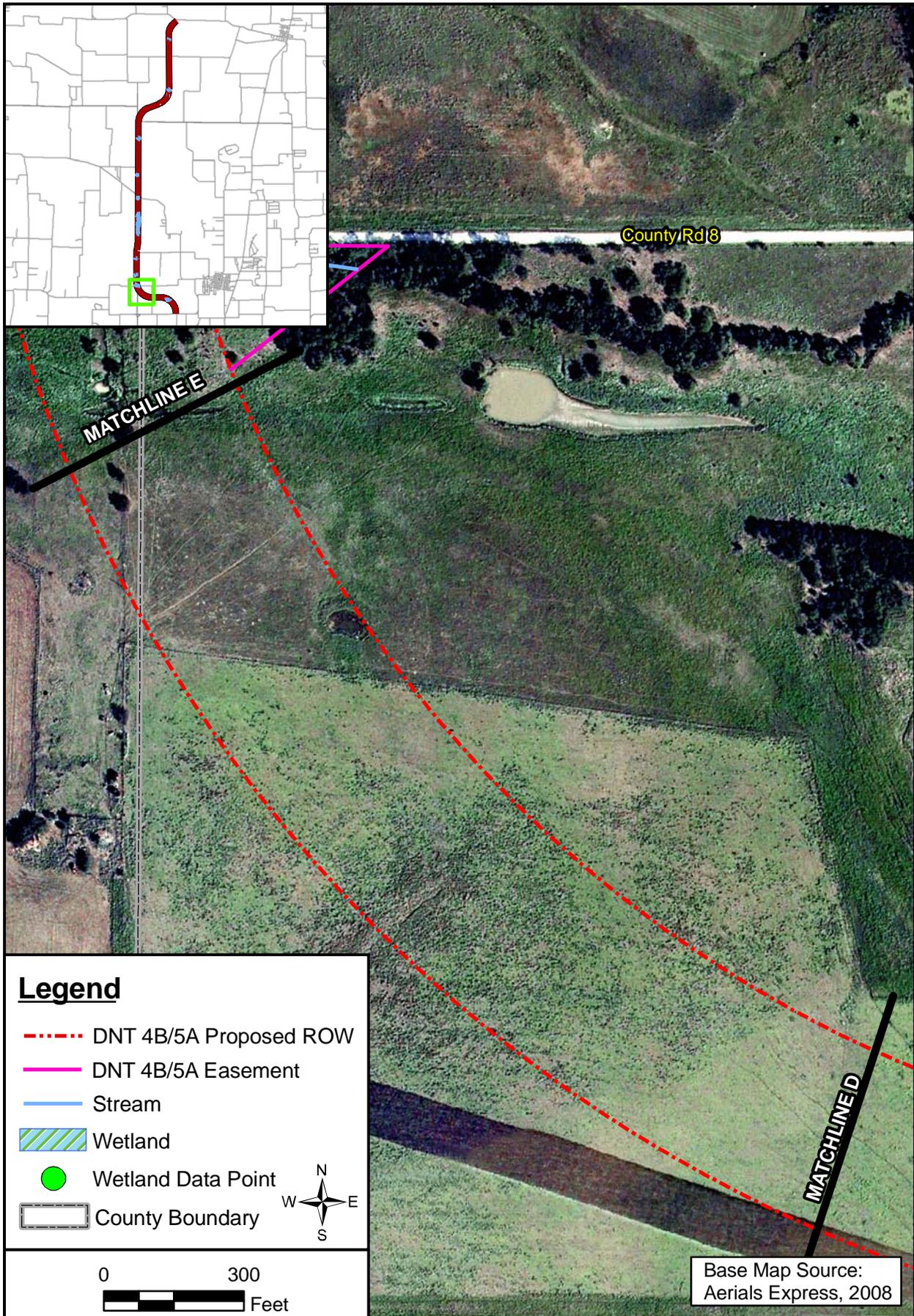


Figure 3: Waters of the U.S. and Wetlands Aerial Map (Sheet 5 of 29)

Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121

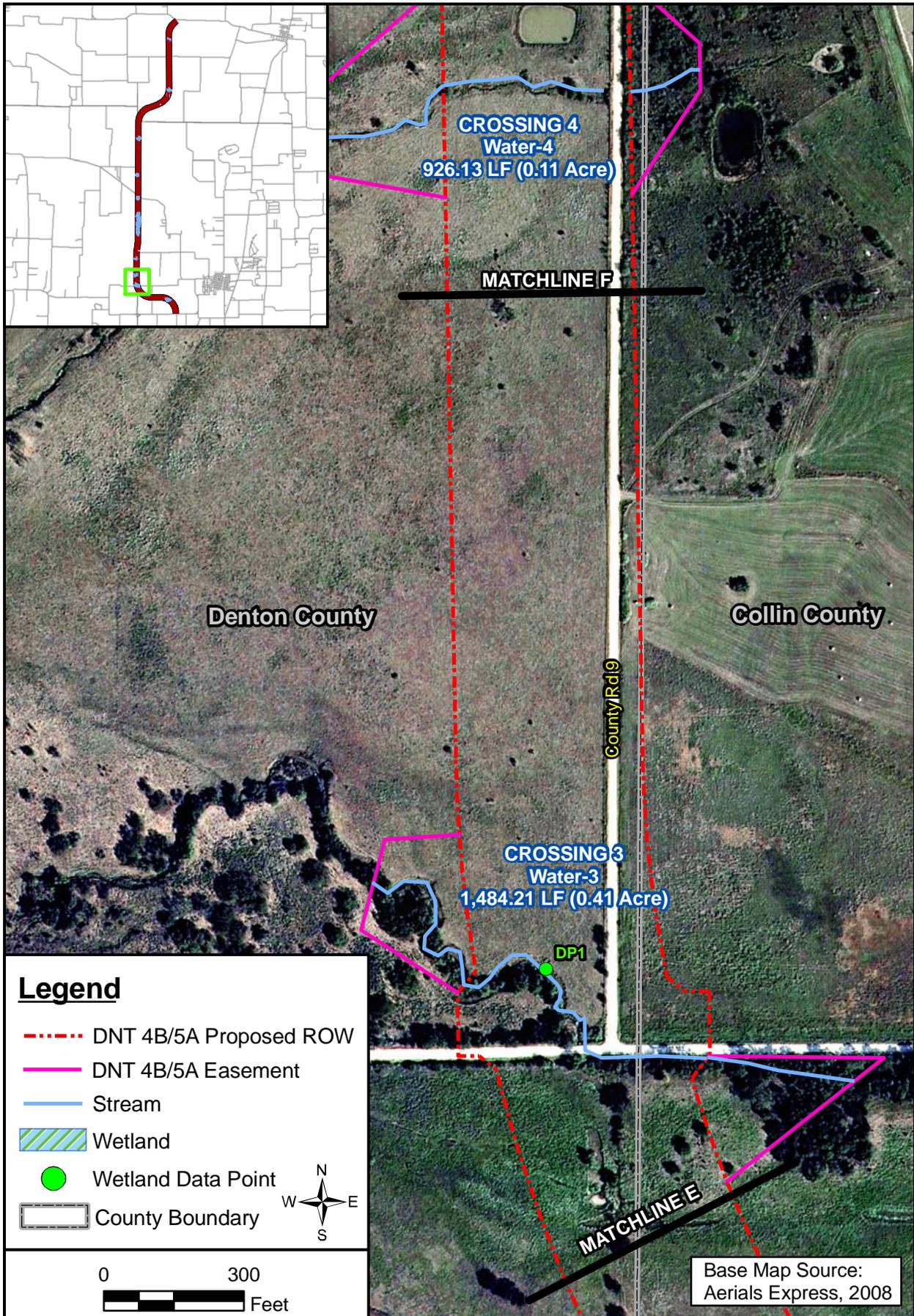
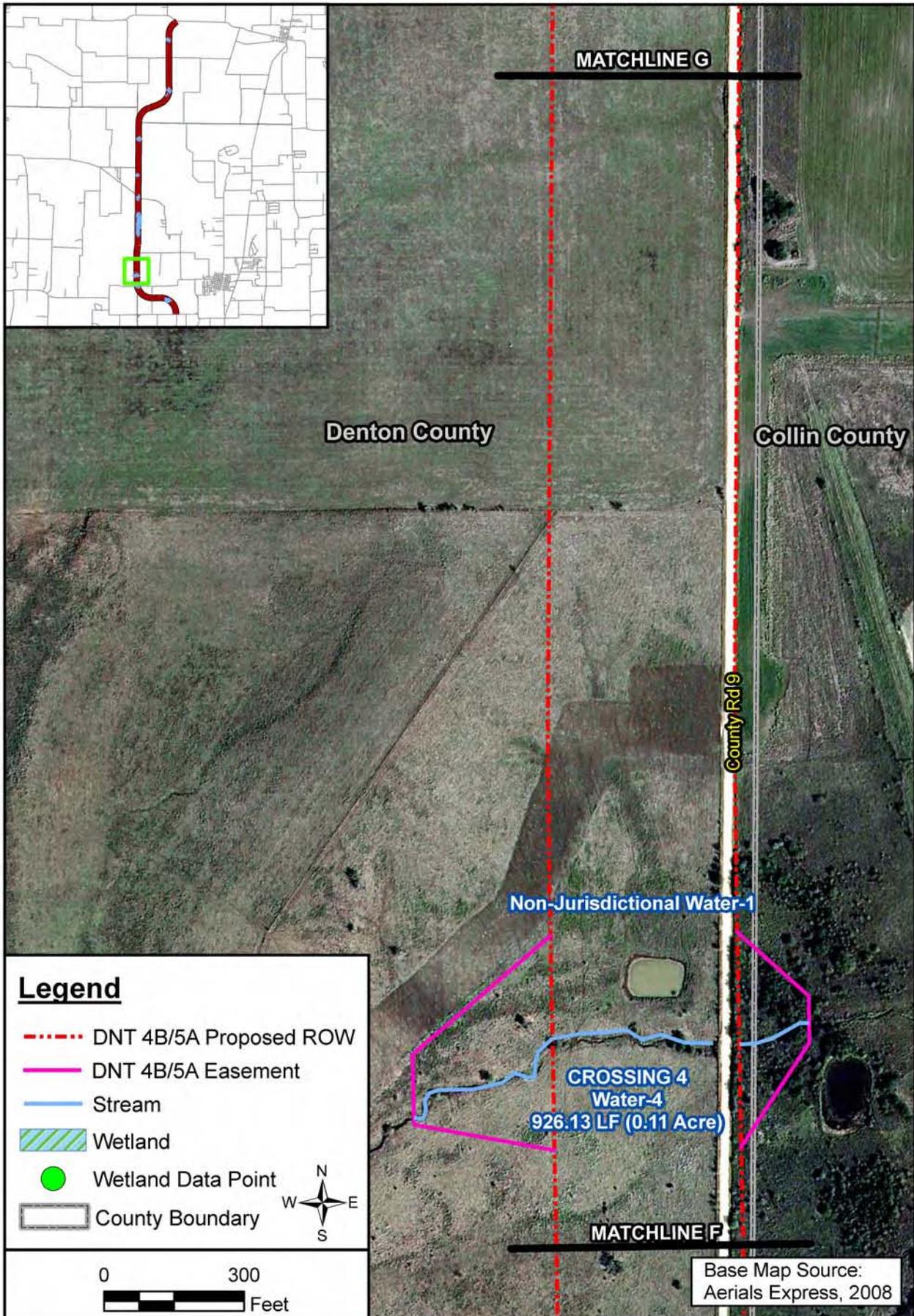


Figure 3: Waters of the U.S. and Wetlands Aerial Map (Sheet 6 of 29)
Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121



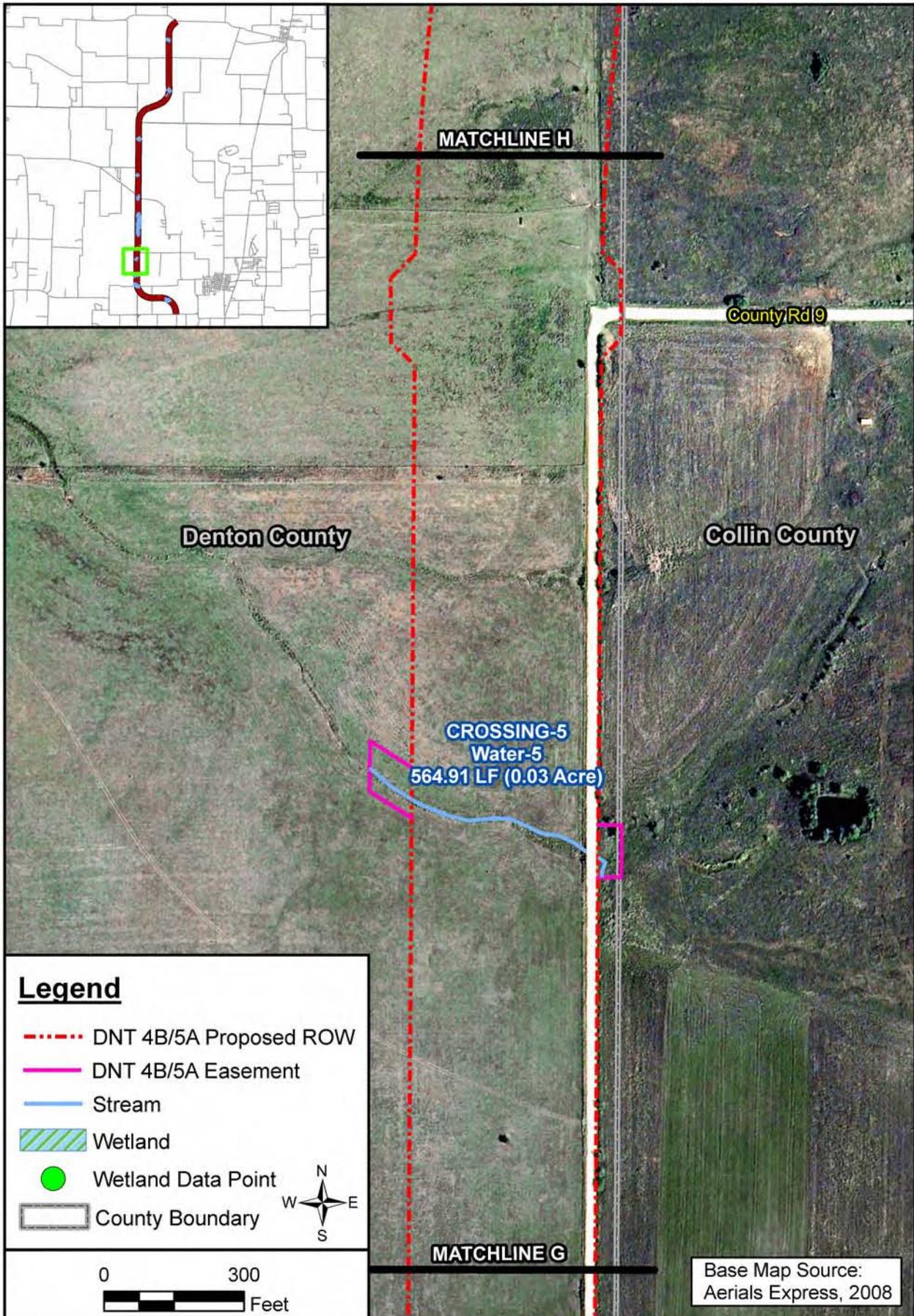


Figure 3: Waters of the U.S. and Wetlands Aerial Map (Sheet 8 of 29)

Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121

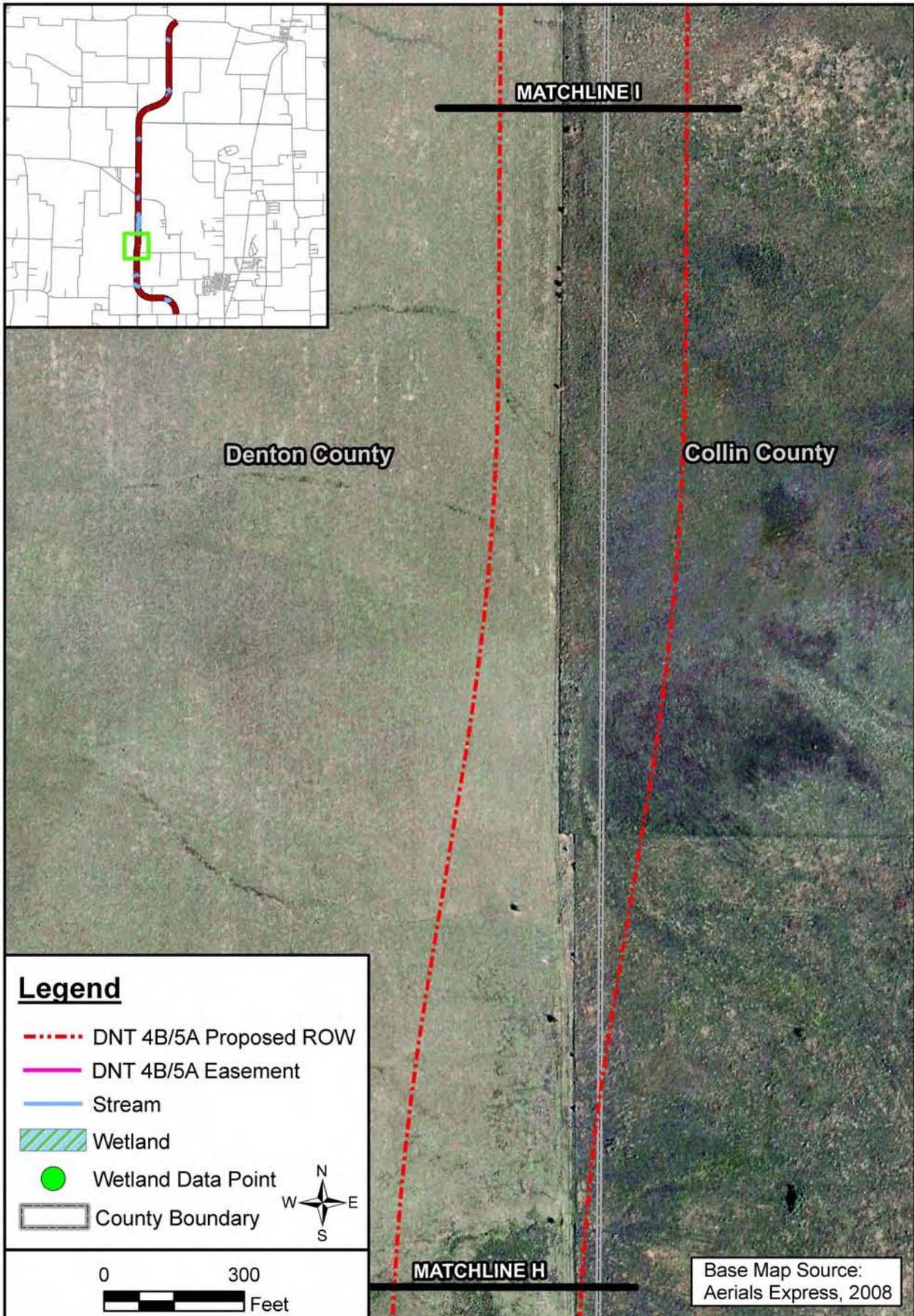


Figure 3: Waters of the U.S. and Wetlands Aerial Map (Sheet 9 of 29)

Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121

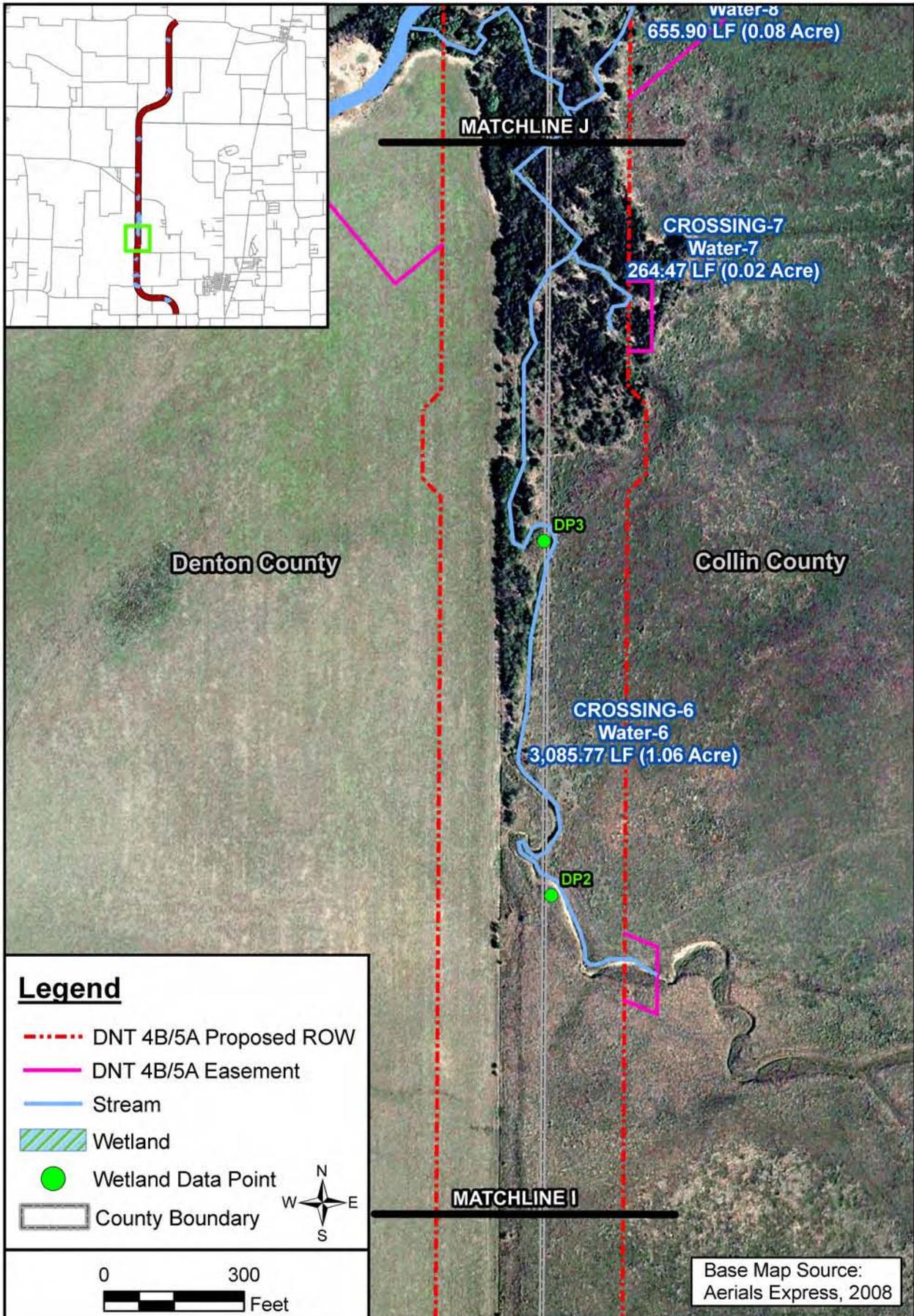


Figure 3: Waters of the U.S. and Wetlands Aerial Map (Sheet 10 of 29)
 Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121

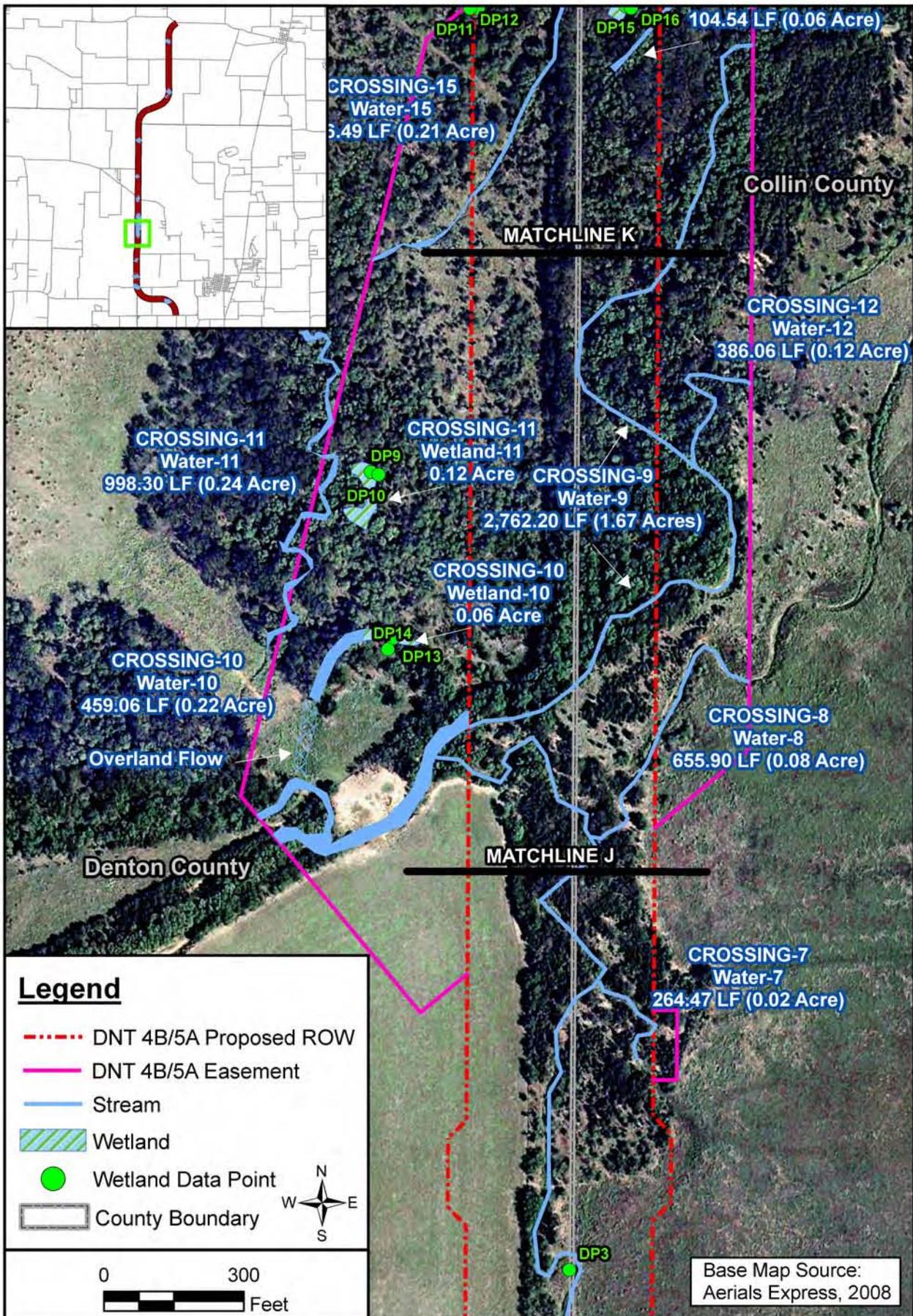


Figure 3: Waters of the U.S. and Wetlands Aerial Map (Sheet 11 of 29)
 Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121

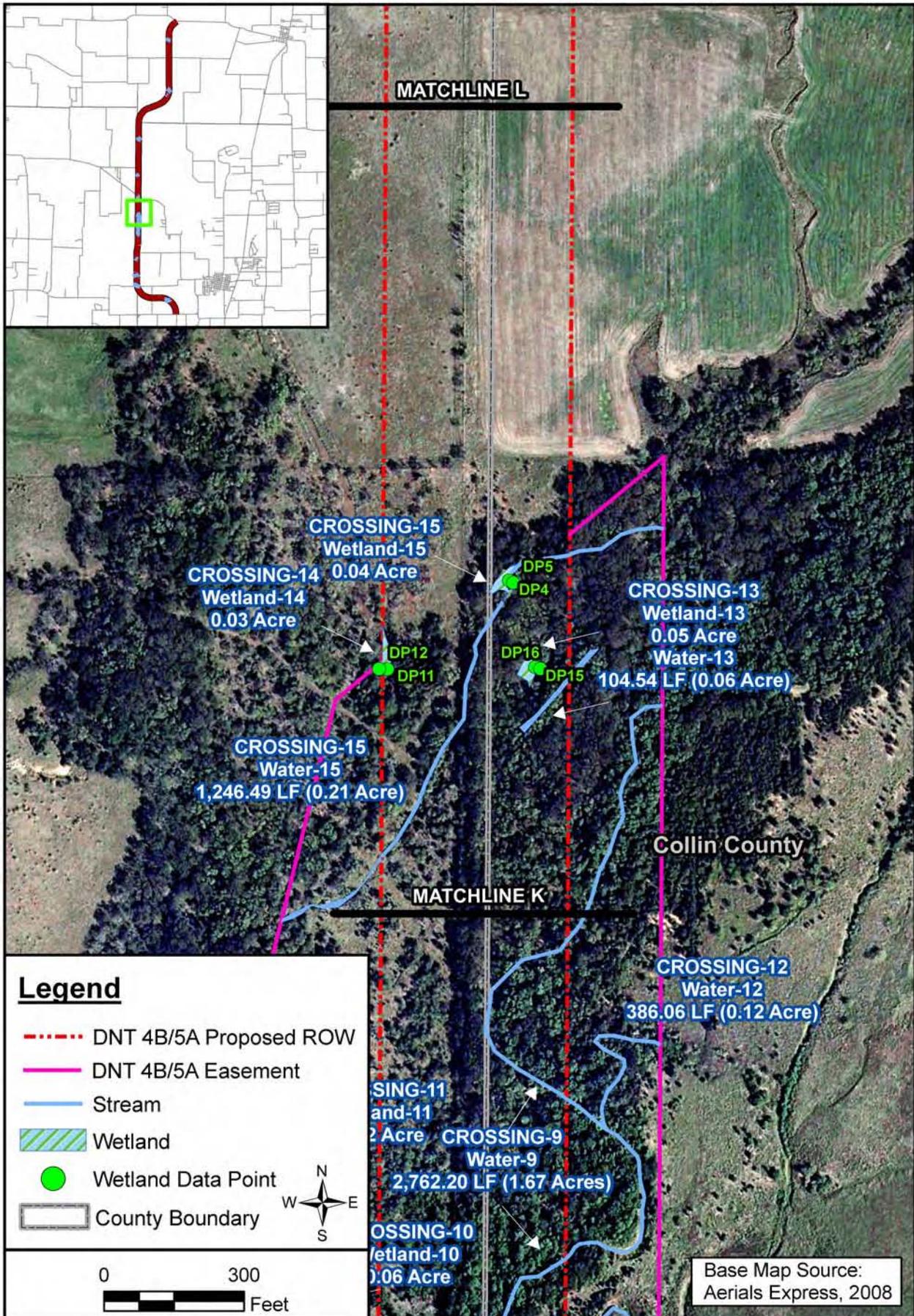


Figure 3: Waters of the U.S. and Wetlands Aerial Map (Sheet 12 of 29)
 Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121

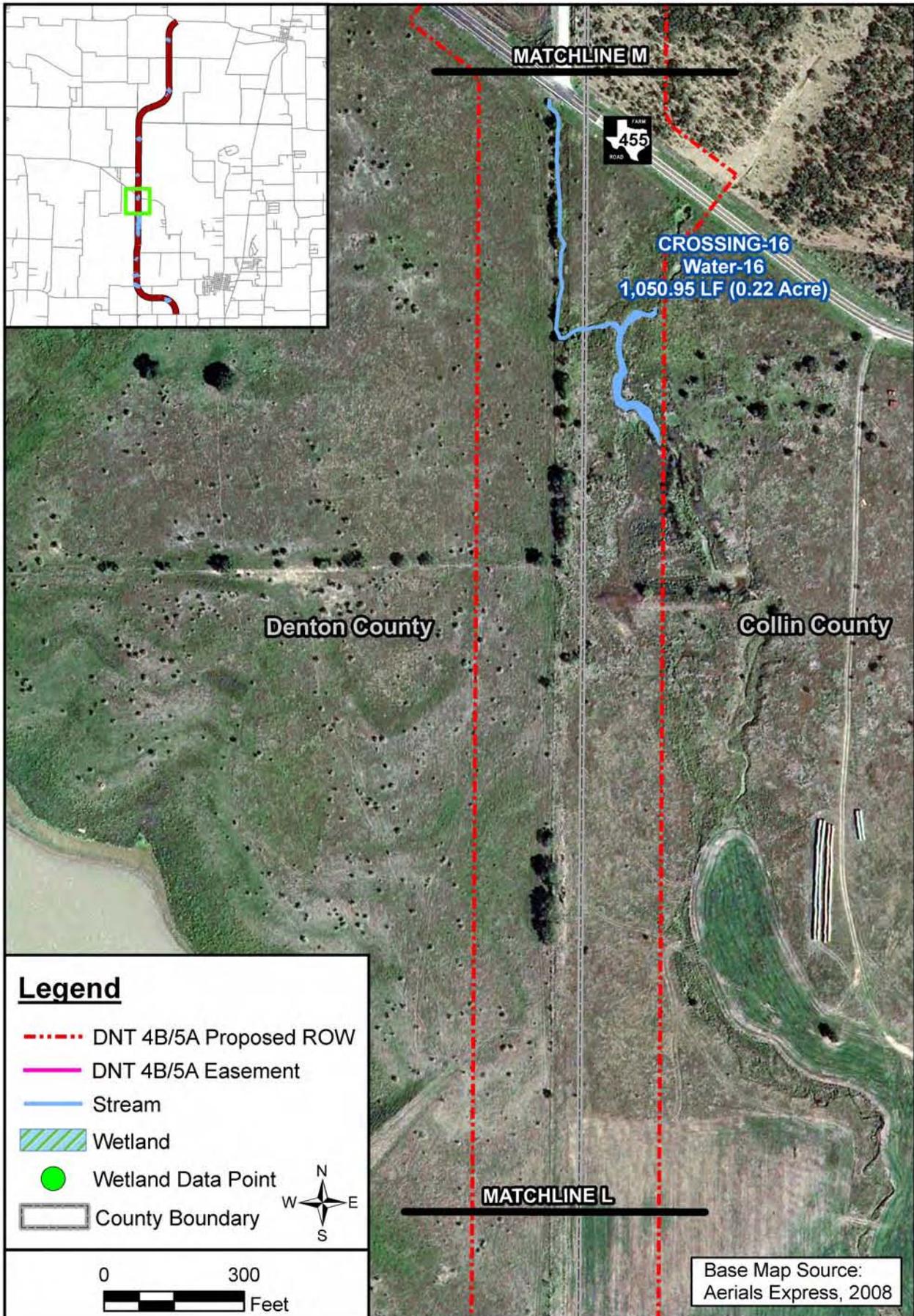


Figure 3: Waters of the U.S. and Wetlands Aerial Map (Sheet 13 of 29)
 Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121

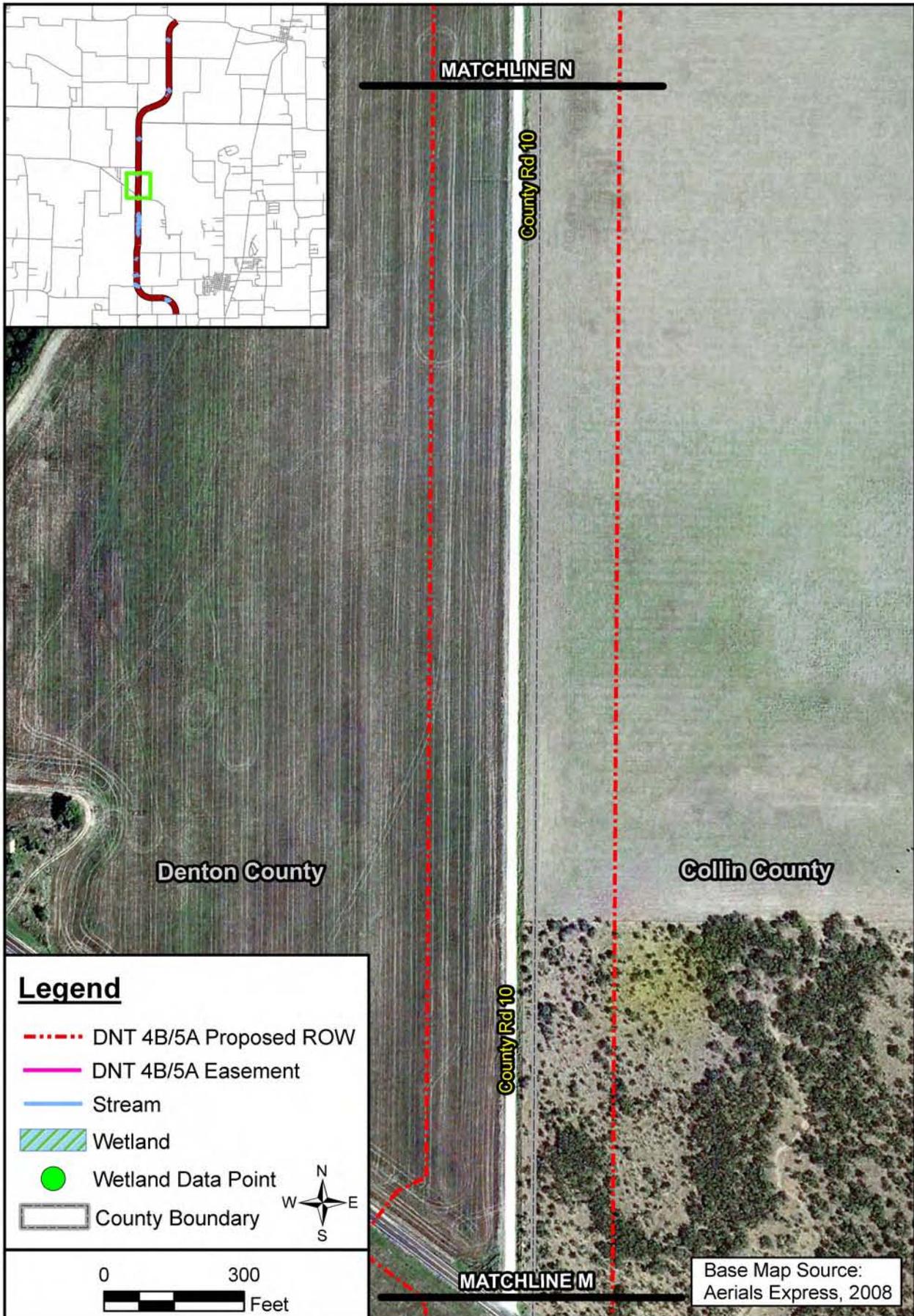


Figure 3: Waters of the U.S. and Wetlands Aerial Map (Sheet 14 of 29)
 Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121

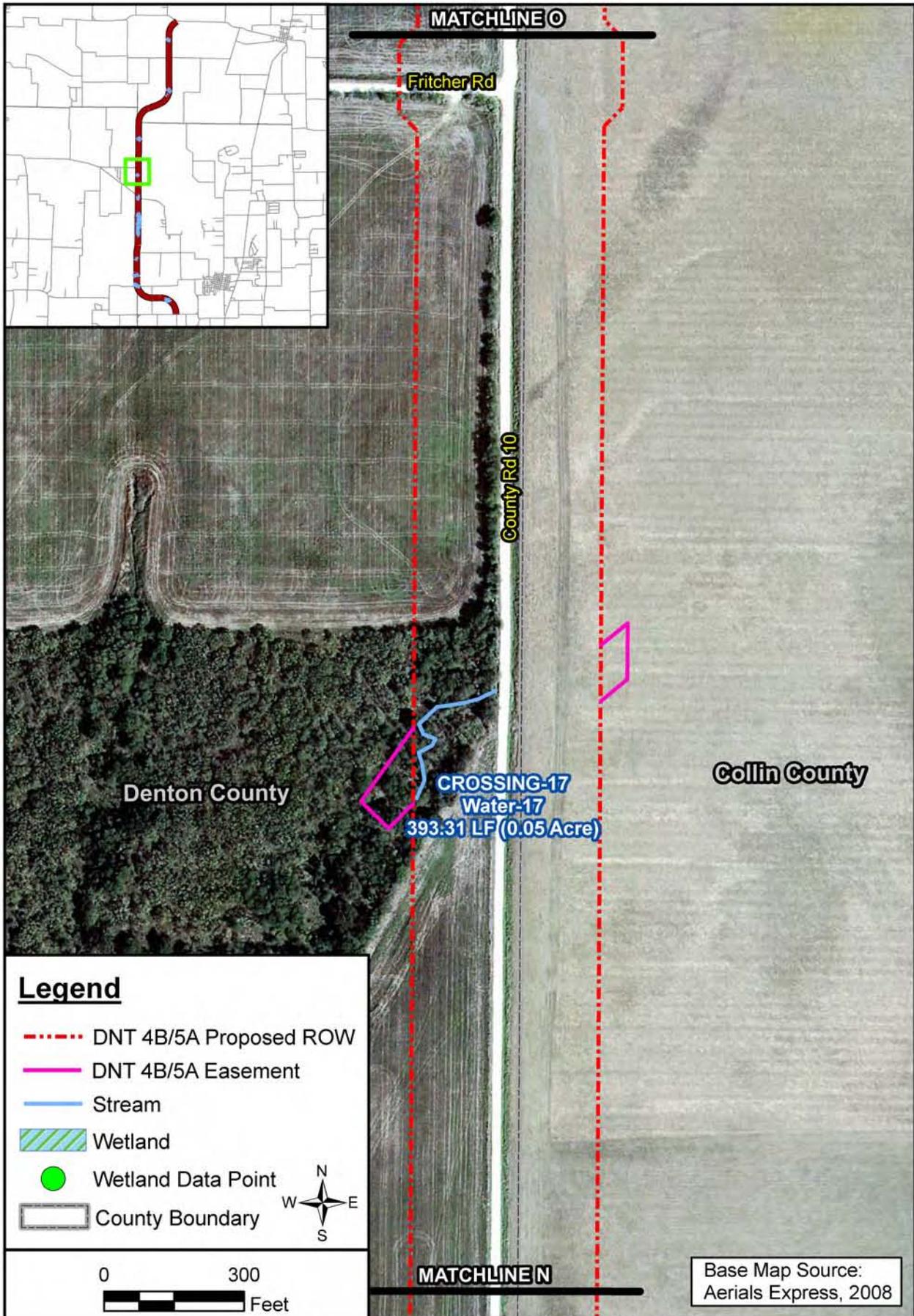


Figure 3: Waters of the U.S. and Wetlands Aerial Map (Sheet 15 of 29)
Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121

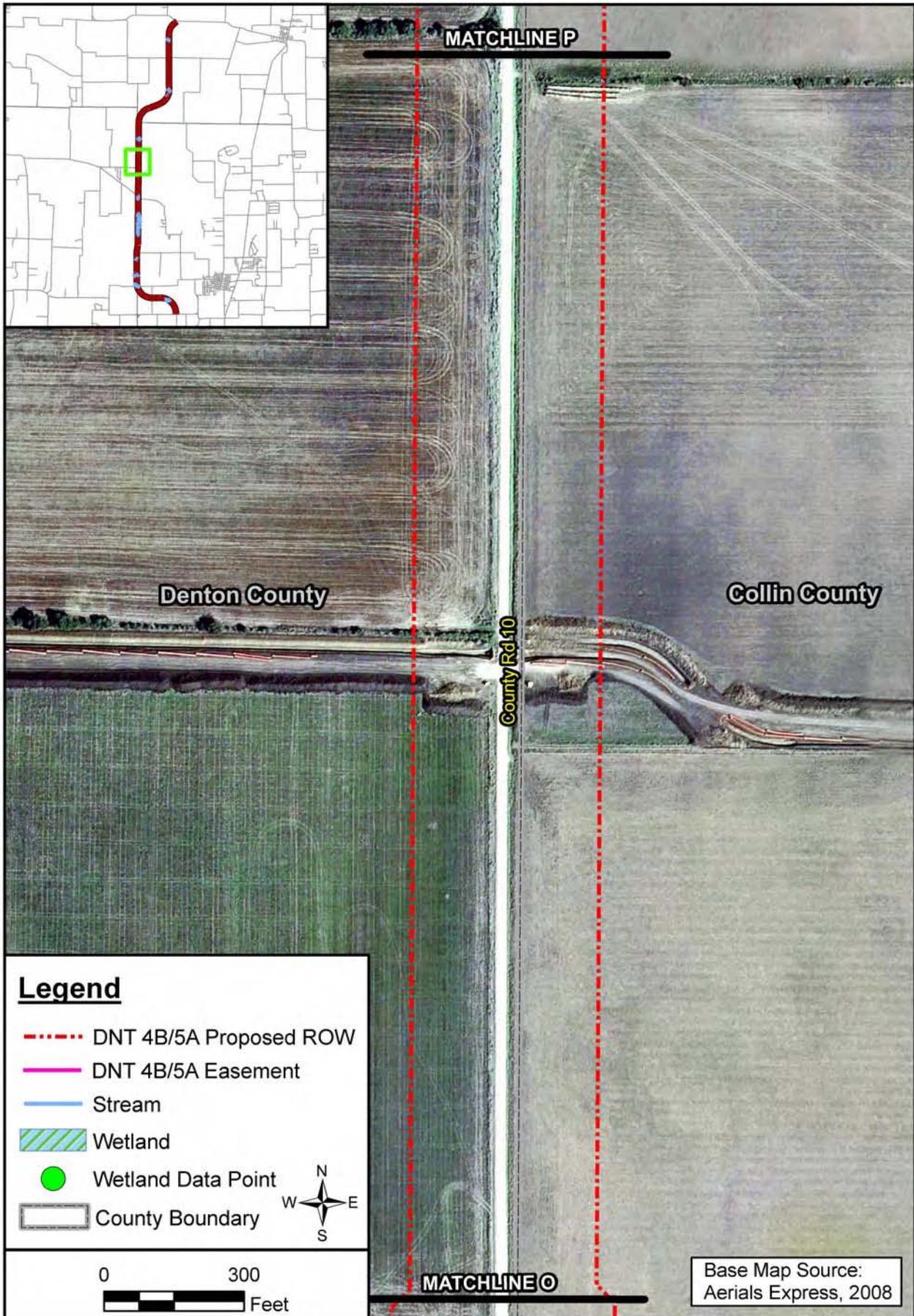


Figure 3: Waters of the U.S. and Wetlands Aerial Map (Sheet 16 of 29)
 Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121

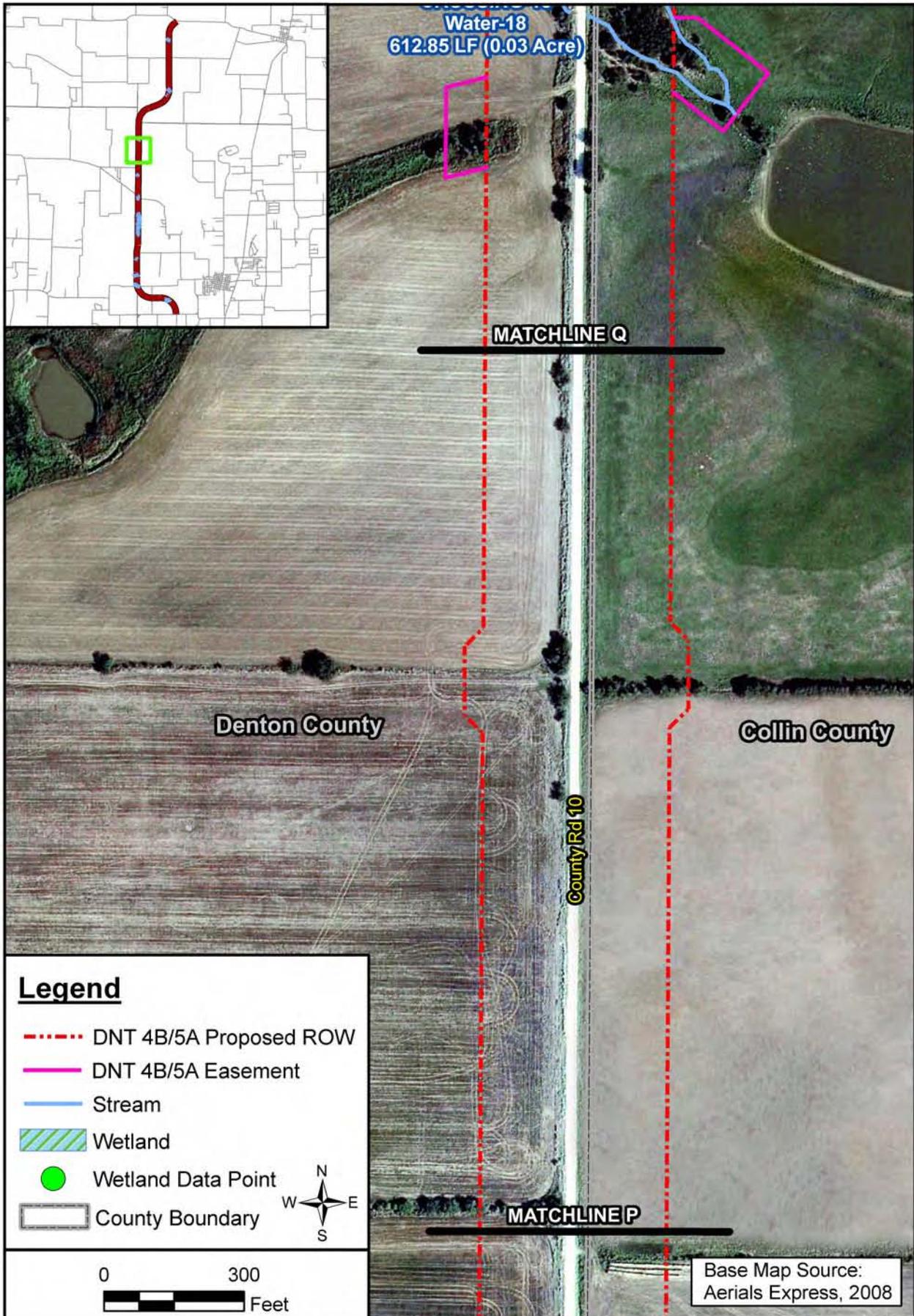


Figure 3: Waters of the U.S. and Wetlands Aerial Map (Sheet 17 of 29)
Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121

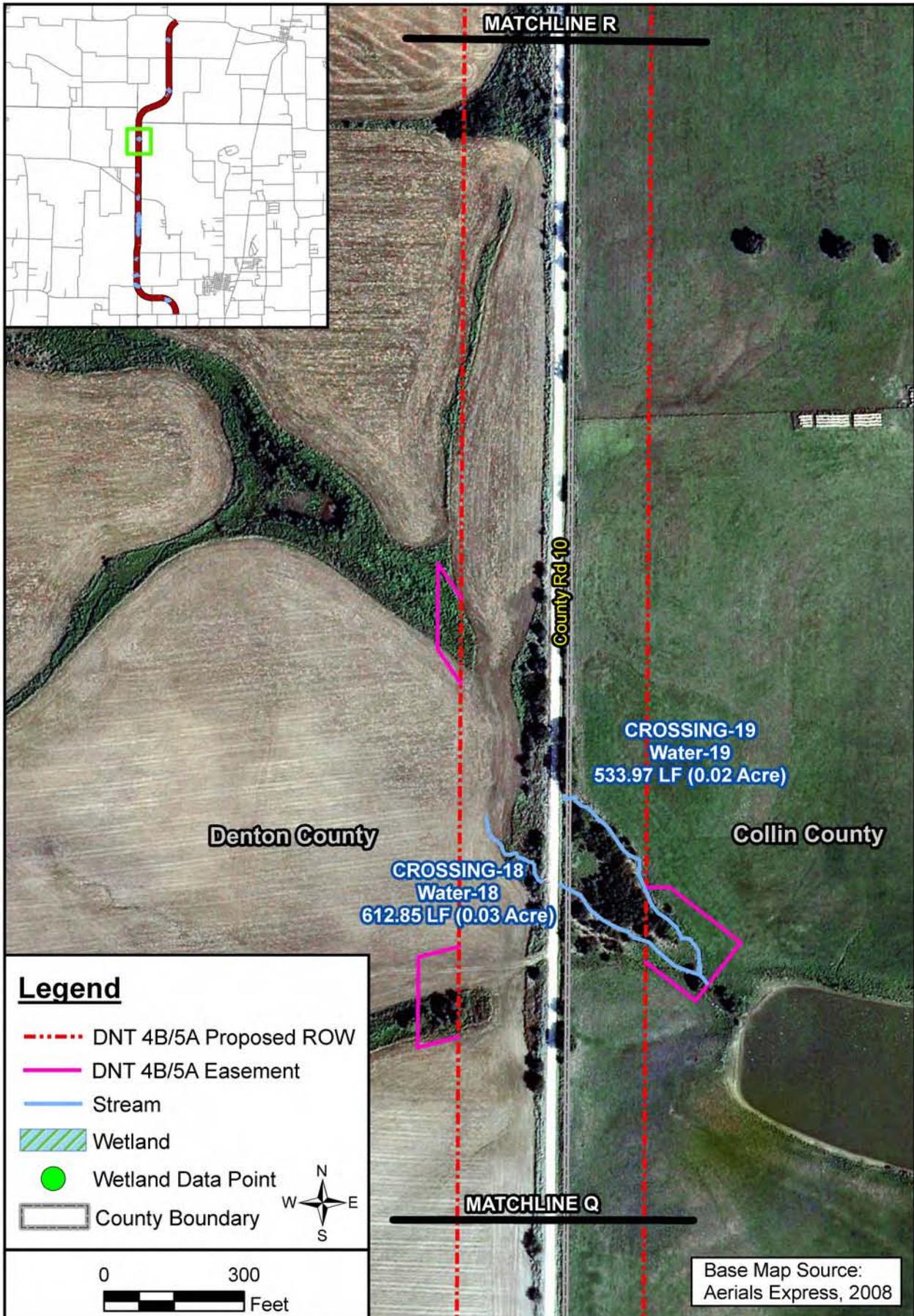


Figure 3: Waters of the U.S. and Wetlands Aerial Map (Sheet 18 of 29)
Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121

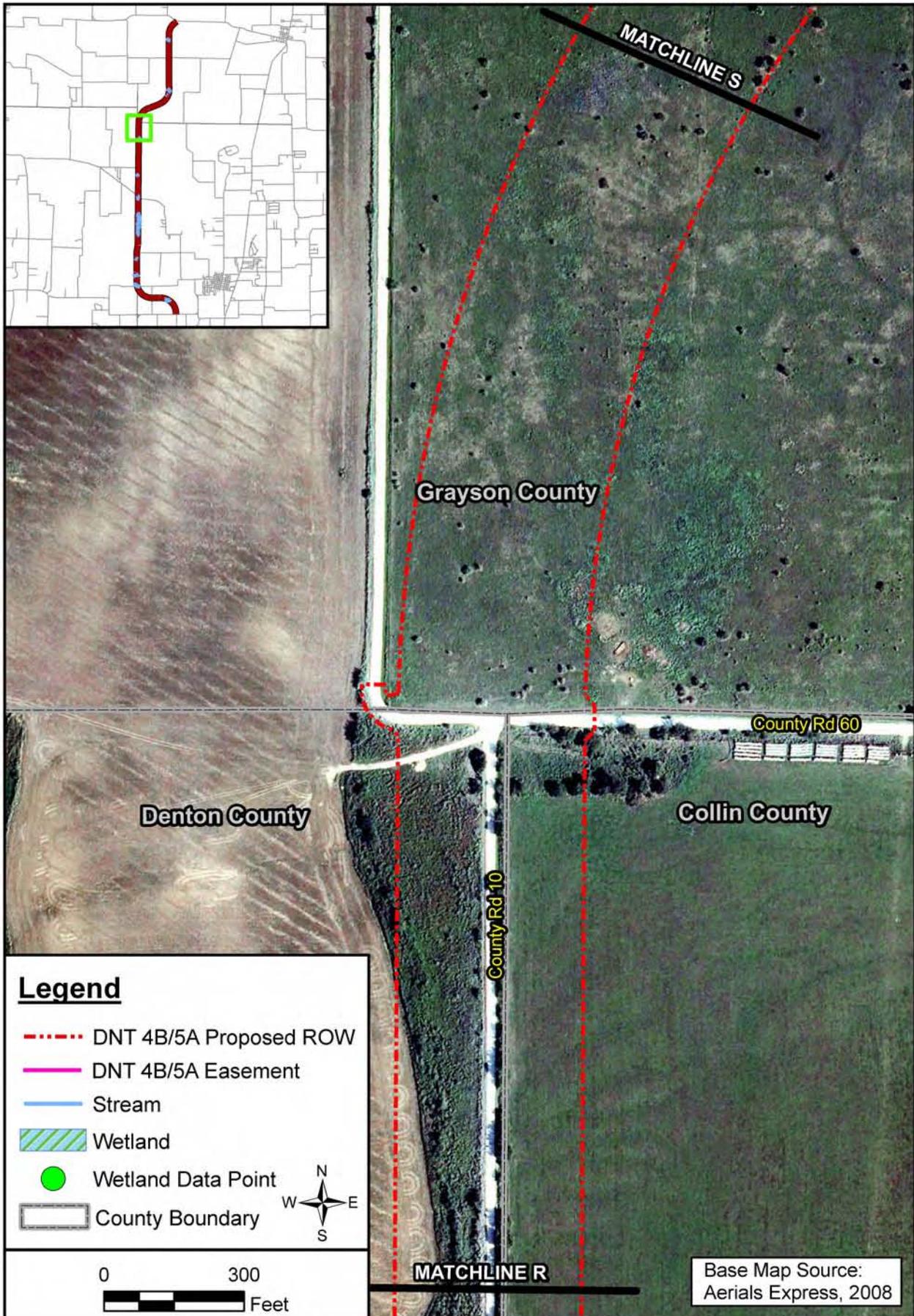


Figure 3: Waters of the U.S. and Wetlands Aerial Map (Sheet 19 of 29)
 Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121

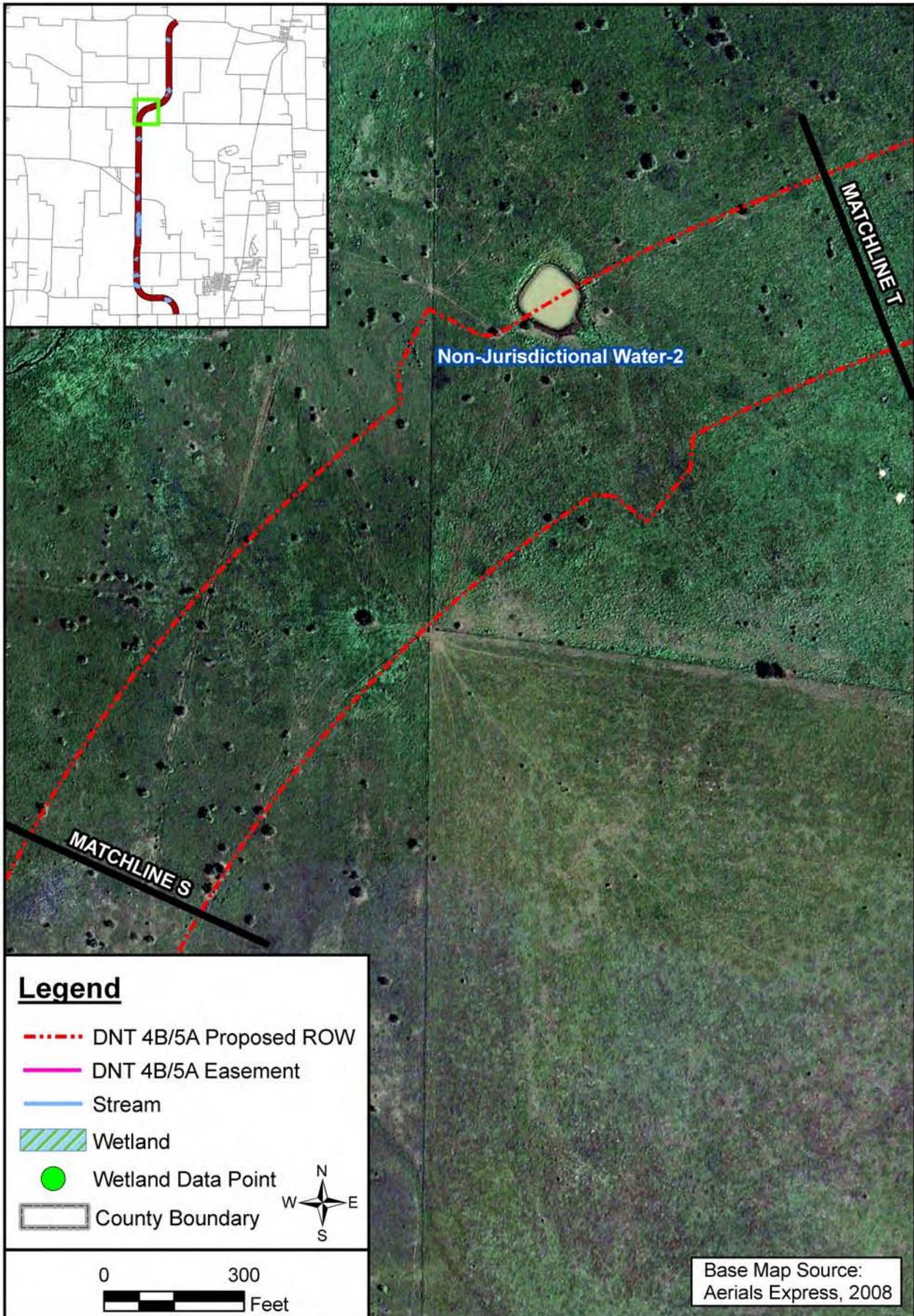


Figure 3: Waters of the U.S. and Wetlands Aerial Map (Sheet 20 of 29)
 Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121

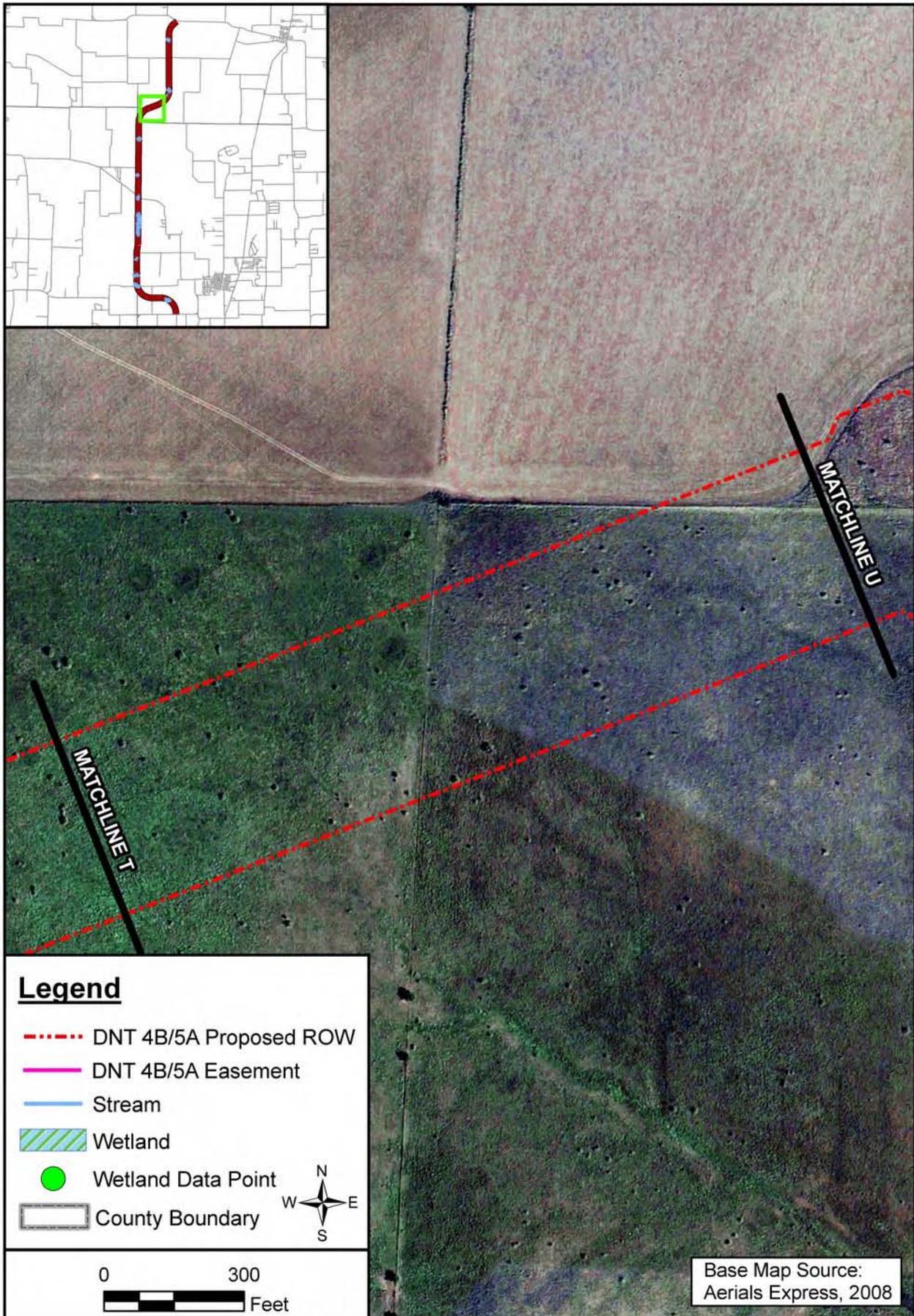
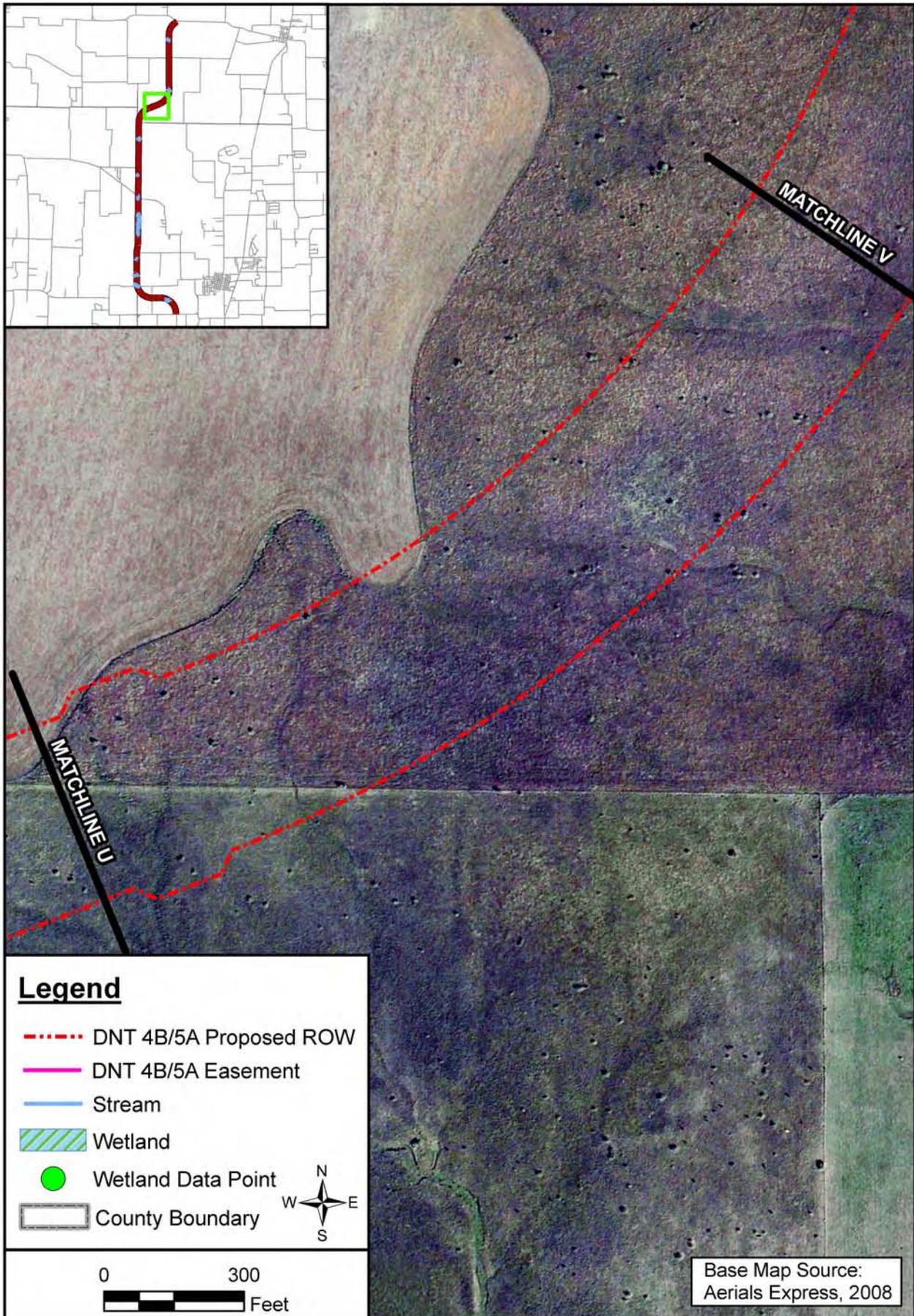


Figure 3: Waters of the U.S. and Wetlands Aerial Map (Sheet 21 of 29)
 Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121



Legend

- DNT 4B/5A Proposed ROW
- DNT 4B/5A Easement
- Stream
- Wetland
- Wetland Data Point
- County Boundary

0 300
Feet



Base Map Source:
Aerials Express, 2008

Figure 3: Waters of the U.S. and Wetlands Aerial Map (Sheet 22 of 29)
Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121

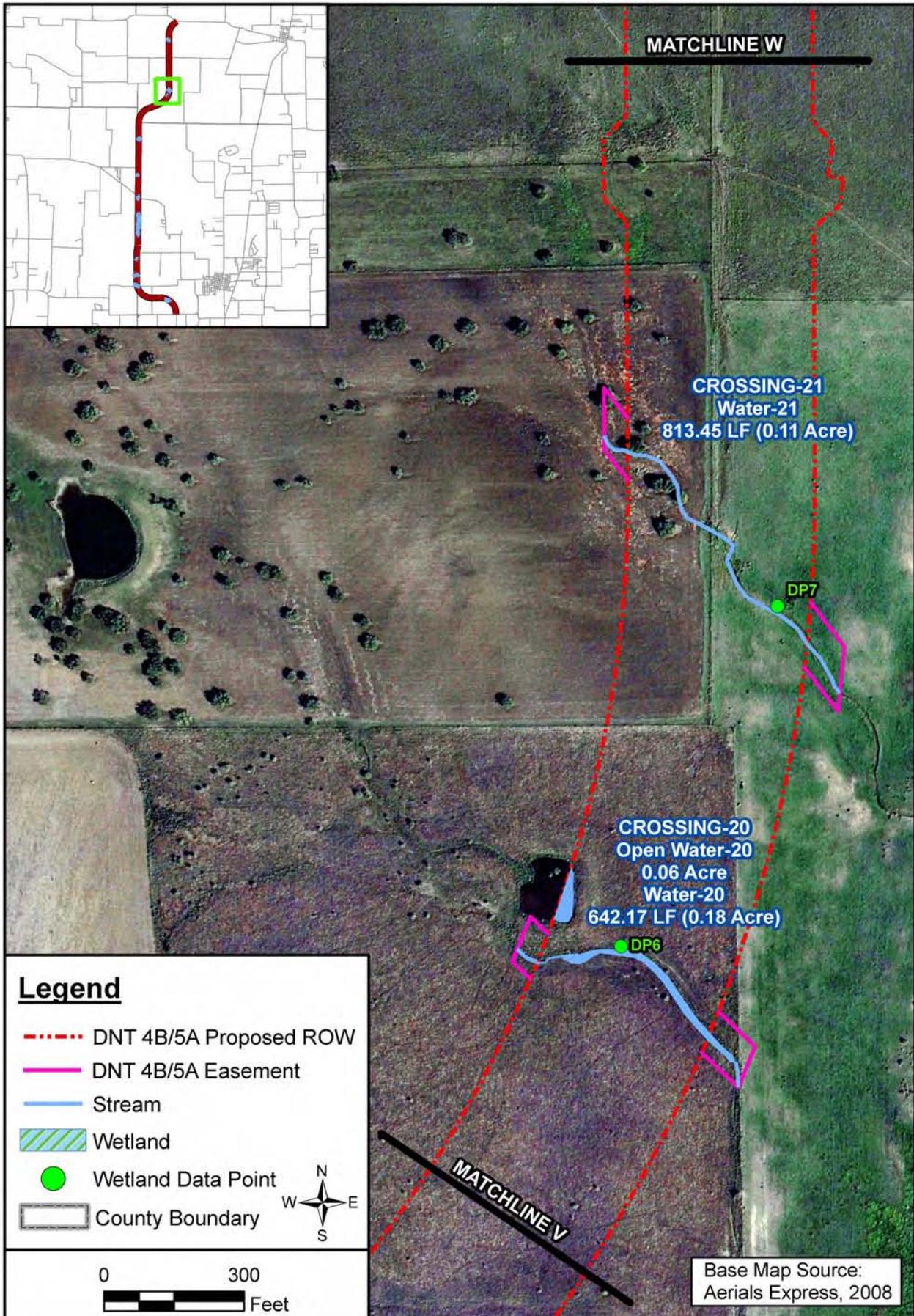


Figure 3: Waters of the U.S. and Wetlands Aerial Map (Sheet 23 of 29)
Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121

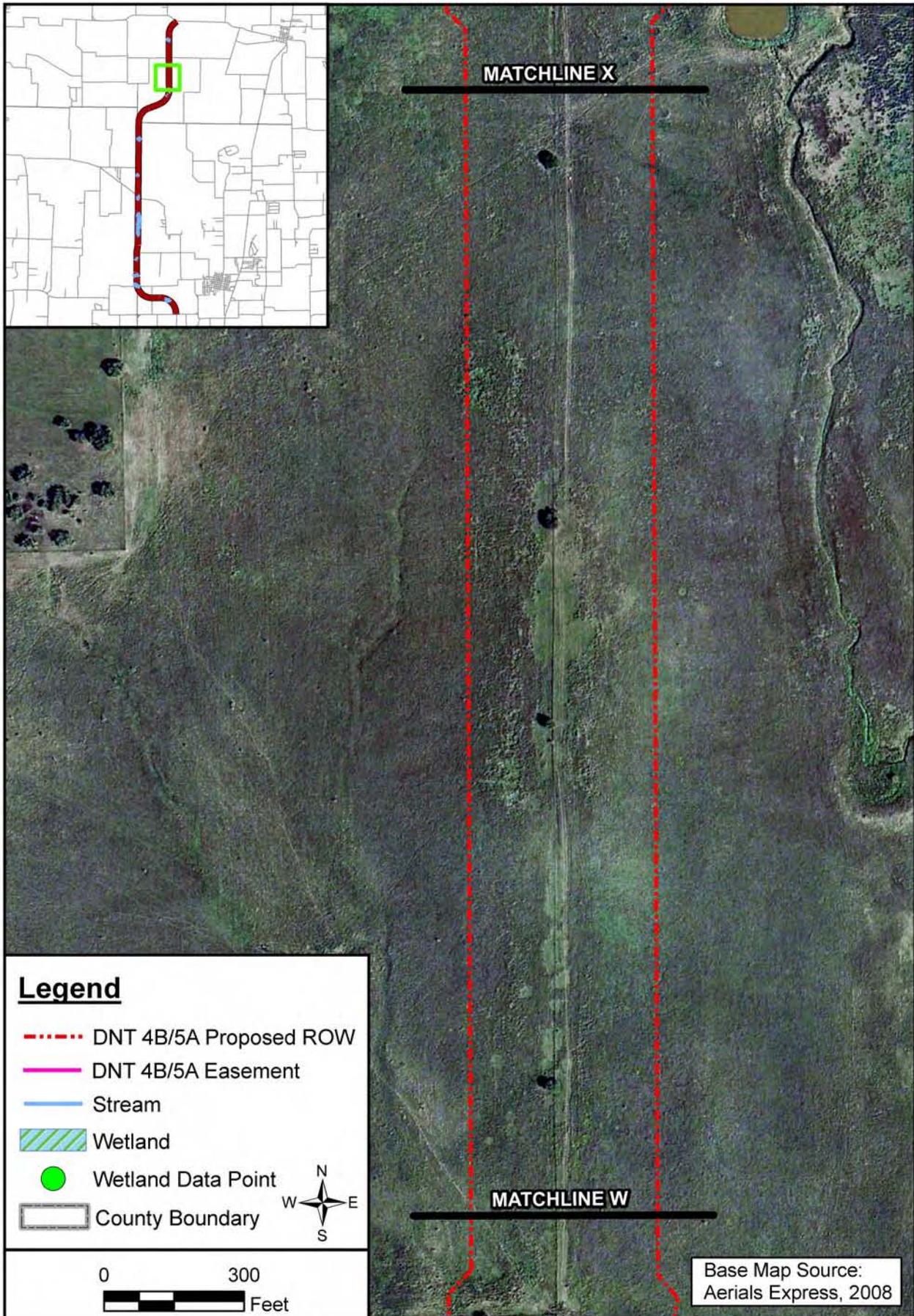


Figure 3: Waters of the U.S. and Wetlands Aerial Map (Sheet 24 of 29)
 Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121

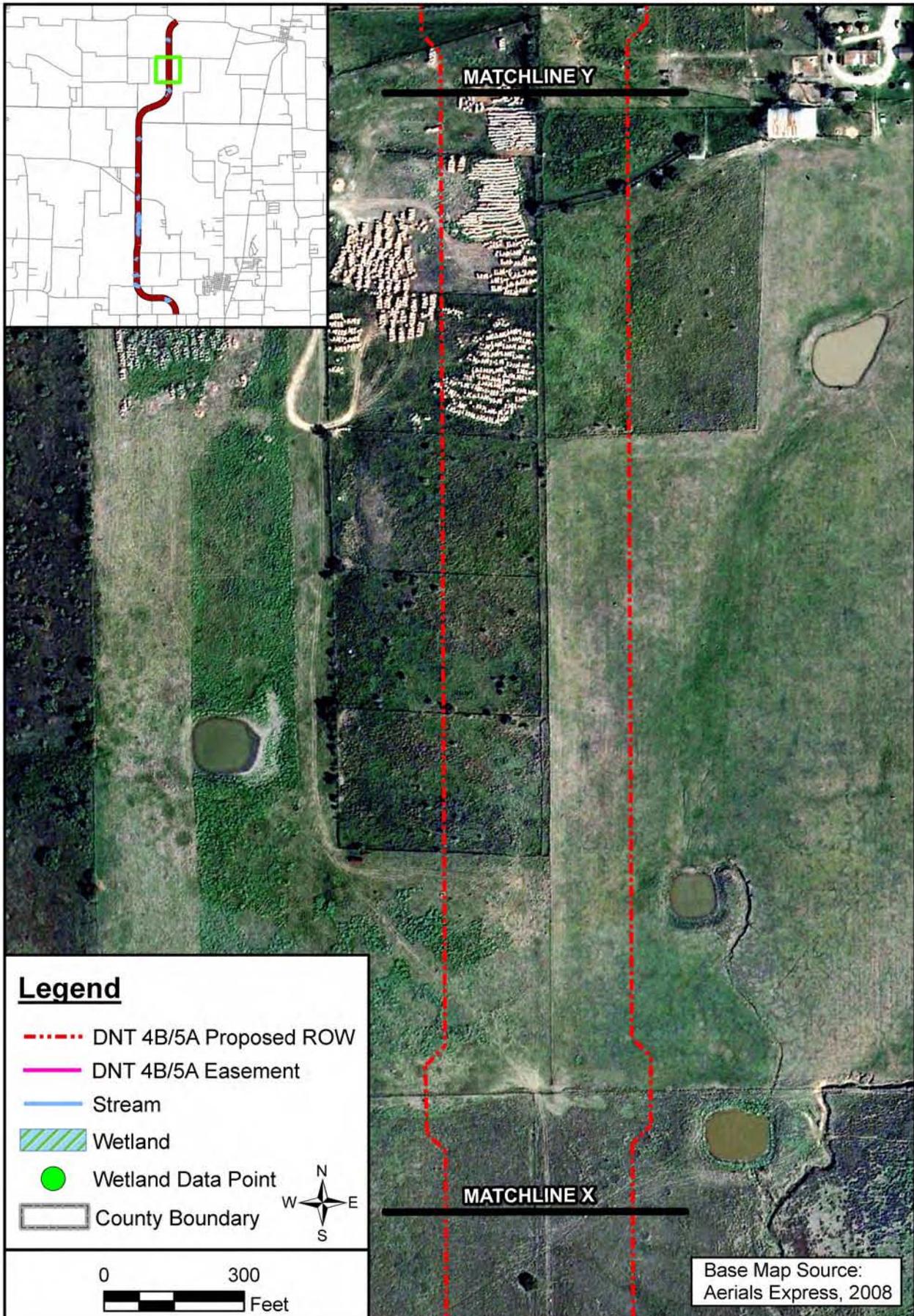


Figure 3: Waters of the U.S. and Wetlands Aerial Map (Sheet 25 of 29)
 Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121



Figure 3: Waters of the U.S. and Wetlands Aerial Map (Sheet 26 of 29)
 Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121

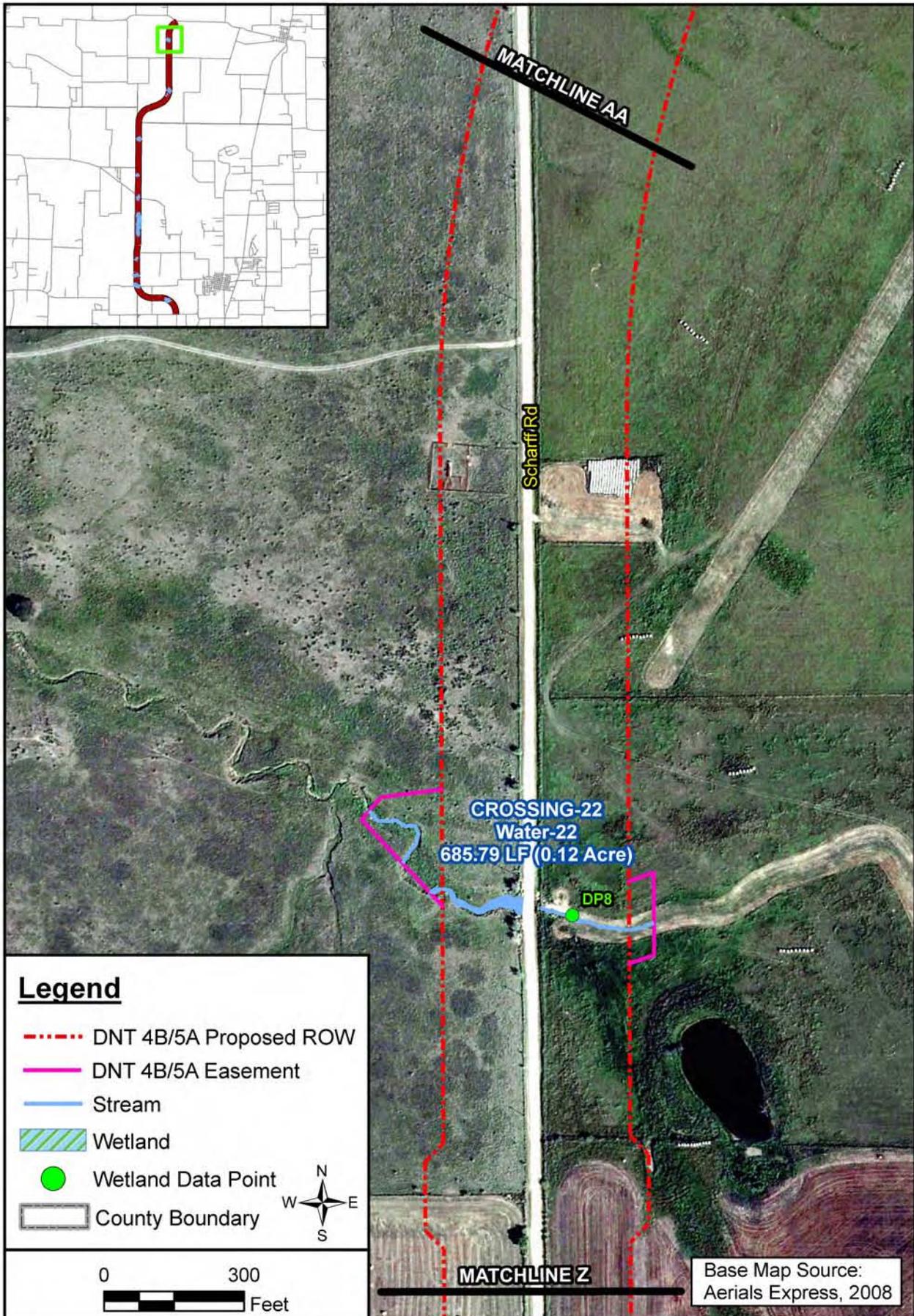


Figure 3: Waters of the U.S. and Wetlands Aerial Map (Sheet 27 of 29)
 Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121

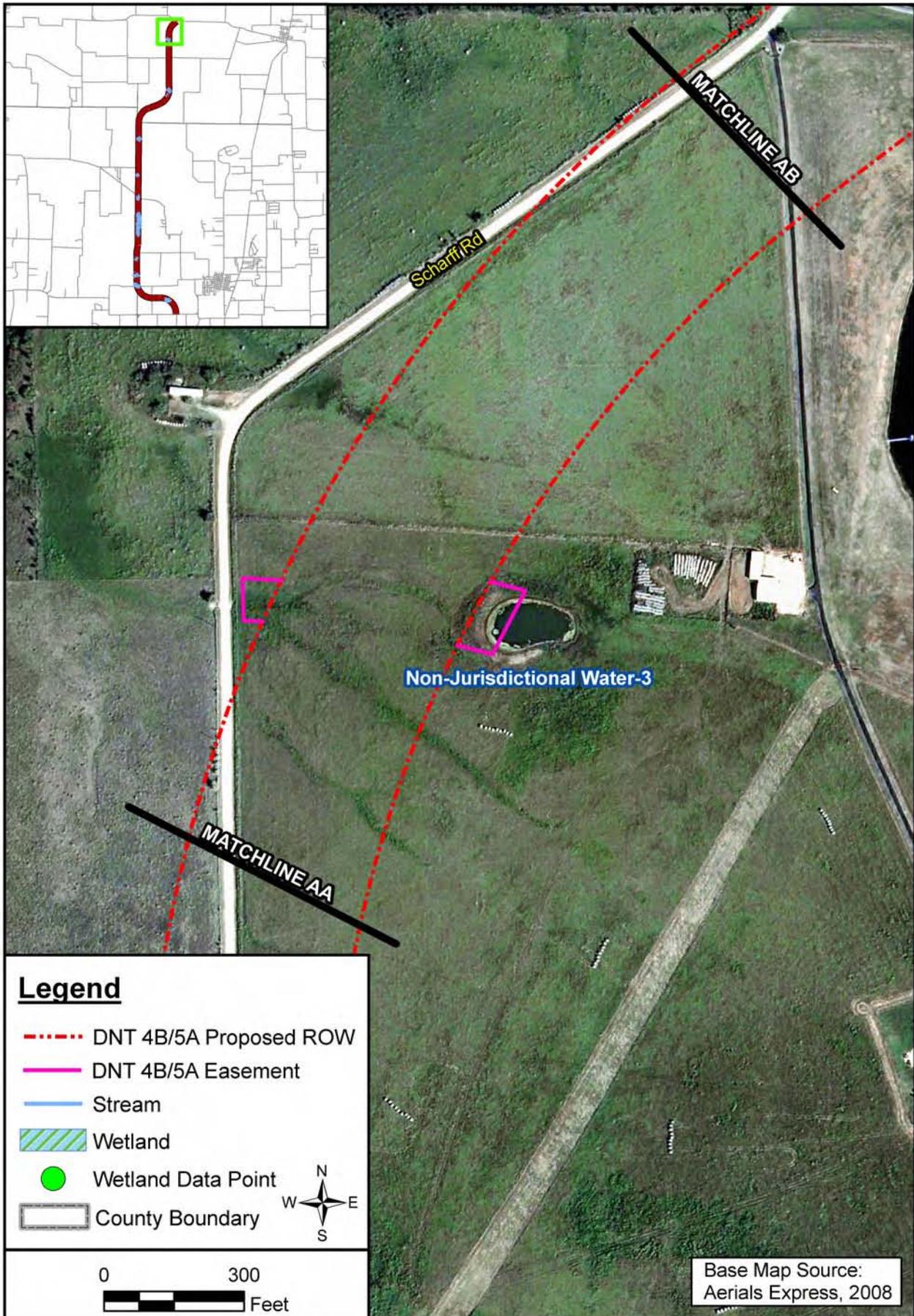


Figure 3: Waters of the U.S. and Wetlands Aerial Map (Sheet 28 of 29)
 Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121

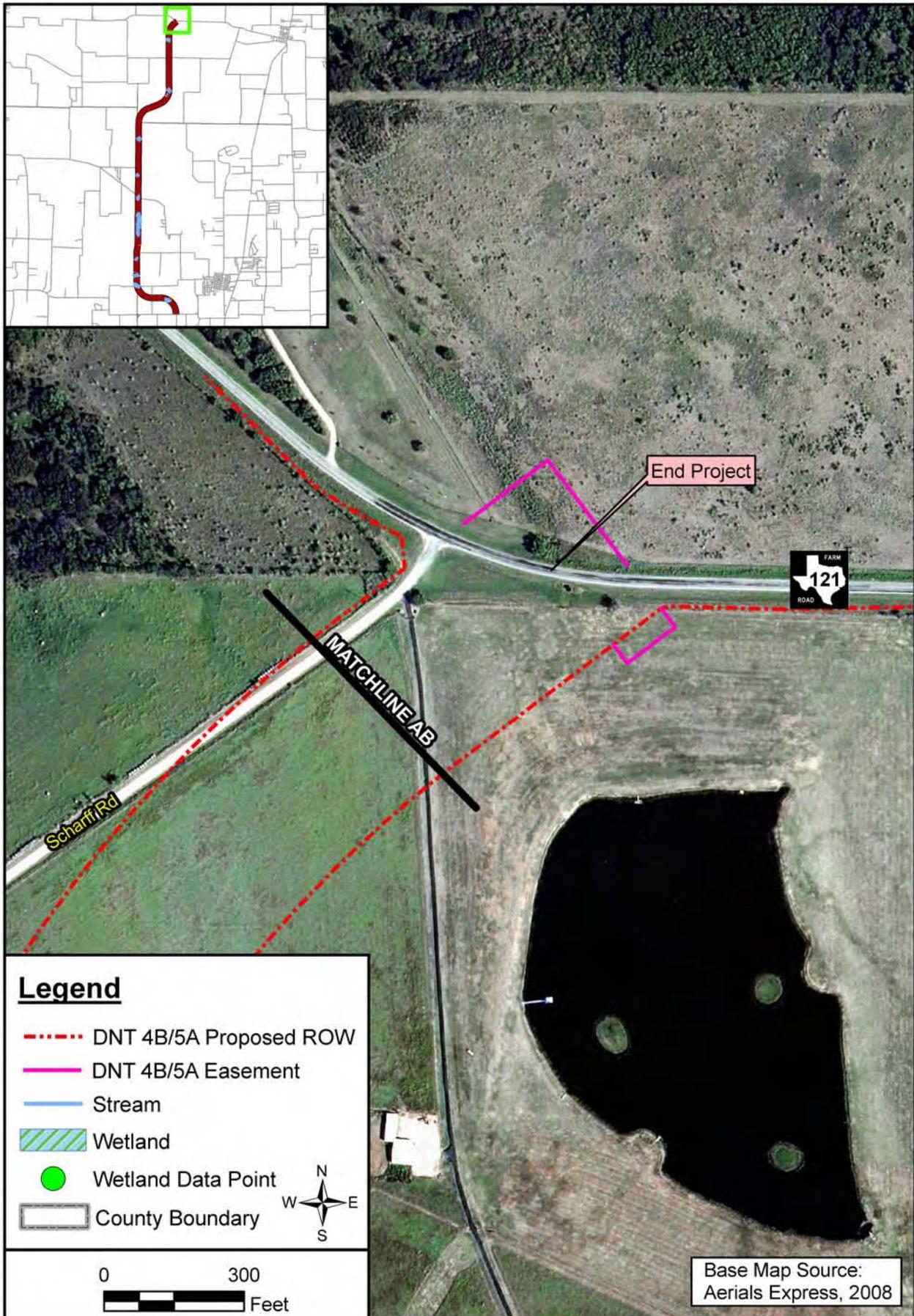


Figure 3: Waters of the U.S. and Wetlands Aerial Map (Sheet 29 of 29)
 Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121

Figure 4
Historical Aerial Maps

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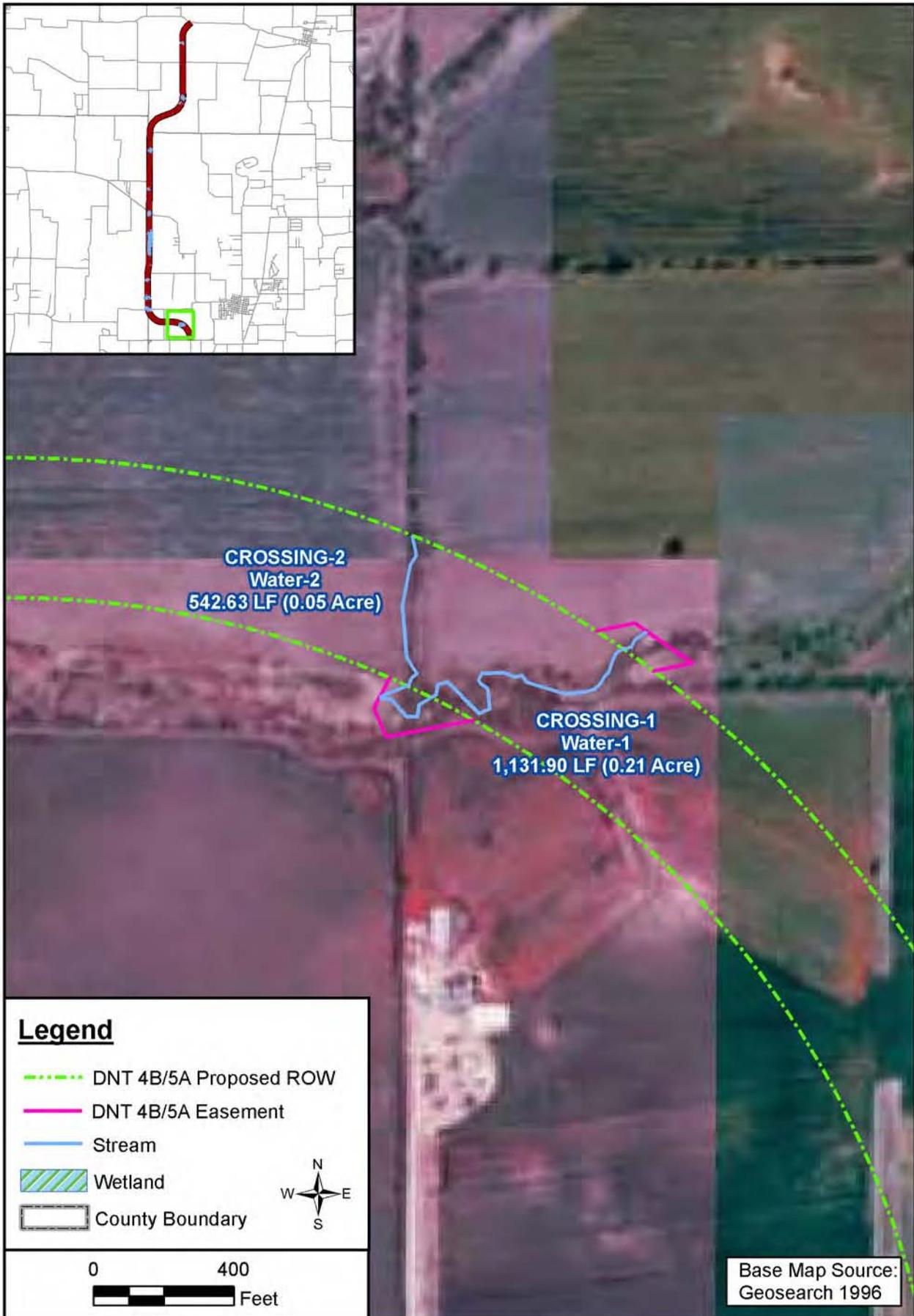


Figure 4: Historical Aerial Map (Sheet 1 of 10)
Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121

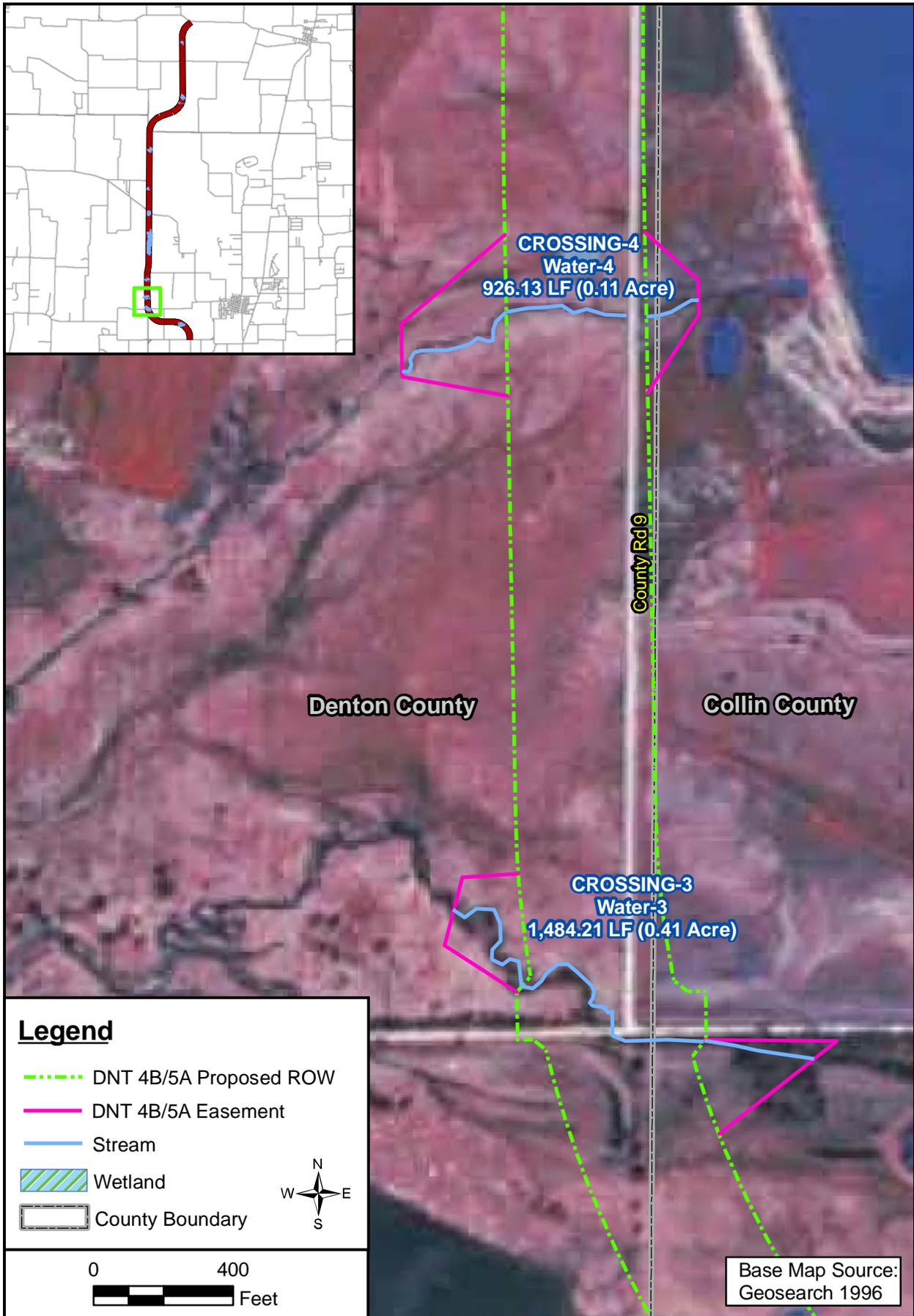


Figure 4: Historical Aerial Map (Sheet 2 of 10)
 Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121



Figure 4: Historical Aerial Map (Sheet 3 of 10)

Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121

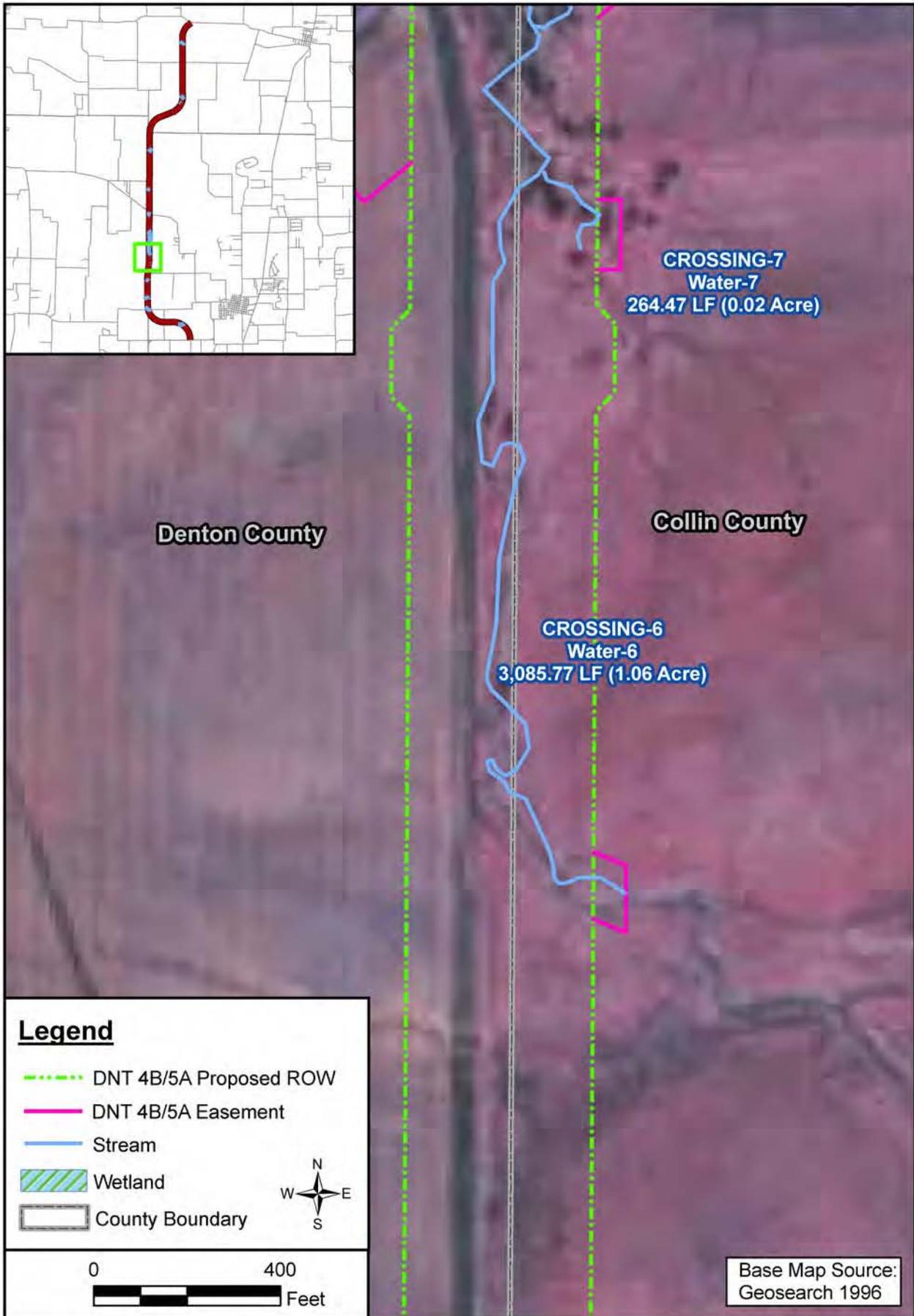


Figure 4: Historical Aerial Map (Sheet 4 of 10)
Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121

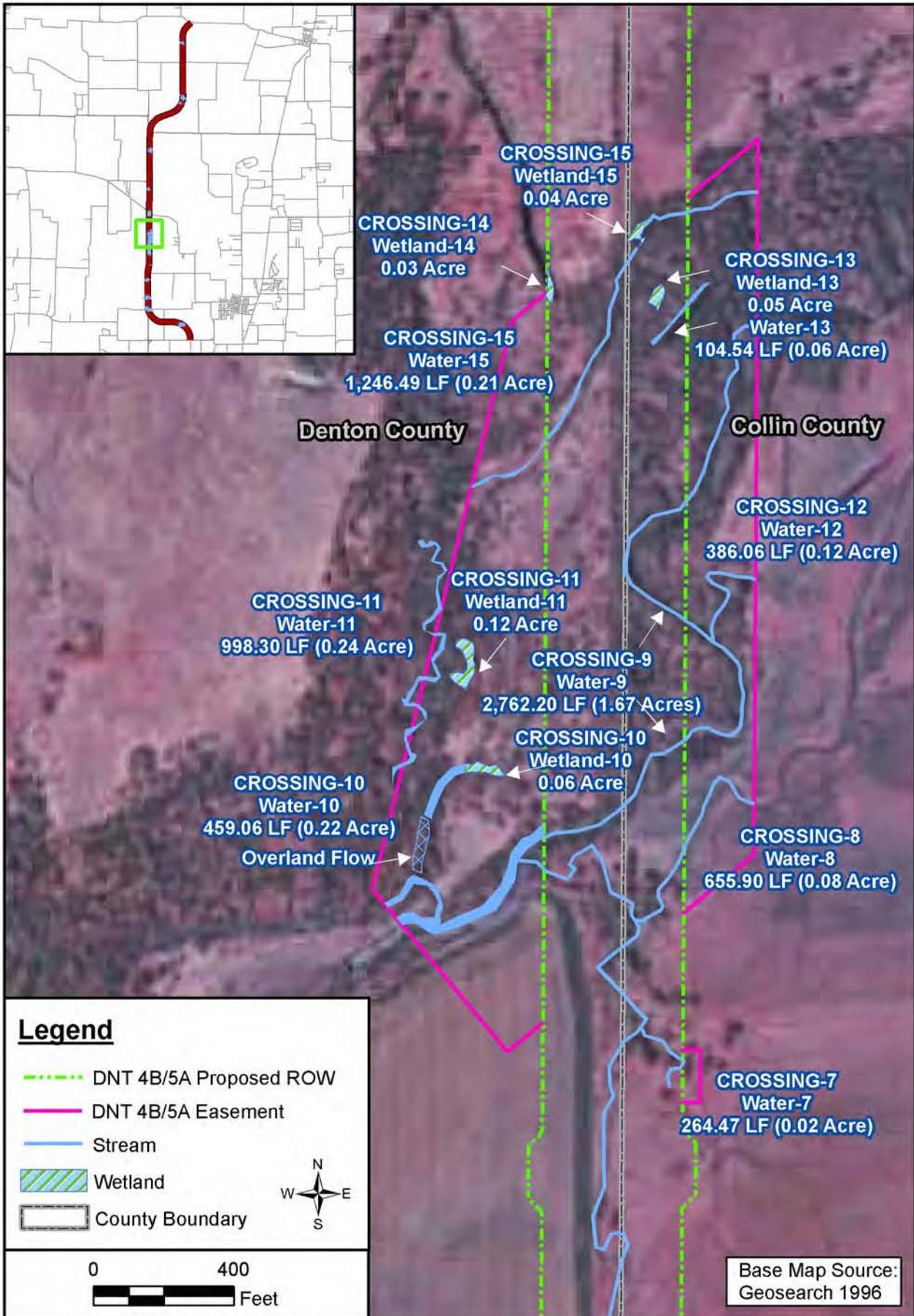


Figure 4: Historical Aerial Map (Sheet 5 of 10)
 Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121

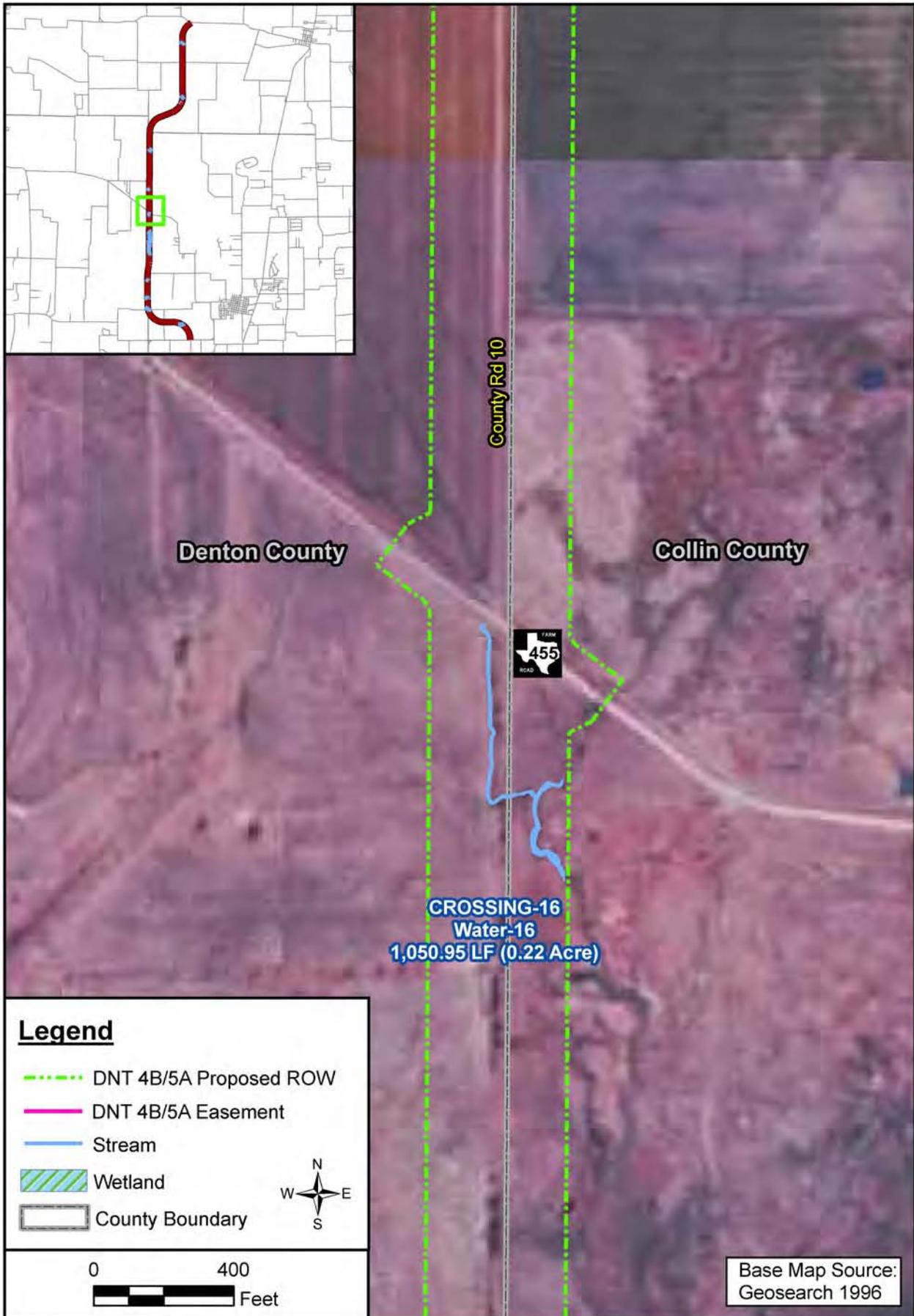


Figure 4: Historical Aerial Map (Sheet 6 of 10)
Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121

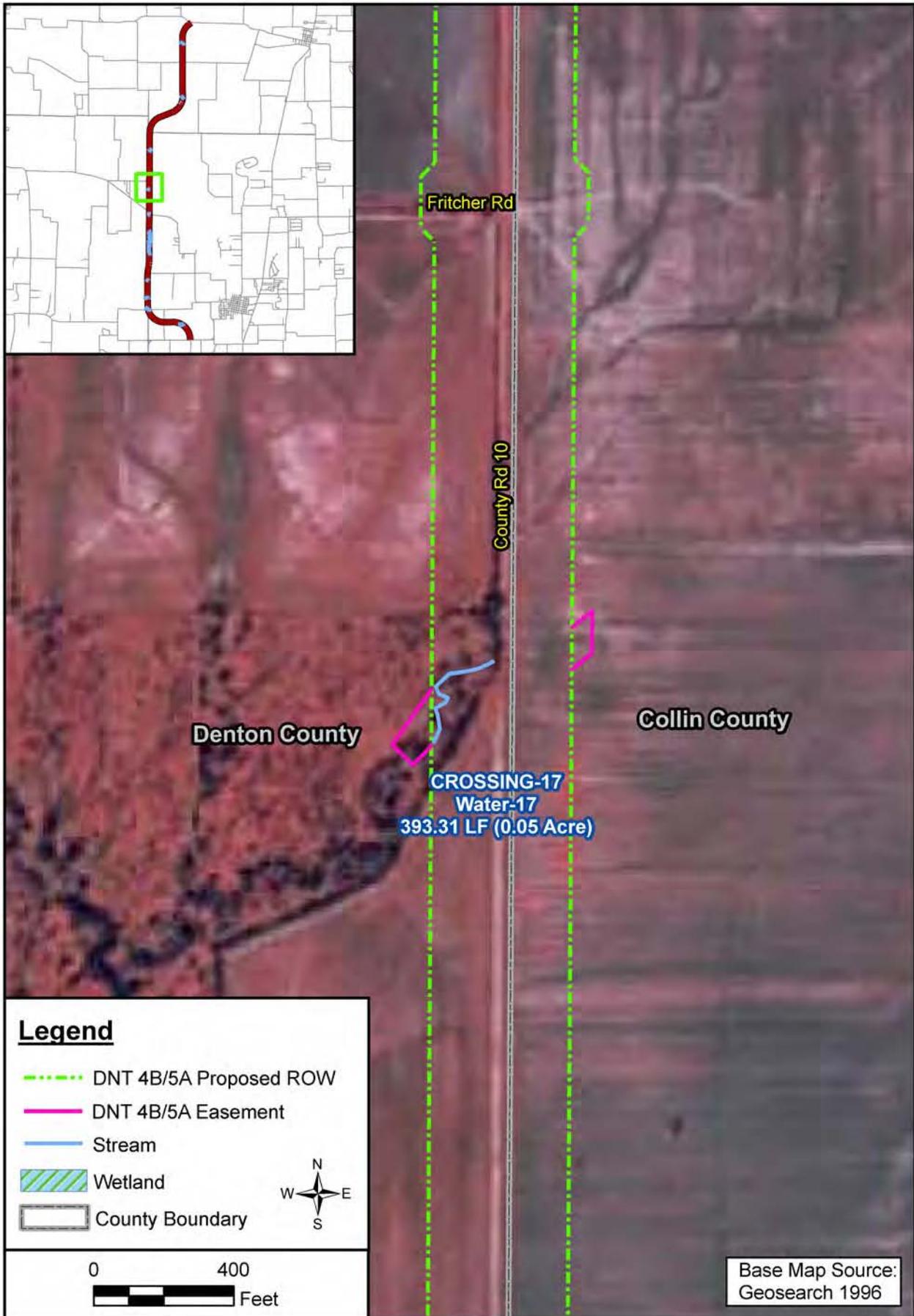


Figure 4: Historical Aerial Map (Sheet 7 of 10)
 Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121

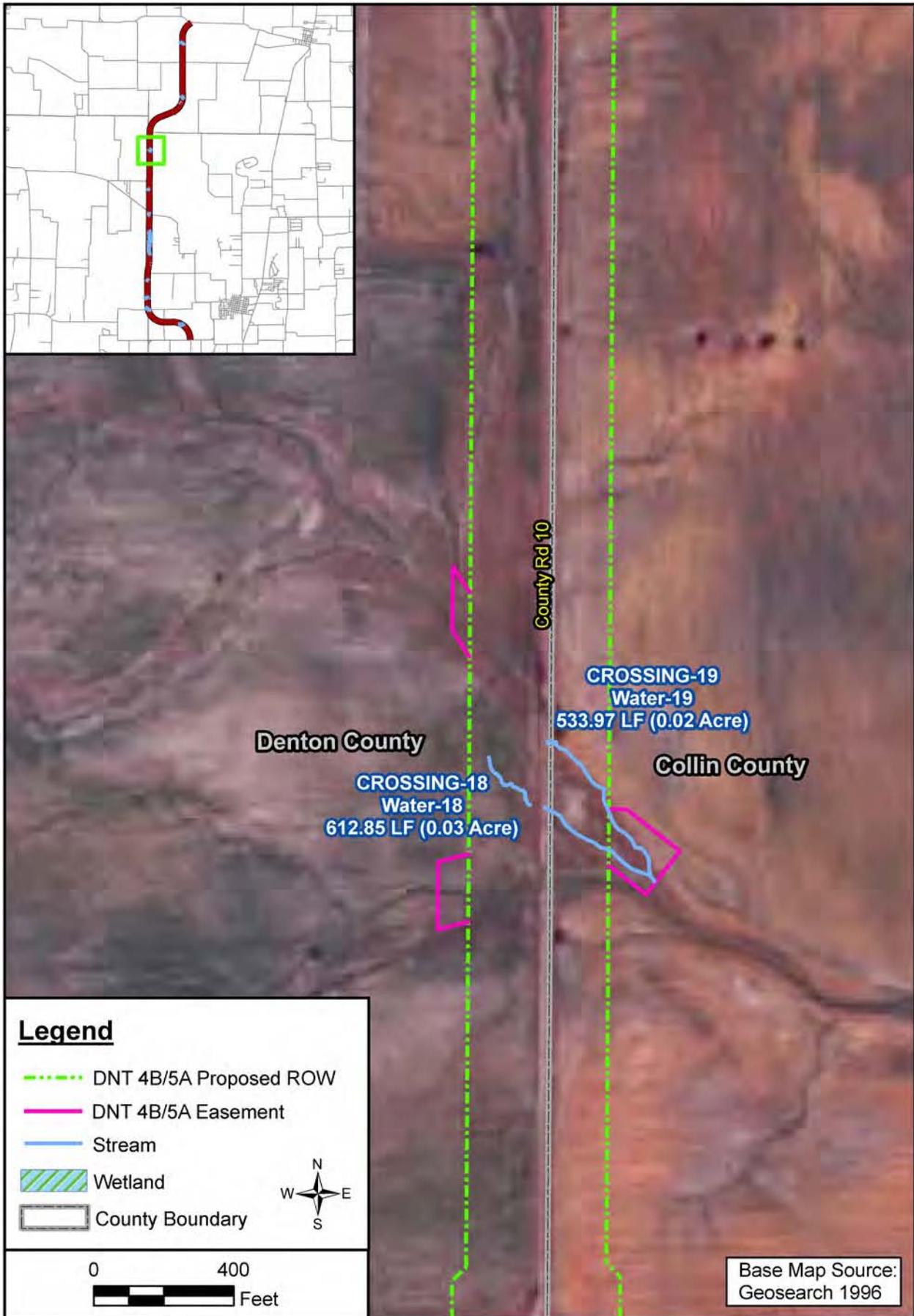


Figure 4: Historical Aerial Map (Sheet 8 of 10)

Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121

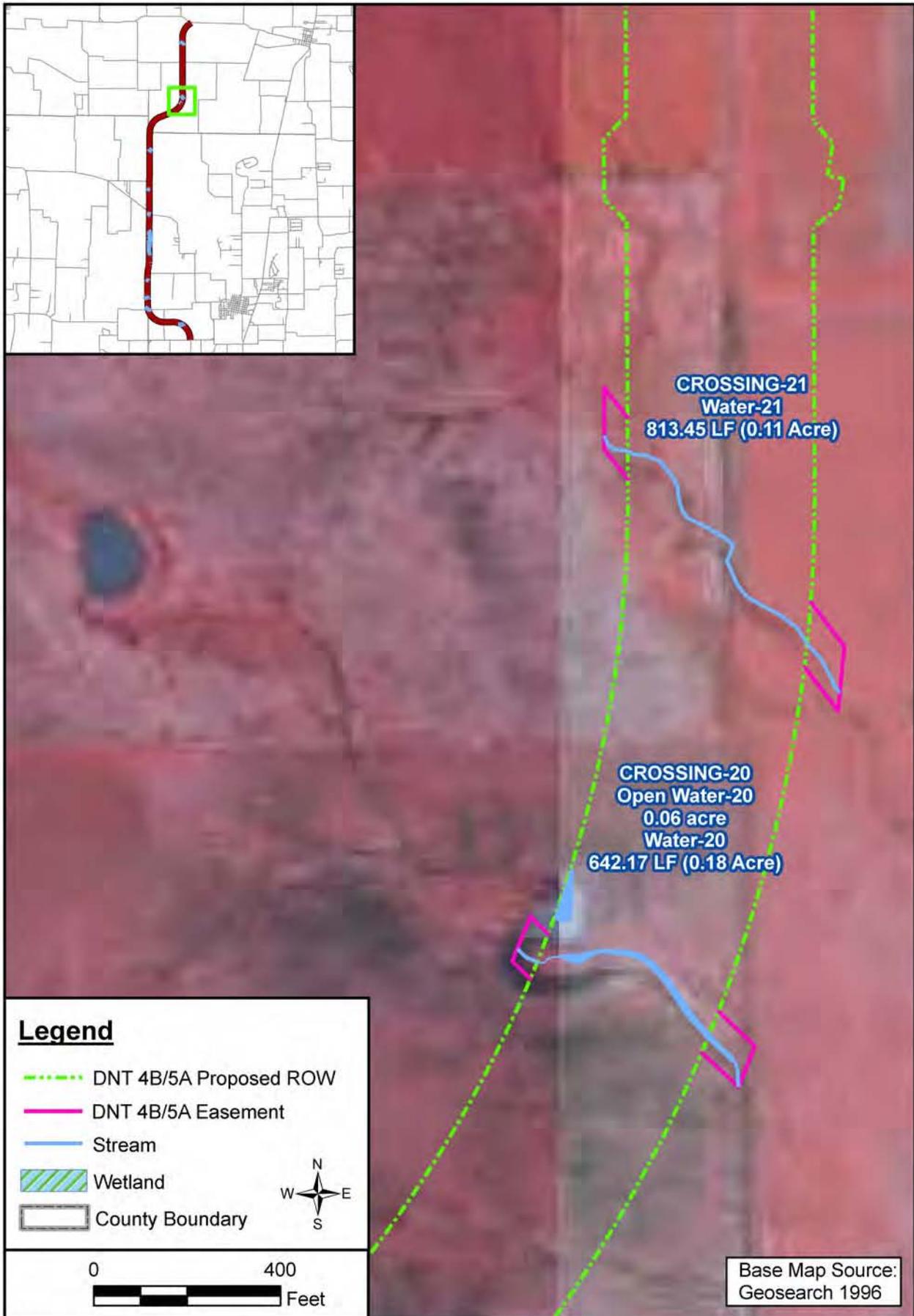


Figure 4: Historical Aerial Map (Sheet 9 of 10)

Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121

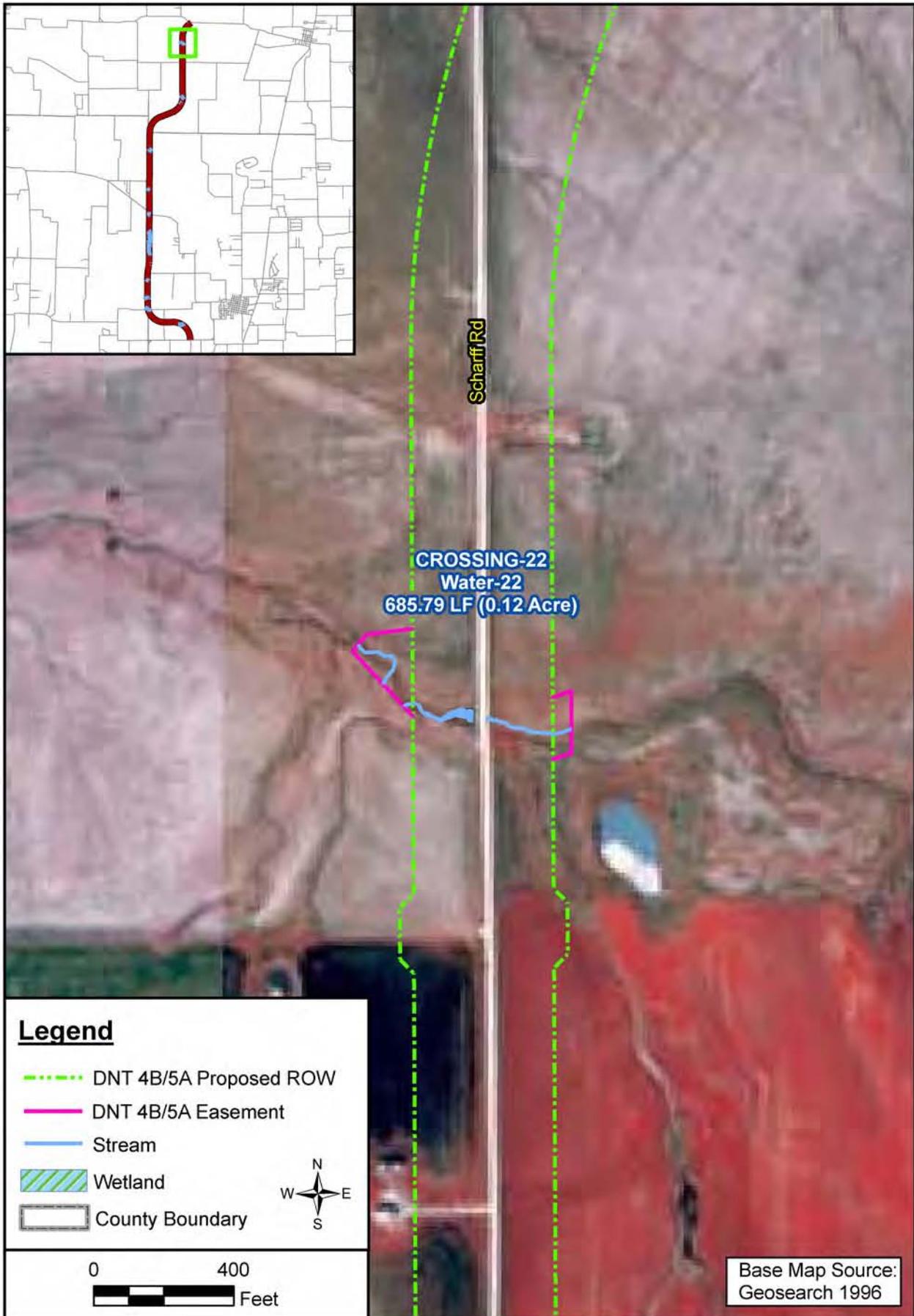


Figure 4: Historical Aerial Map (Sheet 10 of 10)
Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121

Appendix A

Project Area Ground Photographs



Photo No. 1 – View looking east along Crossing-1.



Photo No. 2 – View looking north along Crossing-2.



Photo No. 3 – View looking west at Crossing-3, south of County Road 8.



Photo No. 4 – View looking south at Crossing-3, north of County Road 8.



Photo No. 5 – View looking east from Crossing-4, west of County Road 9.



Photo No. 6 – View looking east from Crossing-5, west of County Road 9.

Appendix A (Sheet 1 of 5)
Project Area Ground Photographs
 Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121



Photo No. 7 – View looking west at Crossing-5, west of County Road 9.

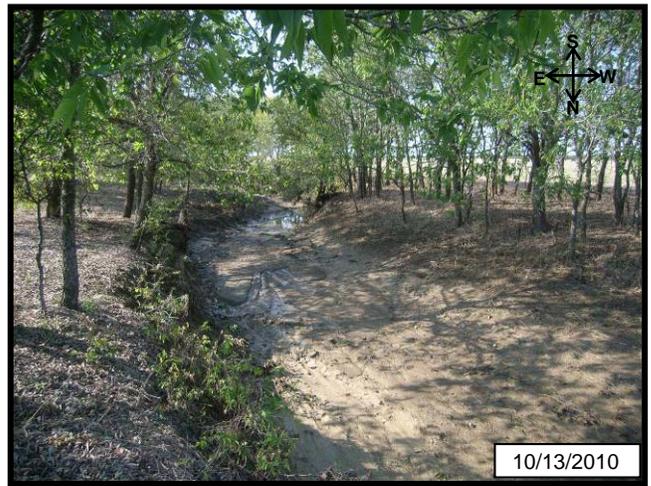


Photo No. 8 – View looking south along Crossing-6.



Photo No. 9 – View looking southeast at a meander in Crossing-6.



Photo No. 10 – View looking northeast at a meander in Crossing-6.



Photo No. 11 – View looking southeast toward Crossing-7.



Photo No. 12 – View looking southwest where Crossing-7 joins Crossing-6.

Appendix A (Sheet 2 of 5)
Project Area Ground Photographs
 Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121



Photo No. 13 – View looking east toward Crossing-8.



Photo No. 14 – View looking southwest along Crossing-9.



Photo No. 15 – View looking west toward Crossing-10.



Photo No. 16 – View looking north at Crossing-11.



Photo No. 17 – View looking east at Crossing-12.



Photo No. 18 – View looking southwest at Crossing-13.

Appendix A (Sheet 3 of 5)
Project Area Ground Photographs
 Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121



Photo No. 19 – View looking northwest toward Crossing-14.



Photo No. 20 – View looking northeast along Crossing-15.



Photo No. 21 – View looking south at Crossing-16.



Photo No. 22 – View looking east at Crossing-17, west of County Road 10.



Photo No. 23 – View looking east at Crossing-18, west of County Road 10.



Photo No. 24 – View looking east at Crossing-19, east of County Road 10.

Appendix A (Sheet 4 of 5)
Project Area Ground Photographs
 Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121



Photo No. 25 – View looking east along Crossing-20.



Photo No. 26 – View looking west from Crossing-21.



Photo No. 27 – View looking west from Crossing-22, east of Scharff Road.



Photo No. 28 – View looking west at Crossing-22, west of Scharff Road.



Photo No. 29 – View looking northeast at Non-jurisdictional Water-1, north of Water-4.

Appendix A (Sheet 5 of 5)
Project Area Ground Photographs
 Dallas North Tollway Extension Phase 4B/5A from FM 428 to FM 121

Appendix B
Wetland Determination Data Forms – Great Plains Region

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WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Dallas North Tollway 4B/5A (Crossing-3) City/County: Denton County Sampling Date: 10/14/2010
 Applicant/Owner: NTTA State: TX Sampling Point: DP1
 Investigator(s): CH, MB, TB Section, Township, Range: Not Applicable
 Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): 3.0000
 Subregion (LRR): J Lat: 33.322324 Long: -96.836863 Datum: NAD83
 Soil Map Unit Name: Ovan clay, frequently flooded NWI Classification: Upland
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation No, Soil No, or Hydrology No Significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation No, Soil No, or Hydrology No Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u> </u>	No <u>X</u>	Is the Sampled Area Within a Wetland? Yes <u> </u> No <u>X</u>
Hydric Soil Present?	Yes <u> </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u> </u>	No <u>X</u>	
Remarks: Sampling location does not meet any of the three wetland criteria.			

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30' rad</u>)	Absolute% Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
1. <u>None</u>				Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>0</u> (A)	
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
	<u>0</u>	= % Total Cover		Total Number of Dominant Species Across All Strata: <u>1</u> (B)	
Sapling/Shrub Stratum (Plot size: <u>15' rad</u>)				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)	
1. <u>None</u>				Prevalence Index worksheet: Total % Cover of: <u> </u> Multiply by: <u> </u> OBL species <u> </u> x 1 = <u> </u> FACW species <u> </u> x 2 = <u> </u> FAC species <u> </u> x 3 = <u> </u> FACU species <u> </u> x 4 = <u> </u> UPL species <u> </u> x 5 = <u> </u> Column Totals: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u>	
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
5. <u> </u>					
6. <u> </u>					
	<u>0</u>	= % Total Cover			
Herb Stratum (Plot size: <u>5' rad</u>)					
1. <u>Cynodon dactylon</u>	<u>30</u>	<u>Yes</u>	<u>FACU+</u>		
2. <u>Sorghum halepense</u>	<u>5</u>	<u>No</u>	<u>FACU</u>		
3. <u>Ambrosia trifida</u>		<u>No</u>	<u>FACU</u>		
4. <u>Elymus virginicus</u>	<u>5</u>	<u>No</u>	<u>FAC</u>		
5. <u>Xanthium strumarium</u>	<u>5</u>	<u>No</u>	<u>FAC-</u>		
6. <u> </u>					
7. <u> </u>		<u>5</u>			
8. <u> </u>					
9. <u> </u>					
10. <u> </u>					
	<u>50</u>	= % Total Cover			
Woody Vine Stratum (Plot size: <u>30' rad</u>)					
1. <u>None</u>					
2. <u> </u>					
	<u>0</u>	= % Total Cover			
% Bare Ground in Herb Stratum	<u>50</u>				
Remarks: Vegetation does not meet hydrophytic vegetation criterion.				Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u> </u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
				Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>	

SOIL

Sampling Point: DP1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-16	10YR 4/2	100					Clay loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- | | | |
|--|--|--|
| <input type="checkbox"/> Histols (A1) | <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> 1 cm Muck (A9) (LRR 1, J) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Dark Surface (S7) (LRR G) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Mucky Mineral (F1) | <input type="checkbox"/> High Plains Depressions (F16) |
| <input type="checkbox"/> Stratified Layers (A5) (LRR F) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | (LRR H outside of MLRA 72 & 73) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H) | <input type="checkbox"/> Depleted Matrix (F3) | <input type="checkbox"/> Reduced Vertic (F18) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Redox Dark Surface (F6) | <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Depleted Dark Surface (F7) | <input type="checkbox"/> Very Dark Surface Unit (TF12) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Redox Depressions (F8) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H) | <input type="checkbox"/> High Plains Depressions (F16) | ³ Indicators of hydrophytic vegetation and |
| <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F) | (MLRA 72 & 73 of LRR H) | wetland hydrology must be present, |
| | | unless disturbed or problematic |

Restrictive Layer (if present):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks: Hydric soil indicators were not observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

Secondary Indicators (minimum of two required)

- | | | |
|---|--|---|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Salt Crust (B11) | <input type="checkbox"/> Surface Soil Cracks (B6) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Aquatic Invertebrates (B13) | <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input checked="" type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Dry-Season Water Table (C2) | <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Oxidized Rhizospheres on Living | (where tilled) |
| <input type="checkbox"/> Drift Deposits (B3) | Roots (C3) (where not tilled) | <input type="checkbox"/> Crayfish burrows (C8) |
| <input type="checkbox"/> Agal Mat or Crust (B4) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Thin Muck Surface (C7) | <input type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> Inundation Visible on Aerial | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> FAC-Neutral Test (D5) |
| Imagery (B7) | | <input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F) |
| <input type="checkbox"/> Water-Stained Leaves (B9) | | |

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): NA
 Water Table Present? Yes _____ No X Depth (inches): NA
 Saturation Present? Yes _____ No X Depth (inches): NA
 (includes capillary fringe)

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No primary or secondary hydrology indicators were present.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Dallas North Tollway 4B/5A (Crossing-6) City/County: Denton County Sampling Date: 10/13/2010
 Applicant/Owner: NTTA State: TX Sampling Point: DP2
 Investigator(s): CH, MB, TB Section, Township, Range: Not Applicable
 Landform (hillslope, terrace, etc.): Meander Local relief (concave, convex, none): None Slope (%): 4.0000
 Subregion (LRR): J Lat: 33.348565 Long: -96.835463 Datum: NAD83
 Soil Map Unit Name: Burleson clay, 1 to 3 percent slopes NWI Classification: Upland
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation No, Soil No, or Hydrology No Significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation No, Soil No, or Hydrology No Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u> </u>	No <u>X</u>	Is the Sampled Area Within a Wetland? Yes <u> </u> No <u>X</u>
Hydric Soil Present?	Yes <u> </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u> </u>	No <u>X</u>	
Remarks: Sampling location does not meet any of the three wetland criteria.			

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30' rad</u>)	Absolute% Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
1. <u>None</u>				Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>0</u> (A)	
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
	<u>0</u> = % Total Cover			Total Number of Dominant Species Across All Strata: <u>1</u> (B)	
Sapling/Shrub Stratum (Plot size: <u>15' rad</u>)				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)	
1. <u>None</u>				Prevalence Index worksheet: Total % Cover of: <u> </u> Multiply by: <u> </u> OBL species <u> </u> x 1 = <u> </u> FACW species <u> </u> x 2 = <u> </u> FAC species <u> </u> x 3 = <u> </u> FACU species <u> </u> x 4 = <u> </u> UPL species <u> </u> x 5 = <u> </u> Column Totals: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u>	
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
5. <u> </u>					
6. <u> </u>					
	<u>0</u> = % Total Cover				
Herb Stratum (Plot size: <u>5' rad</u>)					
1. <u>Bromus catharticus</u>	<u>60</u>	<u>Yes</u>	<u>UPL</u>		
2. <u>Ambrosia trifida</u>	<u>5</u>	<u>No</u>	<u>FACU</u>		
3. <u> </u>					
4. <u> </u>					
5. <u> </u>					
6. <u> </u>					
7. <u> </u>					
8. <u> </u>					
9. <u> </u>					
10. <u> </u>					
	<u>65</u> = % Total Cover				
Woody Vine Stratum (Plot size: <u>30' rad</u>)					
1. <u>None</u>				Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u> </u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
2. <u> </u>					
	<u>0</u> = % Total Cover				
% Bare Ground in Herb Stratum <u>35</u>				Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>	
Remarks: Vegetation does not meet hydrophytic vegetation criterion.					

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-16	10YR 4/2	100					Clay	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- | | | |
|--|--|--|
| <input type="checkbox"/> Histols (A1) | <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> 1 cm Muck (A9) (LRR 1, J) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Dark Surface (S7) (LRR G) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Mucky Mineral (F1) | <input type="checkbox"/> High Plains Depressions (F16) |
| <input type="checkbox"/> Stratified Layers (A5) (LRR F) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | (LRR H outside of MLRA 72 & 73) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H) | <input type="checkbox"/> Depleted Matrix (F3) | <input type="checkbox"/> Reduced Vertic (F18) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Redox Dark Surface (F6) | <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Depleted Dark Surface (F7) | <input type="checkbox"/> Very Dark Surface Unit (TF12) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Redox Depressions (F8) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H) | <input type="checkbox"/> High Plains Depressions (F16) | ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic |
| <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F) | (MLRA 72 & 73 of LRR H) | |

Restrictive Layer (if present):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks: Hydric soil indicators were not observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

Secondary Indicators (minimum of two required)

- | | | |
|--|---|---|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Salt Crust (B11) | <input type="checkbox"/> Surface Soil Cracks (B6) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Aquatic Invertebrates (B13) | <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input checked="" type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Dry-Season Water Table (C2) | <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) (where not tilled) | (where tilled) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input type="checkbox"/> Crayfish burrows (C8) |
| <input type="checkbox"/> Agal Mat or Crust (B4) | <input type="checkbox"/> Thin Muck Surface (C7) | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | | <input type="checkbox"/> FAC-Neutral Test (D5) |
| <input type="checkbox"/> Water-Stained Leaves (B9) | | <input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F) |

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): NA
 Water Table Present? Yes _____ No X Depth (inches): NA
 Saturation Present? Yes _____ No X Depth (inches): NA **Wetland Hydrology Present?** Yes _____ No X
 (includes capillary fringe)

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No primary or secondary hydrology indicators were present.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Dallas North Tollway 4B/5A (Crossing-6) City/County: Denton County Sampling Date: 10/13/2010
 Applicant/Owner: NTTA State: TX Sampling Point: DP3
 Investigator(s): CH, MB, TB Section, Township, Range: Not Applicable
 Landform (hillslope, terrace, etc.): Meander Local relief (concave, convex, none): None Slope (%): 3.0000
 Subregion (LRR): J Lat: 33.350653 Long: -96.835475 Datum: NAD83
 Soil Map Unit Name: Heiden clay, 1 to 3 percent slopes NWI Classification: PEM1
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation No, Soil No, or Hydrology No Significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation No, Soil No, or Hydrology No Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u> </u>	No <u>X</u>	Is the Sampled Area Within a Wetland? Yes <u> </u> No <u>X</u>
Hydric Soil Present?	Yes <u> </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u> </u>	No <u>X</u>	
Remarks: Sampling location does not meet any of the three wetland criteria.			

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30' rad</u>)	Absolute% Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
1. <u>None</u>					
2. _____					
3. _____					
4. _____					
		<u>0</u> = % Total Cover			
Sapling/Shrub Stratum	(Plot size: <u>15' rad</u>)				
1. <u>None</u>					Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species x 1 = _____ FACW species x 2 = _____ FAC species x 3 = _____ FACU species x 4 = _____ UPL species x 5 = _____ Column Totals: (A) (B) Prevalence Index = B/A = _____
2. _____					
3. _____					
4. _____					
5. _____					
		<u>0</u> = % Total Cover			
Herb Stratum	(Plot size: <u>5' rad</u>)				
1. <u>Bromus catharticus</u>		60	Yes	UPL	
2. <u>Ambrosia trifida</u>		15	No	FACU	
3. <u>Sorghum halepense</u>		5	No	FACU	
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
9. _____					
10. _____					
		<u>80</u> = % Total Cover			
Woody Vine Stratum	(Plot size: <u>30' rad</u>)				
1. <u>None</u>					
2. _____					
		<u>0</u> = % Total Cover			
% Bare Ground in Herb Stratum		<u>20</u>			
Remarks: Vegetation does not meet hydrophytic vegetation criterion.					Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u> </u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>

SOIL

Sampling Point: DP3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-16	10YR 4/2	100					Clay	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils³:	
<input type="checkbox"/> Histols (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR 1, J)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside of MLRA 72 & 73)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Dark Surface Unit (TF12)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H)	<input type="checkbox"/> High Plains Depressions (F16)	³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	<input type="checkbox"/> (MLRA 72 & 73 of LRR H)		

Restrictive Layer (if present):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks: Hydric soil indicators were not observed.

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) (where not tilled)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Agal Mat or Crust (B4)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
	<input checked="" type="checkbox"/> Drainage Patterns (B10)
	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) (where tilled)
	<input type="checkbox"/> Crayfish burrows (C8)
	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
	<input type="checkbox"/> Geomorphic Position (D2)
	<input type="checkbox"/> FAC-Neutral Test (D5)
	<input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)

Field Observations:
 Surface Water Present? Yes _____ No X Depth (inches): NA
 Water Table Present? Yes _____ No X Depth (inches): NA
 Saturation Present? Yes _____ No X Depth (inches): NA **Wetland Hydrology Present?** Yes _____ No X
 (includes capillary fringe)

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No primary or secondary hydrology indicators were present.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR 3/2	100					Clay	
4-16	10YR 3/2	80	5YR 3/4	20	C	M	Clay	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- | | | |
|--|---|--|
| <input type="checkbox"/> Histols (A1) | <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> 1 cm Muck (A9) (LRR 1, J) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Dark Surface (S7) (LRR G) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Mucky Mineral (F1) | <input type="checkbox"/> High Plains Depressions (F16) |
| <input type="checkbox"/> Stratified Layers (A5) (LRR F) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | (LRR H outside of MLRA 72 & 73) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H) | <input type="checkbox"/> Depleted Matrix (F3) | <input type="checkbox"/> Reduced Vertic (F18) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input checked="" type="checkbox"/> Redox Dark Surface (F6) | <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Depleted Dark Surface (F7) | <input type="checkbox"/> Very Dark Surface Unit (TF12) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Redox Depressions (F8) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H) | <input type="checkbox"/> High Plains Depressions (F16) | ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic |
| <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F) | (MLRA 72 & 73 of LRR H) | |

Restrictive Layer (if present):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks: Soils meet hydric soil criterion.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

Secondary Indicators (minimum of two required)

- | | | |
|--|---|---|
| <input checked="" type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Salt Crust (B11) | <input type="checkbox"/> Surface Soil Cracks (B6) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Aquatic Invertebrates (B13) | <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input checked="" type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Dry-Season Water Table (C2) | <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) (where not tilled) | (where tilled) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input checked="" type="checkbox"/> Crayfish burrows (C8) |
| <input type="checkbox"/> Agal Mat or Crust (B4) | <input type="checkbox"/> Thin Muck Surface (C7) | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | | <input checked="" type="checkbox"/> FAC-Neutral Test (D5) |
| <input type="checkbox"/> Water-Stained Leaves (B9) | | <input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F) |

Field Observations:

Surface Water Present? Yes No Depth (inches): 3
 Water Table Present? Yes No Depth (inches): NA
 Saturation Present? Yes No Depth (inches): NA **Wetland Hydrology Present? Yes No**
 (includes capillary fringe)

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Hydrology criterion met.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Dallas North Tollway 4B/5A (Crossing-15) City/County: Collin County Sampling Date: 10/13/2010
 Applicant/Owner: NTTA State: TX Sampling Point: DP5
 Investigator(s): CH, MB, TB Section, Township, Range: Not Applicable
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Convex Slope (%): 5.0000
 Subregion (LRR): J Lat: 33.358596 Long: -96.835081 Datum: NAD83
 Soil Map Unit Name: Trinity clay, occasionally flooded, 0 to 1 percent slopes NWI Classification: PEM1
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation No, Soil No, or Hydrology No Significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation No, Soil No, or Hydrology No Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u> </u>	Is the Sampled Area Within a Wetland?	Yes <u> </u>	No <u>X</u>
Hydric Soil Present?	Yes <u> </u>	No <u>X</u>			
Wetland Hydrology Present?	Yes <u> </u>	No <u>X</u>			
Remarks: Sampling location does not meet two of the three wetland criteria.					

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30' rad</u>)	Absolute% Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
1. <u>None</u>						
2. <u> </u>					Total Number of Dominant Species Across All Strata: <u>4</u> (B)	
3. <u> </u>					Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75</u> (A/B)	
4. <u> </u>					Prevalence Index worksheet:	
5. <u> </u>						
					Multiply by:	
					OBL species <u> </u> x 1 = <u> </u>	
					FACW species <u> </u> x 2 = <u> </u>	
					FAC species <u> </u> x 3 = <u> </u>	
					FACU species <u> </u> x 4 = <u> </u>	
					UPL species <u> </u> x 5 = <u> </u>	
					Column Totals: <u> </u> (A) <u> </u> (B)	
					Prevalence Index = B/A = <u> </u>	
Hydrophytic Vegetation Indicators:						
<u>X</u> 1 - Rapid Test for Hydrophytic Vegetation						
<u> </u> 2 - Dominance Test is >50%						
<u> </u> 3 - Prevalence Index is ≤3.0 ¹						
<u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on separate sheet)						
<u> </u> Problematic Hydrophytic Vegetation ¹ (Explain)						
¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.						
Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>						
Remarks: Vegetation meets hydrophytic vegetation criterion.						

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-16	10YR 3/2	100					Clay	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histols (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR 1, J)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside of MLRA 72 & 73)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Dark Surface Unit (TF12)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H)	<input type="checkbox"/> High Plains Depressions (F16)	³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	<input type="checkbox"/> (MLRA 72 & 73 of LRR H)		

Restrictive Layer (if present):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks: Hydric soil indicators were not observed.

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> (where tilled)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Crayfish burrows (C8)
<input type="checkbox"/> Agal Mat or Crust (B4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)
<input type="checkbox"/> Salt Crust (B11)	
<input type="checkbox"/> Aquatic Invertebrates (B13)	
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) (where not tilled)	
<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Thin Muck Surface (C7)	
<input type="checkbox"/> Other (Explain in Remarks)	

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): NA

Water Table Present? Yes _____ No X Depth (inches): NA

Saturation Present? Yes _____ No X Depth (inches): NA **Wetland Hydrology Present?** Yes _____ No X
 (includes capillary fringe)

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No primary or secondary hydrology indicators were present.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Dallas North Tollway 4B/5A (Crossing-20) City/County: Gunter/Grayson Sampling Date: 10/12/2010
 Applicant/Owner: NTTA State: TX Sampling Point: DP6
 Investigator(s): CH, MB, TB Section, Township, Range: Not Applicable
 Landform (hillslope, terrace, etc.): Plain Local relief (concave, convex, none): Concave Slope (%): 5.0000
 Subregion (LRR): J Lat: 33.419375 Long: -96.816007 Datum: NAD83
 Soil Map Unit Name: Vertel clay, 3 to 5 percent slopes NWI Classification: Upland
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
 Are Vegetation No, Soil No, or Hydrology No Significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation No, Soil No, or Hydrology No Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No <u>X</u>	Is the Sampled Area Within a Wetland? Yes _____ No <u>X</u>
Hydric Soil Present?	Yes _____	No <u>X</u>	
Wetland Hydrology Present?	Yes _____	No <u>X</u>	
Remarks: Sampling location does not meet any of the three wetland criteria.			

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30' rad</u>)	Absolute% Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
1. <u>Salix nigra</u>		<u>2</u>	<u>No</u>	<u>FACW+</u>	Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>0</u> (A)	
2. _____					Total Number of Dominant Species Across All Strata: <u>2</u> (B)	
3. _____					Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)	
4. _____						
		<u>2</u>	= % Total Cover			
Sapling/Shrub Stratum	(Plot size: <u>15' rad</u>)				Prevalence Index worksheet:	
1. <u>None</u>					Total % Cover of:	Multiply by:
2. _____					OBL species _____	x 1 = _____
3. _____					FACW species _____	x 2 = _____
4. _____					FAC species _____	x 3 = _____
5. _____					FACU species _____	x 4 = _____
		<u>0</u>	= % Total Cover		UPL species _____	x 5 = _____
					Column Totals: _____	(A) _____ (B)
					Prevalence Index = B/A = _____	
Herb Stratum	(Plot size: <u>5' rad</u>)				Hydrophytic Vegetation Indicators:	
1. <u>Agropyron smithii</u>		<u>60</u>	<u>Yes</u>	<u>FAC-</u>	_____ 1 - Rapid Test for Hydrophytic Vegetation	
2. <u>Sporobolus compositus</u>		<u>35</u>	<u>Yes</u>	<u>UPL</u>	_____ 2 - Dominance Test is >50%	
3. <u>Sorghum halepense</u>		<u>5</u>	<u>No</u>	<u>FACU</u>	_____ 3 - Prevalence Index is ≤3.0 ¹	
4. _____					_____ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on separate sheet)	
5. _____					_____ Problematic Hydrophytic Vegetation ¹ (Explain)	
6. _____					¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
7. _____						
8. _____						
9. _____						
10. _____						
		<u>100</u>	= % Total Cover		Hydrophytic Vegetation Present? Yes _____ No <u>X</u>	
Woody Vine Stratum	(Plot size: <u>30' rad</u>)					
1. <u>None</u>						
2. _____						
		<u>0</u>	= % Total Cover			
% Bare Ground in Herb Stratum		<u>0</u>				
Remarks: Vegetation does not meet hydrophytic vegetation criterion.						

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-16	10YR 3/2	100					Clay	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histols (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR 1, J)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside of MLRA 72 & 73)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Dark Surface Unit (TF12)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H)	<input type="checkbox"/> High Plains Depressions (F16)	³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	<input type="checkbox"/> (MLRA 72 & 73 of LRR H)		

Restrictive Layer (if present):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks: Hydric soil indicators were not observed.

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) (where not tilled)
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Crayfish burrows (C8)
<input type="checkbox"/> Agal Mat or Crust (B4)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): NA

Water Table Present? Yes _____ No X Depth (inches): NA

Saturation Present? Yes _____ No X Depth (inches): NA **Wetland Hydrology Present?** Yes _____ No X

(includes capillary fringe)

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No primary or secondary hydrology indicators were present.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Dallas North Tollway 4B/5A (Crossing-21) City/County: Gunter/Grayson Sampling Date: 10/12/2010
 Applicant/Owner: NTTA State: TX Sampling Point: DP7
 Investigator(s): CH, MB, TB Section, Township, Range: Not Applicable
 Landform (hillslope, terrace, etc.): Plain Local relief (concave, convex, none): Concave Slope (%): 3.0000
 Subregion (LRR): J Lat: 33.421364 Long: -96.814871 Datum: NAD83
 Soil Map Unit Name: Vertel clay, 3 to 5 percent slopes NWI Classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation No, Soil No, or Hydrology No Significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation No, Soil No, or Hydrology No Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u> </u>	No <u>X</u>	Is the Sampled Area Within a Wetland?	Yes <u> </u>	No <u>X</u>
Hydric Soil Present?	Yes <u>X</u>	No <u> </u>			
Wetland Hydrology Present?	Yes <u> </u>	No <u>X</u>			
Remarks: Sampling location does not meet two of the three wetland criteria.					

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30' rad</u>)	Absolute% Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
1. <u>None</u>						Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>0</u> (A)
2. <u> </u>						
3. <u> </u>						
4. <u> </u>						
		<u>0</u> = % Total Cover				Total Number of Dominant Species Across All Strata: <u>1</u> (B)
Sapling/Shrub Stratum	(Plot size: <u>15' rad</u>)				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)	
1. <u>None</u>						
2. <u> </u>						
3. <u> </u>						
4. <u> </u>						
5. <u> </u>						
		<u>0</u> = % Total Cover				
Herb Stratum	(Plot size: <u>5' rad</u>)				Prevalence Index worksheet: Total % Cover of: <u> </u> Multiply by: <u> </u> OBL species <u> </u> x 1 = <u> </u> FACW species <u> </u> x 2 = <u> </u> FAC species <u> </u> x 3 = <u> </u> FACU species <u> </u> x 4 = <u> </u> UPL species <u> </u> x 5 = <u> </u> Column Totals: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u>	
1. <u>Bromus japonicus</u>		<u>50</u>	<u>Yes</u>	<u>FACU</u>		
2. <u> </u>						
3. <u> </u>						
4. <u> </u>						
5. <u> </u>						
6. <u> </u>						
7. <u> </u>						
8. <u> </u>						
9. <u> </u>						
10. <u> </u>						
		<u>50</u> = % Total Cover				
Woody Vine Stratum	(Plot size: <u>30' rad</u>)				Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u> </u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
1. <u>None</u>						
2. <u> </u>						
		<u>0</u> = % Total Cover				
% Bare Ground in Herb Stratum <u>50</u>						
Remarks: Vegetation does not meet hydrophytic vegetation criterion.					Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>	

SOIL

Sampling Point: DP7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-16	10YR 3/2	95	5YR 3/4	5	C	PL	Clay	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- | | | |
|--|---|--|
| <input type="checkbox"/> Histols (A1) | <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> 1 cm Muck (A9) (LRR 1, J) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Dark Surface (S7) (LRR G) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Mucky Mineral (F1) | <input type="checkbox"/> High Plains Depressions (F16) |
| <input type="checkbox"/> Stratified Layers (A5) (LRR F) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | (LRR H outside of MLRA 72 & 73) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H) | <input type="checkbox"/> Depleted Matrix (F3) | <input type="checkbox"/> Reduced Vertic (F18) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input checked="" type="checkbox"/> Redox Dark Surface (F6) | <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Depleted Dark Surface (F7) | <input type="checkbox"/> Very Dark Surface Unit (TF12) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Redox Depressions (F8) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H) | <input type="checkbox"/> High Plains Depressions (F16) | ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic |
| <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F) | (MLRA 72 & 73 of LRR H) | |

Restrictive Layer (if present):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks: Soils meet hydric soil criterion.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

Secondary Indicators (minimum of two required)

- | | | |
|--|---|---|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Salt Crust (B11) | <input type="checkbox"/> Surface Soil Cracks (B6) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Aquatic Invertebrates (B13) | <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input checked="" type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Dry-Season Water Table (C2) | <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) (where not tilled) | (where tilled) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input type="checkbox"/> Crayfish burrows (C8) |
| <input type="checkbox"/> Agal Mat or Crust (B4) | <input type="checkbox"/> Thin Muck Surface (C7) | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | | <input type="checkbox"/> FAC-Neutral Test (D5) |
| <input type="checkbox"/> Water-Stained Leaves (B9) | | <input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F) |

Field Observations:

Surface Water Present? Yes No Depth (inches): NA
 Water Table Present? Yes No Depth (inches): NA
 Saturation Present? Yes No Depth (inches): NA **Wetland Hydrology Present?** Yes No
 (includes capillary fringe)

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No primary or secondary hydrology indicators were present.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Dallas North Tollway 4B/5A (Crossing-22) City/County: Grayson County Sampling Date: 10/12/2010
 Applicant/Owner: NTTA State: TX Sampling Point: DP8
 Investigator(s): CH, MB, TB Section, Township, Range: Not Applicable
 Landform (hillslope, terrace, etc.): Plain Local relief (concave, convex, none): Concave Slope (%): 3.0000
 Subregion (LRR): J Lat: 33.447205 Long: -96.814656 Datum: NAD83
 Soil Map Unit Name: Elbon soils, frequently flooded NWI Classification: Upland
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation No, Soil No, or Hydrology No Significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation No, Soil No, or Hydrology No Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u> </u>	No <u>X</u>	Is the Sampled Area Within a Wetland? Yes <u> </u> No <u>X</u>
Hydric Soil Present?	Yes <u> </u>	No <u>X</u>	
Wetland Hydrology Present?	Yes <u> </u>	No <u>X</u>	
Remarks: Sampling location does not meet any of the three wetland criteria.			

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30' rad</u>)	Absolute% Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
1. <u>None</u>					Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>0</u> (A)	
2. <u> </u>						
3. <u> </u>						
4. <u> </u>						
		<u>0</u> = % Total Cover			Total Number of Dominant Species Across All Strata: <u>2</u> (B)	
Sapling/Shrub Stratum	(Plot size: <u>15' rad</u>)				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)	
1. <u>None</u>					Prevalence Index worksheet: Total % Cover of: <u> </u> Multiply by: <u> </u> OBL species <u> </u> x 1 = <u> </u> FACW species <u> </u> x 2 = <u> </u> FAC species <u> </u> x 3 = <u> </u> FACU species <u> </u> x 4 = <u> </u> UPL species <u> </u> x 5 = <u> </u> Column Totals: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u>	
2. <u> </u>						
3. <u> </u>						
4. <u> </u>						
5. <u> </u>						
6. <u> </u>						
		<u>0</u> = % Total Cover				
Herb Stratum	(Plot size: <u>5' rad</u>)					
1. <u>Cynodon dactylon</u>		<u>60</u>	<u>Yes</u>	<u>FACU+</u>		
2. <u>Aster ericoides</u>		<u>20</u>	<u>Yes</u>	<u>FACU-</u>		
3. <u>Sorghum halepense</u>		<u>18</u>	<u>No</u>	<u>FACU</u>		
4. <u>Rumex crispus</u>		<u>2</u>	<u>No</u>	<u>FACW</u>		
5. <u> </u>						
6. <u> </u>						
7. <u> </u>						
8. <u> </u>						
9. <u> </u>						
10. <u> </u>						
		<u>100</u> = % Total Cover				
Woody Vine Stratum	(Plot size: <u>30' rad</u>)					
1. <u>None</u>						
2. <u> </u>						
		<u>0</u> = % Total Cover				
% Bare Ground in Herb Stratum <u>0</u>						
Remarks: Vegetation does not meet hydrophytic vegetation criterion.					Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u> </u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>	

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Table with columns: Depth (inches), Matrix (Color (moist), %), Redox Features (Color (moist), %, Type¹, Loc²), Texture, Remarks. Row 1: 0-16, 10YR 3/2, 100, Clay.

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- Hydric Soil Indicators: Histols (A1), Histic Epipedon (A2), Black Histic (A3), Hydrogen Sulfide (A4), Stratified Layers (A5) (LRR F), 1 cm Muck (A9) (LRR F, G, H), Depleted Below Dark Surface (A11), Thick Dark Surface (A12), Sandy Mucky Mineral (S1), 2.5 cm Mucky Peat or Peat (S2) (LRR G, H), 5 cm Mucky Peat or Peat (S3) (LRR F), Sandy Gleyed Matrix (S4), Sandy Redox (S5), Stripped Matrix (S6), Loamy Mucky Mineral (F1), Loamy Gleyed Matrix (F2), Depleted Matrix (F3), Redox Dark Surface (F6), Depleted Dark Surface (F7), Redox Depressions (F8), High Plains Depressions (F16), (MLRA 72 & 73 of LRR H).
Indicators for Problematic Hydric Soils: 1 cm Muck (A9) (LRR 1, J), Coast Prairie Redox (A16) (LRR F, G, H), Dark Surface (S7) (LRR G), High Plains Depressions (F16) (LRR H outside of MLRA 72 & 73), Reduced Vertic (F18), Red Parent Material (TF2), Very Dark Surface Unit (TF12), Other (Explain in Remarks).

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present):

Type:
Depth (inches):

Hydric Soil Present? Yes No X

Remarks: Hydric soil indicators were not observed.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

Secondary Indicators (minimum of two required)

- Primary Indicators: Surface Water (A1), High Water Table (A2), Saturation (A3), Water Marks (B1), Sediment Deposits (B2), Drift Deposits (B3), Agal Mat or Crust (B4), Iron Deposits (B5), Inundation Visible on Aerial Imagery (B7), Water-Stained Leaves (B9), Salt Crust (B11), Aquatic Invertebrates (B13), Hydrogen Sulfide Odor (C1), Dry-Season Water Table (C2), Oxidized Rhizospheres on Living Roots (C3) (where not tilled), Presence of Reduced Iron (C4), Thin Muck Surface (C7), Other (Explain in Remarks).
Secondary Indicators: Surface Soil Cracks (B6), Sparsely Vegetated Concave Surface (B8), Drainage Patterns (B10) (checked X), Oxidized Rhizospheres on Living Roots (C3) (where tilled), Crayfish burrows (C8), Saturation Visible on Aerial Imagery (C9), Geomorphic Position (D2), FAC-Neutral Test (D5), Frost-Heave Hummocks (D7) (LRR F).

Field Observations:

Surface Water Present? Yes No X Depth (inches): NA
Water Table Present? Yes No X Depth (inches): NA
Saturation Present? Yes No X Depth (inches): NA
(includes capillary fringe)

Wetland Hydrology Present? Yes No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No primary or secondary hydrology indicators were present.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Dallas North Tollway 4B/5A (Crossing-11) City/County: Denton County Sampling Date: 12/9/2010
 Applicant/Owner: NTTA State: TX Sampling Point: DP9
 Investigator(s): CH, MB, TB Section, Township, Range: Not Applicable
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave Slope (%): .5000
 Subregion (LRR): J Lat: 33.355376 Long: -96.836779 Datum: NAD83
 Soil Map Unit Name: Ovan clay, frequently flooded NWI Classification: PEM1
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation No, Soil No, or Hydrology No Significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation No, Soil No, or Hydrology No Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u> </u>	Is the Sampled Area Within a Wetland?	Yes <u>X</u>	No <u> </u>
Hydric Soil Present?	Yes <u>X</u>	No <u> </u>		Yes <u>X</u>	No <u> </u>
Wetland Hydrology Present?	Yes <u>X</u>	No <u> </u>		Yes <u>X</u>	No <u> </u>
Remarks: Sampling location meets all three of the wetland criteria.					

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30' rad</u>)	Absolute% Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
1. <u>Fraxinus pennsylvanica</u>	5	Yes	FACW-	Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>2</u> (A)	
2. <u>Ulmus crassifolia</u>	1	No	FAC-		
3. <u> </u>					
4. <u> </u>					
6 = % Total Cover				Total Number of Dominant Species Across All Strata: <u>2</u> (B)	
Sapling/Shrub Stratum (Plot size: <u>15' rad</u>)				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)	
1. <u>None</u>				Prevalence Index worksheet:	
2. <u> </u>					
3. <u> </u>					
4. <u> </u>					
5. <u> </u>					
0 = % Total Cover					
Herb Stratum (Plot size: <u>5' rad</u>)				OBL species <u> </u> x 1 = <u> </u>	
1. <u>Carex crus-corvi</u>	30	Yes	OBL	FACW species <u> </u> x 2 = <u> </u>	
2. <u> </u>				FAC species <u> </u> x 3 = <u> </u>	
3. <u> </u>				FACU species <u> </u> x 4 = <u> </u>	
4. <u> </u>				UPL species <u> </u> x 5 = <u> </u>	
5. <u> </u>				Column Totals: <u> </u> (A) <u> </u> (B)	
6. <u> </u>				Prevalence Index = B/A = <u> </u>	
7. <u> </u>				Hydrophytic Vegetation Indicators:	
8. <u> </u>					
9. <u> </u>					
10. <u> </u>					
30 = % Total Cover					
Woody Vine Stratum (Plot size: <u>30' rad</u>)				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
1. <u>None</u>				Hydrophytic Vegetation Present?	
2. <u> </u>				Yes <u>X</u> No <u> </u>	
0 = % Total Cover					
% Bare Ground in Herb Stratum <u>70</u>					
Remarks: Vegetation meets hydrophytic vegetation criterion.					

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-16	10YR 3/1	60	7.5YR 4/3	40	C	PL	Clay	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- | | | |
|--|---|--|
| <input type="checkbox"/> Histols (A1) | <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> 1 cm Muck (A9) (LRR 1, J) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Dark Surface (S7) (LRR G) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Mucky Mineral (F1) | <input type="checkbox"/> High Plains Depressions (F16) |
| <input type="checkbox"/> Stratified Layers (A5) (LRR F) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | (LRR H outside of MLRA 72 & 73) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H) | <input type="checkbox"/> Depleted Matrix (F3) | <input type="checkbox"/> Reduced Vertic (F18) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input checked="" type="checkbox"/> Redox Dark Surface (F6) | <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Depleted Dark Surface (F7) | <input type="checkbox"/> Very Dark Surface Unit (TF12) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Redox Depressions (F8) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H) | <input type="checkbox"/> High Plains Depressions (F16) | ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic |
| <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F) | (MLRA 72 & 73 of LRR H) | |

Restrictive Layer (if present):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks: Soils meet hydric soil criterion.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

Secondary Indicators (minimum of two required)

- | | | |
|--|--|---|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Salt Crust (B11) | <input type="checkbox"/> Surface Soil Cracks (B6) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Aquatic Invertebrates (B13) | <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) |
| <input checked="" type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Dry-Season Water Table (C2) | <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) (where not tilled) | (where tilled) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input checked="" type="checkbox"/> Crayfish burrows (C8) |
| <input type="checkbox"/> Agal Mat or Crust (B4) | <input type="checkbox"/> Thin Muck Surface (C7) | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | | <input checked="" type="checkbox"/> FAC-Neutral Test (D5) |
| <input type="checkbox"/> Water-Stained Leaves (B9) | | <input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F) |

Field Observations:

Surface Water Present? Yes No Depth (inches): NA
 Water Table Present? Yes No Depth (inches): NA
 Saturation Present? Yes No Depth (inches): 0 **Wetland Hydrology Present? Yes No**
 (includes capillary fringe)

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Hydrology criterion met.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Dallas North Tollway 4B/5A (Crossing-11) City/County: Denton County Sampling Date: 12/9/2010
 Applicant/Owner: NTTA State: TX Sampling Point: DP10
 Investigator(s): CH, MB, TB Section, Township, Range: Not Applicable
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Convex Slope (%): 2.0000
 Subregion (LRR): J Lat: 33.355359 Long: -96.083672 Datum: NAD83
 Soil Map Unit Name: Ovan clay, frequently flooded NWI Classification: Upland
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation No, Soil No, or Hydrology No Significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation No, Soil No, or Hydrology No Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u> </u>	No <u>X</u>	Is the Sampled Area Within a Wetland?	Yes <u> </u>	No <u>X</u>
Hydric Soil Present?	Yes <u> </u>	No <u>X</u>			
Wetland Hydrology Present?	Yes <u> </u>	No <u>X</u>			
Remarks: Sampling location does not meet any of the three wetland criteria.					

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30' rad</u>)	Absolute% Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
1. <u>Ulmus crassifolia</u>	10	Yes	FAC-	Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>2</u> (A)	
2. <u>Crataegus viridis</u>	1	No	FAC	Total Number of Dominant Species Across All Strata: <u>4</u> (B)	
3. <u> </u>				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)	
4. <u> </u>				Prevalence Index worksheet:	
5. <u> </u>	11 = % Total Cover			Total % Cover of:	Multiply by:
Sapling/Shrub Stratum (Plot size: <u>15' rad</u>)				OBL species	x 1 = <u> </u>
1. <u>Ulmus crassifolia</u>	10	Yes	FAC-	FACW species	x 2 = <u> </u>
2. <u>Styphnolobium affine</u>	1	No	FACW	FAC species	x 3 = <u> </u>
3. <u> </u>				FACU species	x 4 = <u> </u>
4. <u> </u>				UPL species	x 5 = <u> </u>
5. <u> </u>				Column Totals:	<u> </u> (A) <u> </u> (B)
6. <u> </u>				Prevalence Index = B/A = <u> </u>	
7. <u> </u>				Hydrophytic Vegetation Indicators:	
8. <u> </u>				<u> </u> 1 - Rapid Test for Hydrophytic Vegetation	
9. <u> </u>				<u> </u> 2 - Dominance Test is >50%	
10. <u> </u>				<u> </u> 3 - Prevalence Index is ≤3.0 ¹	
	11 = % Total Cover			<u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on separate sheet)	
Herb Stratum (Plot size: <u>5' rad</u>)				<u> </u> Problematic Hydrophytic Vegetation ¹ (Explain)	
1. <u>Elymus virginicus</u>	20	Yes	FAC	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
2. <u>Cyperus rotundus</u>	10	Yes	FAC	Hydrophytic Vegetation Present?	
3. <u> </u>				Yes <u> </u> No <u>X</u>	
4. <u> </u>					
5. <u> </u>					
6. <u> </u>					
7. <u> </u>					
8. <u> </u>					
9. <u> </u>					
10. <u> </u>					
	30 = % Total Cover				
Woody Vine Stratum (Plot size: <u>30' rad</u>)					
1. <u>None</u>					
2. <u> </u>					
	0 = % Total Cover				
% Bare Ground in Herb Stratum <u>70</u>					
Remarks: Vegetation does not meet hydrophytic vegetation criterion.					

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-16	10YR 4/2	100					Clay	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histols (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR 1, J)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside of MLRA 72 & 73)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Dark Surface Unit (TF12)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H)	<input type="checkbox"/> High Plains Depressions (F16)	³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	<input type="checkbox"/> (MLRA 72 & 73 of LRR H)		

Restrictive Layer (if present):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks: Hydric soil indicators were not observed.

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Roots (C3) (where not tilled)
<input type="checkbox"/> Agal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Inundation Visible on Aerial	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Imagery (B7)	<input checked="" type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)
<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	
<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) (where tilled)	
<input type="checkbox"/> Crayfish burrows (C8)	
<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Geomorphic Position (D2)	

Field Observations:
 Surface Water Present? Yes _____ No X Depth (inches): NA
 Water Table Present? Yes _____ No X Depth (inches): NA
 Saturation Present? Yes _____ No X Depth (inches): NA **Wetland Hydrology Present?** Yes _____ No X
 (includes capillary fringe)

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No primary or secondary hydrology indicators were present.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Dallas North Tollway 4B/5A (Crossing-14) City/County: Denton County Sampling Date: 12/9/2010
 Applicant/Owner: NTTA State: TX Sampling Point: DP11
 Investigator(s): CH, MB, TB Section, Township, Range: Not Applicable
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave Slope (%): 1.0000
 Subregion (LRR): J Lat: 33.358098 Long: -96.834597 Datum: NAD83
 Soil Map Unit Name: Ovan clay, occasionally flooded NWI Classification: PEM1
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation No, Soil No, or Hydrology No Significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation No, Soil No, or Hydrology No Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampled Area Within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Remarks: Sampling location meets all three of the wetland criteria.			

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30' rad</u>)	Absolute% Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)	
1. <u>None</u>						
2. _____						
3. _____						
4. _____						
		<u>0</u> = % Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum	(Plot size: <u>15' rad</u>)					
1. <u>None</u>						
2. _____						
3. _____						
4. _____						
5. _____						
		<u>0</u> = % Total Cover				
Herb Stratum	(Plot size: <u>5' rad</u>)					
1. <u>Carex crus-corvi</u>		<u>40</u>	<u>Yes</u>	<u>OBL</u>		
2. <u>Elymus virginicus</u>		<u>5</u>	<u>No</u>	<u>FAC</u>		
3. _____						
4. _____						
5. _____						
6. _____						
7. _____						
8. _____						
9. _____						
10. _____						
		<u>45</u> = % Total Cover				
Woody Vine Stratum	(Plot size: <u>30' rad</u>)					
1. <u>None</u>						
2. _____						
		<u>0</u> = % Total Cover				
% Bare Ground in Herb Stratum <u>55</u>						
Remarks: Vegetation meets hydrophytic vegetation criterion.						

SOIL

Sampling Point: DP11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-16	10YR 3/1	70	7.5YR 4/4	30	C	PL	Clay	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- | | | |
|--|---|--|
| <input type="checkbox"/> Histols (A1) | <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> 1 cm Muck (A9) (LRR 1, J) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Dark Surface (S7) (LRR G) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Mucky Mineral (F1) | <input type="checkbox"/> High Plains Depressions (F16) |
| <input type="checkbox"/> Stratified Layers (A5) (LRR F) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | (LRR H outside of MLRA 72 & 73) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H) | <input type="checkbox"/> Depleted Matrix (F3) | <input type="checkbox"/> Reduced Vertic (F18) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input checked="" type="checkbox"/> Redox Dark Surface (F6) | <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Depleted Dark Surface (F7) | <input type="checkbox"/> Very Dark Surface Unit (TF12) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Redox Depressions (F8) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H) | <input type="checkbox"/> High Plains Depressions (F16) | ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic |
| <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F) | (MLRA 72 & 73 of LRR H) | |

Restrictive Layer (if present):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks: Soils meet hydric soil criterion.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

Secondary Indicators (minimum of two required)

- | | | |
|--|--|---|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Salt Crust (B11) | <input type="checkbox"/> Surface Soil Cracks (B6) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Aquatic Invertebrates (B13) | <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) |
| <input checked="" type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Dry-Season Water Table (C2) | <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) (where not tilled) | (where tilled) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input type="checkbox"/> Crayfish burrows (C8) |
| <input type="checkbox"/> Agal Mat or Crust (B4) | <input type="checkbox"/> Thin Muck Surface (C7) | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | | <input checked="" type="checkbox"/> FAC-Neutral Test (D5) |
| <input type="checkbox"/> Water-Stained Leaves (B9) | | <input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F) |

Field Observations:

Surface Water Present? Yes No Depth (inches): NA
 Water Table Present? Yes No Depth (inches): NA
 Saturation Present? Yes No Depth (inches): 0 **Wetland Hydrology Present? Yes No**
 (includes capillary fringe)

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Hydrology criterion met.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Dallas North Tollway 4B/5A (Crossing-14) City/County: Denton County Sampling Date: 12/9/2010
 Applicant/Owner: NTTA State: TX Sampling Point: DP12
 Investigator(s): CH, MB, TB Section, Township, Range: Not Applicable
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Convex Slope (%): 2.0000
 Subregion (LRR): J Lat: 33.358100 Long: -96.836032 Datum: NAD83
 Soil Map Unit Name: Ovan clay, occasionally flooded NWI Classification: Upland
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation No, Soil No, or Hydrology No Significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation No, Soil No, or Hydrology No Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u> </u>	Is the Sampled Area Within a Wetland? Yes <u> </u> No <u>X</u>
Hydric Soil Present?	Yes <u>X</u>	No <u> </u>	
Wetland Hydrology Present?	Yes <u> </u>	No <u>X</u>	
Remarks: Sampling location does not meet one of the three wetland criteria.			

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30' rad</u>)	Absolute% Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:		
1.	<u>Crataegus viridis</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>		Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>6</u> (A)	
2.	<u>Gleditsia triacanthos</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>			
3.	_____	_____	_____	_____			
4.	_____	_____	_____	_____			
		<u>30</u> = % Total Cover				Total Number of Dominant Species Across All Strata: <u>6</u> (B)	
Sapling/Shrub Stratum	(Plot size: <u>15' rad</u>)				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)		
1.	<u>Crataegus viridis</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>			
2.	<u>Gleditsia triacanthos</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>			
3.	_____	_____	_____	_____			
4.	_____	_____	_____	_____			
5.	_____	_____	_____	_____			
		<u>15</u> = % Total Cover					
Herb Stratum	(Plot size: <u>5' rad</u>)				Prevalence Index worksheet:		
1.	<u>Elymus virginicus</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>		Total % Cover of: Multiply by:	
2.	<u>Cyperus rotundus</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>			OBL species x 1 = _____
3.	_____	_____	_____	_____			FACW species x 2 = _____
4.	_____	_____	_____	_____			FAC species x 3 = _____
5.	_____	_____	_____	_____			FACU species x 4 = _____
6.	_____	_____	_____	_____		UPL species x 5 = _____	
7.	_____	_____	_____	_____		Column Totals: (A) (B)	
8.	_____	_____	_____	_____		Prevalence Index = B/A = _____	
9.	_____	_____	_____	_____			
10.	_____	_____	_____	_____			
		<u>20</u> = % Total Cover					
Woody Vine Stratum	(Plot size: <u>30' rad</u>)				Hydrophytic Vegetation Indicators:		
1.	<u>None</u>	_____	_____	_____		<u>X</u> 1 - Rapid Test for Hydrophytic Vegetation	
2.	_____	_____	_____	_____		2 - Dominance Test is >50%	
		<u>0</u> = % Total Cover				3 - Prevalence Index is ≤3.0 ¹	
						4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on separate sheet)	
						Problematic Hydrophytic Vegetation ¹ (Explain)	
						¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
						Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>	
Remarks: Vegetation meets hydrophytic vegetation criterion.							

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-16	10YR 3/1	95	7.5YR 4/4	5	C	PL	Clay	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- | | | |
|--|---|--|
| <input type="checkbox"/> Histols (A1) | <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> 1 cm Muck (A9) (LRR 1, J) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Dark Surface (S7) (LRR G) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Mucky Mineral (F1) | <input type="checkbox"/> High Plains Depressions (F16) |
| <input type="checkbox"/> Stratified Layers (A5) (LRR F) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input type="checkbox"/> (LRR H outside of MLRA 72 & 73) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H) | <input type="checkbox"/> Depleted Matrix (F3) | <input type="checkbox"/> Reduced Vertic (F18) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input checked="" type="checkbox"/> Redox Dark Surface (F6) | <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Depleted Dark Surface (F7) | <input type="checkbox"/> Very Dark Surface Unit (TF12) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Redox Depressions (F8) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H) | <input type="checkbox"/> High Plains Depressions (F16) | ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic |
| <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F) | <input type="checkbox"/> (MLRA 72 & 73 of LRR H) | |

Restrictive Layer (if present):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks: Soils meet hydric soil criterion.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

Secondary Indicators (minimum of two required)

- | | | |
|--|--|---|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Salt Crust (B11) | <input type="checkbox"/> Surface Soil Cracks (B6) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Aquatic Invertebrates (B13) | <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Dry-Season Water Table (C2) | <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) (where not tilled) | <input type="checkbox"/> (where tilled) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input type="checkbox"/> Crayfish burrows (C8) |
| <input type="checkbox"/> Agal Mat or Crust (B4) | <input type="checkbox"/> Thin Muck Surface (C7) | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | | <input type="checkbox"/> FAC-Neutral Test (D5) |
| <input type="checkbox"/> Water-Stained Leaves (B9) | | <input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F) |

Field Observations:

Surface Water Present? Yes No Depth (inches): NA
 Water Table Present? Yes No Depth (inches): NA
 Saturation Present? Yes No Depth (inches): NA **Wetland Hydrology Present?** Yes No
 (includes capillary fringe)

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No primary or secondary hydrology indicators were present.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Dallas North Tollway 4B/5A (Crossing-10) City/County: Denton County Sampling Date: 12/9/2010
 Applicant/Owner: NTTA State: TX Sampling Point: DP13
 Investigator(s): CH, MB, TB Section, Township, Range: Not Applicable
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave Slope (%): 2.0000
 Subregion (LRR): J Lat: 33.354392 Long: -96.836644 Datum: NAD83
 Soil Map Unit Name: Ovan clay, frequently flooded NWI Classification: PEM1
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation No, Soil No, or Hydrology No Significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation No, Soil No, or Hydrology No Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampled Area Within a Wetland?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>			
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>			
Remarks: Sampling location meets all three of the wetland criteria.					

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30' rad</u>)	Absolute% Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
1. <u>Fraxinus pennsylvanica</u>	30	Yes	FACW-	Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>2</u> (A)	
2. <u>Maclura pomifera</u>	5	No	UPL	Total Number of Dominant Species Across All Strata: <u>2</u> (B)	
3. _____				Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)	
4. _____					
	35	= % Total Cover			
Sapling/Shrub Stratum (Plot size: <u>15' rad</u>)				Prevalence Index worksheet:	
1. <u>None</u>				Total % Cover of:	Multiply by:
2. _____				OBL species _____ x 1 = _____	
3. _____				FACW species _____ x 2 = _____	
4. _____				FAC species _____ x 3 = _____	
5. _____				FACU species _____ x 4 = _____	
6. _____				UPL species _____ x 5 = _____	
7. _____				Column Totals: _____ (A) _____ (B)	
8. _____				Prevalence Index = B/A = _____	
9. _____					
10. _____					
	0	= % Total Cover		Hydrophytic Vegetation Indicators:	
Herb Stratum (Plot size: <u>5' rad</u>)				<input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation <input checked="" type="checkbox"/> 2 - Dominance Test is >50% <input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)	
1. <u>Carex crus-corvi</u>	20	Yes	OBL	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
2. _____					
3. _____					
4. _____					
5. _____					
6. _____					
7. _____					
8. _____					
9. _____					
10. _____					
	20	= % Total Cover		Hydrophytic Vegetation Present?	
				Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Woody Vine Stratum (Plot size: <u>30' rad</u>)					
1. <u>None</u>					
2. _____					
	0	= % Total Cover			
% Bare Ground in Herb Stratum	80				
Remarks: Vegetation meets hydrophytic vegetation criterion.					

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-10	Gley1 3/5GY	5					Clay	
0-16	10YR4/1	65	10YR 4/4	30	C		Clay	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- | | | |
|--|--|--|
| <input type="checkbox"/> Histols (A1) | <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> 1 cm Muck (A9) (LRR 1, J) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Dark Surface (S7) (LRR G) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Mucky Mineral (F1) | <input type="checkbox"/> High Plains Depressions (F16) |
| <input type="checkbox"/> Stratified Layers (A5) (LRR F) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | (LRR H outside of MLRA 72 & 73) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H) | <input checked="" type="checkbox"/> Depleted Matrix (F3) | <input type="checkbox"/> Reduced Vertic (F18) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Redox Dark Surface (F6) | <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Depleted Dark Surface (F7) | <input type="checkbox"/> Very Dark Surface Unit (TF12) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Redox Depressions (F8) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H) | <input type="checkbox"/> High Plains Depressions (F16) | ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic |
| <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F) | (MLRA 72 & 73 of LRR H) | |

Restrictive Layer (if present):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks: Soils meet hydric soil criterion.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

Secondary Indicators (minimum of two required)

- | | | |
|--|--|---|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Salt Crust (B11) | <input type="checkbox"/> Surface Soil Cracks (B6) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Aquatic Invertebrates (B13) | <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) |
| <input checked="" type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input type="checkbox"/> Drainage Patterns (B10) |
| <input checked="" type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Dry-Season Water Table (C2) | <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) (where not tilled) | (where tilled) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input checked="" type="checkbox"/> Crayfish burrows (C8) |
| <input type="checkbox"/> Agal Mat or Crust (B4) | <input type="checkbox"/> Thin Muck Surface (C7) | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | | <input checked="" type="checkbox"/> FAC-Neutral Test (D5) |
| <input type="checkbox"/> Water-Stained Leaves (B9) | | <input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F) |

Field Observations:

Surface Water Present? Yes No Depth (inches): NA
 Water Table Present? Yes No Depth (inches): NA
 Saturation Present? Yes No Depth (inches): 0 **Wetland Hydrology Present? Yes No**
 (includes capillary fringe)

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Hydrology criterion met.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Dallas North Tollway 4B/5A (Crossing-10) City/County: Denton County Sampling Date: 12/9/2010
 Applicant/Owner: NTTA State: TX Sampling Point: DP14
 Investigator(s): CH, MB, TB Section, Township, Range: Not Applicable
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Convex Slope (%): 3.0000
 Subregion (LRR): J Lat: 33.354328 Long: -96.836678 Datum: NAD83
 Soil Map Unit Name: Ovan clay, frequently flooded NWI Classification: Upland
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation No, Soil No, or Hydrology No Significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation No, Soil No, or Hydrology No Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u>X</u>	No <u> </u>	Is the Sampled Area Within a Wetland?	Yes <u> </u>	No <u>X</u>
Hydric Soil Present?	Yes <u> </u>	No <u>X</u>			
Wetland Hydrology Present?	Yes <u> </u>	No <u>X</u>			
Remarks: Sampling location does not meet two of the three wetland criteria.					

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30' rad</u>)	Absolute% Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:		
1.	<u>Fraxinus pennsylvanica</u>	<u>5</u>	<u>Yes</u>	<u>FACW-</u>			Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>3</u> (A)
2.	<u> </u>	<u> </u>	<u> </u>	<u> </u>	Total Number of Dominant Species Across All Strata: <u>5</u> (B)		
3.	<u> </u>	<u> </u>	<u> </u>	<u> </u>	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>60</u> (A/B)		
4.	<u> </u>	<u> </u>	<u> </u>	<u> </u>			
		<u>5</u> = % Total Cover					
Sapling/Shrub Stratum	(Plot size: <u>15' rad</u>)					Prevalence Index worksheet:	
1.	<u>Ulmus alata</u>	<u>2</u>	<u>Yes</u>	<u>FACU</u>	Total % Cover of: <u> </u> Multiply by: <u> </u>		
2.	<u>Ulmus crassifolia</u>	<u>2</u>	<u>Yes</u>	<u>FAC-</u>	OBL species <u> </u> x 1 = <u> </u>		
3.	<u> </u>	<u> </u>	<u> </u>	<u> </u>	FACW species <u> </u> x 2 = <u> </u>		
4.	<u> </u>	<u> </u>	<u> </u>	<u> </u>	FAC species <u> </u> x 3 = <u> </u>		
5.	<u> </u>	<u> </u>	<u> </u>	<u> </u>	FACU species <u> </u> x 4 = <u> </u>		
		<u>4</u> = % Total Cover			UPL species <u> </u> x 5 = <u> </u>		
					Column Totals: <u> </u> (A) <u> </u> (B)		
					Prevalence Index = B/A = <u> </u>		
Herb Stratum	(Plot size: <u>5' rad</u>)					Hydrophytic Vegetation Indicators:	
1.	<u>Elymus virginicus</u>	<u>40</u>	<u>Yes</u>	<u>FAC</u>	<u>X</u> 1 - Rapid Test for Hydrophytic Vegetation		
2.	<u>Cyperus rotundus</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	2 - Dominance Test is >50%		
3.	<u> </u>	<u> </u>	<u> </u>	<u> </u>	3 - Prevalence Index is ≤3.0 ¹		
4.	<u> </u>	<u> </u>	<u> </u>	<u> </u>	4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on separate sheet)		
5.	<u> </u>	<u> </u>	<u> </u>	<u> </u>	Problematic Hydrophytic Vegetation ¹ (Explain)		
6.	<u> </u>	<u> </u>	<u> </u>	<u> </u>	¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.		
7.	<u> </u>	<u> </u>	<u> </u>	<u> </u>			
8.	<u> </u>	<u> </u>	<u> </u>	<u> </u>			
9.	<u> </u>	<u> </u>	<u> </u>	<u> </u>			
10.	<u> </u>	<u> </u>	<u> </u>	<u> </u>			
		<u>60</u> = % Total Cover			Hydrophytic Vegetation Present? Yes <u>X</u> No <u> </u>		
Woody Vine Stratum	(Plot size: <u>30' rad</u>)						
1.	<u>None</u>	<u> </u>	<u> </u>	<u> </u>			
2.	<u> </u>	<u> </u>	<u> </u>	<u> </u>			
		<u>0</u> = % Total Cover					
% Bare Ground in Herb Stratum		<u>40</u>					
Remarks: Vegetation meets hydrophytic vegetation criterion.							

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-16	10YR 3/2	100					Clay	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)		Indicators for Problematic Hydric Soils ³ :	
<input type="checkbox"/> Histols (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> 1 cm Muck (A9) (LRR 1, J)	
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H)	
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Dark Surface (S7) (LRR G)	
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Mucky Mineral (F1)	<input type="checkbox"/> High Plains Depressions (F16)	
<input type="checkbox"/> Stratified Layers (A5) (LRR F)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)	<input type="checkbox"/> (LRR H outside of MLRA 72 & 73)	
<input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H)	<input type="checkbox"/> Depleted Matrix (F3)	<input type="checkbox"/> Reduced Vertic (F18)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Redox Dark Surface (F6)	<input type="checkbox"/> Red Parent Material (TF2)	
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Depleted Dark Surface (F7)	<input type="checkbox"/> Very Dark Surface Unit (TF12)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Redox Depressions (F8)	<input type="checkbox"/> Other (Explain in Remarks)	
<input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H)	<input type="checkbox"/> High Plains Depressions (F16)	³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F)	<input type="checkbox"/> (MLRA 72 & 73 of LRR H)		

Restrictive Layer (if present):
 Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks: Hydric soil indicators were not observed.

HYDROLOGY

Wetland Hydrology Indicators:	
Primary Indicators (minimum of one required; check all that apply)	Secondary Indicators (minimum of two required)
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Invertebrates (B13)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Roots (C3) (where not tilled)
<input type="checkbox"/> Agal Mat or Crust (B4)	<input type="checkbox"/> Presence of Reduced Iron (C4)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)
<input type="checkbox"/> Inundation Visible on Aerial	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> Imagery (B7)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)
	<input type="checkbox"/> Drainage Patterns (B10)
	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)
	<input type="checkbox"/> (where tilled)
	<input type="checkbox"/> Crayfish burrows (C8)
	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
	<input type="checkbox"/> Geomorphic Position (D2)
	<input type="checkbox"/> FAC-Neutral Test (D5)
	<input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): NA

Water Table Present? Yes _____ No X Depth (inches): NA

Saturation Present? Yes _____ No X Depth (inches): NA **Wetland Hydrology Present?** Yes _____ No X

(includes capillary fringe)

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No primary or secondary hydrology indicators were present.

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-16	10YR 3/1	70	7.5YR 4/4	30	C	PL	Clay	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- | | | |
|--|---|--|
| <input type="checkbox"/> Histols (A1) | <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> 1 cm Muck (A9) (LRR 1, J) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Dark Surface (S7) (LRR G) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Mucky Mineral (F1) | <input type="checkbox"/> High Plains Depressions (F16) |
| <input type="checkbox"/> Stratified Layers (A5) (LRR F) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | (LRR H outside of MLRA 72 & 73) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H) | <input type="checkbox"/> Depleted Matrix (F3) | <input type="checkbox"/> Reduced Vertic (F18) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input checked="" type="checkbox"/> Redox Dark Surface (F6) | <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Depleted Dark Surface (F7) | <input type="checkbox"/> Very Dark Surface Unit (TF12) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Redox Depressions (F8) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H) | <input type="checkbox"/> High Plains Depressions (F16) | ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic |
| <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F) | (MLRA 72 & 73 of LRR H) | |

Restrictive Layer (if present):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks: Soils meet hydric soil criterion.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

Secondary Indicators (minimum of two required)

- | | | |
|--|--|---|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Salt Crust (B11) | <input type="checkbox"/> Surface Soil Cracks (B6) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Aquatic Invertebrates (B13) | <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) |
| <input checked="" type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Dry-Season Water Table (C2) | <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) (where not tilled) | (where tilled) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input type="checkbox"/> Crayfish burrows (C8) |
| <input type="checkbox"/> Agal Mat or Crust (B4) | <input type="checkbox"/> Thin Muck Surface (C7) | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | | <input checked="" type="checkbox"/> FAC-Neutral Test (D5) |
| <input type="checkbox"/> Water-Stained Leaves (B9) | | <input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F) |

Field Observations:

Surface Water Present? Yes No Depth (inches): NA
 Water Table Present? Yes No Depth (inches): NA
 Saturation Present? Yes No Depth (inches): 0 **Wetland Hydrology Present? Yes No**
 (includes capillary fringe)

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Hydrology criterion met.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Dallas North Tollway 4B/5A (Crossing-13) City/County: Denton County Sampling Date: 12/9/2010
 Applicant/Owner: NTTA State: TX Sampling Point: DP16
 Investigator(s): CH, MB, TB Section, Township, Range: Not Applicable
 Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): Convex Slope (%): 2.0000
 Subregion (LRR): J Lat: 33.358087 Long: -96.834900 Datum: NAD83
 Soil Map Unit Name: Ovan clay, occasionally flooded NWI Classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation No , Soil No , or Hydrology No Significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation No , Soil No , or Hydrology No Naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampled Area Within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Wetland Hydrology Present?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Remarks: Sampling location does not meet one of the three wetland criteria.			

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30' rad</u>)	Absolute% Cover	Dominant Species?	Indicator Status	Dominance Test worksheet:	
1. <u>Crataegus viridis</u>	20	Yes	FAC	Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>6</u> (A)	
2. <u>Gleditsia triacanthos</u>	10	Yes	FAC		
3. _____					
4. _____					
	30	= % Total Cover		Total Number of Dominant Species Across All Strata: <u>6</u> (B)	
Sapling/Shrub Stratum (Plot size: <u>15' rad</u>)	Absolute% Cover	Dominant Species?	Indicator Status	Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)	
1. <u>Crataegus viridis</u>	10	Yes	FAC		
2. <u>Gleditsia triacanthos</u>	5	Yes	FAC		
3. _____					
4. _____					
5. _____					
	15	= % Total Cover		Prevalence Index worksheet:	
Herb Stratum (Plot size: <u>5' rad</u>)	Absolute% Cover	Dominant Species?	Indicator Status	Total % Cover of: _____ Multiply by: _____	
1. <u>Elymus virginicus</u>	10	Yes	FAC	OBL species	_____ x 1 = _____
2. <u>Cyperus rotundus</u>	10	Yes	FAC	FACW species	_____ x 2 = _____
3. _____				FAC species	_____ x 3 = _____
4. _____				FACU species	_____ x 4 = _____
5. _____				UPL species	_____ x 5 = _____
6. _____				Column Totals:	_____ (A) _____ (B)
7. _____				Prevalence Index = B/A = _____	
8. _____				Hydrophytic Vegetation Indicators:	
9. _____				<input checked="" type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation	
10. _____				<input checked="" type="checkbox"/> 2 - Dominance Test is >50%	
	20	= % Total Cover		<input type="checkbox"/> 3 - Prevalence Index is ≤3.0 ¹	
Woody Vine Stratum (Plot size: <u>30' rad</u>)	Absolute% Cover	Dominant Species?	Indicator Status	<input type="checkbox"/> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on separate sheet)	
1. <u>None</u>				<input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)	
2. _____				¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
	0	= % Total Cover		Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
% Bare Ground in Herb Stratum <u>80</u>					
Remarks: Vegetation meets hydrophytic vegetation criterion.					

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-16	10YR 3/1	95	7.5YR 4/4	5	C	PL	Clay	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- | | | |
|--|---|--|
| <input type="checkbox"/> Histols (A1) | <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> 1 cm Muck (A9) (LRR 1, J) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Coast Prairie Redox (A16) (LRR F, G, H) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Dark Surface (S7) (LRR G) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Mucky Mineral (F1) | <input type="checkbox"/> High Plains Depressions (F16) |
| <input type="checkbox"/> Stratified Layers (A5) (LRR F) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input type="checkbox"/> (LRR H outside of MLRA 72 & 73) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR F, G, H) | <input type="checkbox"/> Depleted Matrix (F3) | <input type="checkbox"/> Reduced Vertic (F18) |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input checked="" type="checkbox"/> Redox Dark Surface (F6) | <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Depleted Dark Surface (F7) | <input type="checkbox"/> Very Dark Surface Unit (TF12) |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Redox Depressions (F8) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> 2.5 cm Mucky Peat or Peat (S2) (LRR G, H) | <input type="checkbox"/> High Plains Depressions (F16) | ³ Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic |
| <input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR F) | <input type="checkbox"/> (MLRA 72 & 73 of LRR H) | |

Restrictive Layer (if present):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks: Soils meet hydric soil criterion.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

Secondary Indicators (minimum of two required)

- | | | |
|--|--|---|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Salt Crust (B11) | <input type="checkbox"/> Surface Soil Cracks (B6) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Aquatic Invertebrates (B13) | <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Water Marks (B1) | <input type="checkbox"/> Dry-Season Water Table (C2) | <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) |
| <input type="checkbox"/> Sediment Deposits (B2) | <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) (where not tilled) | <input type="checkbox"/> (where tilled) |
| <input type="checkbox"/> Drift Deposits (B3) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input type="checkbox"/> Crayfish burrows (C8) |
| <input type="checkbox"/> Agal Mat or Crust (B4) | <input type="checkbox"/> Thin Muck Surface (C7) | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Iron Deposits (B5) | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> Geomorphic Position (D2) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | | <input type="checkbox"/> FAC-Neutral Test (D5) |
| <input type="checkbox"/> Water-Stained Leaves (B9) | | <input type="checkbox"/> Frost-Heave Hummocks (D7) (LRR F) |

Field Observations:

Surface Water Present? Yes No Depth (inches): NA
 Water Table Present? Yes No Depth (inches): NA
 Saturation Present? Yes No Depth (inches): NA **Wetland Hydrology Present?** Yes No
 (includes capillary fringe)

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: No primary or secondary hydrology indicators were present.

Appendix C
Soil Types Associated with Waters of the U.S. and
Floodplains within the DNT 4B/5A Study Area

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Appendix C
Soil Types Associated with the
Waters of the U.S. and Floodplains within the DNT 4B/5A Study Area

Soil Type	Description
<i>Collin County</i>	
Burleson clay, 2 to 4 percent slopes, eroded	Deep, gently sloping to moderately sloping, eroded soil occupies uplands, mainly along the east and west boundaries of the county. The surface layer is so eroded that a few broad, shallow gullies and many rills are cut. Available water capacity is moderate, surface runoff is moderately rapid, and the hazard of erosion is moderately severe.
Ferris-Houston clays, 5 to 12 percent slopes, severely eroded	This complex consists of sloping to strongly sloping soils in the rolling areas. Most of these areas are cut by many natural drains. Many areas are deeply gullied. When these soils are dry, they crack to a depth of at least 30 inches. Movement in the water in the soils is rapid. When the soils are wet, the cracks close, and movement of waters into the soil is very slow. The hazard of water erosion is severe. Surface runoff is rapid.
Frio clay loam, frequently flooded	A nearly level soil occupies flood plains along the major streams and their tributaries, mainly in the eastern part of the county. The soil is moderately permeable. Surface runoff is very slow.
Houston clay, 3 to 5 percent slopes, eroded	This soil occurs throughout the county. It occupies upland areas that slope to the natural drains. The soil is moderately fertile, but the hazard of water erosion is moderately severe. Surface runoff is rapid.
Houston Black clay, 0 to 1 percent slopes	This soil occupies alluvial terraces along the streams in the eastern part of the county and is on uplands throughout the county. When this soil is dry, it cracks to a depth of more than 30 inches. Water enters the cracks rapidly until it closes. When this soil is wet, the cracks close, and water moves very slowly in the soil.
Houston Black clay, 2 to 4 percent slopes, eroded	This eroded soil occupies uplands throughout the county. Surface runoff is moderately rapid. In sloping areas, water erosion is moderately severe.
Trinity clay, frequently flooded	This soil is on floodplains along major streams and their tributaries, mainly in the eastern part of the county. Frequent flooding is likely. Surface runoff is very slow.
Trinity clay, occasionally flooded, 0 to 1 percent slopes	Deep, calcareous, clayey soil on floodplains along the major streams and their tributaries, mainly in the eastern part of the county. When this soil is dry, it cracks to a depth of at least 20 inches. During each rain, water enters the cracks rapidly. The cracks close after rain, and water moves into the soil very slowly.

Appendix C
Soil Types Associated with the
Waters of the U.S. and Floodplains within the DNT 4B/5A Study Area

Soil Type	Description
<i>Denton County</i>	
Branyon clay, 1 to 3 percent slopes	Deep, gently sloping soil in valley fill areas and on side slopes around the outer edge of ancient terraces. The soil is moderately well drained. Runoff is medium. Permeability is very slow. Available water capacity is high. When the soil is dry, it has cracks that extend from depths of 30 to 60 inches.
Burleson clay, 1 to 3 percent slopes	Deep, gently sloping soil on valley fills and edges of upland terraces. This soil is moderately well drained. Runoff is medium, and permeability is very slow. Available water capacity is high. When dry, this soil has deep cracks that extend to a depth of 30 to 60 inches.
Heiden clay, 1 to 3 percent slopes	Deep, gently sloping soil on uplands. The soil is well drained. Runoff is rapid. Permeability is very slow. Available water capacity is high. The hazard of erosion is moderate.
Houston Black clay, 1 to 3 percent slopes	Deep, gently sloping soil in broad, smooth upland areas. The soil is moderately well drained. Available water capacity is high. The hazard of erosion is moderate.
Ovan clay, occasionally flooded	Deep, nearly level soil on floodplains along major streams. The soil is moderately well drained. Surface runoff is slow. Permeability is very slow. Available water capacity is high.
Ovan clay, frequently flooded	Deep, nearly level soil on floodplains and major streams. The soil is moderately well drained. Surface runoff is slow. Permeability is very slow. Available water capacity is high. Floods occur mainly in spring and in fall months and limit the growth of some plants.
Vertel clay, 1 to 3 percent slopes	Moderately, deep gently sloping soil on convex foot slopes. The soil is well drained. Runoff is rapid. Permeability is very slow. Available water capacity is medium. The hazard of erosion is severe.
Wilson clay loam, 1 to 3 percent slopes	Deep, gently sloping soil on the low part of the landscape and side slopes. The soil is somewhat poorly drained. Surface runoff is slow. Permeability is very slow. Available water capacity is high. This soil receives runoff from the higher parts of the landscape. Wetness is hazard during raining seasons.
<i>Grayson County</i>	
Elbon soil, frequently flooded	Deep, nearly level soils on floodplains of major streams. These soils are subject to flooding one or more times during spring and fall. These soils are moderately well drained. Runoff is very slow. Permeability is moderately slow, and available water capacity is high. The hazard of erosion is slight.
Vertel clay, 3 to 5 percent slopes	Moderately deep, gently sloping, clayey soil on side slopes above drains and on gently undulating, low ridges. This soil is well drained. Runoff is rapid. Permeability is very slow, and available water capacity is low. The hazard of erosion is severe.
Source: USDA soil surveys for Collin (1969), Denton (1980), and Grayson (1980) counties.	

Appendix D
Preliminary Jurisdictional Determination Form

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PRELIMINARY JURISDICTIONAL DETERMINATION FORM

This preliminary JD finds that there "may be" waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

District Office: Fort Worth District File/ORM #: PJD Date: February 2011

State: TX City/County: Gunter/Collin, Denton, and Grayson coun
Nearest Waterbody: tributary to Little Elm Creek
Location: TRS, LatLong or UTM: Latitude: 33.31436°N, Longitude: -96.81737°W
Name/Address of Person Requesting PJD: Elizabeth Mow, P.E., North Texas Tollway Authority, P.O. Box 260729, Plano, Texas 75026

Identify (Estimate) Amount of Waters in the Review Area:
Non-Wetland Waters: Stream Flow: Tidal: Not applicable
Table 1* linear ft width acres Section 10 Waters: Non-Tidal: Not applicable
Wetlands: acre(s) Cowardin Class: Office (Desk) Determination Field Determination: Date of Field Trip:

SUPPORTING DATA: Data reviewed for preliminary JD (check all that apply - checked items should be included in case file and, where checked and requested, appropriately reference sources below):

- Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant:
- Data sheets prepared/submitted by or on behalf of the applicant/consultant.
 - Office concurs with data sheets/delineation report.
 - Office does not concur with data sheets/delineation report.
- Data sheets prepared by the Corps
- Corps navigable waters' study:
- U.S. Geological Survey Hydrologic Atlas:
 - USGS NHD data.
 - USGS 8 and 12 digit HUC maps.
- U.S. Geological Survey map(s). Cite quad name: Celina and Marilee, TX
- USDA Natural Resources Conservation Service Soil Survey. Citation: Collin, Denton, and Grayson counties: http://websoi
- National wetlands inventory map(s). Cite name: Celina and Marilee, TX
- State/Local wetland inventory map(s):
- FEMA/FIRM maps: Collin 48085C0105J (06/02/2009), Denton 48121C02
- 100-year Floodplain Elevation is:
- Photographs: Aerial (Name & Date): Aerial Express 2008, GeoSearch 1996
 - Other (Name & Date):
- Previous determination(s). File no. and date of response letter:
- Other information (please specify): National Weather Service Climatological Data for C

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

Signature and Date of Regulatory Project Manager (REQUIRED)

Signature and Date of Person Requesting Preliminary JD (REQUIRED, unless obtaining the signature is impracticable)

EXPLANATION OF PRELIMINARY AND APPROVED JURISDICTIONAL DETERMINATIONS:

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "preconstruction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accompany the appeal as soon as is practicable.

PRELIMINARY JURISDICTIONAL DETERMINATION FORM

This preliminary JD finds that there "may be" waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

Appendix A - Sites

District Office File/ORM # PJD Date:

State City/County Person Requesting PJD

Site Number	Latitude	Longitude	Cowardin Class	Est. Amount of Aquatic Resource in Review Area	Class of Aquatic Resource
Table 1*	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>				
<input type="text"/>	<input type="text"/>				
<input type="text"/>	<input type="text"/>				
<input type="text"/>	<input type="text"/>				
<input type="text"/>	<input type="text"/>				

Notes:

*Refer to Table 1 of the Preliminary Jurisdictional Determination of Waters of the U.S. report for the information required above.

Appendix 2-2
NTTA Stream Data Forms

STREAM DATA FORM

Stream Data Form #:	1	Project Name:	DNT 4B/5A
Surveyor(s):	CH, TB, MB	Date of Field Work:	10-14-10
USGS Stream Name:	Tributary to Little Elm Creek	County/State:	Collin, TX
USGS Topo Quad Name:	Celina	Stream Number 303(d) List:	
Associated-Wetland(s):		GPS Data:	Latitude 33.3143621032267 Longitude -96.8173716362732

Stream Type: Intermittent
 Stream Flow Direction: West
 OHWM Width (ft): 8
 OHWM Height (in): 6-12
 Stream Bottom Composition: Other
 Description of Combination or Other: _____
 Water Quality: Slightly Turbid
 Water Color (if not clear): Green

Aquatic Habitat: (Indicate all types present within ROW/project limits.)

- | | | | |
|--|--|---|---|
| <input type="checkbox"/> Sand bar | <input checked="" type="checkbox"/> Sand/Gravel beach/bar | <input checked="" type="checkbox"/> Mud bar | <input type="checkbox"/> Gravel riffles |
| <input checked="" type="checkbox"/> Overhanging trees/shrubs | <input checked="" type="checkbox"/> Deep pool/hole/channel | <input type="checkbox"/> Aquatic vegetation | <input type="checkbox"/> Other |

Description of Other: _____

Aquatic Organisms: List all species observed. This would include waterfowl, fish, snakes, turtles, frogs, invertebrates, etc.

Black bullhead (*Ameiurus melas*)

Riparian Vegetation: List species observed.

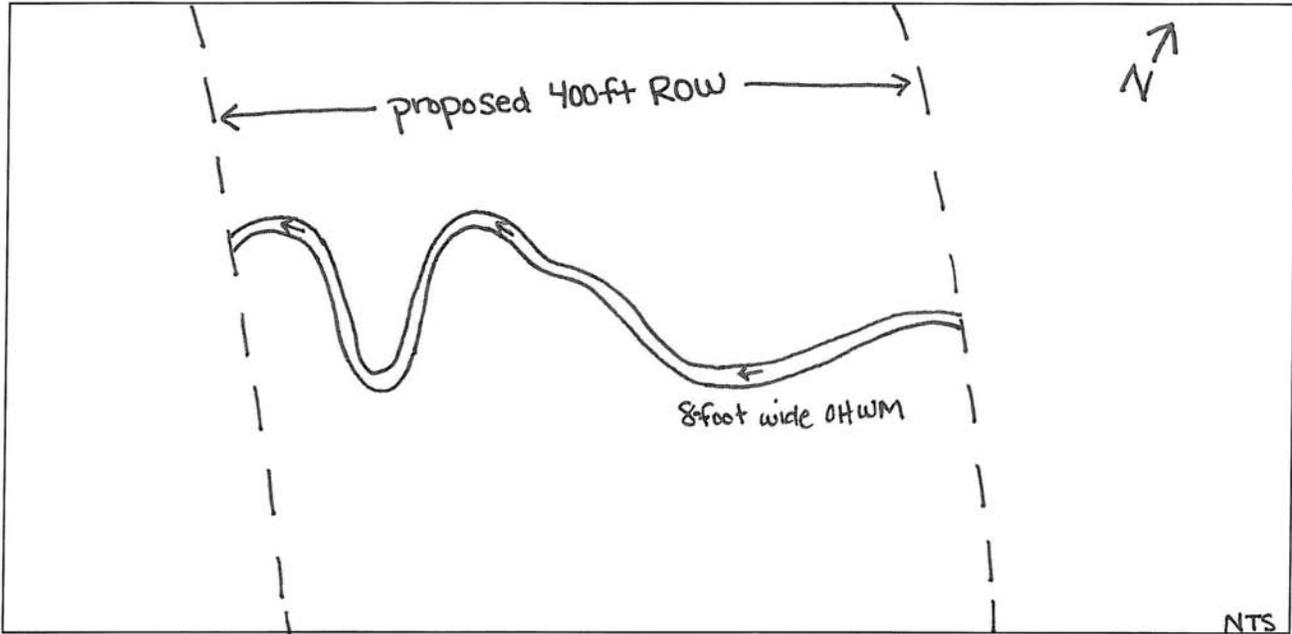
Sugarberry (*Celtis laevigata*), black willow (*Salix nigra*), giant ragweed (*Ambrosia trifida*), Johnson grass (*Sorghum halepense*), Virginia wildrye (*Elymus virginicus*), poison ivy (*Toxicodendron radicans*), saw greenbrier (*Smilax bona-nox*)

T&E Species / Suitable Habitat: List T&E species observed or which species the habitat is suitable for.

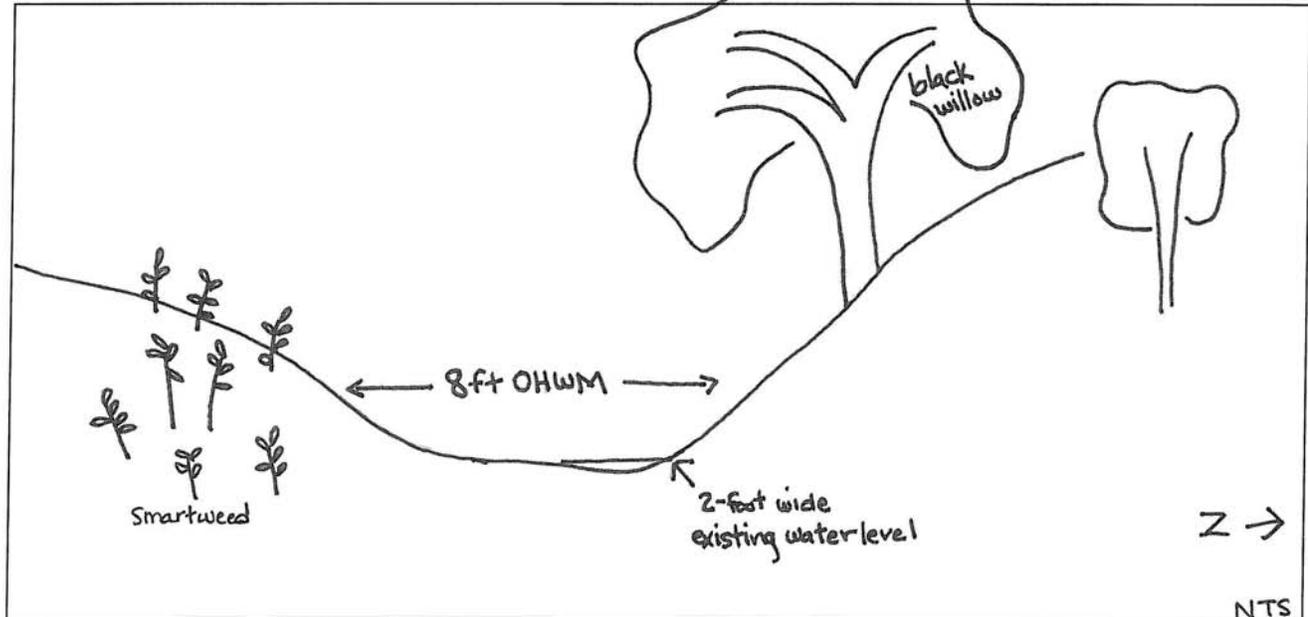
Timber/canebrake rattlesnake (*Crotalus horridus*)

Please provide a hand-drawn plan and section view sketch of the stream channel. The sketch should include: a directional arrow, the width of the channel from bank top to bank top and the width of the stream from water edge to water edge. Print this page, draw the sketches in the space provided below, and submit this page with the above form.

Plan View



Section View



STREAM DATA FORM

Stream Data Form #:	2	Project Name:	DNT 4B/5A
Surveyor(s):	CH, TB, MB	Date of Field Work:	10-14-10
USGS Stream Name:	Tributary to Little Elm Creek	County/State:	Collin, TX
USGS Topo Quad Name:	Celina	Stream Number 303(d) List:	
Associated-Wetland(s):		GPS Data:	Latitude 33.3150660373572 Longitude -96.8188714373097

Stream Type: Ephemeral
Stream Flow Direction: South
OHWM Width (ft): 4
OHWM Height (in): 6
Stream Bottom Composition: Other
 Description of Combination or Other: _____
Water Quality: Choose One
Water Color (if not clear): None

Aquatic Habitat: (Indicate all types present within ROW/project limits.)

- Sand bar
- Sand/Gravel beach/bar
- Mud bar
- Gravel riffles
- Overhanging trees/shrubs
- Deep pool/hole/channel
- Aquatic vegetation
- Other

Description of Other: _____

Aquatic Organisms: List all species observed. This would include waterfowl, fish, snakes, turtles, frogs, invertebrates, etc.

None.

Riparian Vegetation: List species observed.

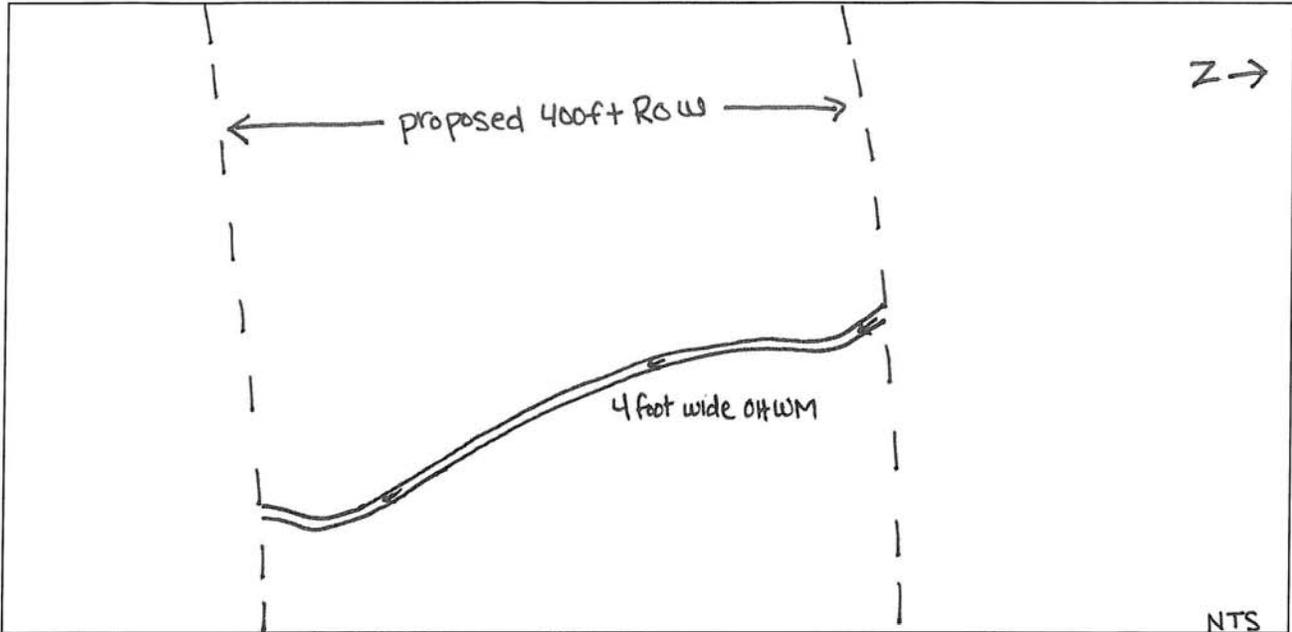
Sugarberry (*Celtis laevigata*), winged elm (*Ulmus alata*), Osage orange (*Maclura pomifera*), Western soapberry (*Sapindus saponaria*), Eastern red cedar (*Juniperus virginiana*), Eastern cottonwood (*Populus deltoides*), poison ivy (*Toxicodendron radicans*), saw greenbrier (*Smilax bona-nox*)

T&E Species / Suitable Habitat: List T&E species observed or which species the habitat is suitable for.

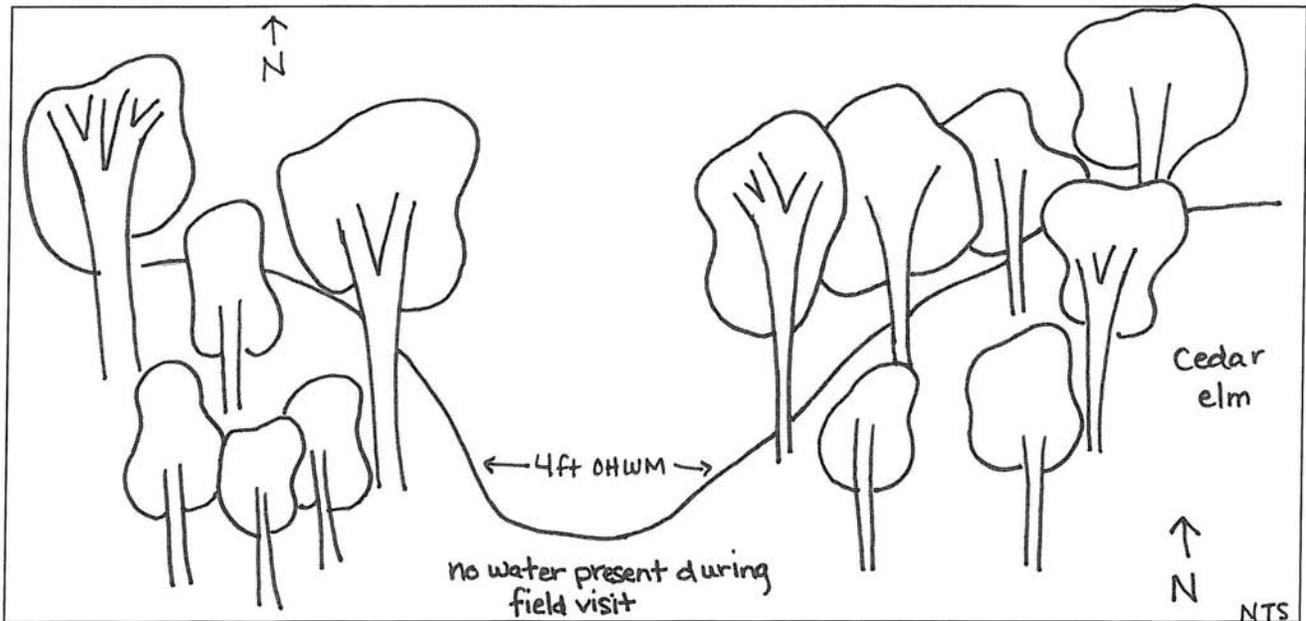
Timber/canebrake rattlesnake (*Crotalus horridus*)

Please provide a hand-drawn plan and section view sketch of the stream channel. The sketch should include: a directional arrow, the width of the channel from bank top to bank top and the width of the stream from water edge to water edge. Print this page, draw the sketches in the space provided below, and submit this page with the above form.

Plan View



Section View



STREAM DATA FORM

Stream Data Form #:	3	Project Name:	DNT 4B/5A
Surveyor(s):	CH, TB, MB	Date of Field Work:	10-14-10
USGS Stream Name:	Tributary to Little Elm Creek	County/State:	Collin and Denton, TX
USGS Topo Quad Name:	Celina	Stream Number 303(d) List:	
Associated-Wetland(s):		GPS Data:	Latitude 33.3218128373067 Longitude -96.8365746697482

Stream Type: Perennial

Stream Flow Direction: Northwest

OHWM Width (ft): 12 (avg)

OHWM Height (in): 18-24

Stream Bottom Composition: Other
 Description of Combination or Other: mud and rock (gravel)

Water Quality: Slightly Turbid

Water Color (if not clear): Greenish

Aquatic Habitat: (Indicate all types present within ROW/project limits.)

- | | | | |
|--|--|--|---|
| <input type="checkbox"/> Sand bar | <input type="checkbox"/> Sand/Gravel beach/bar | <input type="checkbox"/> Mud bar | <input type="checkbox"/> Gravel riffles |
| <input checked="" type="checkbox"/> Overhanging trees/shrubs | <input checked="" type="checkbox"/> Deep pool/hole/channel | <input checked="" type="checkbox"/> Aquatic vegetation | <input type="checkbox"/> Other |

Description of Other: _____

Aquatic Organisms: List all species observed. This would include waterfowl, fish, snakes, turtles, frogs, invertebrates, etc.

Fish, mollusks and frogs

Riparian Vegetation: List species observed.

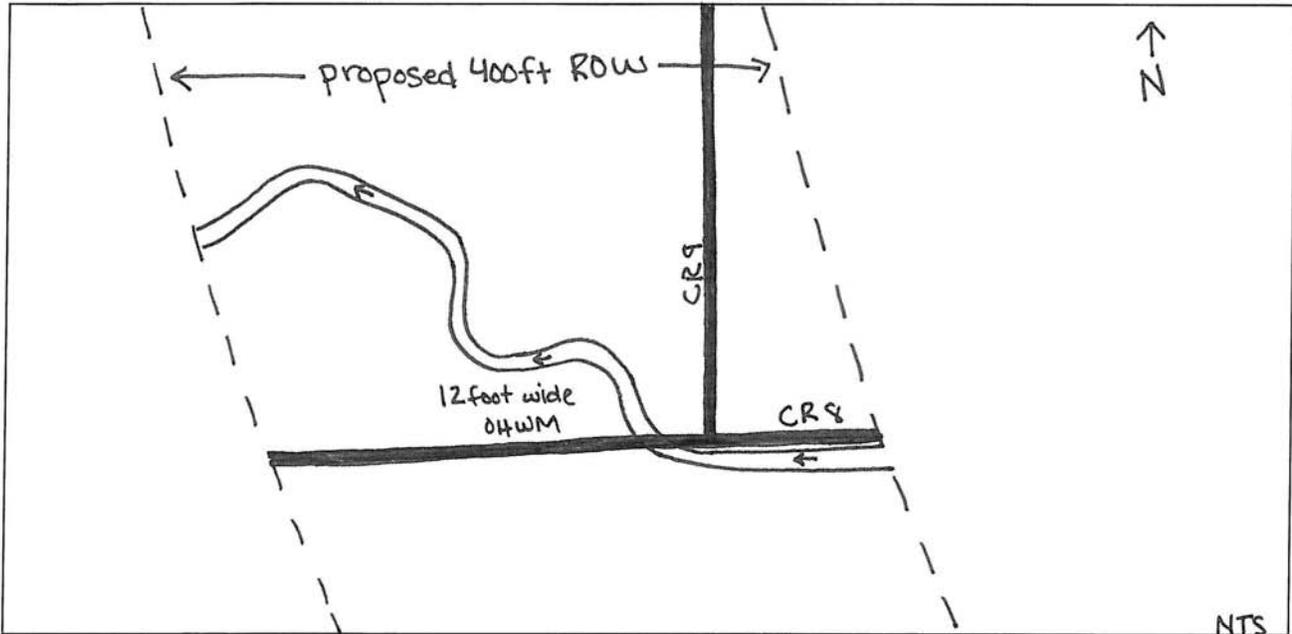
Cedar elm (*Ulmus crassifolia*), black willow (*Salix nigra*), Osage orange (*Maclura pomifera*), green ash (*Fraxinus pennsylvanica*), balloon vine (*Cardiospermum halicacabum*), rough cocklebur (*Xanthium strumarium*), giant goldenrod (*Solidago gigantea*), Bermuda grass (*Cynodon dactylon*), Virginia wildrye (*Elymus virginicus*), switchgrass (*Panicum virgatum*)

T&E Species / Suitable Habitat: List T&E species observed or which species the habitat is suitable for.

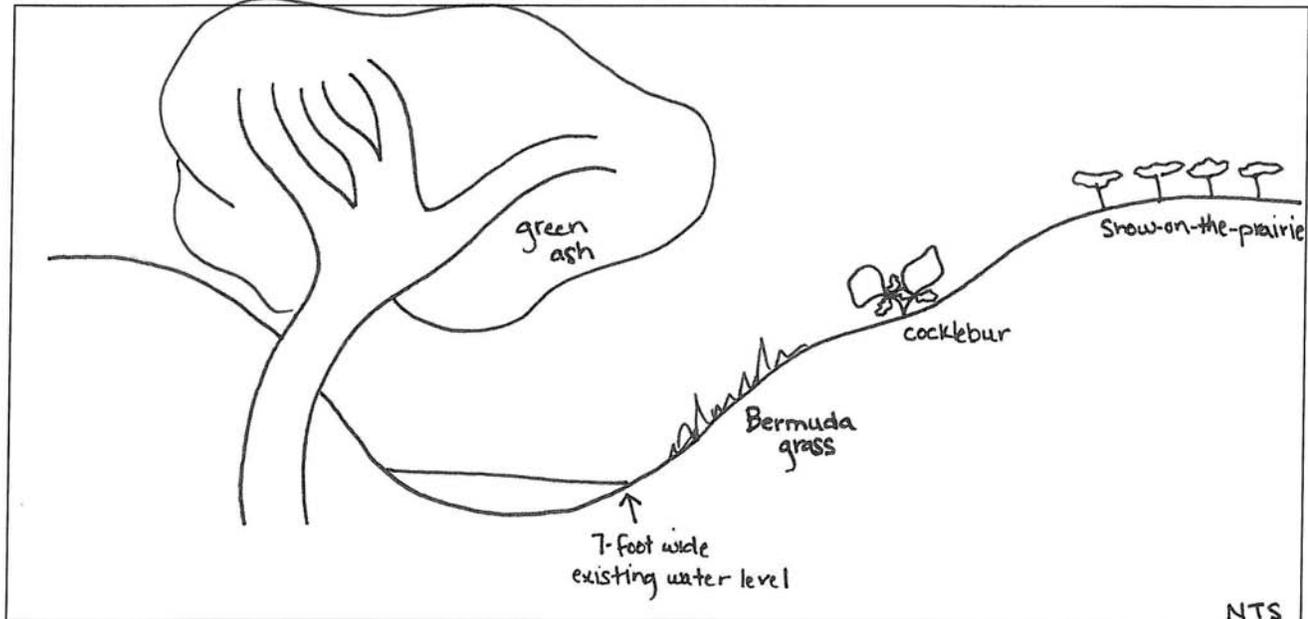
Mollusk

Please provide a hand-drawn plan and section view sketch of the stream channel. The sketch should include: a directional arrow, the width of the channel from bank top to bank top and the width of the stream from water edge to water edge. Print this page, draw the sketches in the space provided below, and submit this page with the above form.

Plan View



Section View



STREAM DATA FORM

Stream Data Form #:	4	Project Name:	DNT 4B/5A
Surveyor(s):	CH, TB, MB	Date of Field Work:	10-14-10
USGS Stream Name:	Tributary to Little Elm Creek	County/State:	Denton, TX
USGS Topo Quad Name:	Celina	Stream Number 303(d) List:	
Associated-Wetland(s):		GPS Data:	Latitude 33.3275218917667 Longitude -96.8368381597549

Stream Type: Intermittent

Stream Flow Direction: Southwest

OHWM Width (ft): 5

OHWM Height (in): 6

Stream Bottom Composition: Choose One
 Description of Combination or Other: _____

Water Quality: Choose One

Water Color (if not clear): None

Aquatic Habitat: (Indicate all types present within ROW/project limits.)

- | | | | |
|--|--|---|---|
| <input type="checkbox"/> Sand bar | <input type="checkbox"/> Sand/Gravel beach/bar | <input type="checkbox"/> Mud bar | <input type="checkbox"/> Gravel riffles |
| <input checked="" type="checkbox"/> Overhanging trees/shrubs | <input checked="" type="checkbox"/> Deep pool/hole/channel | <input type="checkbox"/> Aquatic vegetation | <input type="checkbox"/> Other |

Description of Other: _____

Aquatic Organisms: List all species observed. This would include waterfowl, fish, snakes, turtles, frogs, invertebrates, etc.

None

Riparian Vegetation: List species observed.

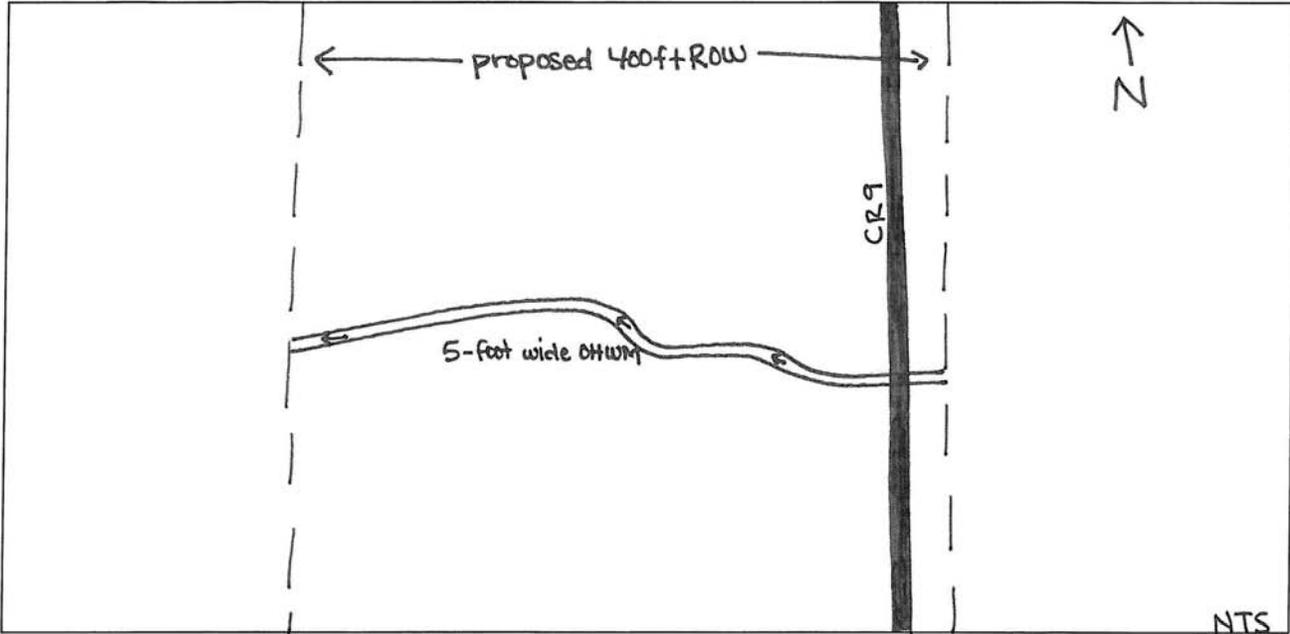
Osage orange (*Maclura pomifera*), prairie broomweed (*Amphiachyris dracunculoides*), switchgrass (*Panicum virgatum*), giant sumpweed (*Cyclachaena xanthifolia*)

T&E Species / Suitable Habitat: List T&E species observed or which species the habitat is suitable for.

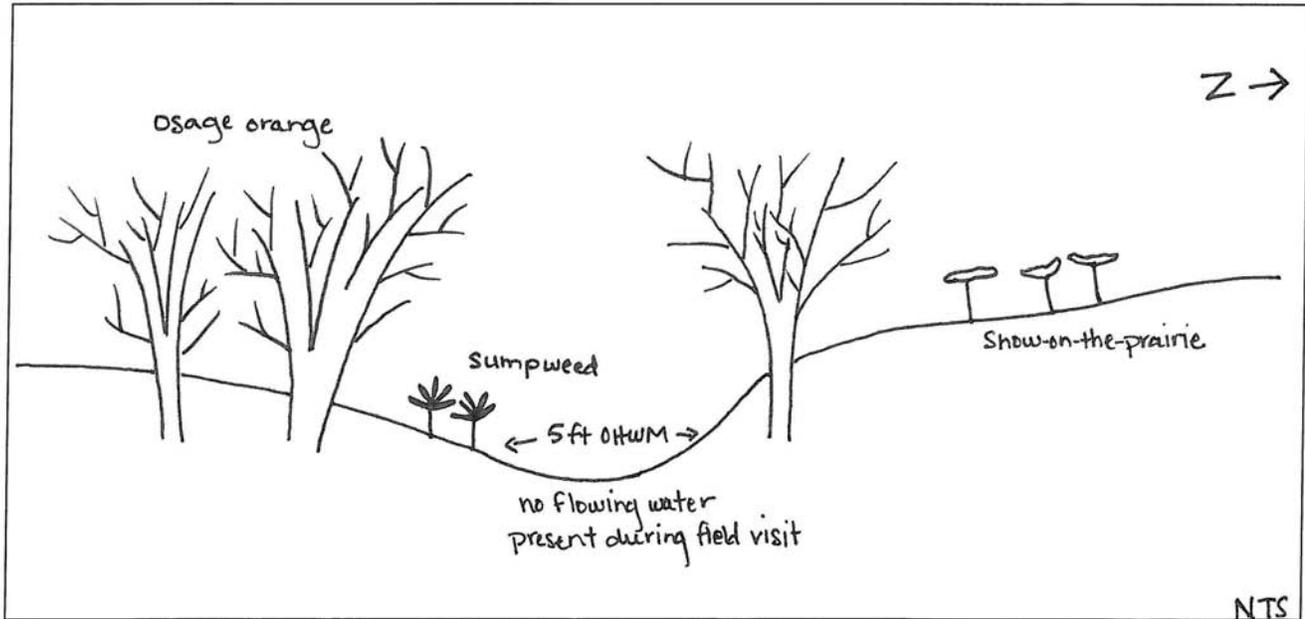
None.

Please provide a hand-drawn plan and section view sketch of the stream channel. The sketch should include: a directional arrow, the width of the channel from bank top to bank top and the width of the stream from water edge to water edge. Print this page, draw the sketches in the space provided below, and submit this page with the above form.

Plan View



Section View



STREAM DATA FORM

Stream Data Form #:	5	Project Name:	DNT 4B/5A
Surveyor(s):	CH, TB, MB	Date of Field Work:	10/14/10
USGS Stream Name:	Tributary to Little Elm Creek	County/State:	Denton, TX
USGS Topo Quad Name:	Celina	Stream Number 303(d) List:	
Associated-Wetland(s):		GPS Data:	Latitude 33.3358458329968 Longitude -96.8366627971606

Stream Type: Intermittent

Stream Flow Direction: Northwest

OHWM Width (ft): 2

OHWM Height (in): 4

Stream Bottom Composition: Other
 Description of Combination or Other: Mud and grass

Water Quality: Choose One

Water Color (if not clear): None

Aquatic Habitat: (Indicate all types present within ROW/project limits.)

- | | | | |
|---|---|---|---|
| <input type="checkbox"/> Sand bar | <input type="checkbox"/> Sand/Gravel beach/bar | <input type="checkbox"/> Mud bar | <input type="checkbox"/> Gravel riffles |
| <input type="checkbox"/> Overhanging trees/shrubs | <input type="checkbox"/> Deep pool/hole/channel | <input type="checkbox"/> Aquatic vegetation | <input type="checkbox"/> Other |

Description of Other: _____

Aquatic Organisms: List all species observed. This would include waterfowl, fish, snakes, turtles, frogs, invertebrates, etc.

None

Riparian Vegetation: List species observed.

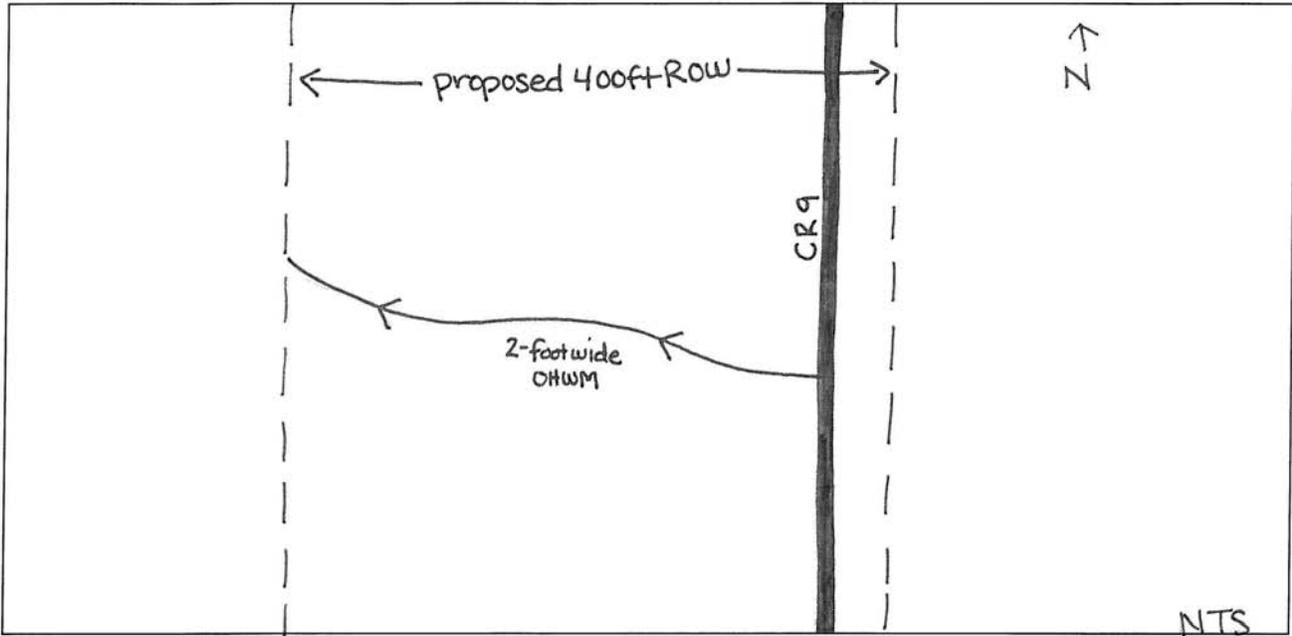
No riparian corridor.

T&E Species / Suitable Habitat: List T&E species observed or which species the habitat is suitable for.

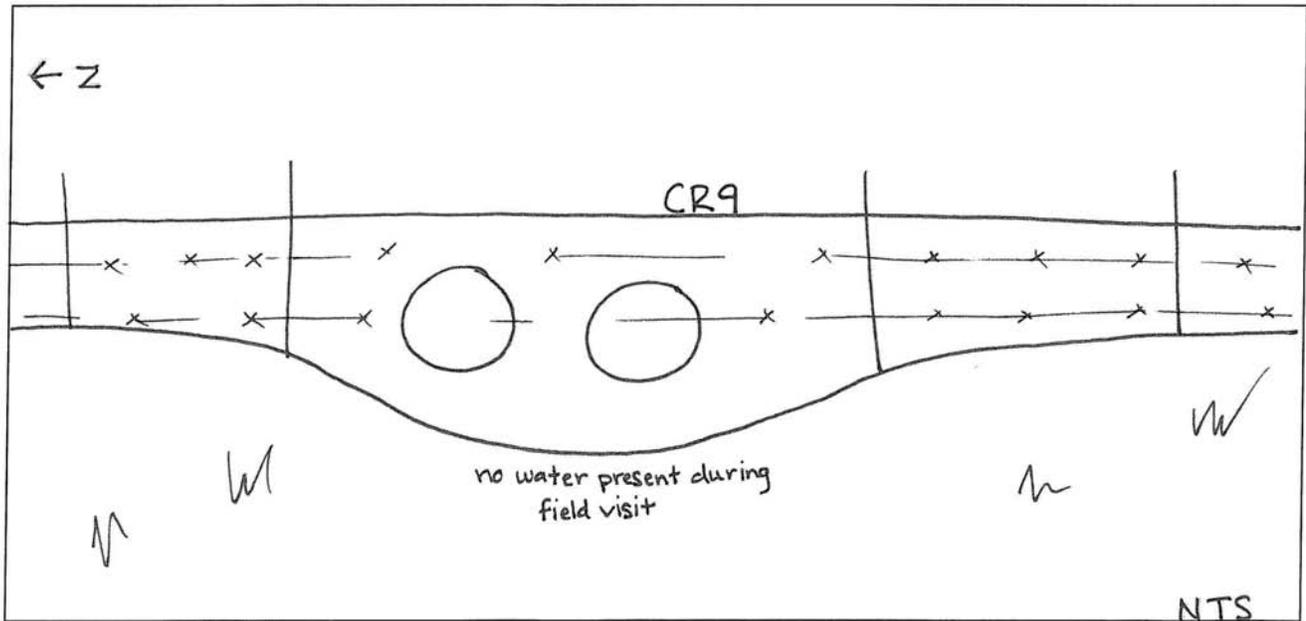
None

Please provide a hand-drawn plan and section view sketch of the stream channel. The sketch should include: a directional arrow, the width of the channel from bank top to bank top and the width of the stream from water edge to water edge. Print this page, draw the sketches in the space provided below, and submit this page with the above form.

Plan View



Section View



STREAM DATA FORM

Stream Data Form #:	6	Project Name:	DNT 4B/5A
Surveyor(s):	CH, TB, MB	Date of Field Work:	10-13-10
USGS Stream Name:	Tributary to Little Elm Creek	County/State:	Collin and Denton, TX
USGS Topo Quad Name:	Celina	Stream Number 303(d) List:	
Associated-Wetland(s):		GPS Data:	Latitude 33.3487568104667 Longitude -96.8356077096793

Stream Type: Ephemeral
 Stream Flow Direction: North
 OHWM Width (ft): 15 (avg.)
 OHWM Height (in): None
 Stream Bottom Composition: Other
 Description of Combination or Other: Mud
 Water Quality: Very Turbid
 Water Color (if not clear): Green (stagnant)

Aquatic Habitat: (Indicate all types present within ROW/project limits.)

- | | | | |
|--|--|---|---|
| <input type="checkbox"/> Sand bar | <input type="checkbox"/> Sand/Gravel beach/bar | <input checked="" type="checkbox"/> Mud bar | <input type="checkbox"/> Gravel riffles |
| <input checked="" type="checkbox"/> Overhanging trees/shrubs | <input checked="" type="checkbox"/> Deep pool/hole/channel | <input type="checkbox"/> Aquatic vegetation | <input type="checkbox"/> Other |

Description of Other: _____

Aquatic Organisms: List all species observed. This would include waterfowl, fish, snakes, turtles, frogs, invertebrates, etc.

None

Riparian Vegetation: List species observed.

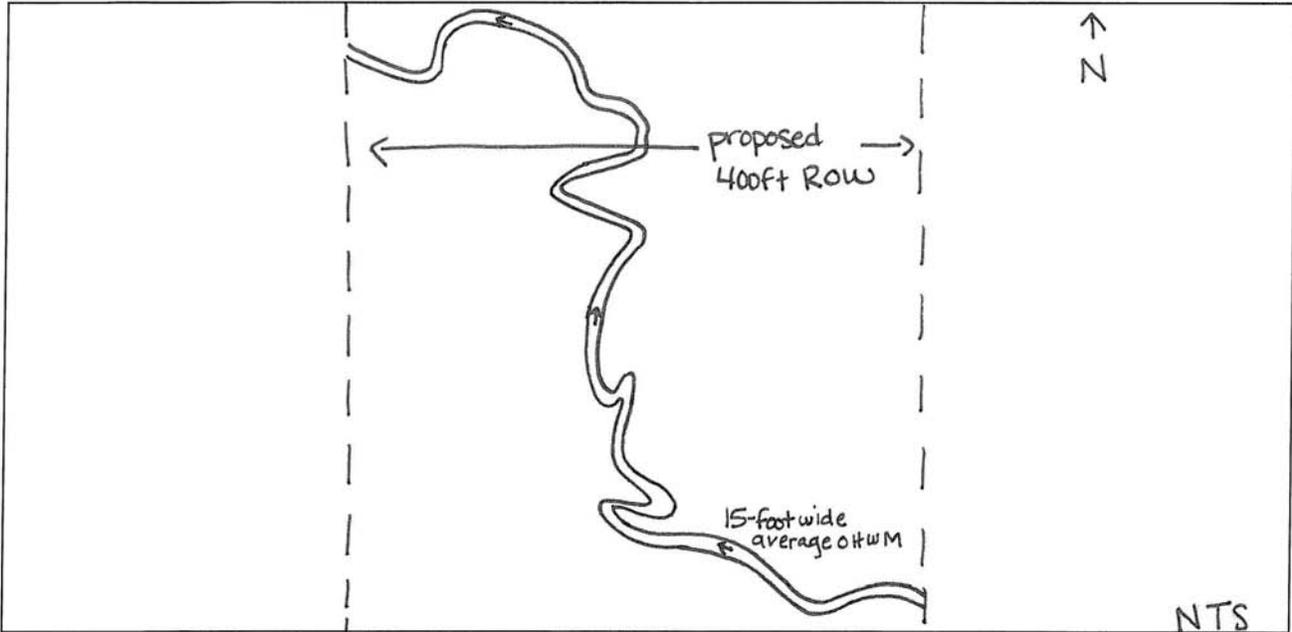
Cedar elm (*Ulmus crassifolia*), boxelder (*Acer negundo*), sugarberry (*Celtis laevigata*), honey locust (*Gleditsia triacanthos*), rescuegrass (*Bromus catharticus*), Japanese brome (*Bromus japonicus*), green spangletop (*Leptochloa dubia*), Western wheatgrass (*Pascopyrum smithii*), meadow dropseed (*Sporobolus asper* var. *drummondii*), Johnson grass (*Sorghum halepense*), giant ragweed (*Ambrosia trifida*)

T&E Species / Suitable Habitat: List T&E species observed or which species the habitat is suitable for.

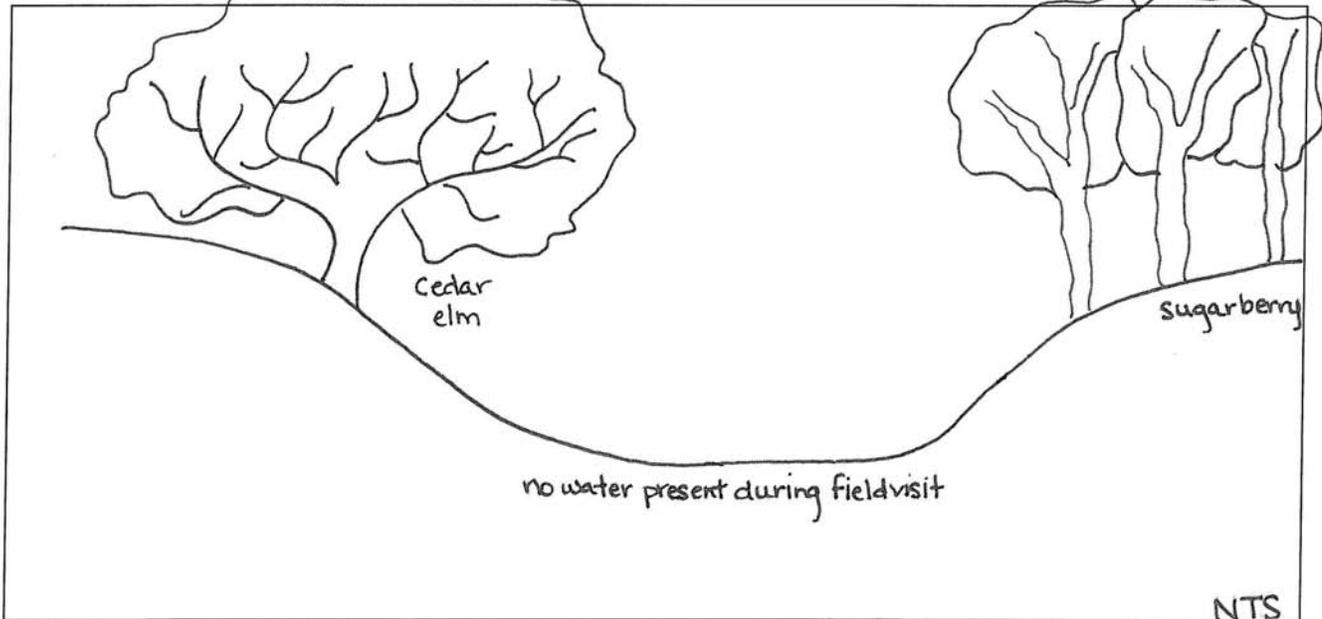
None

Please provide a hand-drawn plan and section view sketch of the stream channel. The sketch should include: a directional arrow, the width of the channel from bank top to bank top and the width of the stream from water edge to water edge. Print this page, draw the sketches in the space provided below, and submit this page with the above form.

Plan View



Section View



STREAM DATA FORM

Stream Data Form #:	7	Project Name:	DNT 4B/5A
Surveyor(s):	CH, TB, MB	Date of Field Work:	10/13/10
USGS Stream Name:	Tributary to Little Elm Creek	County/State:	Collin, TX
USGS Topo Quad Name:	Celina	Stream Number 303(d) List:	
Associated-Wetland(s):		GPS Data:	Latitude 33.3523512577907 Longitude -96.8352309764835

Stream Type: Ephemeral
 Stream Flow Direction: Northwest
 OHWM Width (ft): 3
 OHWM Height (in): None
 Stream Bottom Composition: Other
 Description of Combination or Other: Muddy
 Water Quality: Choose One _____
 Water Color (if not clear): None

Aquatic Habitat: (Indicate all types present within ROW/project limits.)

- Sand bar
- Sand/Gravel beach/bar
- Mud bar
- Gravel riffles
- Overhanging trees/shrubs
- Deep pool/hole/channel
- Aquatic vegetation
- Other

Description of Other: _____

Aquatic Organisms: List all species observed. This would include waterfowl, fish, snakes, turtles, frogs, invertebrates, etc.

None

Riparian Vegetation: List species observed.

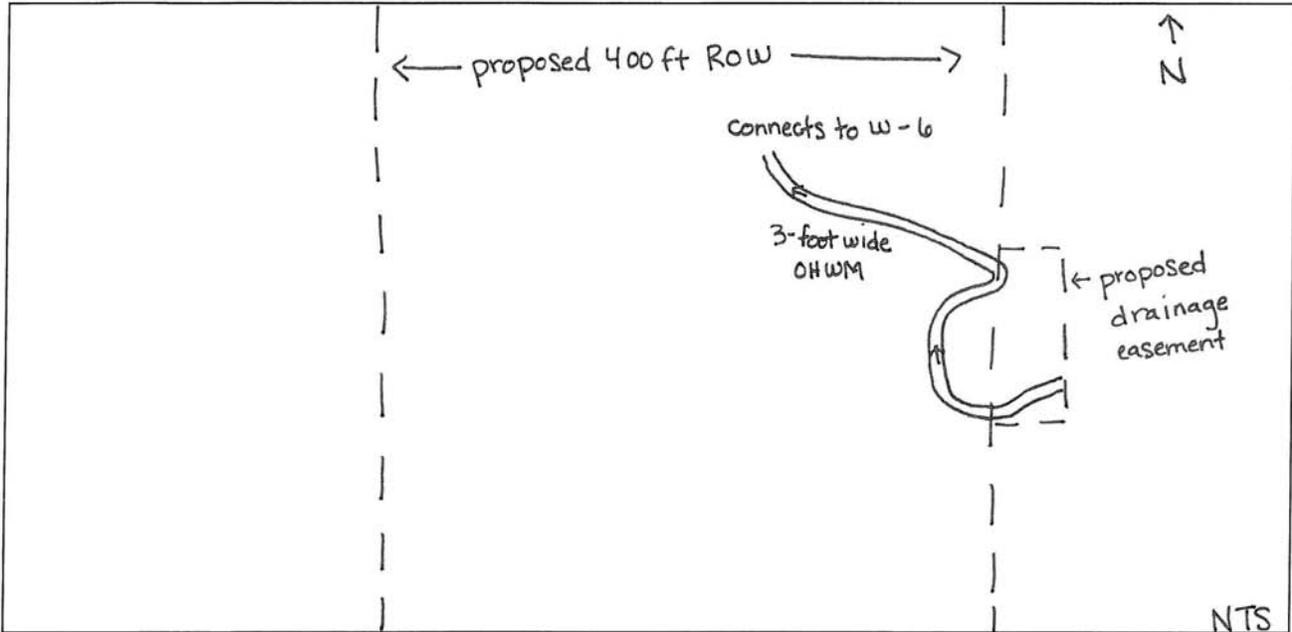
Cedar elm (*Ulmus crassifolia*), sugarberry (*Celtis laevigata*), Virginia wildrye (*Elymus virginicus*)

T&E Species / Suitable Habitat: List T&E species observed or which species the habitat is suitable for.

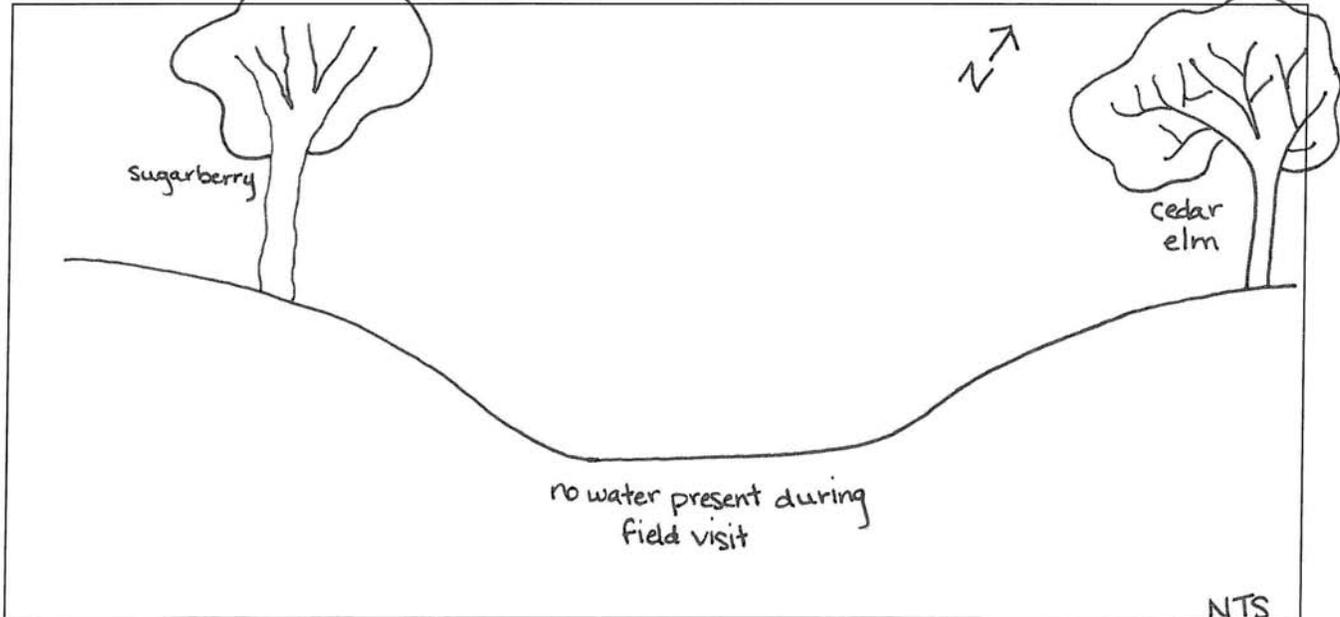
None

Please provide a hand-drawn plan and section view sketch of the stream channel. The sketch should include: a directional arrow, the width of the channel from bank top to bank top and the width of the stream from water edge to water edge. Print this page, draw the sketches in the space provided below, and submit this page with the above form.

Plan View



Section View



STREAM DATA FORM

Stream Data Form #:	8	Project Name:	DNT 4B/5A
Surveyor(s):	CH, TB, MB	Date of Field Work:	10-13-10
USGS Stream Name:	Tributary to Little Elm Creek	County/State:	Collin, TX
USGS Topo Quad Name:	Celina	Stream Number 303(d) List:	
Associated-Wetland(s):		GPS Data:	Latitude 33.3532029979338 Longitude -96.8352835470406

Stream Type: Ephemeral

Stream Flow Direction: Southwest

OHWM Width (ft): 5

OHWM Height (in): 4

Stream Bottom Composition: Other
 Description of Combination or Other: Mud

Water Quality: Clear

Water Color (if not clear): _____

Aquatic Habitat: (Indicate all types present within ROW/project limits.)

Sand bar Sand/Gravel beach/bar Mud bar Gravel riffles
 Overhanging trees/shrubs Deep pool/hole/channel Aquatic vegetation Other

Description of Other: _____

Aquatic Organisms: List all species observed. This would include waterfowl, fish, snakes, turtles, frogs, invertebrates, etc.

None

Riparian Vegetation: List species observed.

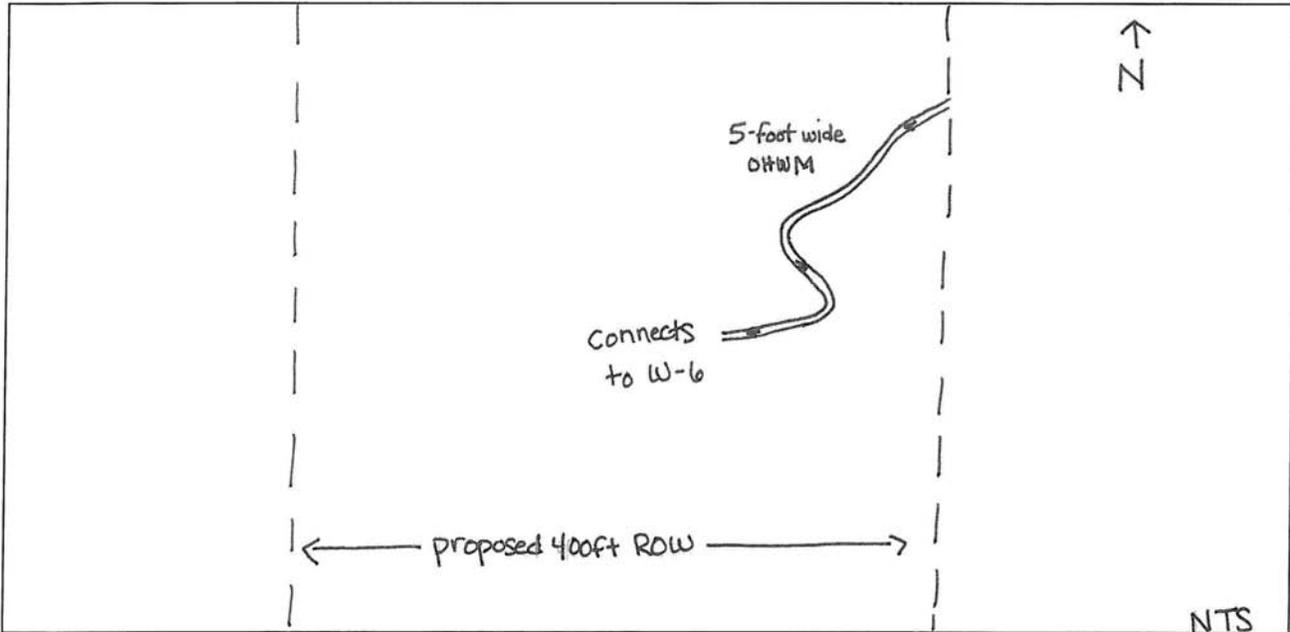
Cedar elm (Ulmus crassifolia), giant ragweed (Ambrosia trifida), Virginia wildrye (Elymus virginicus)

T&E Species / Suitable Habitat: List T&E species observed or which species the habitat is suitable for.

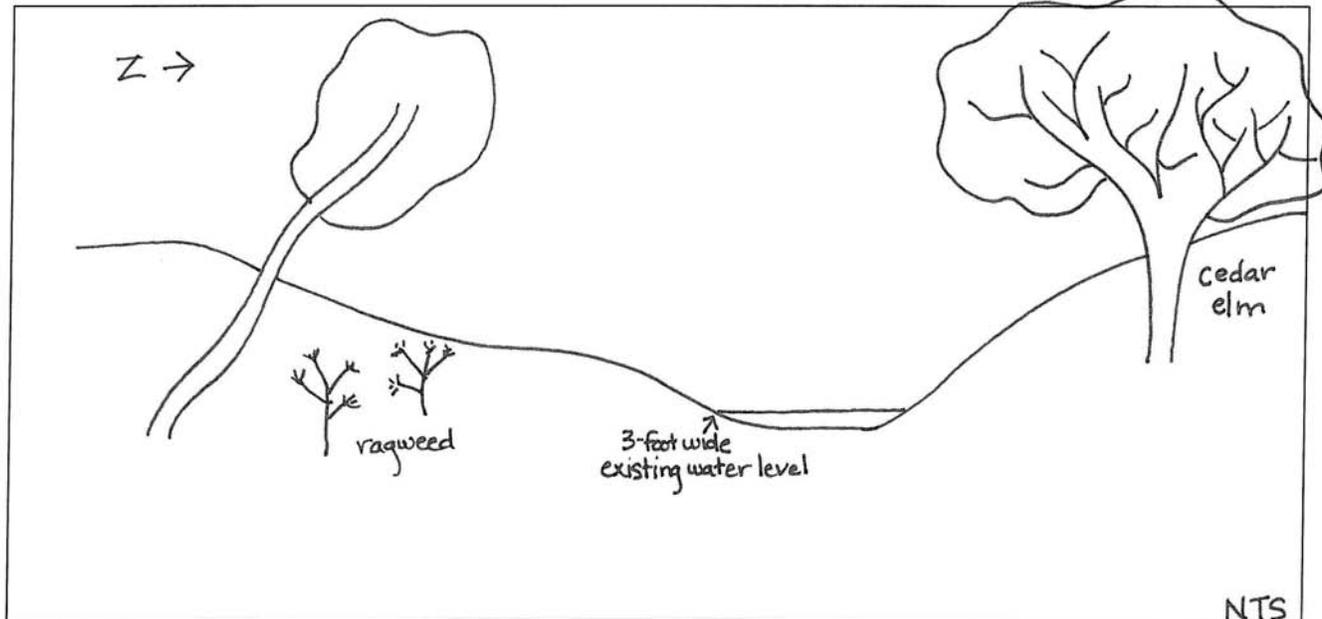
Texas garter snake (Thamnophis sirtalis annectens)

Please provide a hand-drawn plan and section view sketch of the stream channel. The sketch should include: a directional arrow, the width of the channel from bank top to bank top and the width of the stream from water edge to water edge. Print this page, draw the sketches in the space provided below, and submit this page with the above form.

Plan View



Section View



STREAM DATA FORM

Stream Data Form #:	9	Project Name:	DNT 4B/5A
Surveyor(s):	CH, TB, MB	Date of Field Work:	10/13/10
USGS Stream Name:	Little Elm Creek	County/State:	Collin and Denton, TX
USGS Topo Quad Name:	Celina	Stream Number 303(d) List:	0823A
Associated-Wetland(s):		GPS Data:	Latitude 33.3540751674856 Longitude -96.8354688433649

Stream Type: Perennial _____
Stream Flow Direction: Southwest _____
OHWM Width (ft): 25 _____
OHWM Height (in): 36 _____
Stream Bottom Composition: Other _____
 Description of Combination or Other: Muddy _____
Water Quality: Turbid _____
Water Color (if not clear): Greenish _____

Aquatic Habitat: (Indicate all types present within ROW/project limits.)
 Sand bar Sand/Gravel beach/bar Mud bar Gravel riffles
 Overhanging trees/shrubs Deep pool/hole/channel Aquatic vegetation Other
 Description of Other: _____

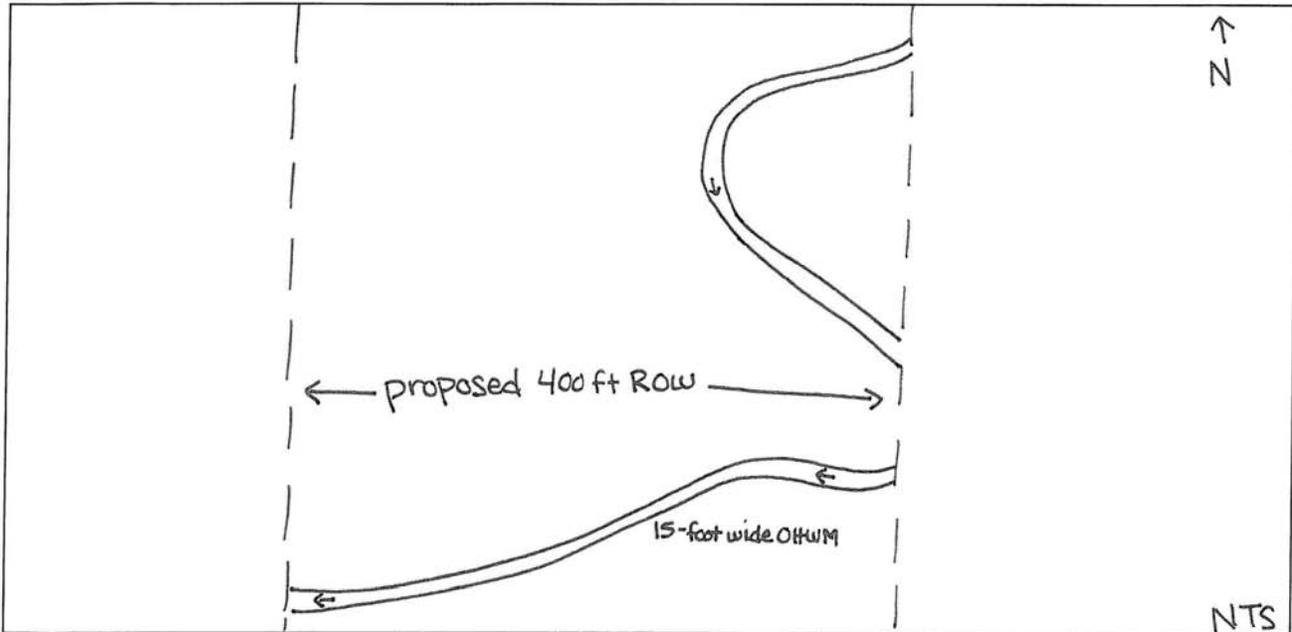
Aquatic Organisms: List all species observed. This would include waterfowl, fish, snakes, turtles, frogs, invertebrates, etc.
 Minnows

Riparian Vegetation: List species observed.
 Green ash (*Fraxinus pennsylvanica*), sugarberry (*Celtis laevigata*), cedar elm (*Ulmus crassifolia*), Osage orange (*Maclura pomifera*), Western soapberry (*Sapindus saponaria*), Eve's necklace (*Styphnolobium affine*), coralberry (*Symphoricarpos orbiculatus*), Indian woodoats (*Chasmanthium latifolium*), giant ragweed (*Ambrosia trifida*), Virginia wildrye (*Elymus virginicus*).

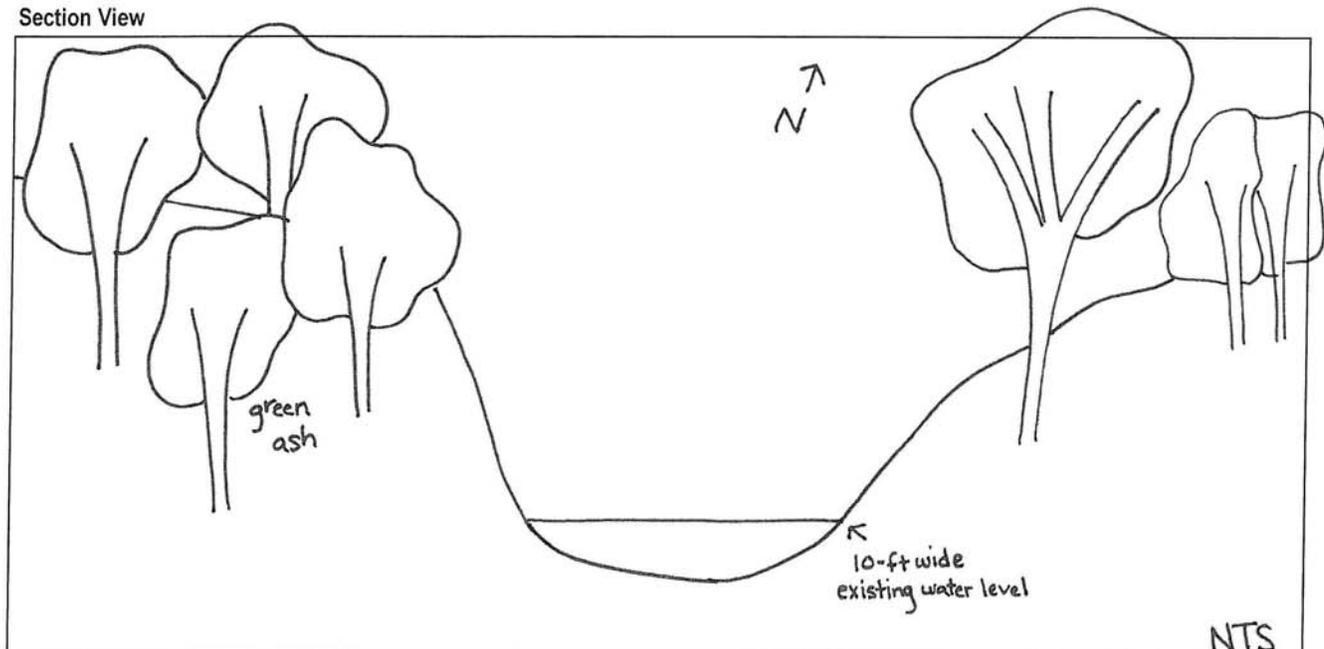
T&E Species / Suitable Habitat: List T&E species observed or which species the habitat is suitable for.
 Mollusks, Texas garter snake (*Thamnophis sirtalis annectens*)

Please provide a hand-drawn plan and section view sketch of the stream channel. The sketch should include: a directional arrow, the width of the channel from bank top to bank top and the width of the stream from water edge to water edge. Print this page, draw the sketches in the space provided below, and submit this page with the above form.

Plan View



Section View



STREAM DATA FORM

Stream Data Form #:	10	Project Name:	DNT 4B/5A
Surveyor(s):	CH, TB, MB	Date of Field Work:	12-9-10
USGS Stream Name:	Tributary to Little Elm Creek	County/State:	Denton, TX
USGS Topo Quad Name:	Celina	Stream Number 303(d) List:	
Associated-Wetland(s):	Yes	GPS Data:	Latitude 33.354454°N Longitude -96.836829°S

Stream Type: Ephemeral

Stream Flow Direction: Southwest

OHWM Width (ft): 25

OHWM Height (in): 6

Stream Bottom Composition: Other
 Description of Combination or Other: clay soil

Water Quality: Clear

Water Color (if not clear): _____

Aquatic Habitat: (Indicate all types present within ROW/project limits.)

Sand bar Sand/Gravel beach/bar Mud bar Gravel riffles
 Overhanging trees/shrubs Deep pool/hole/channel Aquatic vegetation Other

Description of Other: _____

Aquatic Organisms: List all species observed. This would include waterfowl, fish, snakes, turtles, frogs, invertebrates, etc.

None

Riparian Vegetation: List species observed.

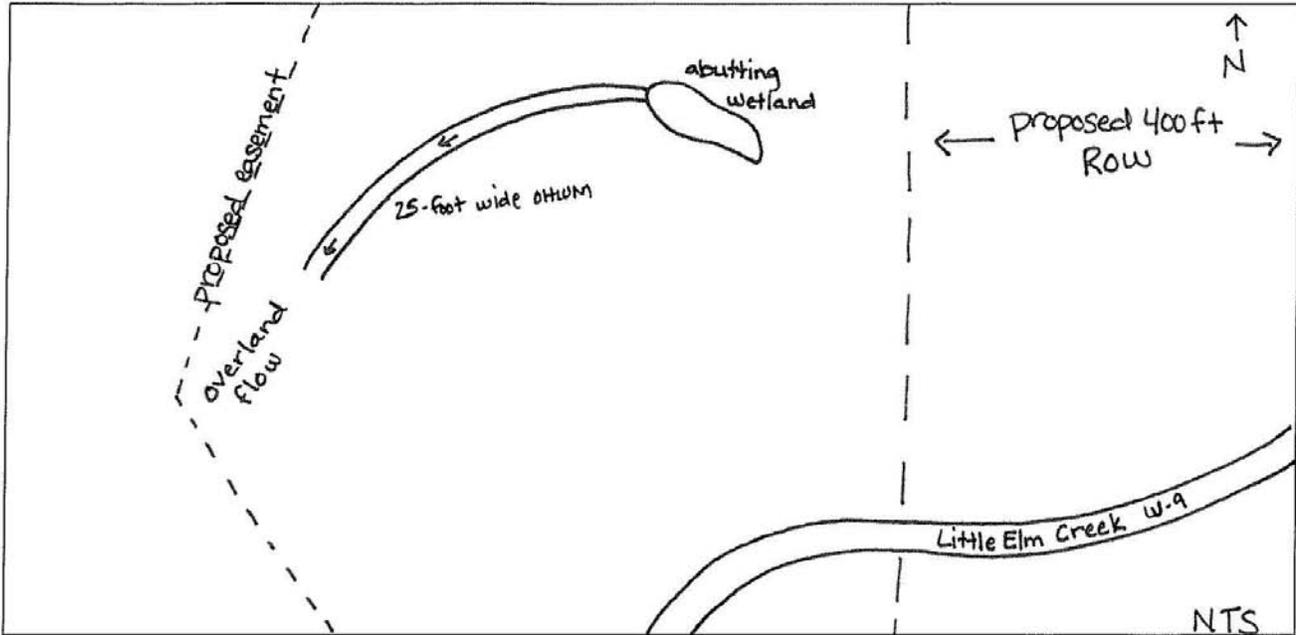
Green ash (*Fraxinus pennsylvanica*), Osage orange (*Maclura pomifera*), winged elm (*Ulmus alata*), cedar elm (*Ulmus crassifolia*), honey locust (*Gleditsia triacanthos*), Virginia wildrye (*Elymus virginicus*), slimleaf panicgrass (*Dichanthelium linearifolium*), nutgrass (*Cyperus rotundus*), ravenfoot sedge (*Carex crus-corvi*)

T&E Species / Suitable Habitat: List T&E species observed or which species the habitat is suitable for.

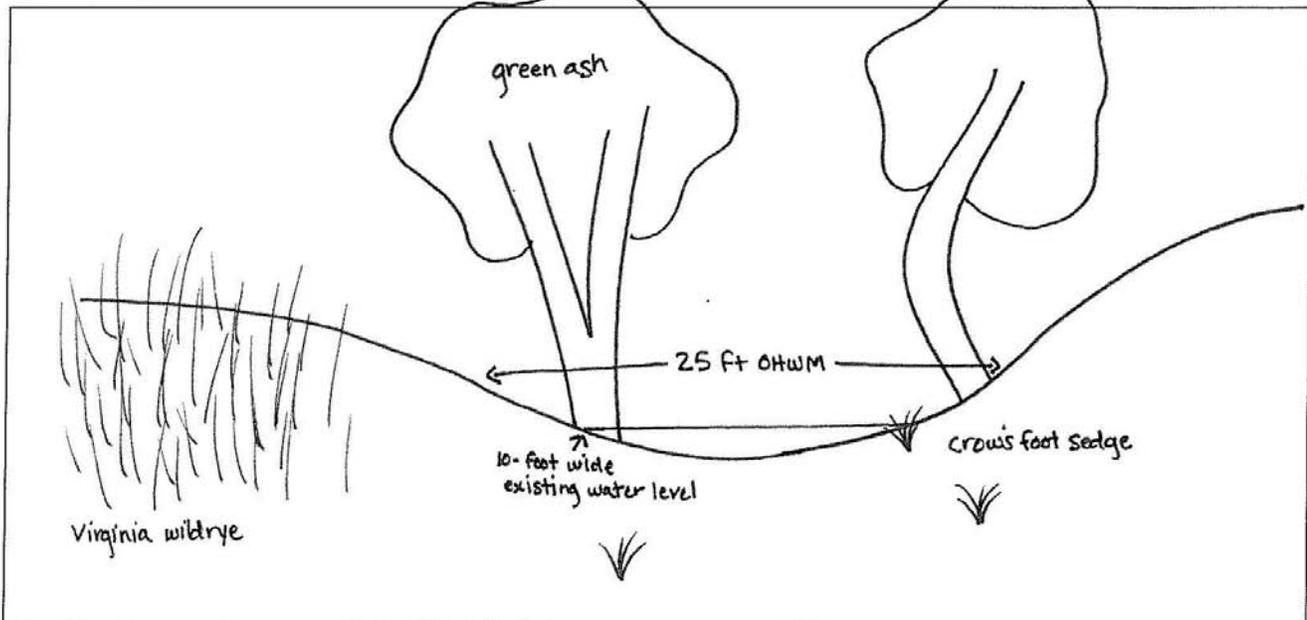
None

Please provide a hand-drawn plan and section view sketch of the stream channel. The sketch should include: a directional arrow, the width of the channel from bank top to bank top and the width of the stream from water edge to water edge. Print this page, draw the sketches in the space provided below, and submit this page with the above form.

Plan View



Section View



STREAM DATA FORM

Stream Data Form #:	11	Project Name:	DNT 4B/5A
Surveyor(s):	CH, TB, MB	Date of Field Work:	12-9-10
USGS Stream Name:	Tributary to Little Elm Creek	County/State:	Denton, TX
USGS Topo Quad Name:	Celina	Stream Number 303(d) List:	
Associated-Wetland(s):	Yes	GPS Data:	Latitude 33.355475°N Longitude -96.837003°S

Stream Type: Intermittent
 Stream Flow Direction: South
 OHWM Width (ft): 6-15
 OHWM Height (in): NA
 Stream Bottom Composition: Other
 Description of Combination or Other: clay soil
 Water Quality: Choose One
 Water Color (if not clear):

Aquatic Habitat: (Indicate all types present within ROW/project limits.)
 Sand bar Sand/Gravel beach/bar Mud bar Gravel riffles
 Overhanging trees/shrubs Deep pool/hole/channel Aquatic vegetation Other
 Description of Other: _____

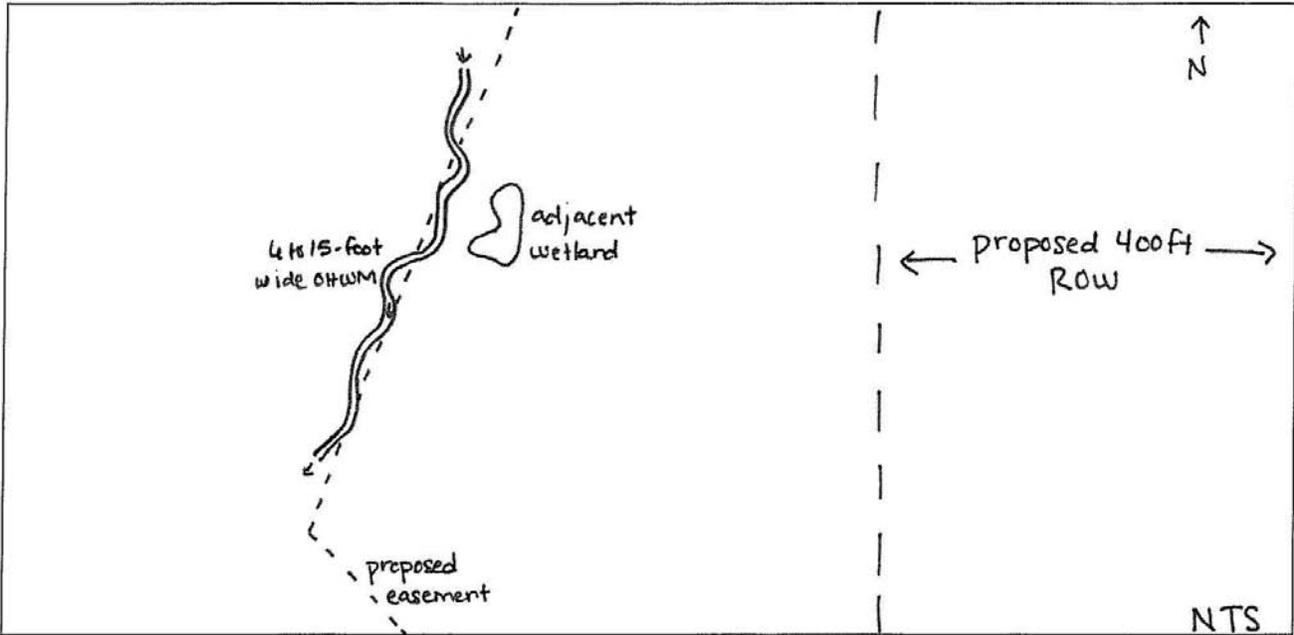
Aquatic Organisms: List all species observed. This would include waterfowl, fish, snakes, turtles, frogs, invertebrates, etc.

Riparian Vegetation: List species observed.
 Green ash (*Fraxinus pennsylvanica*), Cedar elm (*Ulmus crassifolia*), Common greenbrier (*Smilax rotundifolia*), Eve's necklace (*Styphnolobium affine*), Green hawthorn (*Crataegus viridis*), Virginia wildrye (*Elymus virginicus*), Nutsedge (*Cyperus rotundus*)

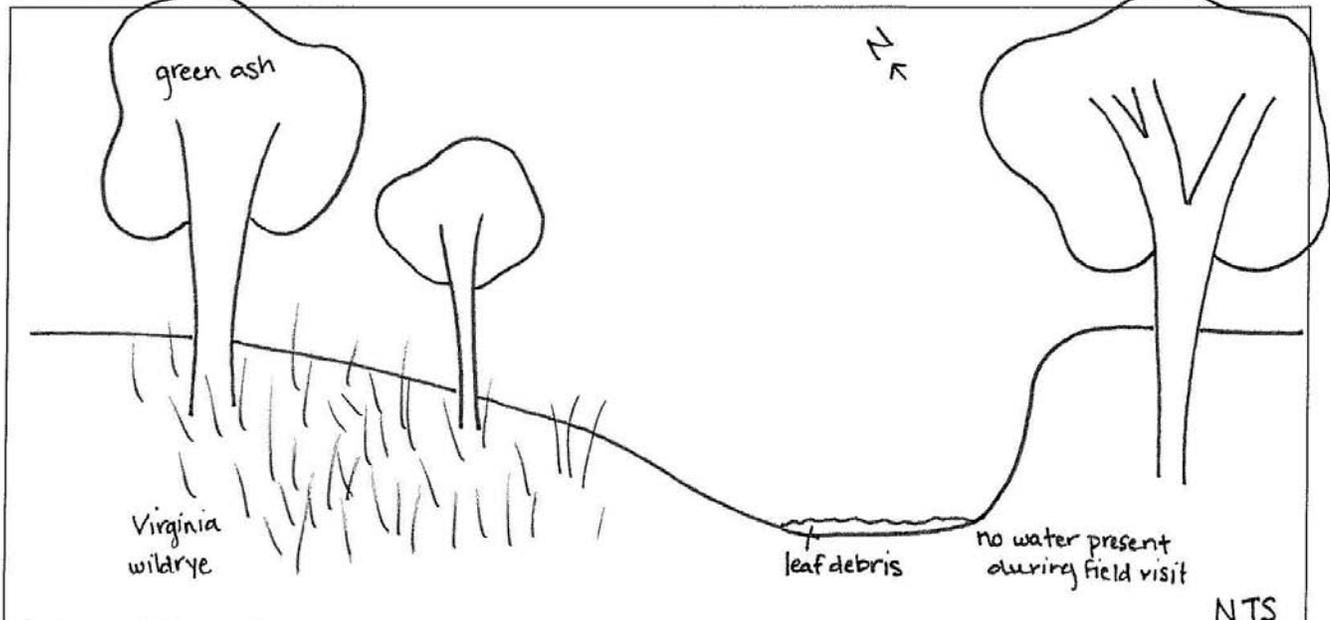
T&E Species / Suitable Habitat: List T&E species observed or which species the habitat is suitable for.
 None

Please provide a hand-drawn plan and section view sketch of the stream channel. The sketch should include: a directional arrow, the width of the channel from bank top to bank top and the width of the stream from water edge to water edge. Print this page, draw the sketches in the space provided below, and submit this page with the above form.

Plan View



Section View



STREAM DATA FORM

Stream Data Form #:	12	Project Name:	DNT 4B/5A
Surveyor(s):	CH, TB, MB	Date of Field Work:	12-9-10
USGS Stream Name:	Tributary to Little Elm Creek	County/State:	Collin, TX
USGS Topo Quad Name:	Celina	Stream Number 303(d) List:	
Associated-Wetland(s):		GPS Data:	Latitude 33.355885°N/ Longitude -96.834559°S

Stream Type: Ephemeral

Stream Flow Direction: South

OHWM Width (ft): 6-20

OHWM Height (in): 6

Stream Bottom Composition: Other
 Description of Combination or Other: clay soil

Water Quality: Choose One

Water Color (if not clear): _____

Aquatic Habitat: (Indicate all types present within ROW/project limits.)

Sand bar Sand/Gravel beach/bar Mud bar Gravel riffles
 Overhanging trees/shrubs Deep pool/hole/channel Aquatic vegetation Other

Description of Other: _____

Aquatic Organisms: List all species observed. This would include waterfowl, fish, snakes, turtles, frogs, invertebrates, etc.

None

Riparian Vegetation: List species observed.

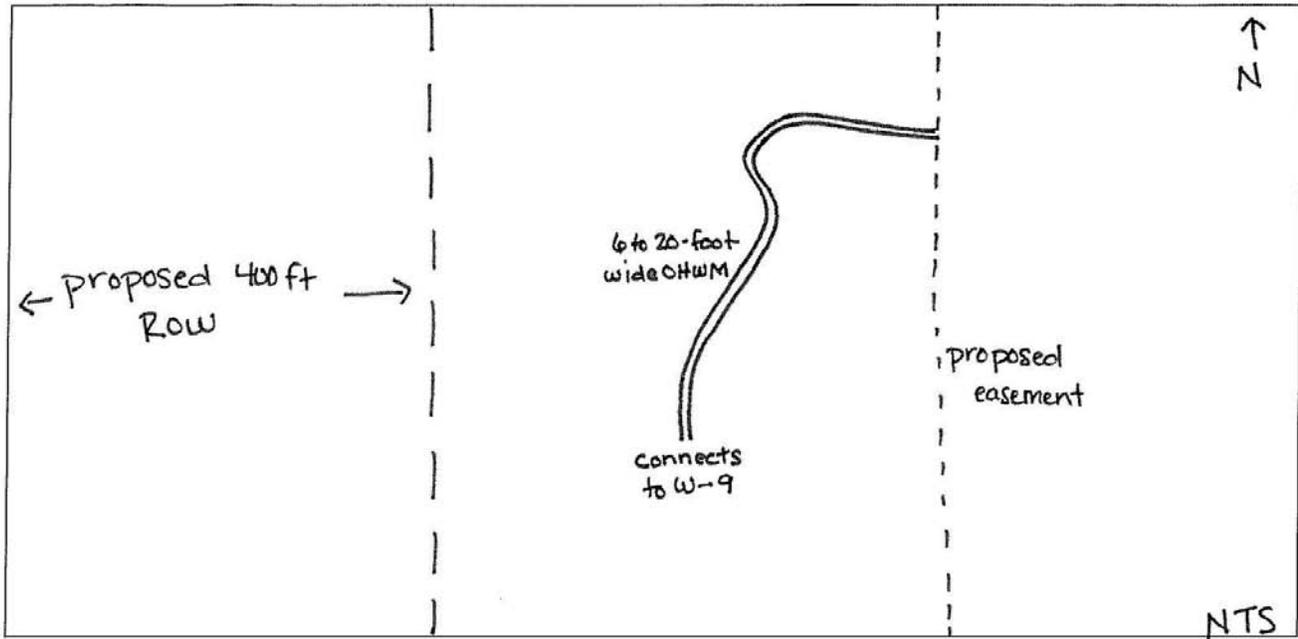
Green ash (*Fraxinus pennsylvanica*), sugarberry (*Celtis laevigata*), Virginia wildrye (*Elymus virginicus*).

T&E Species / Suitable Habitat: List T&E species observed or which species the habitat is suitable for.

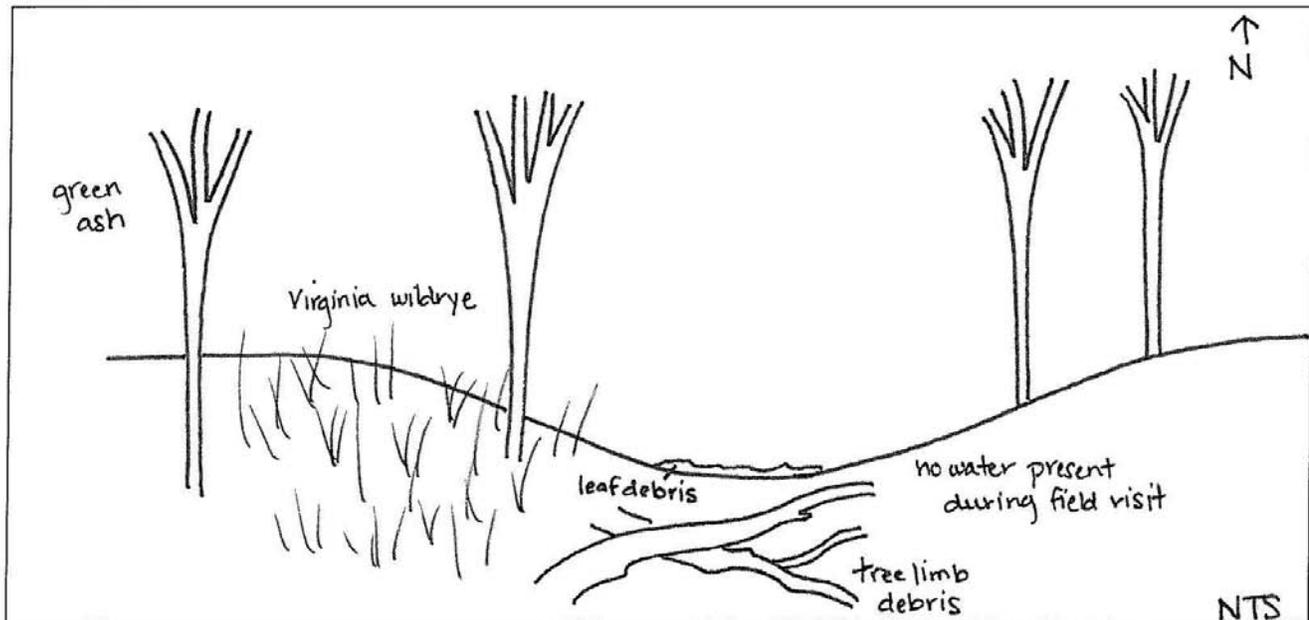
None

Please provide a hand-drawn plan and section view sketch of the stream channel. The sketch should include: a directional arrow, the width of the channel from bank top to bank top and the width of the stream from water edge to water edge. Print this page, draw the sketches in the space provided below, and submit this page with the above form.

Plan View



Section View



STREAM DATA FORM

Stream Data Form #:	15	Project Name:	DNT 4B/5A
Surveyor(s):	CH, TB, MB	Date of Field Work:	10-13-10
USGS Stream Name:	Tributary to Little Elm Creek	County/State:	Collin and Denton, TX
USGS Topo Quad Name:	Celina	Stream Number 303(d) List:	
Associated-Wetland(s):	Yes	GPS Data:	Latitude 33.3581409040731 Longitude -96.8353626724861

Stream Type: Intermittent
 Stream Flow Direction: Southwest
 OHWM Width (ft): 6-10
 OHWM Height (in): 6
 Stream Bottom Composition: Other
 Description of Combination or Other: Mud
 Water Quality: Turbid
 Water Color (if not clear): Brown

Aquatic Habitat: (Indicate all types present within ROW/project limits.)

- | | | | |
|--|--|--|---|
| <input type="checkbox"/> Sand bar | <input type="checkbox"/> Sand/Gravel beach/bar | <input checked="" type="checkbox"/> Mud bar | <input type="checkbox"/> Gravel riffles |
| <input checked="" type="checkbox"/> Overhanging trees/shrubs | <input checked="" type="checkbox"/> Deep pool/hole/channel | <input checked="" type="checkbox"/> Aquatic vegetation | <input type="checkbox"/> Other |

Description of Other: _____

Aquatic Organisms: List all species observed. This would include waterfowl, fish, snakes, turtles, frogs, invertebrates, etc.

Crayfish, frogs

Riparian Vegetation: List species observed.

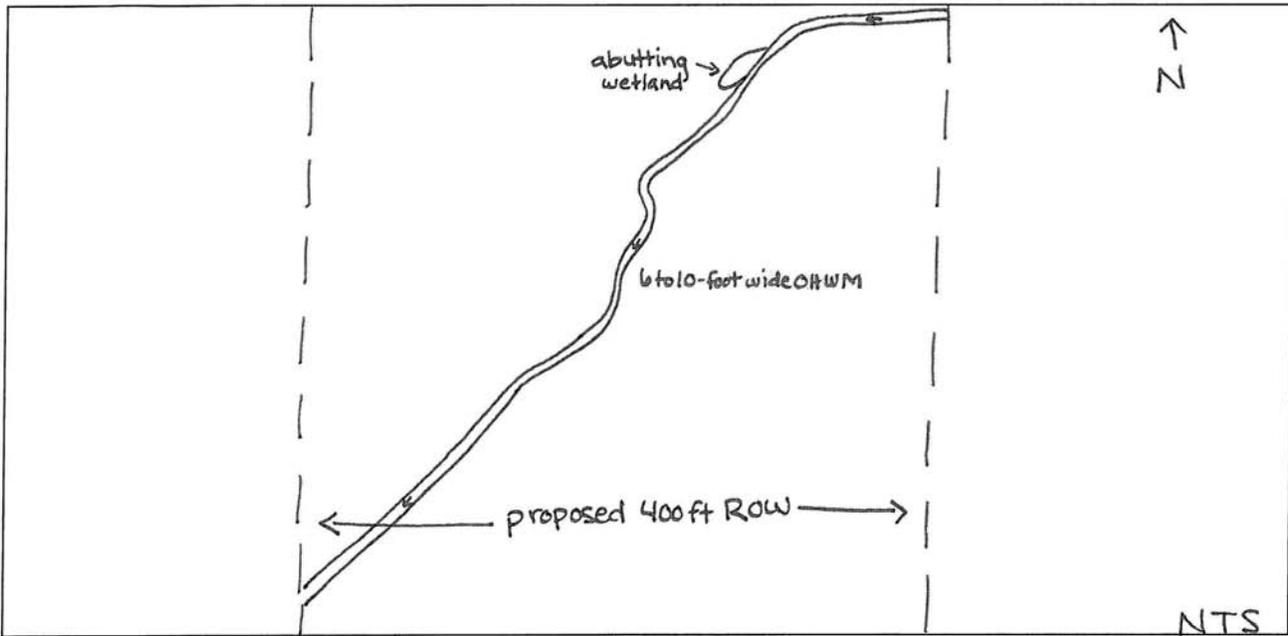
Green ash (*Fraxinus pennsylvanica*), cedar elm (*Ulmus crassifolia*), sugarberry (*Celtis laevigata*), meadow dropseed (*Sporobolus asper* var. *drummondii*), ravenfoot sedge (*Carex crus-corvi*), Virginia wildrye (*Elymus virginicus*)

T&E Species / Suitable Habitat: List T&E species observed or which species the habitat is suitable for.

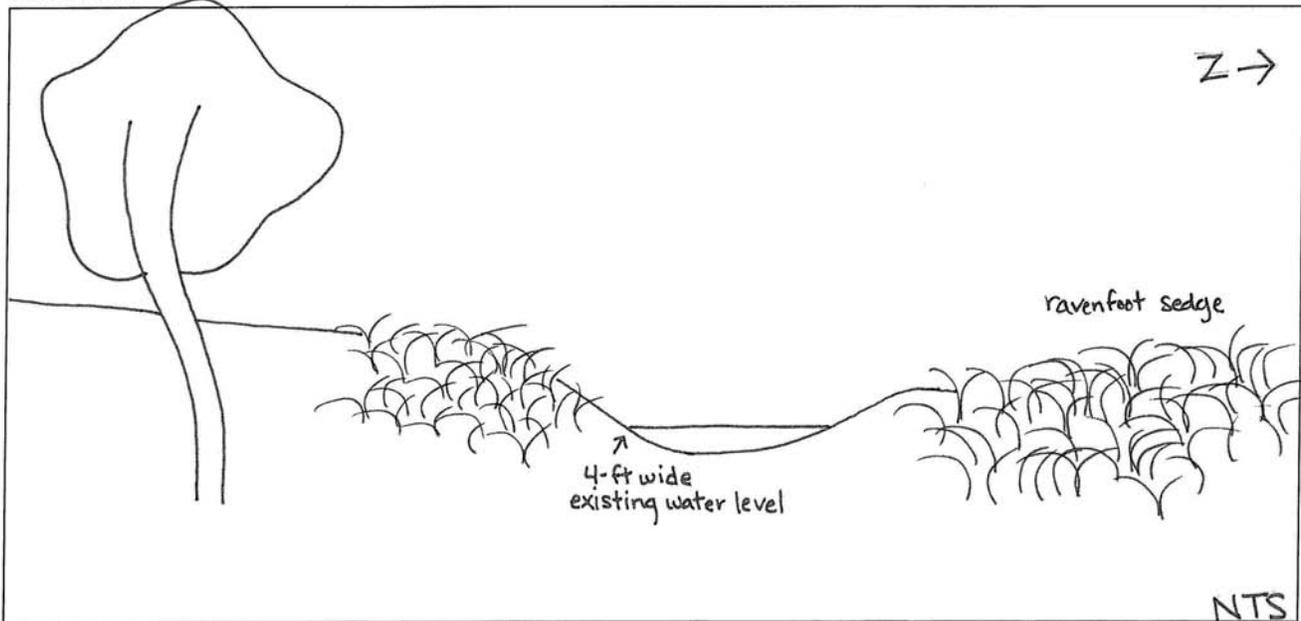
Texas garter snake (*Thamnophis sirtalis annectens*)

Please provide a hand-drawn plan and section view sketch of the stream channel. The sketch should include: a directional arrow, the width of the channel from bank top to bank top and the width of the stream from water edge to water edge. Print this page, draw the sketches in the space provided below, and submit this page with the above form.

Plan View



Section View



STREAM DATA FORM

Stream Data Form #:	16	Project Name:	DNT 4B/5A
Surveyor(s):	CH, TB, MB	Date of Field Work:	10/14/10
USGS Stream Name:	Tributary to Little Elm Creek	County/State:	Collin and Denton, TX
USGS Topo Quad Name:	Celina	Stream Number 303(d) List:	
Associated-Wetland(s):		GPS Data:	Latitude 33.3665717142638 Longitude -96.835142482403

Stream Type: Ephemeral

Stream Flow Direction: South

OHWM Width (ft): 12

OHWM Height (in): 6

Stream Bottom Composition: Other
 Description of Combination or Other: Soil

Water Quality: Choose One

Water Color (if not clear): None

Aquatic Habitat: (Indicate all types present within ROW/project limits.)

Sand bar Sand/Gravel beach/bar Mud bar Gravel riffles
 Overhanging trees/shrubs Deep pool/hole/channel Aquatic vegetation Other

Description of Other: _____

Aquatic Organisms: List all species observed. This would include waterfowl, fish, snakes, turtles, frogs, invertebrates, etc.

None

Riparian Vegetation: List species observed.

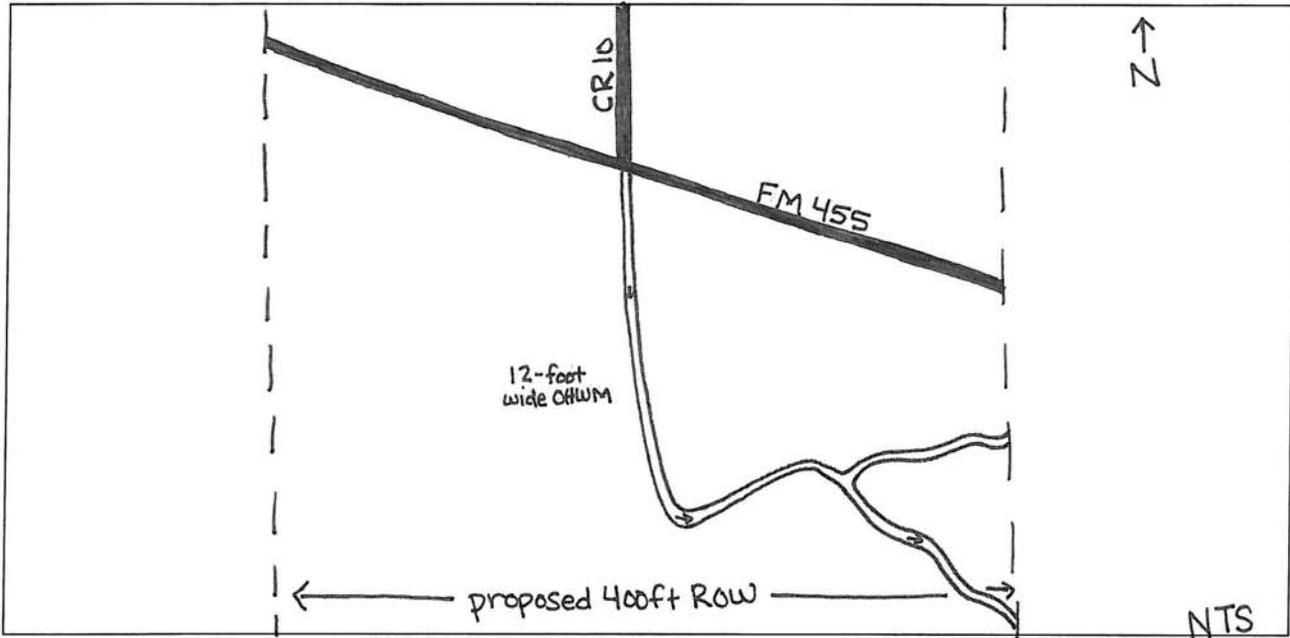
Balloon vine (Cardiospermum halicacabum), snow-on-the-prairie (Euphorbia bicolor), giant ragweed (Ambrosia trifida), seaside goldenrod (Solidago sempervirens)

T&E Species / Suitable Habitat: List T&E species observed or which species the habitat is suitable for.

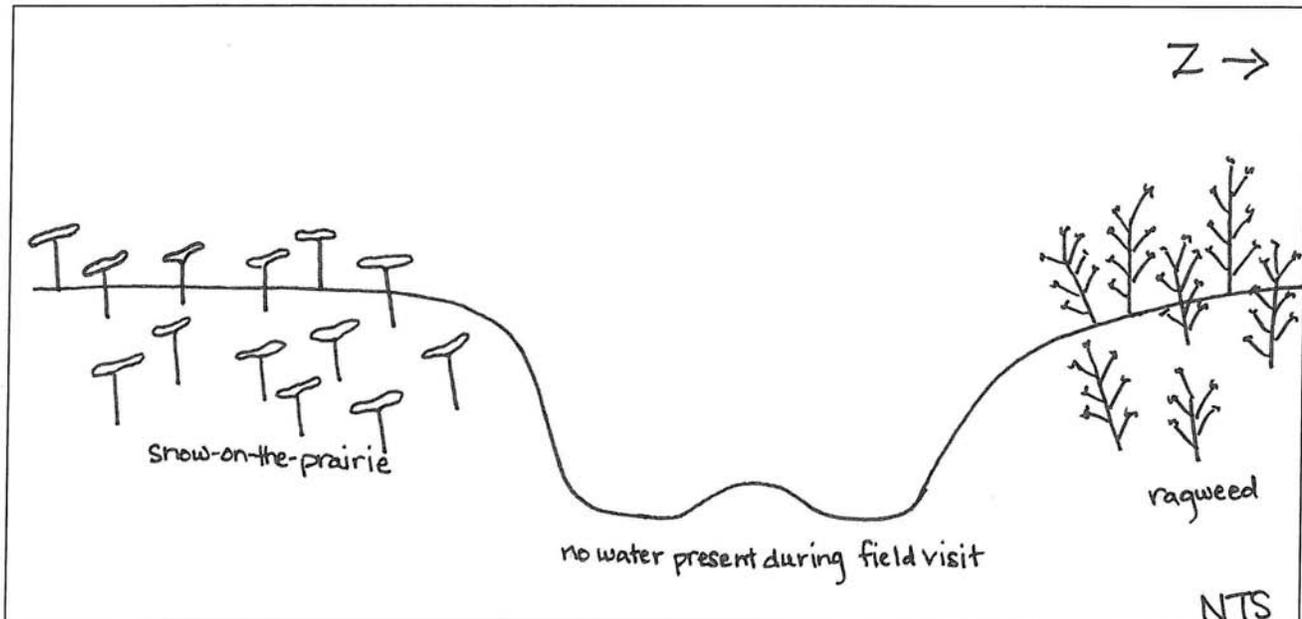
None

Please provide a hand-drawn plan and section view sketch of the stream channel. The sketch should include: a directional arrow, the width of the channel from bank top to bank top and the width of the stream from water edge to water edge. Print this page, draw the sketches in the space provided below, and submit this page with the above form.

Plan View



Section View



STREAM DATA FORM

Stream Data Form #:	17	Project Name:	DNT 4B/5A
Surveyor(s):	CH, TB, MB	Date of Field Work:	10-14-10
USGS Stream Name:	Tributary to Little Elm Creek	County/State:	Denton, TX
USGS Topo Quad Name:	Marilee	Stream Number 303(d) List:	
Associated-Wetland(s):	None	GPS Data:	Latitude 33.3787944160909 Longitude -96.8348853997527

Stream Type: Ephemeral

Stream Flow Direction: Southwest

OHWM Width (ft): 5

OHWM Height (in): 6

Stream Bottom Composition: Other
 Description of Combination or Other: Mud

Water Quality: Choose One

Water Color (if not clear): None

Aquatic Habitat: (Indicate all types present within ROW/project limits.)

Sand bar Sand/Gravel beach/bar Mud bar Gravel riffles
 Overhanging trees/shrubs Deep pool/hole/channel Aquatic vegetation Other

Description of Other: _____

Aquatic Organisms: List all species observed. This would include waterfowl, fish, snakes, turtles, frogs, invertebrates, etc.

None

Riparian Vegetation: List species observed.

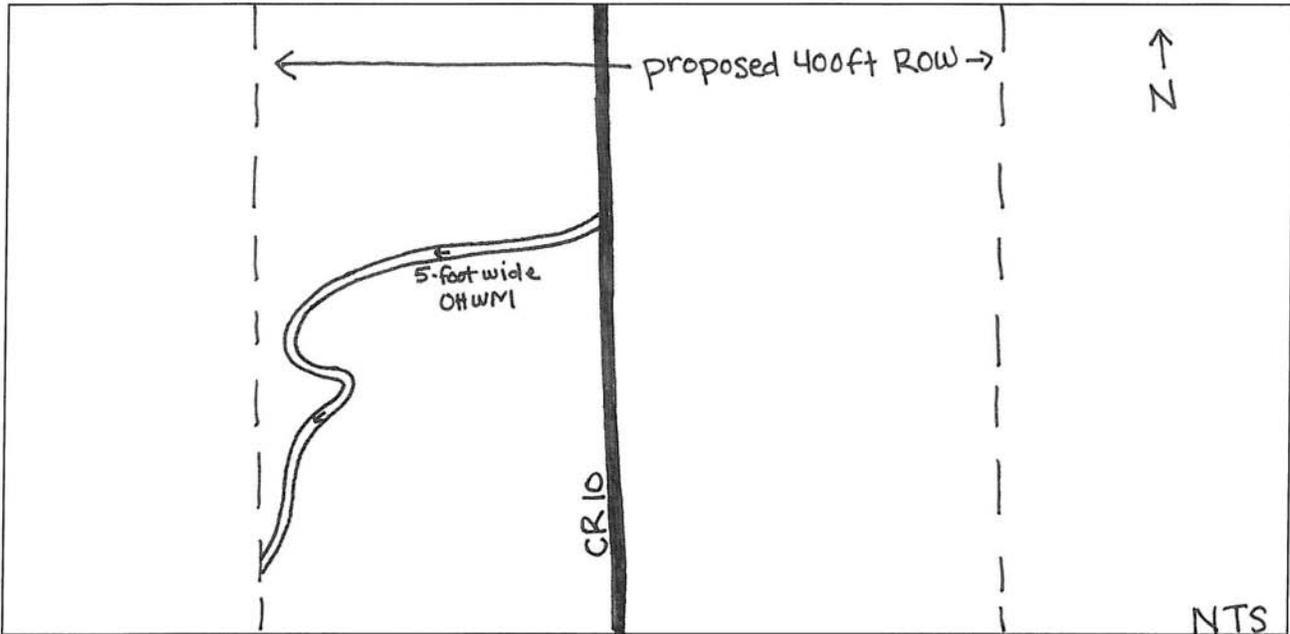
Honey locust (Gleditsia triacanthos), Osage orange (Maclura pomifera), cedar elm (Ulmus crassifolia), saw greenbrier (Smilax bona-nox), Texas croton (Croton texensis)

T&E Species / Suitable Habitat: List T&E species observed or which species the habitat is suitable for.

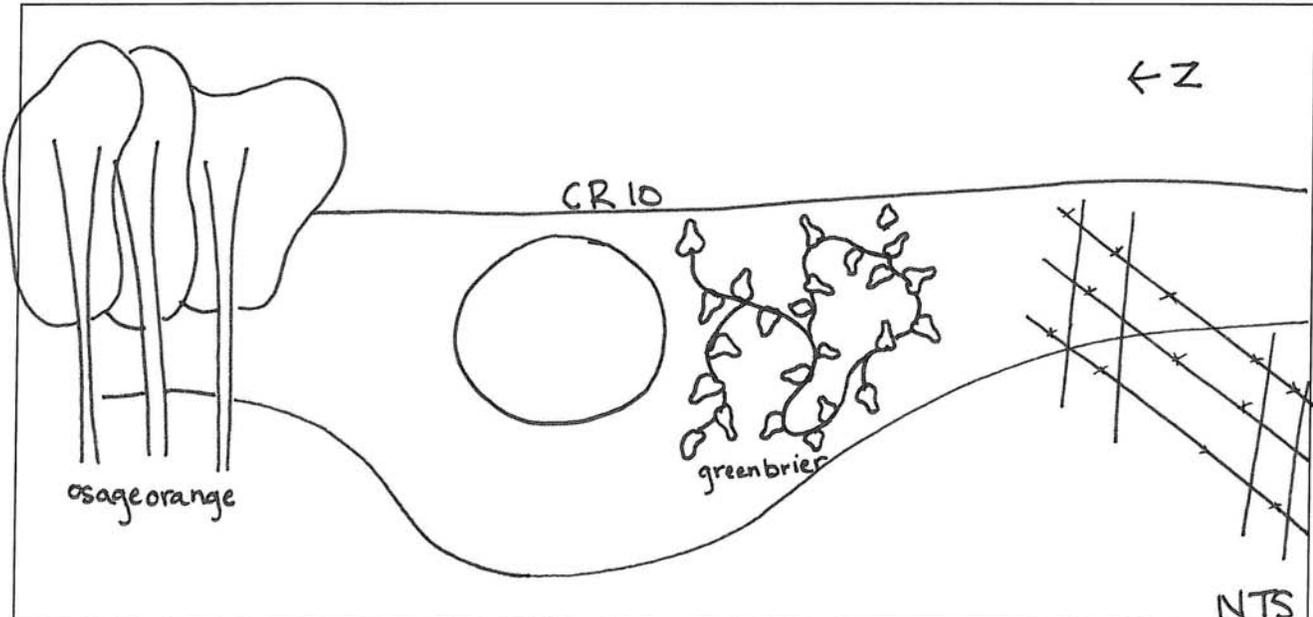
None

Please provide a hand-drawn plan and section view sketch of the stream channel. The sketch should include: a directional arrow, the width of the channel from bank top to bank top and the width of the stream from water edge to water edge. Print this page, draw the sketches in the space provided below, and submit this page with the above form.

Plan View



Section View



STREAM DATA FORM

Stream Data Form #:	18	Project Name:	DNT 4B/5A
Surveyor(s):	CH, TB, MB	Date of Field Work:	10-14-10
USGS Stream Name:	Tributary to Little Elm Creek	County/State:	Collin and Denton, TX
USGS Topo Quad Name:	Marilee	Stream Number 303(d) List:	
Associated-Wetland(s):		GPS Data:	Latitude 33.3971567371335 Longitude -96.8343433260761

Stream Type: Intermittent

Stream Flow Direction: Southeast

OHWM Width (ft): 1-3

OHWM Height (in): 6

Stream Bottom Composition: Other
 Description of Combination or Other: Mud

Water Quality: Choose One

Water Color (if not clear): _____

Aquatic Habitat: (Indicate all types present within ROW/project limits.)

- | | | | |
|--|--|---|---|
| <input type="checkbox"/> Sand bar | <input type="checkbox"/> Sand/Gravel beach/bar | <input type="checkbox"/> Mud bar | <input type="checkbox"/> Gravel riffles |
| <input checked="" type="checkbox"/> Overhanging trees/shrubs | <input checked="" type="checkbox"/> Deep pool/hole/channel | <input type="checkbox"/> Aquatic vegetation | <input type="checkbox"/> Other |

Description of Other: _____

Aquatic Organisms: List all species observed. This would include waterfowl, fish, snakes, turtles, frogs, invertebrates, etc.

Crayfish, frog

Riparian Vegetation: List species observed.

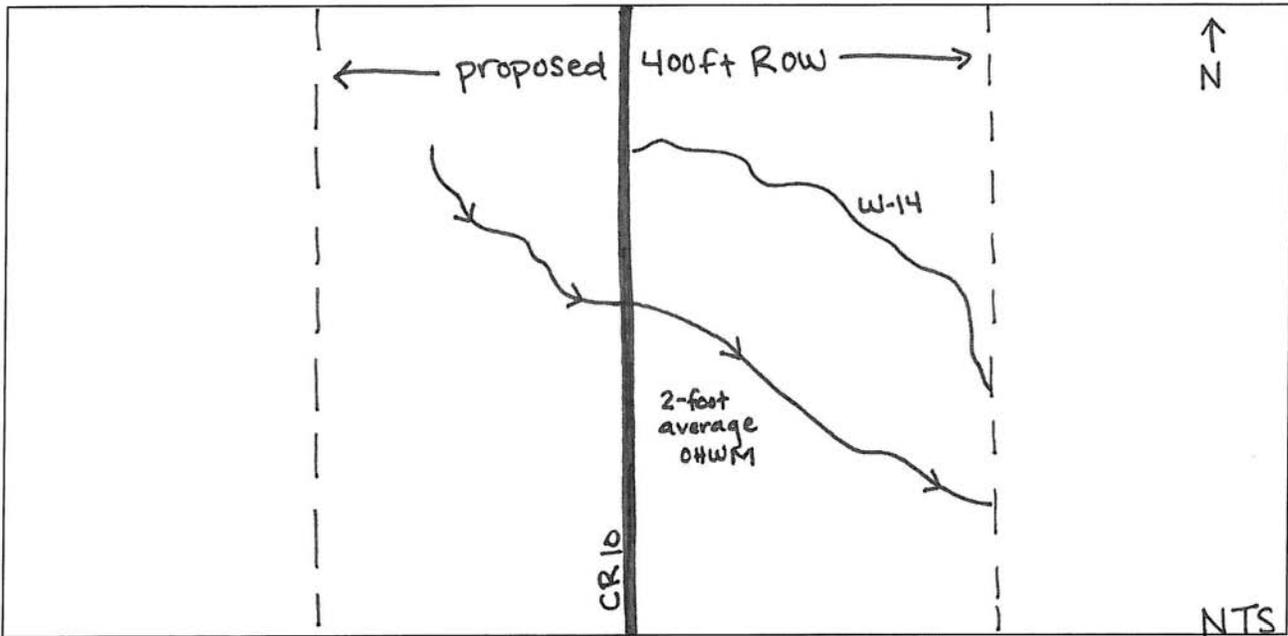
Honey locust (*Gleditsia triacanthos*), sugarberry (*Celtis laevigata*), Johnson grass (*Sorghum halepense*)

T&E Species / Suitable Habitat: List T&E species observed or which species the habitat is suitable for.

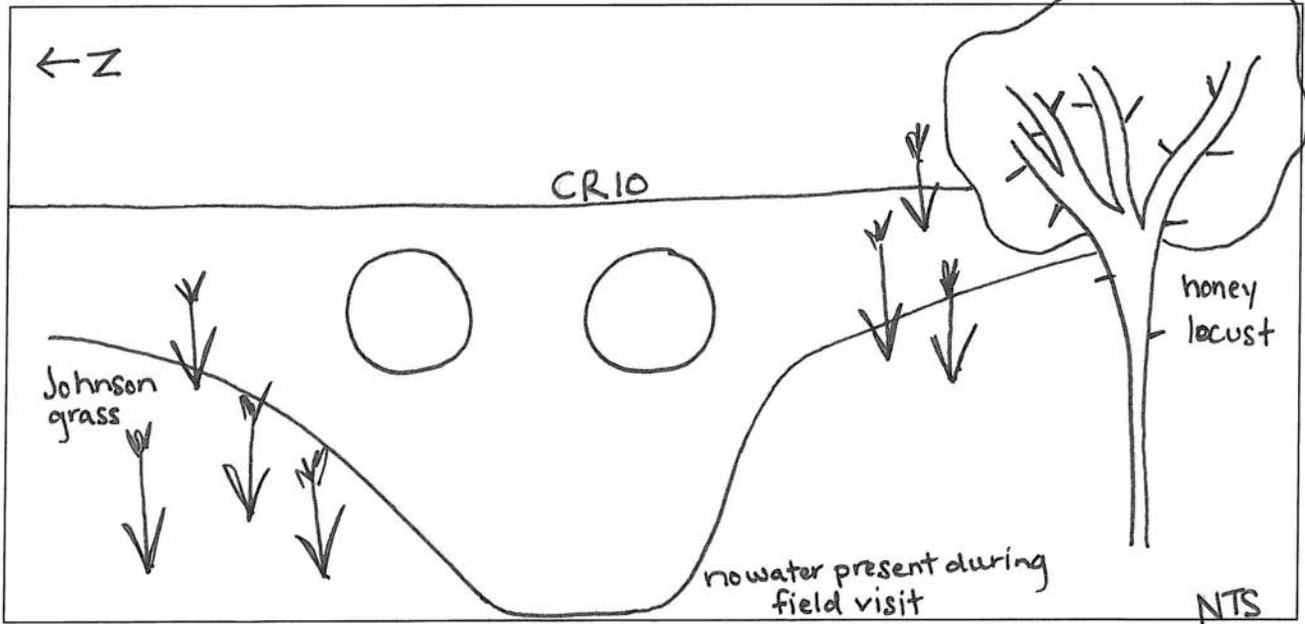
Texas garter snake (*Thamnophis sirtalis annectens*)

Please provide a hand-drawn plan and section view sketch of the stream channel. The sketch should include: a directional arrow, the width of the channel from bank top to bank top and the width of the stream from water edge to water edge. Print this page, draw the sketches in the space provided below, and submit this page with the above form.

Plan View



Section View



STREAM DATA FORM

Stream Data Form #:	19	Project Name:	DNT 4B/5A
Surveyor(s):	CH, TB, MB	Date of Field Work:	10-14-10
USGS Stream Name:	Tributary to Little Elm Creek	County/State:	Collin, TX
USGS Topo Quad Name:	Marilee	Stream Number 303(d) List:	
Associated-Wetland(s):		GPS Data:	Latitude 33.3976377154148 Longitude -96.8342440798059

Stream Type: Intermittent

Stream Flow Direction: Southeast

OHWM Width (ft): 2

OHWM Height (in): 4

Stream Bottom Composition: Choose One
 Description of Combination or Other: _____

Water Quality: Choose One

Water Color (if not clear): _____

Aquatic Habitat: (Indicate all types present within ROW/project limits.)

Sand bar Sand/Gravel beach/bar Mud bar Gravel riffles
 Overhanging trees/shrubs Deep pool/hole/channel Aquatic vegetation Other

Description of Other: _____

Aquatic Organisms: List all species observed. This would include waterfowl, fish, snakes, turtles, frogs, invertebrates, etc.

None

Riparian Vegetation: List species observed.

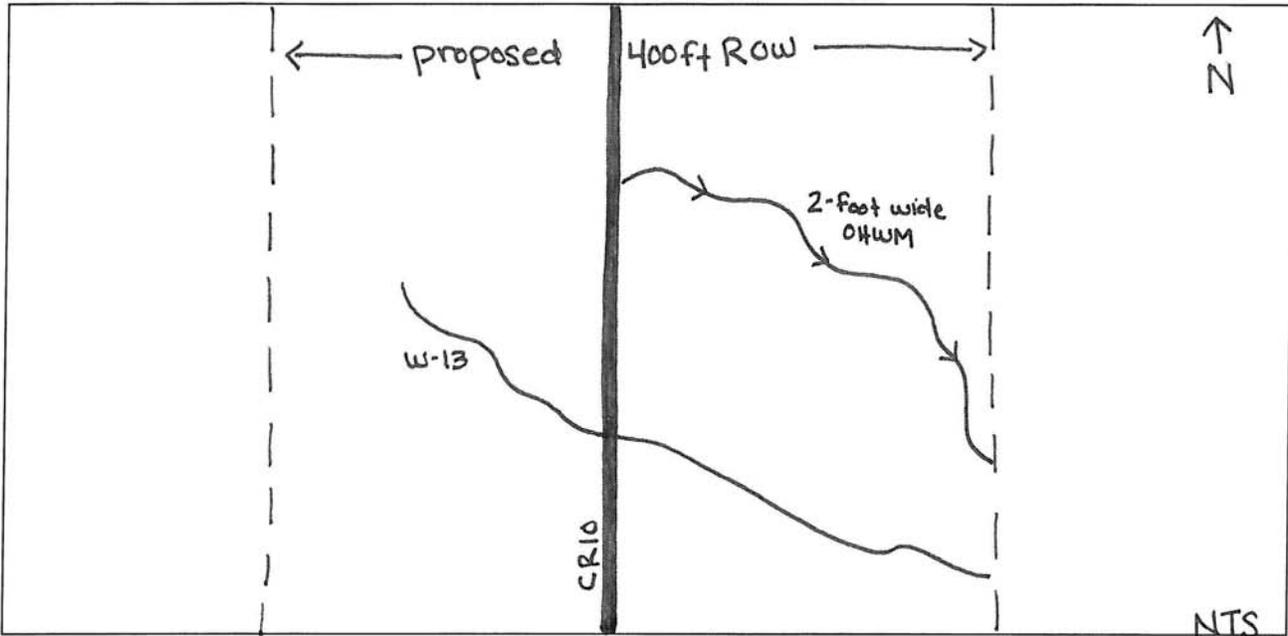
Black willow (Salix nigra)

T&E Species / Suitable Habitat: List T&E species observed or which species the habitat is suitable for.

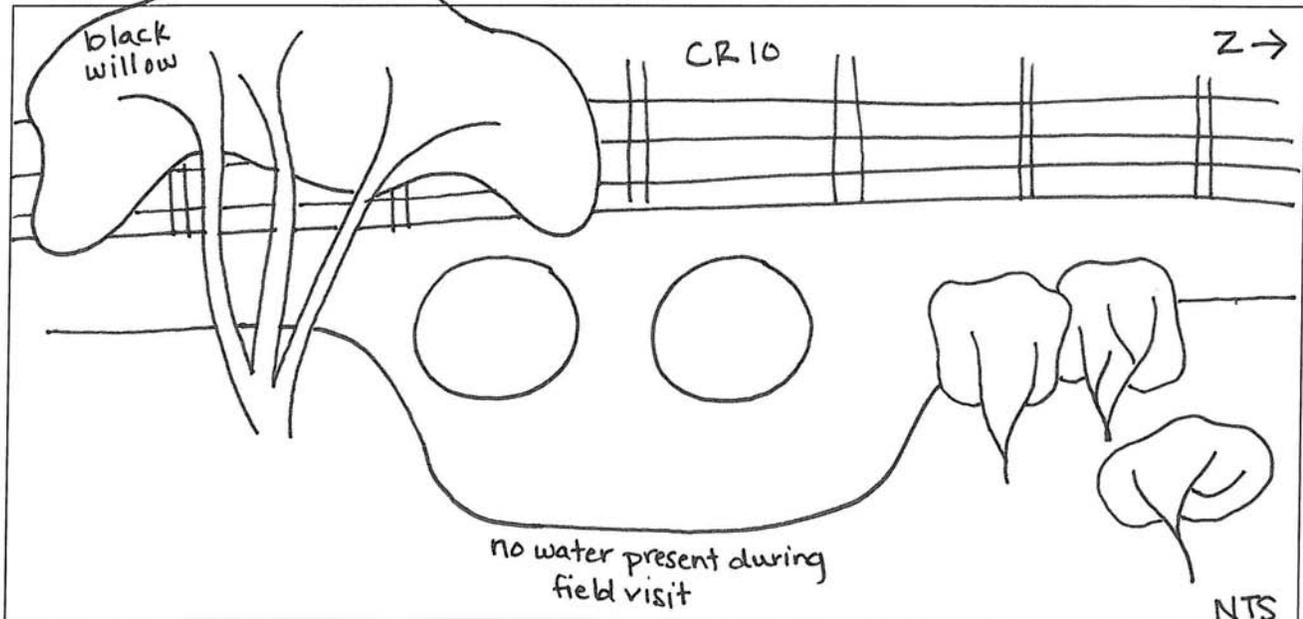
None

Please provide a hand-drawn plan and section view sketch of the stream channel. The sketch should include: a directional arrow, the width of the channel from bank top to bank top and the width of the stream from water edge to water edge. Print this page, draw the sketches in the space provided below, and submit this page with the above form.

Plan View



Section View



STREAM DATA FORM

Stream Data Form #:	20	Project Name:	DNT 4B/5A
Surveyor(s):	CH, TB, MB	Date of Field Work:	10-12-10
USGS Stream Name:	Tributary to Little Elm Creek	County/State:	Grayson, TX
USGS Topo Quad Name:	Marilee	Stream Number 303(d) List:	
Associated-Wetland(s):	None	GPS Data:	Latitude 33.4193174455395 Longitude -96.8158921279232

Stream Type: Intermittent

Stream Flow Direction: Southeast

OHWM Width (ft): Varies 5 to 22

OHWM Height (in): 3

Stream Bottom Composition: Combination
 Description of Combination or Other: Soil and grasses

Water Quality: Clear

Water Color (if not clear): _____

Aquatic Habitat: (Indicate all types present within ROW/project limits.)

Sand bar Sand/Gravel beach/bar Mud bar Gravel riffles
 Overhanging trees/shrubs Deep pool/hole/channel Aquatic vegetation Other

Description of Other: _____

Aquatic Organisms: List all species observed. This would include waterfowl, fish, snakes, turtles, frogs, invertebrates, etc.

Crayfish

Riparian Vegetation: List species observed.

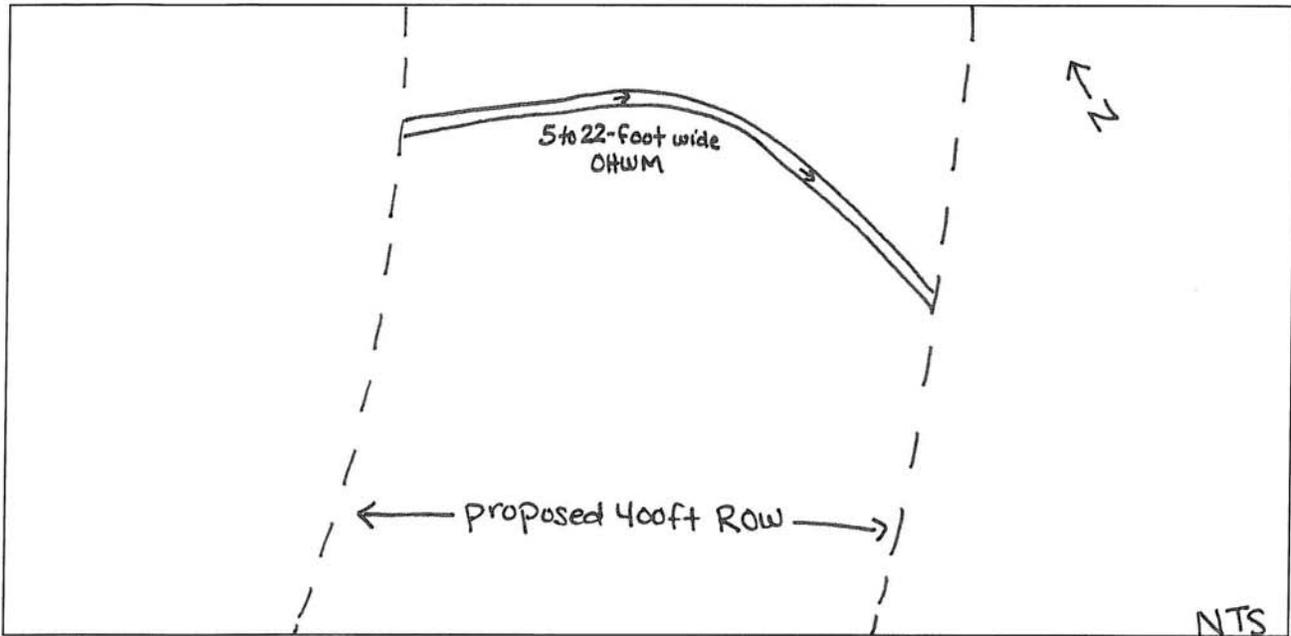
None

T&E Species / Suitable Habitat: List T&E species observed or which species the habitat is suitable for.

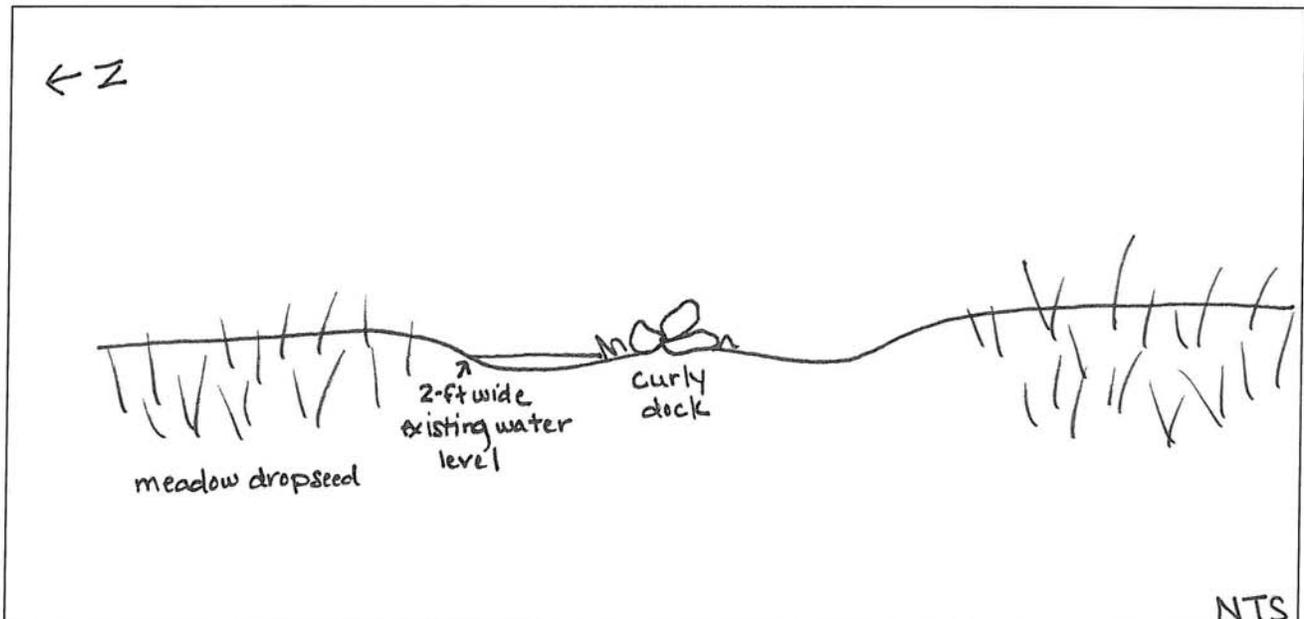
None

Please provide a hand-drawn plan and section view sketch of the stream channel. The sketch should include: a directional arrow, the width of the channel from bank top to bank top and the width of the stream from water edge to water edge. Print this page, draw the sketches in the space provided below, and submit this page with the above form.

Plan View



Section View



STREAM DATA FORM

Stream Data Form #:	21	Project Name:	DNT 4B/5A
Surveyor(s):	CH, TB, MB	Date of Field Work:	10-12-10
USGS Stream Name:	Tributary to Walnut Fork	County/State:	Grayson, TX
USGS Topo Quad Name:	Marilee	Stream Number 303(d) List:	
Associated-Wetland(s):	None	GPS Data:	Latitude 33.4217902590212 Longitude -96.8152746161079

Stream Type: Intermittent
 Stream Flow Direction: Southeast
 OHWM Width (ft): 6
 OHWM Height (in): 4
 Stream Bottom Composition: Other
 Description of Combination or Other: muddy silt
 Water Quality: Choose One
 Water Color (if not clear): None

Aquatic Habitat: (Indicate all types present within ROW/project limits.)
 Sand bar Sand/Gravel beach/bar Mud bar Gravel riffles
 Overhanging trees/shrubs Deep pool/hole/channel Aquatic vegetation Other
 Description of Other: _____

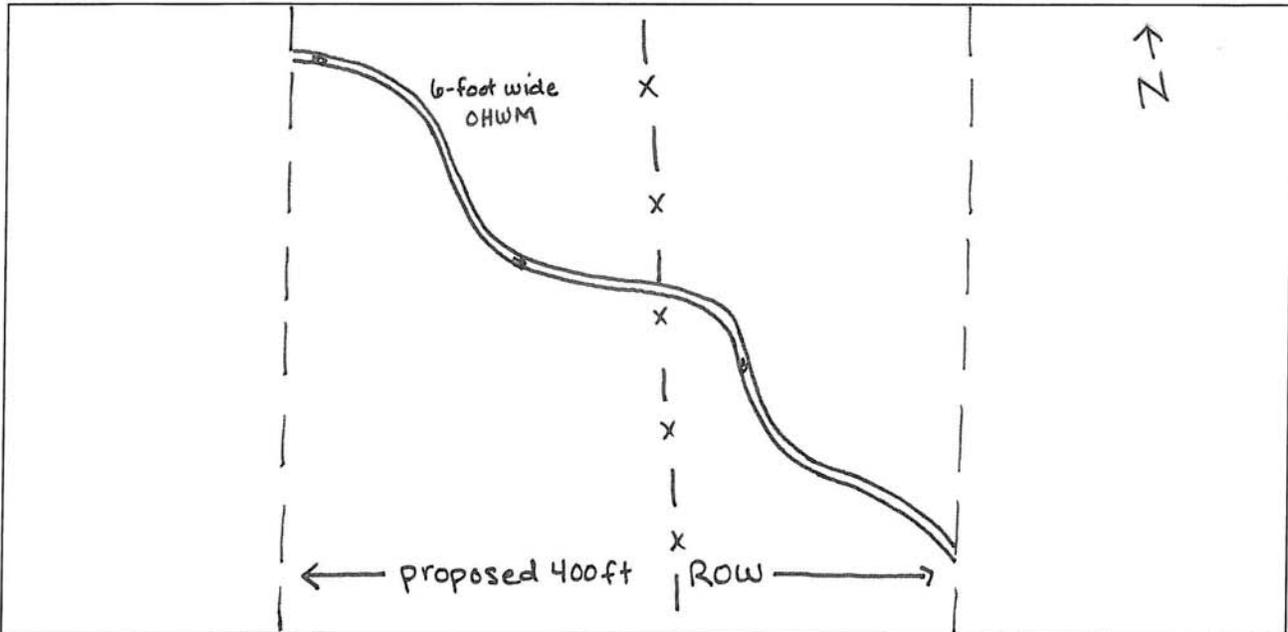
Aquatic Organisms: List all species observed. This would include waterfowl, fish, snakes, turtles, frogs, invertebrates, etc.
 None

Riparian Vegetation: List species observed.
 None

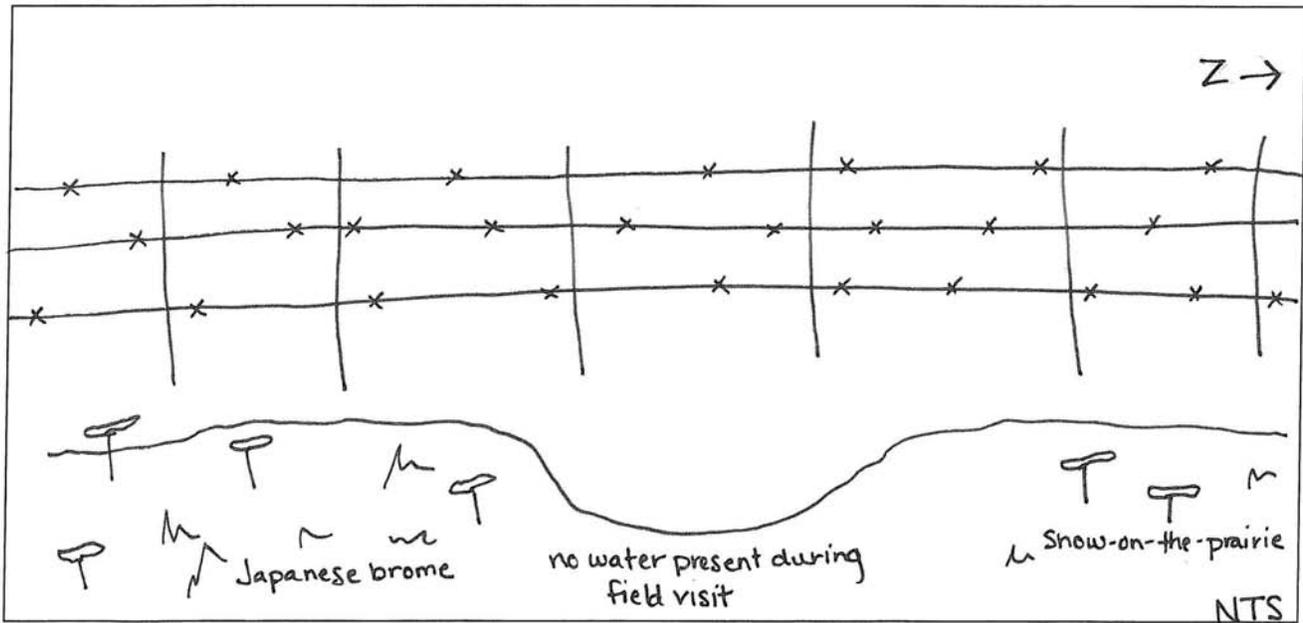
T&E Species / Suitable Habitat: List T&E species observed or which species the habitat is suitable for.
 None

Please provide a hand-drawn plan and section view sketch of the stream channel. The sketch should include: a directional arrow, the width of the channel from bank top to bank top and the width of the stream from water edge to water edge. Print this page, draw the sketches in the space provided below, and submit this page with the above form.

Plan View



Section View



STREAM DATA FORM

Stream Data Form #:	22	Project Name:	DNT 4B/5A
Surveyor(s):	CH, TB, MB	Date of Field Work:	10-12-10
USGS Stream Name:	Tributary to Buck Creek	County/State:	Grayson, TX
USGS Topo Quad Name:	Marilee	Stream Number 303(d) List:	
Associated-Wetland(s):	None	GPS Data:	Latitude 33.4472596595918 Longitude -96.8149258201766

Stream Type: Intermittent

Stream Flow Direction: West

OHWM Width (ft): 3

OHWM Height (in): 6

Stream Bottom Composition: Combination
 Description of Combination or Other: Soil with some rock

Water Quality: Turbid

Water Color (if not clear): Greenish brown

Aquatic Habitat: (Indicate all types present within ROW/project limits.)

- Sand bar
- Sand/Gravel beach/bar
- Mud bar
- Gravel riffles
- Overhanging trees/shrubs
- Deep pool/hole/channel
- Aquatic vegetation
- Other

Description of Other: _____

Aquatic Organisms: List all species observed. This would include waterfowl, fish, snakes, turtles, frogs, invertebrates, etc.

frogs and minnows

Riparian Vegetation: List species observed.

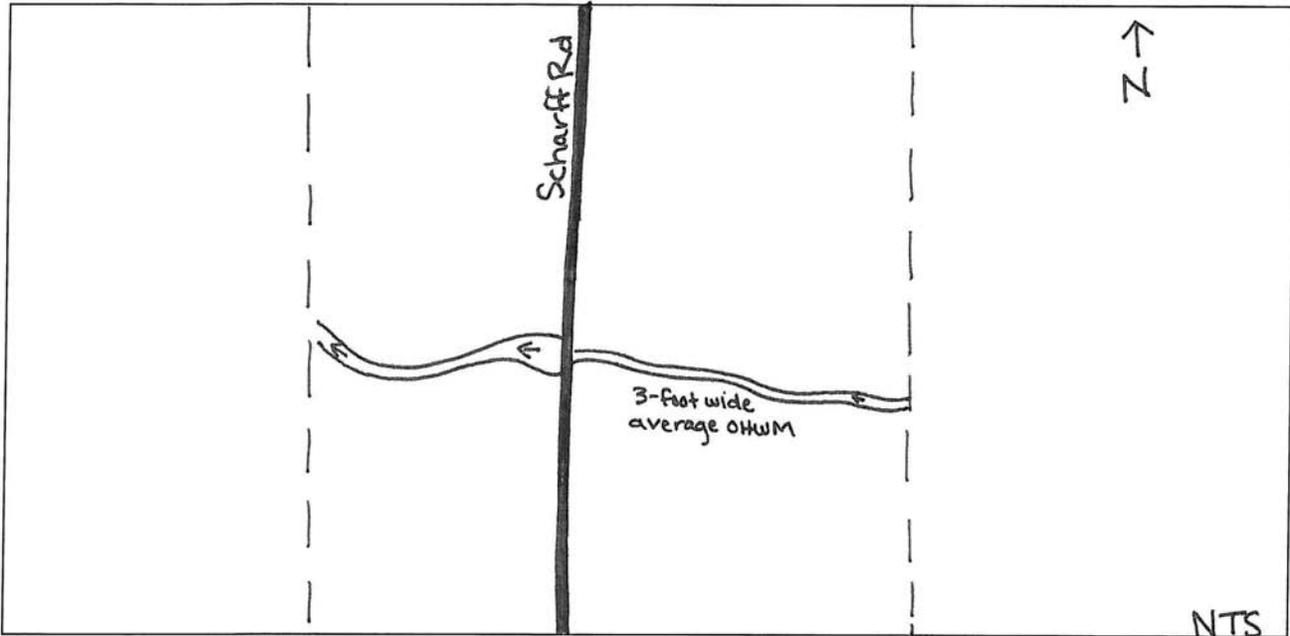
None

T&E Species / Suitable Habitat: List T&E species observed or which species the habitat is suitable for.

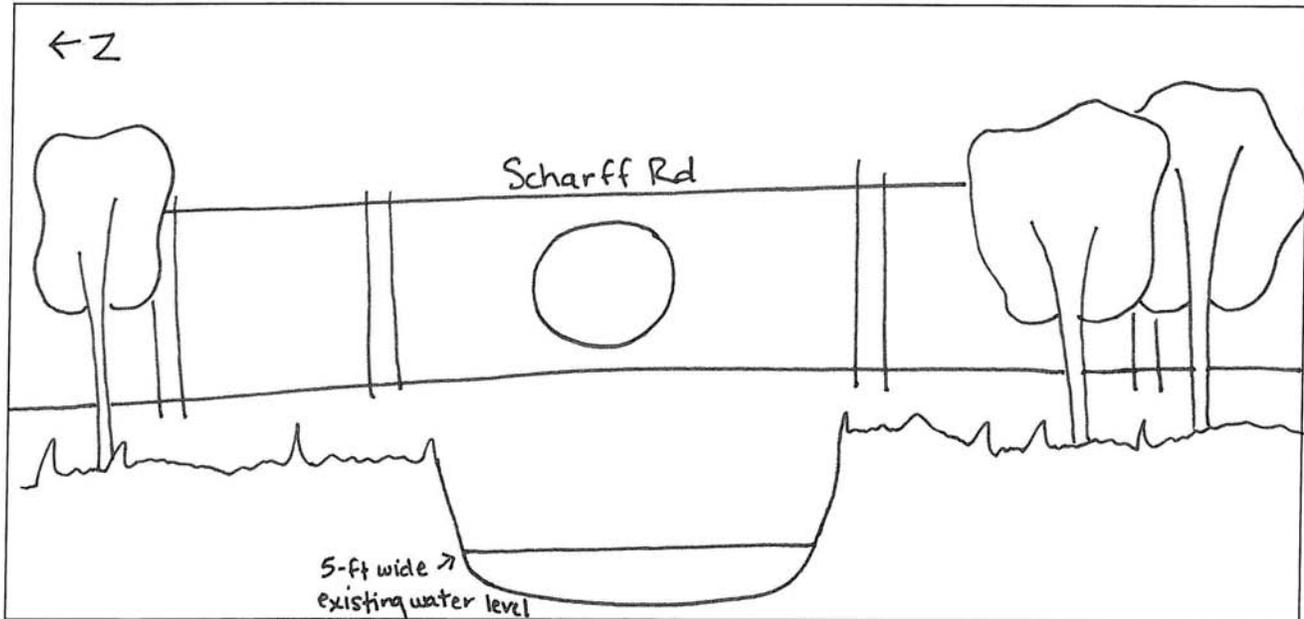
None

Please provide a hand-drawn plan and section view sketch of the stream channel. The sketch should include: a directional arrow, the width of the channel from bank top to bank top and the width of the stream from water edge to water edge. Print this page, draw the sketches in the space provided below, and submit this page with the above form.

Plan View



Section View



Appendix 2-3

Inventory of Habitat Resources Supporting Information

Inventory of Habitat Resources Supporting Information

Dallas North Tollway Extension Phase 4B/5A (DNT 4B/5A)

This inventory accounts for the major types of vegetation/land cover within the total proposed DNT 4B/5A construction footprint of 617.40 acres, which is comprised of all ROW (583.52 acres) and drainage easements (33.88 acres). Areas of temporary ground disturbance would affect all areas within the proposed DNT 4B/5A footprint during road construction, which would include 15.10 acres of existing roads (paved and gravel surface) and 602.30 acres of vegetated or water surfaces.

1. Agricultural Land: 548.53 acres, roughly balanced between cropland and pastures or hay meadows.

- **Cropland areas** are plowed annually for the the production of grain sorghum (*Sorghum* sp.), corn (*Zea mays*), and wheat (*Triticum* sp.).
- **Pastures for livestock and hay meadows** vary widely in terms of species composition and range condition, but the most common species dominating these areas are non-native grasses such as Bermuda grass (*Cynodon dactylon*), King Ranch bluestem (*Bothriochloa ischaemum*), and Johnson grass (*Sorghum halepense*). Additional non-native grasses frequently encountered include western wheatgrass (*Pascopyrum smithii*), rescue grass (*Bromus catharticus*), and perennial rye grass (*Lolium perenne*). The condition of pastures varies from good to poor, as evidenced by the relative abundance of unpalatable forbs (i.e., non-grass herbaceous species) which increase under sustained heavy grazing. Native prairie grasses occur occasionally in pastures/meadows throughout the proposed DNT 4B/5A project area but are rarely dominant plants within the landscape. Native grasses commonly found include silver bluestem (*Bothriochloa laguroides*), white tridens (*Tridens albescens*), meadow dropseed (*Sporobolus compositus* var. *drummondii*), red sprangletop (*Leptochloa mucronata*), slim-leaf rosette grass (*Dichanthelium linearifolium*), prairie cupgrass (*Eriochloa contracta*), oilfield three-awn (*Aristida oligantha*), little barley (*Hordeum pusillum*), and Florida paspalum (*Paspalum floridanum*). Forb species frequently observed include broomweed (*Gutierrezia dracunculoides*), snow-on-the-prairie (*Euphorbia bicolor*), green milkweed (*Asclepias viridis*), western ragweed (*Ambrosia psilostachya*), giant ragweed (*Ambrosia trifida*), silver-leaf nightshade (*Solanum elaeagnifolium*), annual sunflower (*Helianthus annuus*), cocklebur (*Xanthium strumarium*), sump weed (*Iva annua*), and balloonvine (*Cardiospermum halicacabum*).

2. Forested Areas: 52.74 acres, including riparian forest, upland forest, and fencerow trees.

Details about riparian and upland forest characteristics are provided in woodland data forms in **Appendix 2-4**. The locations of proposed impacts to forested areas are shown in **Exhibit 2-3**.

- **Riparian forest** habitat comprises a total of 44.86 acres, with most of the riparian forest habitat (37.01 acres) within the DNT 4B/5A footprint located within the Little Elm Creek floodplain (see Woodlands Data Forms 1, 3, and 4 in **Appendix 2-4**). Riparian forests within the DNT 4B/5A footprint are principally dominated by cedar elm (*Ulmus*

1 *crassifolia*) trees, but also frequently include hackberry (*Celtis laevigata*), soapberry
2 (*Sapindus saponaria* var. *drummondii*), honey locust (*Gleditsia triacanthos*), black
3 willow (*Salix nigra*), green ash (*Fraxinus pennsylvanica*), and bois d'arc (*Maclura*
4 *pomifera*) trees. Throughout the areas with riparian forests, three trees were observed
5 with a diameter at breast height (dbh) exceeding 20 inches (see Woodlands Data
6 Forms 4 and 9 in **Appendix 2-4**). Riparian forests were observed to occur in uneven
7 aged stands. Proposed DNT 4B/5A impacts would affect an estimated 4,346 trees
8 larger than 6 inches dbh.

- 9 • **Upland forest** (4.49 acres) is largely absent within the project area, as nearly all land
10 areas that are not within riparian zones in some form of agricultural use. Upland forests
11 were observed at two sites (see Woodlands Data Forms 2 and 7 in **Appendix 2-4**)
12 where mesquite (*Prosopis glandulosa*) trees have been increasing in abundance most
13 likely in response to a history of sustained heavy grazing. Proposed DNT 4B/5A
14 impacts would affect an estimated 52 upland forest trees larger than 6 inches dbh.
- 15 • **Fencerows** (3.39 acres) within the proposed DNT 4B/5A project area are nearly all
16 dominated by hackberry trees that typically range in size from seedlings to 10 inches
17 dbh. However, three large hackberry trees (21-22 inches dbh) were observed
18 approximately 2,000 feet south of FM 455. Other trees commonly found within
19 fencerows include bois d'arc, honey locust, and eastern red cedar (*Juniperus*
20 *virginiana*) trees. Fencerow trees generally do not exceed 20 feet in height within the
21 proposed DNT 4B/5A footprint. The density of trees within fencerows varies widely from
22 very dense fencerows to relatively discontinuous groups of trees. Proposed DNT 4B/5A
23 impacts would affect an estimated 112 fencerow trees larger than 6 inches dbh.
- 24 • Proposed DNT 4B/5A impacts would affect an estimated 4,510 trees larger than
25 6 inches dbh from the three forest categories described above.

26 **3. Water Features.**

- 27 • Three non-jurisdictional stock ponds (0.62 acre) would be affected by the proposed
28 DNT 4B/5A. The locations of these ponds are shown in **Exhibit 2-3**.
- 29 • Other water features within the proposed DNT 4B/5A footprint are jurisdictional streams
30 and wetlands discussed in Section 2 under the heading **Waters of the U.S., Including**
31 **Wetlands**, and described in detail in **Appendices 2-1** and **2-2**. These include
32 5.22 acres of proposed impacts to jurisdictional streams or stream remnants, and
33 0.30 acre of proposed impacts to four emergent wetlands within the Little Elm Creek
34 floodplain. Proposed impacts to habitat associated with major water features occur
35 within the areas mapped as riparian forest.

36
37
38 **4. Native Tallgrass Prairie Remnants:** several small remnant patches of native tallgrass
39 prairie (0.41 acre) were found along the east side of the north-south fenceline extending
40 3,000 feet south of FM 455. The location and acreage of these areas of proposed vegetation
41 impacts are shown in **Exhibit 2-3**. Although small in size, these prairie remnants are dominated
42 by robust stands of big bluestem (*Andropogon gerardii*) and Texas cupgrass (*Eriochloa*
43 *sericea*). These areas represent a healthy source of biodiversity that was prehistorically
44 abundant within the proposed DNT 4B/5A project area but which now can scarcely be found.

Appendix 2-4
NTTA Woodlands Data Forms

NTTA WOODLANDS DATA FORM

GENERAL

Project/Site	DNT Extension Phase 4B/5A	Site #: 1	Date	13 October 2010
CSJ	N/A	Investigator	Rich Jaynes	County
Collin				
Filename	Location: I:\25000s\25602\DNT 4B-5A\EE--DNT Phases 4B-5A\c-BACKUP DATA & EX-APP Workshop\Sec 2--IMPACT ASSESSMENT2--biological resources\1--veg type & impacts File Name: WDF--DNT 4B-5A.docx			
Project Scope				
New location tollway with 6 main lanes and 3-lane frontage roads from FM 428 to FM 121.				
Description of Wooded Site (riparian, upland, fence line, overstory/understory, disturbed, diverse, etc.)				
Location: large riparian forest south of Little Elm Creek; proposed road centerline (CL) station 2178+50, ca. 150 feet east of CL.				
Vegetation type: riparian forest.				
Overstory: dominated by cedar elm trees, generally not more than 30 feet tall.				
Understory: very sparse understory (ca. 10% cover).				
<ul style="list-style-type: none"> ▪ woody vines: none. ▪ shrubs: gum bumelia (<i>Sideroxylon lanuginosum</i>). ▪ grasses: Virginia wildrye (<i>Elymus virginicus</i>); remnants of Spring annual grasses (<i>Bromus</i> sp.). ▪ forbs: none. 				
Is Site Unusual or Typical of Others in the Area?		typical		

SPECIES DESCRIPTION

Species by Order of Dominance		
Common Name	Taxonomic Name	Range of Sizes (dbh)
cedar elm	<i>Ulmus crassifolia</i>	<1" – 8"
hackberry	<i>Celtis laevigata</i>	<1"
soapberry	<i>Sapindus saponaria</i>	<1"
Acreage of Trees to be Removed	8.96 acres (ca. 394 total trees >6" dbh)	
Density per Acre (trees > 6" dbh)	44 trees/acre	
Remarks, Description of any Unique, Large, or Mature Trees (>20" dbh)		
Impacts: clearing of trees is anticipated throughout the proposed ROW.		
Density sample: trees >6" dbh within a circle with a radius of 25 feet (0.045 acre) = 2 trees.		
Canopy coverage estimate: 60%.		
Tree notes: riparian area is densely forested, but few trees are greater than 6" dbh or taller than 20 feet; some older growth (i.e., greater than 15" dbh) cedar elm trees were observed in the vicinity.		

HABITAT VALUE

Is the Site Adjacent to Water?	Yes
Is the Site in a Developed Area?	No
Do Plants Produce Nuts, Berries, or Acorns?	
Yes: cedar elm – samara; hackberry and soapberry – berry.	
Land Use in the Project Area	
Agriculture (crops and pasture).	
Evidence or Sightings of Wildlife in the Project Area?	
Evidence of feral hog disturbance of soil.	
Remarks	
Area has been scoured by recent high water; debris lines as high as two feet on vegetation.	

NTTA WOODLANDS DATA FORM

GENERAL

Project/Site	DNT Extension Phase 4B/5A	Site #: 2	Date	13 October 2010
CSJ	N/A	Investigator	Rich Jaynes	County
Filename	Location: I:\25000s\25602\DNT 4B-5A\EE--DNT Phases 4B-5A\c-BACKUP DATA & EX-APP Workshop\Sec 2--IMPACT ASSESSMENT2--biological resources\1--veg type & impacts File Name: WDF--DNT 4B-5A.docx			
Project Scope				
New location tollway with 6 main lanes and 3-lane frontage roads from FM 428 to FM 121.				
Description of Wooded Site (riparian, upland, fence line, overstory/understory, disturbed, diverse, etc.)				
Location: small forest south of FM 455; proposed road centerline (CL) station 2201+00, ca. 50 feet west of CL.				
Vegetation type: upland forest.				
Overstory: dominated by mesquite trees, generally not more than 20 feet tall.				
Understory: open understory with 90% ground cover (mostly dried cool-season annual forbs and grasses).				
<ul style="list-style-type: none"> ▪ woody vines: none. ▪ shrubs: prickly pear cactus (<i>Opuntia</i> sp.). ▪ grasses: silver bluestem (<i>Bothriochloa laguroides</i>); remnants of Spring annual grasses (<i>Bromus</i> sp.). ▪ forbs: snow-on-the-prairie (<i>Euphorbia bicolor</i>), croton (<i>Croton</i> sp.), and horse-nettle (<i>Solanum carolinense</i>). 				
Is Site Unusual or Typical of Others in the Area?		typical		

SPECIES DESCRIPTION

Species by Order of Dominance		
Common Name	Taxonomic Name	Range of Sizes (dbh)
mesquite	<i>Prosopis glandulosa</i>	<1" – 10"
honey locust	<i>Gleditsia triacanthos</i>	<1" – 2"
Acreage of Trees to be Removed	0.62 acre (ca. 27 total trees >6" dbh)	
Density per Acre (trees > 6" dbh)	44 trees/acre	
Remarks, Description of any Unique, Large, or Mature Trees (>20" dbh)		
Impacts: clearing of trees is anticipated throughout the proposed ROW.		
Density sample: trees >6" dbh within a circle with a radius of 25 feet (0.045 acre) = 2 trees.		
Canopy coverage estimate: 40%.		
Tree notes:		

HABITAT VALUE

Is the Site Adjacent to Water?	No
Is the Site in a Developed Area?	No
Do Plants Produce Nuts, Berries, or Acorns?	
Yes: mesquite and honey locust – legume.	
Land Use in the Project Area	
Agriculture (crops and pasture).	
Evidence or Sightings of Wildlife in the Project Area?	
Yes (song birds).	
Remarks	

NTTA WOODLANDS DATA FORM

GENERAL

Project/Site	DNT Extension Phase 4B/5A	Site #: 3	Date	13 October 2010
CSJ	N/A	Investigator	Rich Jaynes	County
Filename	Location: I:\25000s\25602\DNT 4B-5A\EE--DNT Phases 4B-5A\c-BACKUP DATA & EX-APP Workshop\Sec 2--IMPACT ASSESSMENT2--biological resources\1--veg type & impacts File Name: WDF--DNT 4B-5A.docx			
Project Scope				
New location tollway with 6 main lanes and 3-lane frontage roads from FM 428 to FM 121.				
Description of Wooded Site (riparian, upland, fence line, overstory/understory, disturbed, diverse, etc.)				
Location: riparian forest north of Little Elm Creek and west of a north-south road parallel to the county line; proposed road centerline (CL) station 2197+50, ca. 100 feet west of CL.				
Vegetation type: riparian forest.				
Overstory: dominated by cedar elm trees, generally not more than 30 feet tall.				
Understory: sparse understory with ca. 50% cover.				
<ul style="list-style-type: none"> ▪ woody vines: none. ▪ shrubs: none. ▪ grasses: Virginia wildrye (<i>Elymus virginicus</i>); sedges (<i>Carex</i> sp.) also observed. ▪ forbs: none. 				
Is Site Unusual or Typical of Others in the Area?		typical		

SPECIES DESCRIPTION

Species by Order of Dominance		
Common Name	Taxonomic Name	Range of Sizes (dbh)
cedar elm	<i>Ulmus crassifolia</i>	<1" – 7"
honey locust	<i>Gleditsia triacanthos</i>	<3" – 5"
hawthorn	<i>Crataegus</i> sp.	<1" – 8"
Acreage of Trees to be Removed	10.44 acres (ca. 720 total trees >6" dbh)	
Density per Acre (trees > 6" dbh)	69 trees/acre	
Remarks, Description of any Unique, Large, or Mature Trees (>20" dbh)		
Impacts: clearing of trees is anticipated throughout the proposed ROW.		
Density sample: trees >6" dbh within a circle with a radius of 25 feet (0.045 acre) = 3 trees.		
Canopy coverage estimate: 90%.		
Tree notes:		

HABITAT VALUE

Is the Site Adjacent to Water?	Yes
Is the Site in a Developed Area?	No
Do Plants Produce Nuts, Berries, or Acorns?	
Yes: cedar elm – samara; honey locust – legume; hawthorn – pome.	
Land Use in the Project Area	
Agriculture (crops and pasture).	
Evidence or Sightings of Wildlife in the Project Area?	
Yes (song birds).	
Remarks	
This riparian area is farther removed from Little Elm Creek, and is drier than WDP Site #4.	

NTTA WOODLANDS DATA FORM

GENERAL

Project/Site	DNT Extension Phase 4B/5A	Site #: 4	Date	13 October 2010
CSJ	N/A	Investigator	Rich Jaynes	County
Filename	Location: I:\25000s\25602\DNT 4B-5A\EE--DNT Phases 4B-5A\c-BACKUP DATA & EX-APP Workshop\Sec 2--IMPACT ASSESSMENT2--biological resources\1--veg type & impacts File Name: WDF--DNT 4B-5A.docx			
Project Scope				
New location tollway with 6 main lanes and 3-lane frontage roads from FM 428 to FM 121.				
Description of Wooded Site (riparian, upland, fence line, overstory/understory, disturbed, diverse, etc.)				
Location: riparian forest north of Little Elm Creek and east of a north-south road parallel to the county line; proposed road centerline (CL) station 2197+00, ca. 50 feet east of CL.				
Vegetation type: riparian forest.				
Overstory: dominated by cedar elm trees, generally not more than 50 feet tall.				
Understory: generally open understory with ca. 80% ground cover.				
<ul style="list-style-type: none"> ▪ woody vines: saw greenbrier (<i>Smilax bona-nox</i>). ▪ shrubs: coralberry (<i>Symphoricarpos orbiculatus</i>). ▪ grasses: Virginia wildrye (<i>Elymus virginicus</i>) and rosette grass (<i>Dichantherium</i> sp.). ▪ forbs: pigeon-berry (<i>Rivina humilis</i>) and noseburn (<i>Tragia</i> sp.). 				
Is Site Unusual or Typical of Others in the Area? typical				

SPECIES DESCRIPTION

Species by Order of Dominance		
Common Name	Taxonomic Name	Range of Sizes (dbh)
cedar elm	<i>Ulmus crassifolia</i>	<1" – 17"
soapberry	<i>Sapindus saponaria</i>	<1" – 5"
Acreage of Trees to be Removed	17.61 acres (ca. 2,342 total trees >6" dbh)	
Density per Acre (trees > 6" dbh)	133 trees/acre	
Remarks, Description of any Unique, Large, or Mature Trees (>20" dbh)		
Impacts: clearing of trees is anticipated throughout the proposed ROW.		
Density sample: trees >6" dbh within a circle with a radius of 25 feet (0.045 acre) = 6 trees.		
Canopy coverage estimate: 90%.		
Tree notes: a twin-trunk green ash (<i>Fraxinum pennsylvanica</i>) (dbh 31") was observed approximately 950 feet southeast of this data point.		

HABITAT VALUE

Is the Site Adjacent to Water?	Yes
Is the Site in a Developed Area?	No
Do Plants Produce Nuts, Berries, or Acorns?	
Yes: cedar elm – samara; soapberry – berry.	
Land Use in the Project Area	
Agriculture (crops and pasture).	
Evidence or Sightings of Wildlife in the Project Area?	
Yes (song birds); woodpecker sounds.	
Remarks	

NTTA WOODLANDS DATA FORM

GENERAL

Project/Site	DNT Extension Phase 4B/5A	Site #: 5	Date	14 October 2010
CSJ	N/A	Investigator	Rich Jaynes	County
Filename	Location: I:\25000s\25602\DNT 4B-5A\EE--DNT Phases 4B-5A\c-BACKUP DATA & EX-APP Workshop\Sec 2--IMPACT ASSESSMENT2--biological resources\1--veg type & impacts File Name: WDF--DNT 4B-5A.docx			
Project Scope				
New location tollway with 6 main lanes and 3-lane frontage roads from FM 428 to FM 121.				
Description of Wooded Site (riparian, upland, fence line, overstory/understory, disturbed, diverse, etc.)				
Location: small forest south of CR 60 (Marilee Road); proposed road centerline (CL) station 2340+00, ca. 150 feet east of CL.				
Vegetation type: riparian forest.				
Overstory: dominated by hackberry trees, generally not more than 25 feet tall.				
Understory: sparse understory with estimated 20% ground cover.				
<ul style="list-style-type: none"> ▪ woody vines: none. ▪ shrubs: none. ▪ grasses: Bermuda grass (<i>Cynodon dactylon</i>) observed in forest fringe areas. ▪ forbs: giant ragweed (<i>Ambrosia trifida</i>) and annual sunflower (<i>Helianthus annuus</i>) on forest fringe. 				
Is Site Unusual or Typical of Others in the Area?		typical		

SPECIES DESCRIPTION

Species by Order of Dominance		
Common Name	Taxonomic Name	Range of Sizes (dbh)
hackberry	<i>Celtis laevigata</i>	<1" – 6"
honey locust	<i>Gleditsia triacanthos</i>	<1" – 5"
mesquite	<i>Prosopis glandulosa</i>	<1"
Acreage of Trees to be Removed	0.81 acre (ca. 18 total trees >6" dbh)	
Density per Acre (trees > 6" dbh)	22 trees/acre	
Remarks, Description of any Unique, Large, or Mature Trees (>20" dbh)		
Impacts: clearing of trees is anticipated throughout the proposed ROW.		
Density sample: trees >6" dbh within a circle with a radius of 25 feet (0.045 acre) = 1 tree.		
Canopy coverage estimate: 90%.		
Tree notes: tree density is high in this area, but very few trees are greater than 6" dbh; site characteristics are based on observations made from CR 10 (County Line Road) ROW adjacent to the site as the property owner did not authorize right of entry.		

HABITAT VALUE

Is the Site Adjacent to Water?	Yes
Is the Site in a Developed Area?	No
Do Plants Produce Nuts, Berries, or Acorns?	
Yes: hackberry – berry; mesquite and honey locust – legume.	
Land Use in the Project Area	
Agriculture (crops and pasture).	
Evidence or Sightings of Wildlife in the Project Area?	
None noted.	
Remarks	

NTTA WOODLANDS DATA FORM

GENERAL

Project/Site	DNT Extension Phase 4B/5A	Site #: 6	Date	14 October 2010
CSJ	N/A	Investigator	Rich Jaynes	County
Filename	Location: I:\25000s\25602\DNT 4B-5A\EE--DNT Phases 4B-5A\c-BACKUP DATA & EX-APP Workshop\Sec 2--IMPACT ASSESSMENT2--biological resources\1--veg type & impacts File Name: WDF--DNT 4B-5A.docx			
Project Scope				
New location tollway with 6 main lanes and 3-lane frontage roads from FM 428 to FM 121.				
Description of Wooded Site (riparian, upland, fence line, overstory/understory, disturbed, diverse, etc.)				
Location: riparian forest north of FM 455 and south of Fritcher Road; proposed road centerline (CL) station 2273+50, ca. 100 feet west of CL.				
Vegetation type: riparian forest.				
Overstory: dominated by honey locust trees, generally not more than 50 feet tall.				
Understory: understory with ca. 50% cover.				
<ul style="list-style-type: none"> ▪ woody vines: saw greenbrier (<i>Smilax bona-nox</i>). ▪ shrubs: coralberry (<i>Symphoricarpos orbiculatus</i>). ▪ grasses: Virginia wildrye (<i>Elymus virginicus</i>), rosette grass (<i>Dichanthelium</i> sp.), and sedges (<i>Carex</i> sp.). ▪ forbs: ironweed (<i>Vernonia baldwinii</i>) and noseburn (<i>Tragia</i> sp.). 				
Is Site Unusual or Typical of Others in the Area? typical				

SPECIES DESCRIPTION

Species by Order of Dominance		
Common Name	Taxonomic Name	Range of Sizes (dbh)
honey locust	<i>Gleditsia triacanthos</i>	<1" – 9"
bois d'arc	<i>Maclura pomifera</i>	<1" – 5"
hackberry	<i>Celtis laevigata</i>	<1" – 8"
cedar elm	<i>Ulmus crassifolia</i>	<1"
hawthorn	<i>Crataegus</i> sp.	<1"
Acreage of Trees to be Removed	1.68 acres (ca. 74 total trees >6" dbh)	
Density per Acre (trees > 6" dbh)	44 trees/acre	
Remarks, Description of any Unique, Large, or Mature Trees (>20" dbh)		
Impacts: clearing of trees is anticipated throughout the proposed ROW.		
Density sample: trees >6" dbh within a circle with a radius of 25 feet (0.045 acre) = 2 trees.		
Canopy coverage estimate: 90%.		
Tree notes:		

HABITAT VALUE

Is the Site Adjacent to Water?	Yes
Is the Site in a Developed Area?	No
Do Plants Produce Nuts, Berries, or Acorns?	
Yes: honey locust – legume; bois d'arc – syncarp; hackberry – berry; cedar elm – samara; hawthorn – pome.	
Land Use in the Project Area	
Agriculture (crops and pasture).	
Evidence or Sightings of Wildlife in the Project Area?	
None noted.	
Remarks	

NTTA WOODLANDS DATA FORM

GENERAL

Project/Site	DNT Extension Phase 4B/5A	Site #: 7	Date	14 October 2010
CSJ	N/A	Investigator	Rich Jaynes	County
Filename	Location: I:\25000s\25602\DNT 4B-5A\EE--DNT Phases 4B-5A\c-BACKUP DATA & EX-APP Workshop\Sec 2--IMPACT ASSESSMENT2--biological resources\1--veg type & impacts File Name: WDF--DNT 4B-5A.docx			
Project Scope				
New location tollway with 6 main lanes and 3-lane frontage roads from FM 428 to FM 121.				
Description of Wooded Site (riparian, upland, fence line, overstory/understory, disturbed, diverse, etc.)				
Location: forest north of FM 455 and east of CR 10 (County Line Road); proposed road centerline (CL) station 2234+00, ca. 100 feet east of CL.				
Vegetation type: upland forest.				
Overstory: dominated by mesquite trees, generally not more than 15 feet tall.				
Understory: open understory with nearly 100% ground cover (mostly dried cool-season annual forbs and grasses).				
<ul style="list-style-type: none"> ▪ woody vines: none. ▪ shrubs: prickly pear cactus (<i>Opuntia</i> sp.). ▪ grasses: Johnson grass (<i>Sorghum halepense</i>), rosette grass (<i>Dichantherium</i> sp.), remnants of Spring annual grasses (<i>Bromus</i> sp.). ▪ forbs: western ragweed (<i>Ambrosia psilostachya</i>) and snow-on-the-prairie (<i>Euphorbia bicolor</i>). 				
Is Site Unusual or Typical of Others in the Area? typical				

SPECIES DESCRIPTION

Species by Order of Dominance		
Common Name	Taxonomic Name	Range of Sizes (dbh)
mesquite	<i>Prosopis glandulosa</i>	<1" – 7"
Acreage of Trees to be Removed	3.87 acres (ca. 85 total trees >6" dbh)	
Density per Acre (trees > 6" dbh)	22 trees/acre	
Remarks, Description of any Unique, Large, or Mature Trees (>20" dbh)		
Impacts: clearing of trees is anticipated throughout the proposed ROW.		
Density sample: trees >6" dbh within a circle with a radius of 25 feet (0.045 acre) = 1 tree.		
Canopy coverage estimate: 50%.		
Tree notes: brushy forest.		

HABITAT VALUE

Is the Site Adjacent to Water?	No
Is the Site in a Developed Area?	No
Do Plants Produce Nuts, Berries, or Acorns?	
Yes: mesquite – legume.	
Land Use in the Project Area	
Agriculture (crops and pasture).	
Evidence or Sightings of Wildlife in the Project Area?	
None noted.	
Remarks	
Site is part of a grazed pasture.	

NTTA WOODLANDS DATA FORM

GENERAL

Project/Site	DNT Extension Phase 4B/5A	Site #: 8	Date	14 October 2010
CSJ	N/A	Investigator	Rich Jaynes	County
Filename	Location: I:\25000s\25602\DNT 4B-5A\EE--DNT Phases 4B-5A\c-BACKUP DATA & EX-APP Workshop\Sec 2--IMPACT ASSESSMENT2--biological resources\1--veg type & impacts File Name: WDF--DNT 4B-5A.docx			
Project Scope				
New location tollway with 6 main lanes and 3-lane frontage roads from FM 428 to FM 121.				
Description of Wooded Site (riparian, upland, fence line, overstory/understory, disturbed, diverse, etc.)				
Location: north of FM 428 and east of CR 54; proposed road centerline (CL) station 1995+75, near and east of CL.				
Vegetation type: riparian forest.				
Overstory: dominated by hackberry trees, generally not more than 40 feet tall.				
Understory: generally open understory with ca. 90% ground cover (mostly dried grasses).				
<ul style="list-style-type: none"> ▪ woody vines: saw greenbrier (<i>Smilax bona-nox</i>). ▪ shrubs: none. ▪ grasses: Virginia wildrye (<i>Elymus virginicus</i>) and Johnson grass (<i>Sorghum halepense</i>). ▪ forbs: annual sunflower (<i>Helianthus annuus</i>). 				
Is Site Unusual or Typical of Others in the Area? typical				

SPECIES DESCRIPTION

Species by Order of Dominance		
Common Name	Taxonomic Name	Range of Sizes (dbh)
hackberry	<i>Celtis laevigata</i>	<1" – 8"
black willow	<i>Salix nigra</i>	15"
Acreage of Trees to be Removed	2.83 acres (ca. 441 total trees >6" dbh)	
Density per Acre (trees > 6" dbh)	156 trees/acre	
Remarks, Description of any Unique, Large, or Mature Trees (>20" dbh)		
Impacts: clearing of trees is anticipated throughout the proposed ROW.		
Density sample: trees >6" dbh within a circle with a radius of 25 feet (0.045 acre) = 7 trees.		
Canopy coverage estimate: 90%.		
Tree notes:		

HABITAT VALUE

Is the Site Adjacent to Water?	Yes
Is the Site in a Developed Area?	No
Do Plants Produce Nuts, Berries, or Acorns?	
Yes: hackberry – berry.	
Land Use in the Project Area	
Agriculture (crops and pasture).	
Evidence or Sightings of Wildlife in the Project Area?	
Yes (song birds); raccoon paw prints.	
Remarks	

NTTA WOODLANDS DATA FORM

GENERAL

Project/Site	DNT Extension Phase 4B/5A	Site #: 9	Date	14 October 2010
CSJ	N/A	Investigator	Rich Jaynes	County
Filename	Location: I:\25000s\25602\DNT 4B-5A\EE--DNT Phases 4B-5A\c-BACKUP DATA & EX-APP Workshop\Sec 2--IMPACT ASSESSMENT2--biological resources\1--veg type & impacts File Name: WDF--DNT 4B-5A.docx			
Project Scope				
New location tollway with 6 main lanes and 3-lane frontage roads from FM 428 to FM 121.				
Description of Wooded Site (riparian, upland, fence line, overstory/understory, disturbed, diverse, etc.)				
Location: north of FM 428 and east of CR 54; proposed road centerline (CL) station 2014+00, ca. 150 feet south of CL.				
Vegetation type: riparian forest.				
Overstory: dominated by hackberry trees, generally not more than 50 feet tall.				
Understory: generally open understory with very sparse (ca. 10%) ground cover.				
<ul style="list-style-type: none"> ▪ woody vines: saw greenbrier (<i>Smilax bona-nox</i>) and poison ivy (<i>Toxicodendron radicans</i>). ▪ shrubs: : gum bumelia (<i>Sideroxylon lanuginosum</i>). ▪ grasses: Virginia wildrye (<i>Elymus virginicus</i>). ▪ forbs: none. 				
Is Site Unusual or Typical of Others in the Area?		typical		

SPECIES DESCRIPTION

Species by Order of Dominance		
Common Name	Taxonomic Name	Range of Sizes (dbh)
hackberry	<i>Celtis laevigata</i>	<1" – 17"
black willow	<i>Salix nigra</i>	17" – 28"
Acreage of Trees to be Removed	0.72 acre (ca. 64 total trees >6" dbh)	
Density per Acre (trees > 6" dbh)	89 trees/acre	
Remarks, Description of any Unique, Large, or Mature Trees (>20" dbh)		
Impacts: clearing of trees is anticipated throughout the proposed ROW.		
Density sample: trees >6" dbh within a circle with a radius of 25 feet (0.045 acre) = 4 trees.		
Canopy coverage estimate: 90%.		
Tree notes: two large black willow trees were observed (24" and 28" dbh) within the site.		

HABITAT VALUE

Is the Site Adjacent to Water?	Yes
Is the Site in a Developed Area?	No
Do Plants Produce Nuts, Berries, or Acorns?	
Yes: hackberry – berry.	
Land Use in the Project Area	
Agriculture (crops and pasture).	
Evidence or Sightings of Wildlife in the Project Area?	
None noted.	
Remarks	

NTTA WOODLANDS DATA FORM

GENERAL

Project/Site	DNT Extension Phase 4B/5A	Site #: 10	Date	14 October 2010
CSJ	N/A	Investigator	Rich Jaynes	County
Filename	Location: I:\25000s\25602\DNT 4B-5A\EE--DNT Phases 4B-5A\c-BACKUP DATA & EX-APP Workshop\Sec 2--IMPACT ASSESSMENT2--biological resources\1--veg type & impacts File Name: WDF--DNT 4B-5A.docx			
Project Scope				
New location tollway with 6 main lanes and 3-lane frontage roads from FM 428 to FM 121.				
Description of Wooded Site (riparian, upland, fence line, overstory/understory, disturbed, diverse, etc.)				
Location: south of intersection of CR 8 and CR 9; proposed road centerline (CL) station 2065+00, generally from the CL eastward to the edge of the proposed ROW.				
Vegetation type: riparian forest.				
Overstory: dominated by hackberry trees, generally not more than 45 feet tall.				
Understory: very sparse understory (ca. 20% ground cover).				
<ul style="list-style-type: none"> ▪ woody vines: none. ▪ shrubs: : none. ▪ grasses: Virginia wildrye (<i>Elymus virginicus</i>) and Johnson grass (<i>Sorghum halepense</i>). ▪ forbs: goldenrod (<i>Solidago missouriensis</i>). 				
Is Site Unusual or Typical of Others in the Area?		typical		

SPECIES DESCRIPTION

Species by Order of Dominance		
Common Name	Taxonomic Name	Range of Sizes (dbh)
green ash	<i>Fraxinus pennsylvanica</i>	<1" – 14"
cedar elm	<i>Ulmus crassifolia</i>	<1" – 10"
black willow	<i>Salix nigra</i>	<1" – 14"
hackberry	<i>Celtis laevigata</i>	<1"
Acreage of Trees to be Removed	1.81 acres (ca. 293 total trees >6" dbh)	
Density per Acre (trees > 6" dbh)	162 trees/acre	
Remarks, Description of any Unique, Large, or Mature Trees (>20" dbh)		
Impacts: clearing of trees is anticipated throughout the proposed ROW.		
Density sample: trees >6" dbh within a 250-foot strip of forest on the south side of CR 8 (0.13 acre) = 21 trees.		
Canopy coverage estimate: 70%.		
Tree notes:		

HABITAT VALUE

Is the Site Adjacent to Water?	Yes
Is the Site in a Developed Area?	No
Do Plants Produce Nuts, Berries, or Acorns?	
Yes: green ash and cedar elm – samara; hackberry – berry.	
Land Use in the Project Area	
Agriculture (crops and pasture).	
Evidence or Sightings of Wildlife in the Project Area?	
None noted.	
Remarks	

Appendix 2-5

List of Federal and State Threatened and Endangered Species

1 **List of Federal and State Threatened and Endangered Species**
2 **in Collin, Denton, and Grayson Counties**

3 **Dallas North Tollway Extension Phase 4B/5A (DNT 4B/5A)**
4

5 The U.S. Fish and Wildlife Service (USFWS) has authority under the Endangered Species Act
6 (ESA) to list and monitor the status of species whose populations are considered imperiled.
7 USFWS regulations that implement the ESA are codified and regularly updated in 50 Code of
8 Federal Regulations Part 17. The federal process identifies potential candidates based upon the
9 species' biological vulnerability. The vulnerability decision is based upon many factors affecting
10 the species within its range and is linked to the best scientific data available to the USFWS at
11 the time. Species listed as threatened or endangered by the USFWS are provided full protection
12 under the ESA including a prohibition of indirect take such as destruction of known critical
13 habitat (i.e., areas formally designated by USFWS in the Federal Register).

14 Texas endangered species legislation in 1973 and subsequent amendments have established a
15 state regulatory program for the management and protection of endangered species (i.e.,
16 species in danger of extinction) and threatened species (i.e., likely to become endangered
17 within the foreseeable future). Chapters 67 and 68 of the Texas Parks and Wildlife Code
18 authorize the Texas Parks and Wildlife Department (TPWD) to formulate lists of threatened and
19 endangered fish and wildlife species and to regulate the taking or possession of the species.
20 Under this statutory authority, the TPWD regulates the taking, possession, transport, export,
21 processing, selling or offering for sale, or shipping of threatened or endangered species of fish
22 and wildlife.

23 The potential presence or absence of state-listed threatened or endangered species was
24 researched via the TPWD Web site for the proposed DNT 4B/5A project area. The potential
25 presence of federally listed species was also checked with Internet information maintained by
26 the USFWS. In addition, a database search was conducted using the Texas Natural Diversity
27 Database (TXNDD) in October 2010, and field visits were performed October 13-14, 2010. The
28 TPWD maintains the TXNDD to track known occurrences of special species on public land
29 throughout Texas. The TPWD and USFWS Web sites listed several threatened or endangered
30 species whose geographic range includes any portion of Collin, Denton, or Grayson counties.
31 The listed species for these counties, current regulatory status, habitat requirements, and a
32 determination of the potential for project-related species effects are presented in **Table 1**. The
33 table is followed by a brief description of federally and state-listed species for the proposed DNT
34 4B/5A project area, a review of unlisted species of concern to the TPWD, and an evaluation of
35 TXNDD data. Inclusion of a species in **Table 1** does not imply that a species is known to occur
36 in the study area but only acknowledges the potential for occurrence. The estimate of likelihood
37 of a species to occur within the study area is based on an analysis of habitat available and the
38 known habitat preferences for each species.

Table 1. List of Federal and State Threatened/Endangered Species

Species	USFWS ²	TPWD ³	Habitat Requirements	Habitat Present	Species Effects	Justification of Effects
BIRDS						
American Peregrine Falcon (<i>Falco peregrinus anatum</i>)	--	T	Resident in west Texas, and is migrant across state from more northern breeding areas in US and Canada, winters along coast and farther south; occupies wide range of habitats during migration, including urban, concentrations along coast and barrier islands; low-altitude migrant, stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands.	No	No	This species is migratory through the project area and would only potentially utilize the area for temporary stopover areas. Stopover habitat in proximity to large water bodies is not available within the proposed DNT 4B/5A ROW or nearby areas.
Arctic Peregrine Falcon (<i>Falco peregrinus tundrius</i>)	--	T	Nests in tundra regions; migrates through Texas; winter inhabitant of coastlines and mountains from Florida to South America. Open areas, usually near water.	No	No	This species is migratory through the project area and would only potentially utilize the area for temporary stopover areas.
Peregrine Falcon (<i>Falco peregrinus</i>)	--	T	Both subspecies noted above migrate across the state from more northern breeding areas in US and Canada to winter along coast and farther south; the two subspecies' listing statuses differ, thus the species level shows this dual listing status; because the subspecies are not easily distinguishable at a distance, reference is generally made only to the species level; see subspecies for habitat.	No	No	This species is migratory through the project area and would only potentially utilize the area for temporary stopover areas.
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	DM	T	Nests and winters near rivers, lakes and along coasts; nests in tall trees or on cliffs near large bodies of water.	No	No	The project area does not contain the preferred habitat requirements for this species.
Interior Least Tern (<i>Sterna antillarum athalassos</i>)	E	E	Nests along sand and gravel bars within braided streams and rivers; prefers sparsely vegetated sandy/gravelly areas within wide unobstructed river channels, or salt flats along lake shorelines.	No	No	The project area does not contain the preferred habitat requirements for this species.
Piping Plover (<i>Charadrius melodus</i>)	T	T	Wintering migrant along the Texas Gulf Coast; prefers beaches and bayside mud or salt flats.	No	No	This species is migratory through the project area and would only potentially utilize the area for temporary stopover areas.
White-Faced Ibis (<i>Plegadis chihi</i>)	--	T	Prefers freshwater marshes, sloughs, and irrigated rice fields, but will attend brackish and saltwater habitats; nests in marshes, low trees, on the ground in bulrushes or reeds, or on floating mats.	No	No	The project area does not contain the preferred habitat requirements for this species.

Species	USFWS ²	TPWD ³	Habitat Requirements	Habitat Present	Species Effects	Justification of Effects
Whooping Crane (<i>Grus americana</i>)	E	E	Estuaries, prairie marshes savannah, grasslands, croplands pastures- winter resident at Aransas National Wildlife Refuge, Aransas, and Matagorda.	No	No	This species is migratory through the project area and would only potentially utilize the area for temporary stopover areas.
Wood Stork (<i>Mycteria americana</i>)	--	T	Forages in prairie ponds, flooded pastures or fields, ditches, and other shallow standing water, including salt water; usually roosts communally in tall snags.	No	No	The project area does not contain the preferred habitat requirements for this species.
MAMMALS						
Red Wolf (<i>Canis rufus</i>)	--	E	Extirpated; formerly known throughout the eastern half of Texas in brushy and forested areas, as well as coastal prairies.	No	No	This species is considered extinct in the area. The project area also does not contain the preferred habitat requirements for this species.
FISHES ⁴						
Blue sucker (<i>Cycleptus elongatus</i>)	--	T	Larger portions of major rivers, usually in channels and flowing pools with moderate current; bottom type usually of exposed bedrock, perhaps combined with hard clay, sand, and gravel; adults winter in deep pools and move upstream in Spring to spawn on riffles.	No	No	The project area does not contain the preferred habitat requirements for this species.
Creek chubsucker (<i>Erimyzon oblongus</i>)	--	T	Tributaries of the Red, Sabine, Neches, Trinity, and San Jacinto rivers; small rivers and creeks of various types; seldom in impoundments; prefers headwaters, but seldom occurs in springs; young typically in headwater rivulets or marshes; spawns in river mouths or pools, riffles, lake outlets, upstream creeks.	No	No	The project area does not contain the preferred habitat requirements for this species.
Paddlefish (<i>Polyodon spathula</i>)	--	T	Large, free-flowing rivers, but will frequent impoundments with access to spawning sites; spawns in fast, shallow water over gravel bars; larvae may drift from reservoir to reservoir.	No	No	The project area does not contain the preferred habitat requirements for this species.
Shovelnose sturgeon (<i>Scaphirhynchus platyrhynchus</i>)	--	T	Open, flowing channels with bottoms of sand or gravel; spawns over gravel or rocks in an area with a fast current; Red River below reservoir.	No	No	The project area does not contain the preferred habitat requirements for this species.
MOLLUSKS ⁴						
Louisiana pigtoe (<i>Pleurobema riddellii</i>)	--	T	Streams and moderate-size rivers, usually flowing water on substrates of mud, sand, and gravel; not generally known from impoundments; Sabine, Neches, and Trinity (historic) River basins.	No	No	The project area does not contain the preferred habitat requirements for this species.

Species	USFWS ²	TPWD ³	Habitat Requirements	Habitat Present	Species Effects	Justification of Effects
Texas heelsplitter (<i>Potamilus amphichaenus</i>)	UR ⁵	T	Quiet waters in mud or sand and also in reservoirs. Sabine, Neches, and Trinity River basins.	No	No	The project area does not contain the preferred habitat requirements for this species.
REPTILES						
Alligator Snapping Turtle (<i>Macrochelys temminckii</i>)	--	T	Perennial water bodies; deep water of rivers, canals, lakes, and oxbows; ponds near deep running water; usually in water with mud bottom and abundant aquatic vegetation.	No	No	The project area does not contain the preferred habitat requirements for this species.
Texas Horned Lizard (<i>Phrynosoma cornutum</i>)	--	T	Open, arid, and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush, or scrubby trees; sandy to rocky soil.	No	No	The project area does not contain the preferred habitat requirements for this species.
Timber/Canebrake Rattlesnake (<i>Crotalus horridus</i>)	--	T	Swamps, floodplains, upland woodlands, riparian zones, abandoned farmland; prefers dense ground cover (i.e. grapevines or palmetto).	Yes	No	The project area may contain preferred habitat for this species. No evidence of the species was observed during field surveys. See discussion in text below.
<p>1. Sources: TPWD Annotated County List of Rare Species as revised on 10/14/2010; USFWS-Southwest Region, Endangered Species List for Collin, Denton, and Grayson counties as of 12/8/2010.</p> <p>2. USFWS listing codes: DM = Delisted species that has recovered and is being monitored during the first 5 years of delisted status; E = Endangered (i.e., in danger of extinction); T = Threatened (i.e., severely depleted population that may become endangered); blank = no federal status; UR = Under review.</p> <p>3. TPWD listing codes: E = Endangered; T = Threatened.</p> <p>4. The state-listed threatened fishes and mollusks all have habitat requirements for reservoirs or rivers/streams with year-round flowing water. Little Elm Creek is the largest perennial stream in the project area, but exhibits extremely low flows between storm events and would not expect to meet preferred habitat requirements for these species.</p> <p>5. On December 15, 2009, the USFWS issued a 90-day finding that future listing under the ESA may be warranted for this species.</p>						

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Based on field observations of potential habitat and available information from the USFWS, there is no critical habitat for any federally listed threatened or endangered species within the proposed DNT 4B/5A project area, and the proposed DNT 4B/5A is not likely to adversely affect such species. Similarly, no effects are likely to occur to state-listed threatened or endangered species as a result of the proposed DNT 4B/5A.

Listed Threatened or Endangered Species

The discussion that follows describes habitat preferences and other characteristics for the state and federal threatened or endangered species shown in the above table. The information below is drawn primarily from the TPWD and USFWS online data and publications. Most of the listed threatened or endangered species that may be found within the proposed DNT 4B/5A project area are migratory birds. These species utilize the area primarily as a travel corridor, where suitable habitats are used for resting and feeding stops. Some of the more important migratory habitats within the project area include riparian zones and cropland/pasture fields.

1 Peregrine Falcon. The peregrine falcon (*Falco peregrinus*) nests on cliffs and in cliff-like areas
2 near wetlands and water bodies. The American subspecies (*Falco peregrinus anatum*) breeds
3 throughout the western U.S., Canada, and Mexico, and in the Trans-Pecos region of Texas.
4 This subspecies is not easily distinguished at a distance from the Arctic subspecies (*Falco*
5 *peregrinus tundrius*), which breeds within the tundra regions of Alaska, Canada, and Greenland.
6 Both subspecies migrate through Texas, and can be found seasonally along the Texas Gulf
7 Coast. Species decline has been attributed to human disturbance, habitat loss, illegal
8 shooting/collecting, and, most notably, past use of the pesticide dichloro-diphenyl-
9 trichloroethane (DDT). The Arctic subspecies is no longer listed in Texas; however, because the
10 subspecies are difficult to distinguish from one another, references are generally made at the
11 species level. Although preferred habitat for these subspecies is very limited within the project
12 area, there exists the potential for the area to be used for stopover during migration.

13
14 Bald Eagle. Breeding habitat for the bald eagle is most commonly located within 2.5 miles of a
15 major water source which can be used for fishing. Primary food sources include fish and
16 waterfowl, most often associated with rivers, lakes, bays, and coastal areas. Bald eagles roost
17 and nest in large trees and often return to the same nest year after year. In Texas, bald eagle
18 nesting typically occurs from October to July. Past threats to the species included reproductive
19 failure due to pesticides, unrestricted taking by humans, and loss of habitat. Recovery efforts
20 have been successful, and the bald eagle populations are currently being monitored. The bald
21 eagle is known to nest and winter within the project area, generally near Ray Roberts Lake and
22 Lewisville Lake which are several miles to the west of the project area.

23
24 Interior Least Tern. Preferred habitat for the interior least tern includes salt flats, broad
25 sandbars, and barren shores along reservoirs and wide, shallow rivers. Nesting sites are chosen
26 based on a lack of vegetation and proximity to fishing grounds. This species will, as needed, use
27 non-traditional locations, such as gravel-mined areas and gravel rooftops, for nesting sites. The
28 tern is a colonial species, and creates a shallow depression in the sand/gravel to create its nest.
29 The nest is susceptible to inundation, predation, and pollution, all of which threaten the terns
30 and their offspring. Known populations of interior least tern nest along the Red River. The
31 interior least tern is not likely to occur within the project area because the type of habitat
32 preferred by this species is not available. Areas associated with Ray Roberts Lake and
33 Lewisville Lake could provide potential habitat for this species.

34
35 Piping Plover. The piping plover breeds along the Atlantic Coast, within the Northern Great
36 Plains, and within the Great Lakes region of North America. This species migrates south for the
37 winter, with individuals from both Northern Great Plains and Great Lakes populations wintering
38 along the Texas Gulf Coast. All populations prefer open, sandy beaches, mudflats, and sparsely
39 vegetated sand and gravel coastlines for nesting. The birds forage for invertebrates in the sand
40 near the water as the tide fluctuates. Species decline has been attributed to human disturbance
41 and habitat loss along waterways. Although preferred habitat for these species is generally
42 absent within the project area, their potential use of the project area should be considered
43 incidental relative to the large area regarded as their migration corridor.

1 White-Faced Ibis. The white-faced ibis prefers freshwater marshes, sloughs, and irrigated rice
2 fields, but will utilize brackish and saltwater habitats. In Texas, this species breeds and winters
3 in marshes along the Gulf Coast. The bird roosts on low platforms of dead reed stems or on
4 mud banks, and feeds on small animals found in the wet sand. Threats to this species include
5 pesticide use and the draining of wetlands. The project area lies within the migratory route used
6 by these rare birds and they could potentially use locations with suitable habitat as stopover
7 sites. However, the potential use of the project area by this bird should be considered incidental
8 relative to the large area regarded as their migration corridor and because of the general
9 absence of preferred habitat.

10
11 Whooping Crane. Preferred whooping crane habitat includes freshwater marshes, tidal flats,
12 barrier islands, and wet prairies. Historically, the whooping crane occurred throughout most of
13 North America. It was almost extirpated during the twentieth century due to habitat destruction
14 and human disturbances. Whooping crane populations increased from a low of 18 in 1938-1939
15 to approximately 300 in 1990. Whooping cranes breed in the wetlands of Wood Buffalo National
16 Park, Northwest Territory, Canada, and winter in the coastal wetlands of the Aransas National
17 Wildlife Refuge in Aransas, Calhoun, and Refugio counties, Texas. Consistent with a recent
18 USFWS publication addressing whooping cranes and transmission lines, the migration route
19 may be described as a generally straight corridor extending north to south from West Central
20 Canada to the Texas Gulf Coast.¹ This north to south corridor is approximately 220 miles wide
21 west to east, and the project area lies on the eastern edge of migration corridor. The main flight
22 corridor, within which 85% of migrating whooping crane sightings have been made throughout
23 its length from Canada to the Texas Gulf Coast, stretches from western Wilbarger County to the
24 eastern part of Montague County. An additional 10% of whooping crane sightings have been
25 made within the outer range of the overall flight corridor, which places the project area at the
26 eastern fringe of this migration corridor. There are no records of observations of whooping
27 cranes within the project area. Nevertheless, whooping cranes may make use of preferred
28 habitat within the project area during their seasonal migrations through it. Although it would be
29 difficult to predict where such occasional stopovers would occur, it is expected that stopovers
30 would be most likely to occur in proximity to major water features such as the Red River, Ray
31 Roberts Lake, and Lewisville Lake.

32
33 Wood Stork. The preferred habitat of the wood stork consists of low-lying wetland areas that
34 may be seasonably flooded and/or drying. Wood storks feed not by sight but by touch “tacto-
35 location” in shallow and often muddy water full of plants. Fish cannot be seen in those
36 conditions. Walking slowly forward, the stork sweeps its submerged bill from side to side.
37 Touching prey, mostly small fish, the bill snaps shut. Only seasonally dry wetlands (mostly in
38 drying ponds) concentrate enough fish to provide the 440 pounds that a pair of these big birds
39 requires during the breeding season. When natural wetland cycles are upset by human water
40 management, wood storks may fail to nest successfully. Preferred habitat for these species is

¹ Whooping Cranes and Wind Development – An Issue Paper (2009). USFWS Southwest Region Electronic Library (28 pages). <http://www.fws.gov/southwest/es/library/>

1 generally absent within the project area. This bird's potential use of the project area for
2 migratory stopovers should be considered incidental relative to its wide migration corridor.

3
4 Red Wolf. Historically, the red wolf was found throughout much of the eastern half of Texas.
5 Typical habitat included woodlands and grasslands where suitable cover and den sites could be
6 found. Excessive hunting and predator-control measures caused population numbers to
7 plummet, and the species is now believed to be extirpated from the state. The red wolf is not
8 expected to occur within the project area, although suitable habitat may exist. Reintroduction of
9 this species has occurred elsewhere in the country (i.e., North Carolina and Tennessee)² and
10 the red wolf would not likely be expected to occur within the project area unless it were to be
11 reintroduced.

12
13 Blue Sucker. The blue sucker could historically be found in many larger rivers within central
14 North America. Populations have declined over time due to dam construction and poor water
15 quality. Spawning habitats, consisting of shallower riffle areas upstream of water bodies, are
16 well removed from non-spawning habitats, and individuals may travel more than 100 miles
17 between the two. Maintenance of perennial stream flows, construction of fishways,
18 improvements in water quality and enforcement of water quality standards, and protection of
19 spawning grounds would help the species to recover its numbers. In north Texas this species is
20 known to occur along the state line with Oklahoma in association with the Red River basin.

21
22 Creek Chubsucker. The creek chubsucker is found in medium-sized rivers and creeks. Clearer
23 waters and sand- and gravel-bottomed pools seem to be preferred. Apparent causes of species
24 decline include the siltation of preferred streams. In north Texas this species is known to occur
25 along the state line with Oklahoma in association with the Red River basin.

26
27 Paddlefish. The paddlefish prefers the slower-moving waters of large rivers and reservoirs, and
28 is generally found in water deeper than 4 feet. Spawning grounds are generally more shallow
29 areas over gravel or sandbars. Numbers of this species have declined due to dam construction
30 and over-fishing for both the fish and its eggs. In north Texas this species is known to occur
31 along the state line with Oklahoma in association with the Red River basin.

32
33 Shovelnose Sturgeon. The shovelnose sturgeon is found in large rivers, often in deep water.
34 This species is generally sedentary by habit, but can move large distances if needed. Over-
35 harvest of this species for its eggs has caused declines in population numbers. In north Texas
36 this species is known to occur along the state line with Oklahoma in association with the Red
37 River basin.

38
39 Mollusks. The TPWD has placed two mussel species (i.e., Louisiana pigtoe and Texas
40 heelsplitter) on the state threatened species list which may occur Collin, Denton, or Grayson
41 counties where suitable habitat exists. Habitat requirements for the Louisiana pigtoe includes

² USFWS online information on the red wolf (accessed December 2010):
<http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spscode=A00F>.

1 streams and moderate-size rivers, usually flowing water on substrates of mud, sand, and gravel
2 (not generally found within reservoirs). The Texas heelsplitter may be found in quiet waters in
3 mud or sand associated with large perennial streams, and in reservoirs. USFWS published a
4 notice in December 2009 indicating its interest in the Texas heelsplitter for possible future listing
5 under the Endangered Species Act.³ According to the habitat description in the USFWS notice,
6 this species is historically and currently known to occur in rivers that are not within the vicinity of
7 the project area.

8
9 Alligator Snapping Turtle. The alligator snapping turtle requires perennial water bodies as it is a
10 highly aquatic organism, spending most of its life submerged. Turtles have been known to utilize
11 rivers, creeks, estuaries, ponds, lakes, and wetlands for their habitats. Distribution of this
12 species stretches from East Texas through the southeast to the panhandle of Florida, and north
13 along the Mississippi River Valley. Little is known about their life history; however, humans are
14 the main predators on adults. Nest predation by wildlife is believed to be an important factor in
15 hatchling success. This species is slow to recover from impacts due to slow maturity. Although
16 the project area includes one generally perennial stream (Little Elm Creek), this water body is
17 not expected to provide preferred habitat for the turtle.

18
19 Texas Horned Lizard. The historical range of the Texas horned lizard included the entire state of
20 Texas in arid and semiarid areas of flat, open terrain with scattered vegetation and sandy or
21 loamy soils. Population declines have been linked to loss of habitat, insecticides, over-
22 collection, and the accidental introduction of the imported fire ant (*Solenopsis invicta*). Despite
23 declines in east and central Texas, the Texas horned lizard is still common in portions of the Rio
24 Grande Plains of south Texas, the Rolling and High Plains of northwest Texas, and the Trans
25 Pecos of far west Texas. The Texas horned lizard is not likely to be found within the project area
26 due to the pervasively agricultural land use and lack of undisturbed open terrain.

27
28 Timber/Canebrake Rattlesnake. The timber/canebrake rattlesnake is a shy animal that prefers
29 to live in areas with ample cover and available refuge. Preferred habitat is forested areas with
30 dense ground cover. The distribution of the timber/canebrake rattlesnake stretches from the
31 East Coast westward into Texas, and as far north as New England. In the southern portions of
32 its range, this species prefers to make its den in somewhat swampy, wetland habitats. The
33 project area represents the far western edge of its range, and is characterized by drier
34 conditions than generally preferred for this snake. Populations tend to be higher in eastern
35 Texas where greater concentrations of wetlands and humid forests are found. Forested areas
36 located near permanent water sources are also utilized, as fallen debris from trees can provide
37 refuge for the rattlesnake. This type of habitat is the most likely within north central Texas to be
38 suitable for this species, and within the project area exists in larger riparian corridors such as
39 the Little Elm Creek floodplain.

40
41

³ 90-Day Finding on Petitions to List Nine Species of Mussels from Texas as Threatened or Endangered with Critical Habitat. 74 Federal Register 66260-66271, December 15, 2009.

1 **Species of Concern**

2 The Texas Wildlife Action Plan strives to keep “common species common” by gathering
3 information about native species before they become rare.⁴ Species that are uncommon or
4 exhibit declining numbers may be designated as species of concern (SOC) by the TPWD.
5 Often, these designations are placed on species for which little is known as a precautionary
6 measure and to focus attention on gaining insight into the species’ life histories. Preferred
7 habitat descriptions for SOCs that may occur within the project area are provided below.

8
9 **Henslow's Sparrow.** The Henslow's sparrow (*Ammodramus henslowii*) nests in open fields and
10 undisturbed grasslands along the Great Lakes region and through the central Midwest. The bird
11 was known to winter along the Texas Gulf Coast, but is now believed to be extirpated
12 throughout much of this former range. Population declines have been attributed to habitat
13 alteration. The bird is now considered a very rare migrant to the state and is unlikely to be
14 encountered within the project area.

15
16 **Western Burrowing Owl.** The western burrowing owl (*Athene cunicularia hypugaea*) occurs in
17 the western half of North America. Nesting takes place in warmer temperate and sub-tropical
18 regions from southern California to west Texas and south into Mexico. Preferred habitat is
19 typified by shorter vegetation accompanied by abandoned small mammal burrows, which the
20 owl modifies for its own use. This species rarely creates its own burrows, and is thus associated
21 with known habitat for prairie dog, ground squirrel, fox, and similar ground-dwelling mammals.
22 Species decline is primarily due to habitat loss and fragmentation. This species is considered
23 migratory through the project area. The use of the project area by the western burrowing owl
24 should be considered incidental relative to the large area considered as part of the migration
25 corridor.

26
27 **Plains Spotted Skunk.** The plains spotted skunk (*Spilogale putorius interrupta*) prefers woodland
28 or brushy habitats, which provide cover and potential den sites. The species is sometimes seen
29 foraging in more open areas, and utilizes abandoned burrows, brush piles, or hollow logs when
30 bearing young. Range information for this species is incomplete, but the species has been
31 observed throughout the Midwest. Potential habitat for this species occurs within riparian and
32 floodplain areas within the project area.

33
34 **Parkhill Prairie Crayfish.** *Procambarus steigmani*, commonly known as the Parkhill Prairie
35 crayfish, is known only from Collin County, Texas. This species constructs burrows in moist
36 grasslands, and is considered to be primarily terrestrial. Little is known about the life history of
37 this species. Potential habitat exists within the project area.

38

⁴ Texas Wildlife Action Plan. TPWD online information (accessed 2010).
http://www.tpwd.state.tx.us/publications/pwdpubs/pwd_pl_w7000_1187a/.

1 Goldeye. The goldeye (*Hiodon alosoides*) is a fish that inhabits medium to large lowland rivers
2 and their associated features (i.e., marshes, ponds, etc). Spawning takes place in shallower
3 sites usually over firm- or gravel-bottomed sites. Currently this species is only known to occur in
4 Texas in association with the Red River basin along the state line with Oklahoma.

5
6 Orangebelly Darter. The orangebelly darter (*Etheostoma radiosum*) is known only from the
7 Oauchita and Red River basins where it inhabits the rivers and their associated creeks, pools,
8 and riffles. Adults bury eggs in gravel along riffles and other shallow areas. Currently this
9 species is only known to occur in Texas in association with the Red River basin along the state
10 line with Oklahoma.

11
12 Mollusks. Large perennial water bodies provide potential habitat for the following species of
13 mollusks: common pimpleback (*Quadrula pustulosa*), fawnsfoot (*Truncilla donaciformis*), little
14 spectaclecase (*Villosa lienosa*), Wabash pigtoe (*Fusconaia flava*), and white heelsplitter
15 (*Lasmigona complanata*). Factors influencing mussel population decline include aquatic
16 contaminants, population decline of needed host species (necessary for reproduction), and the
17 damming/impoundment of rivers. Too little is known about the individual species to assess
18 potential risks independently, but it is anticipated effects to any could potentially be felt by all.
19 Potential habitat in the vicinity of the proposed project includes the Red River and other large
20 perennial streams. As mollusks (undetermined species) within the project area were observed in
21 the stream beds for Crossing-3 and Crossing-9 (see **Appendices 2-1** and **2-2**), both perennial
22 streams, the potential exists for the aforementioned species to be found within perennial stream
23 crossings in the project area.

24
25 Texas Garter Snake. The Texas garter snake prefers marshy areas and those associated with
26 permanent sources of water. This species occurs in east through central Texas, with a second
27 population stretching from the Texas Panhandle north through Oklahoma and into Kansas. This
28 snake is most abundant in the central Texas portion of its range, and is uncommon to rare in
29 north Texas. The Texas garter snake has been recorded in the Upper Trinity and Elm Fork
30 Trinity watersheds, and the potential exists for it to occur within the project area.

31
32 Glen Rose Yucca. The Glen Rose yucca (*Yucca necopina*) potentially occurs within the Denton
33 County portion of the project area. This species, which is endemic to north central Texas, is a
34 perennial plant with narrow leaves on a trunk-like stem that inhabits sandy soils and limestone
35 outcrops within grasslands. Within the vicinity of the project area, this species would be most
36 likely to occur several miles west of the project area, on sandy soils within the East Cross
37 Timbers portions of Denton County.

1 **Texas Natural Diversity Database**

2 The TXNDD provides information about the locations and descriptions of rare habitats and
3 areas managed to achieve high species diversity as well as provide quality habitat for common
4 and rare wildlife species. Information obtained from the TXNDD in October 2010 (see
5 **Appendix 5-1**) includes descriptive records corresponding with mapped locations of all rare
6 habitats within the vicinity of the project area. These records indicate two areas of tallgrass
7 prairie remnants of the Little Bluestem-Indiangrass series located approximately 5 miles to the
8 east of the proposed DNT 4B/5A. This type of habitat is recognized by the TPWD and
9 conservation organizations as an imperiled plant community at both the state and global levels
10 (i.e., S2/G2 ranking). Neither this series nor its namesake species have regulatory protection,
11 but both are generally regarded as scarce relicts of prehistoric tallgrass prairies.

12 The TXNDD also provided digital maps indicating areas managed to provide habitat for wildlife
13 and/or to conserve native plant resources. The nearest wildlife management area to the
14 proposed DNT 4B/5A is Ray Roberts Lake and its shoreline areas, approximately 3 miles to the
15 west. TXNDD records also indicate observations of bald eagles at Ray Roberts Lake.

16 The TXNDD did not indicate any records of rare species or wildlife management areas within
17 the project area. However, absence of information in the TXNDD for an area does not mean
18 absence of occurrence. The TXNDD does not include a representative inventory of rare
19 resources in the state. Rather, TXNDD data include reported records of species throughout
20 Texas. Data from the TXNDD do not provide a definitive statement as to the presence, absence,
21 or condition of special species, natural communities, or other substantial features within the
22 proposed DNT 4B/5A project area.

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