Draft Environmental Assessment

Farm-to-Market Road (FM) 1385, Dallas District

Project Limits from U.S. Highway 380 to FM 455

CSJ Number(s) 1315-01-030

Denton County, Texas

April 2023

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

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List of Acronyms

A list of common acronyms used throughout this document and their definitions is provided below.

AADT	average annual daily traffic
ACHP	Advisory Council on Historic Preservation
ACM	asbestos-containing materials
ACS	American Community Survey
AOI	Area of Influence
APE	Area of Potential Effects
AST	Aboveground Petroleum Storage Tank
BMP	Best Management Practices
CAD	County Appraisal District
CBRA	Coastal Barrier Resources Act of 1982
CFR	Code of Federal Regulations
CGP	Construction General Permit
CMAQ	Congestion Mitigation and Air Quality Improvement
CMP	Congestion Management Process
CO	carbon monoxide
C.R.I.S.	Crash Records Information System
dB(A)	decibels (A-weighted)
DOT	U.S. Department of Transportation
EA	Environmental Assessment
ECOS	TxDOT's Environmental Compliance Oversight System
EFH	Essential Fish Habitat
EPA	Environmental Protection Agency
EIS	Environmental Impact Statement
EMST	Ecological Mapping System of Texas
EO	Executive Order
EPIC	Environmental Permits, Issues, and Commitments
ETC	estimated time of completion
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
FM	Farm-to-Market Road
FONSI	Finding of No Significant Impact
FPPA	Farmland Protection Policy Act
FTA	Federal Transit Administration
GHG	greenhouse gas
GIS	Geographic Information System
USIBWC	United States Section, International Boundary and Water Commission
IPaC	Information for Planning and Consultation
IPCC	Intergovernmental Panel on Climate Change
ISA	Initial Site Assessment
LCP	lead-containing paint
LEP	Limited English Proficiency
MBTA	Migratory Bird Treaty Act
MMT	million metric tons
MOU	Memorandum of Understanding
MOVES	Motor Vehicle Emissions Simulator
MS4	Municipal Separate Storm Sewer System
MSA	Magnuson-Stevens Fishery Conservation and Management Act

MSAT	Mobile Source Air Toxics
MTP	Metropolitan Transportation Plan
NAAQS	National Ambient Air Quality Standards
NAC	Noise Abatement Criteria
NCTCOG	North Central Texas Council of Governments'
NEPA	National Environmental Policy Act
NOI	Notice of Intent
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWP	Nationwide Permit
NWPR	Navigable Waters Protection Rule
PA	Programmatic Agreement
PCN	Pre-Construction Notification
PM	particulate matter
PS&E	Plans, Specifications, and Estimates
PST	Petroleum Storage Tank
RAH	Rivers and Harbors Act
ROW	Right-of-Way
SAL	State Antiquities Landmark
SGCN	Species of Greatest Conservation Need
SHPO	State Historic Preservation Officer
STIP	Statewide Transportation Improvement Plan
SWP3	Storm Water Pollution Prevention Plan
TAQA	Carbon Monoxide Traffic Air Quality Analysis
TCEQ	Texas Commission on Environmental Quality
TCMP	Texas Coastal Management Plan
TDC	Texas Demographic Center
TDM	Travel Demand Management
TERP	Texas Emissions Reduction Plan
THC	Texas Historical Commission
TMA	Transportation Management Area
TMDL	Total Maximum Daily Load
TPDES	Texas Pollutant Discharge Elimination System
TPWD	Texas Parks and Wildlife Department
TSM	Traffic System Management
TSS	Total Suspended Solids
TWDB	Texas Water Development Board
TxDOT	Texas Department of Transportation
Uniform Act	Uniform Relocation Assistance and Real Properties Acquisition Policies Act of 1970, as amended in the Surface Transportation and Uniform Relocation Assistance Act of 1987
U.S.	United States of America
US	U.S. Highway
USACE	U.S. Army Corps of Engineers
USCB	U.S. Census Bureau
USFWS	U.S. Fish and Wildlife Service
VMT	Vehicle Miles Traveled
Vpd	vehicles per day

1.0 Introduction

The Texas Department of Transportation (TxDOT) proposes to reconstruct and widen Farm-to-Market Road (FM) 1385 from U.S. Highway (US) 380 to FM 455 in Denton County, Texas (**Figure 1**, **Appendix A**). The total length of the proposed project is approximately 12.03 miles.

This project is sponsored in part by federal funds. Pursuant to the 2019 Memorandum of Understanding (MOU) between the Federal Highway Administration (FHWA) and TxDOT, TxDOT has authority over approval of this project. Therefore, environmental documentation is being prepared to federal standards. This draft Environmental Assessment (EA) will evaluate the social, economic, and environmental impacts for the proposed project and determine whether such impacts warrant preparation of an Environmental Impact Statement (EIS). This EA was prepared in compliance with TxDOT and FHWA environmental policies and procedures according to the National Environmental Policy Act (NEPA). The EA will be made available for public review and comment. Following the comment period, TxDOT will consider all comments submitted. If TxDOT determines there are no significant adverse effects, it will prepare and sign a Finding of No Significant Impact (FONSI), which will be made available to the public.

2.0 Project Description

2.1 Existing Facility

FM 1385 varies between a two-lane rural undivided roadway and a two-lane divided roadway with a center turn lane. The existing roadway has 12-foot-wide lanes in each direction bound by 3-foot shoulders. The existing right-of-way (ROW) of FM 1385 varies between 80 to 120- feet wide. The central portion of the FM 1385 roadway within the project area ties into Mustang Road, which involves a sharp curve in the roadway as well as a three-way intersection. Existing drainage is conveyed through grass-lined ditches and conveyed beneath the roadway through culverts. Three bridges (over Mustang Creek, Little Elm Creek Relief, and Little Elm Creek) and one bridge class culvert (over Long Branch) are located along FM 1385 within the project area. Eleven-foot-wide left turn lanes are present at various locations throughout the project area. No transit stops, sidewalks, or designated bicycle lanes exist along the proposed project limits.

Refer to **Appendix B** for Project Photos, **Appendix C** for the Project Schematic, and **Appendix D** for the existing typical section.

2.2 Proposed Facility

The proposed FM 1385 improvements would include reconstructing and widening the existing two-lane rural highway to ultimately a six-lane divided urban roadway. FM 1385 from US 380 to FM 428 West is proposed to be constructed as a six-lane facility while the roadway from FM 428 West to FM 455 is proposed to be constructed as a four-lane interim facility. The majority of the project area follows the existing FM 1385 roadway alignment; however, two areas are being proposed for new

location roadway realignments to address mobility and safety concerns. The first 0.9-mile-long realignment is located south of Mustang Road and would directly connect FM 1385 to the north and to the south without requiring vehicles to travel along the Mustang Road portion of the existing FM 1385. The second 0.45-mile-long realignment is located southeast of the current alignment. This proposed improvement would flatten out the existing "S" curve at Gee Road and improve mobility at this intersection with FM 1385. The bridges and culverts (Mustang Creek bridge, Little Elm Creek Relief bridge, Little Elm Creek bridge, and Long Branch bridge class culvert) would be reconstructed and widened to accommodate the additional roadway width. The northbound and southbound roadways from US 380 to FM 428 West would be constructed with three 11-foot travel lanes, 4-foot outside shoulders, and 1.5-foot inside shoulders. The median would be between 6 to 21 feet wide. Eleven-foot-wide left turn lanes would be constructed at multiple intersections within the project area. From FM 428 West to FM 455, the northbound and southbound roadways would be constructed with two 11-foot travel lanes, 1.5-foot to 5-foot outside shoulders, and 1.5-foot inside shoulders. The median would be between 6 to 39 feet. Roadside drainage would be maintained in grass-lined ditches. Additionally, a 10-foot-wide shared use path is proposed along the east and west side of the proposed roadway.

The proposed project would require the acquisition of approximately 124.4 acres of additional ROW. Refer to **Appendix C** for the project schematic and **Appendix D** for the proposed typical section.

2.3 Logical Termini and Independent Utility

Federal regulations require that federally funded transportation projects have logical termini (23 Code of Federal Regulations [CFR] 771.111(f)(1)). Simply stated, this means that a project must have rational beginning and end points. Those end points may not be created simply to avoid proper analysis of environmental impacts. The logical termini for the project are US 380 and FM 455. US 380 is a major traffic generator for Denton County and the existing FM 1385 roadway ends at FM 455.

Federal regulations require that a project have independent utility and be a reasonable expenditure even if no other transportation improvements are made in the area (23 CFR 771.111(f)(2). This means a project must be able to provide benefit by itself, and that the project must not compel further expenditures to make the project useful. Stated another way, a project must be able to satisfy its purpose and need with no other projects being built. The proposed project has independent utility and would not preclude other foreseeable transportation improvements within the project area. The project provides mobility and safety improvements, which satisfies the project's need, and this would be true even if no other roads were built nearby. Because the project stands alone, it cannot and does not irretrievably commit federal funds for other future transportation projects.

Federal law prohibits a project from restricting consideration of alternatives for other reasonably foreseeable transportation improvements (23 CFR 771.111(f)(3). This means that a project must not dictate or restrict any future roadway alternatives. The FM 1385 project has independent utility and

would not restrict the consideration of alternatives for other foreseeable transportation improvements.

2.4 Planning Consistency

The proposed project is anticipated to cost $250,077,274, with 80 percent from federal funding and 20 percent from state funding. The proposed project is included in the *Mobility 2045 Metropolitan Transportation Plan* (MTP) adopted by the North Central Texas Council of Governments (NCTCOG) Regional Transportation Council. The project is included in the *2023-2026 Statewide Transportation Improvement Program* (STIP), which was found to conform by FHWA/FTA on November 18, 2022.

3.0 Purpose and Need

3.1 Need

This project is needed because the capacity of the FM 1385 roadway is inadequate to meet current and future traffic volumes stemming from population growth and increased traffic volumes, resulting in reduced mobility and increased safety concerns on this stretch of roadway. Additionally, the current configuration of FM 1385 does not meet current safety standards due to vertical and horizontal curve design speeds and sight distances.

3.2 Supporting Facts and/or Data

3.2.1 Anticipated Population Growth

According to U.S. Census Bureau (USCB) population data and American Community Survey (ACS) estimates, Denton County has experienced rapid population growth since the year 2010 with an approximate population growth rate of 41.4 percent from 2010 to 2019. The population in Denton County is projected to grow by 90.6 percent from 2020 to 2040, with an annual growth rate of over 2 percent (**Table 1**) (Texas Demographic Center [TDC] 2022).

Table 1: Population Projections for Denton County

County	2020	2030	2040	Percent Population Growth (2020 – 2040)
Denton	897,953	1,234,110	1,708,302	90.6%

Source: TDC 2022.

The project roadway begins at the intersection of FM 1385 and US 380 on the northwest side of the Town of Prosper and passes through portions of the communities of Little Elm, Celina, Aubrey, and Pilot Point. The local communities surrounding the project area are experiencing similar growth trends as the wider Denton County (**Table 2).** Traffic along the existing FM 1385 was analyzed in two sections; Section 1: US 380 to FM 428, and Section 2: FM 428 to FM 455. Traffic data for the estimated time of completion (ETC) year 2025 is 18, 675 and 3,225 vehicles per day for Sections 1

and 2, respectively. For the design year (2055), the estimate for Section 1 is 32,225 vehicles per day and Section 2 is 5,500 vehicles per day, which represents a 71 percent increase in average daily traffic along the roadway.

Table 2: Population Change for Local Municipalities

Municipality	2010	2021	Percent Population Increase (2010 – 2021)
Prosper	9,423	30,147	219.62
Little Elm	25,898	46,453	79.37
Celina	6,028	16,739	177.70
Aubrey	2,595	5,006	92.90
Pilot Point	3,538	4,381	23.83

Source: ACS 2022.

3.2.2 Collision Data

Texas statewide crash rates for two-way, two-lane rural roadways (such as FM 1385) indicate a 2017-2021 average of 71.38 crashes per 100 million vehicle miles travelled. An accident summary, pulled from TxDOT's Crash Records Information System (C.R.I.S.) in July 2022, indicates a 2017-2022 average crash rate of 56 crashes per 100 million vehicle miles travelled for FM 1385 from US 380 to FM 455 (**Table 3**). While the FM 1385 crash rate is lower than the state average, there were between 37 and 62 crashes each year within the project area, several of which were documented as severe crashes. A heatmap of the data identifies US 380, Glenbrooke Drive, Fishtrap Road, FM 428, and Mustang Road as key areas of higher crash rates within the project area. Studies have shown that conversion from most typical two-lane, two-way section to a typical four-lane divided section results in a 40 to 60 percent reduction in crashes (Council and Stewart 1999, Fitzpatrick et al. 2005). This is similarly reflected in the 2020 statewide traffic crash rates by roadway type for Texas, with approximately 90 crashes occurring per 100 million vehicle miles on a two-lane, two-way roadway compared with approximately 54 crashes occurring on a four or more lane-divided section.

Table 3: Vehicle Crashes Per Year within the Project Area

Year	Number of Accidents
2017	37
2018	50
2019	56
2020	37
2021	62
2022 (YTD)	38

Source: C.R.I.S., 2022.

3.2.3 Design Standard Improvements

As discussed in **Section 3.2.1** and **Section 3.2.2**, the project area is experiencing rapid growth and has documented safety concerns associated with various intersections. The proposed improvements would address current design deficiencies by providing turning bays to accommodate vehicles turning at various intersections throughout the project area, eliminate the "S" curve at Fishtrap Road, as well as provide pedestrian and bicycle facilities along the facility.

3.3 Purpose

The purpose of the proposed project is to improve mobility, address safety concerns, and meet current design standards.

4.0 Alternatives

4.1 Build Alternative

The Build Alternative would include reconstructing and widening the existing FM 1385 from a two-lane rural highway to ultimately a six-lane divided urban roadway. The Build Alternative is the Preferred Alternative and, as described in **Section 2.2**, meets the purpose and need by improving mobility and safety along the existing corridor.

4.2 No-Build Alternative

Under the No-Build Alternative, FM 1385 would not be improved. The No-Build Alternative assumes that no transportation improvements beyond the continued maintenance of the existing facility would occur. This alternative would not meet current safety standards nor facilitate movement within the project area; therefore, it would not meet the need and purpose of the project and the Build

Alternative is the proposed alternative. The No-Build Alternative will be carried forward as a baseline for comparison to the preferred alternative.

4.3 Preliminary Alternatives Considered but Eliminated from Further Consideration

A preliminary project-specific Feasibility Study was conducted in 2019 to inform the project team about known environmental constraints in the FM 1385 project area. The project engineers considered three separate design alternatives during the design phase of this project:

Alternative 1: 10-foot shared use path with 4-foot buffer to face of curve and additional ROW – This alternative met desired minimums by keeping a 4-foot buffer and acquiring additional ROW to meet the grading needs. This alternative was not pursued because it would affect several adjacent detention ponds, would cause additional displacements of homes, and would require the relocation of a 48-inch water line which is the main transmission line for the City of Celina.

Alternative 2: 8-foot-wide shared use path with 4-foot buffer – An alternative to keep the required 4-foot offset from face of curb was considered by reducing the shared-use path from 10 feet to 8 feet. It was not pursued further, as even with the reduction, it resulted in a less desirable shared-use path width and the same relocation issues with the 48-inch waterline and two residential displacements would still occur.

Alternative 3: Barrier added at edge of shared-use path – Another alternative considered adding a barrier to the edge of pavement at all locations, which would satisfy the requirements for eliminating the 4-foot buffer. This option was not pursued because it would widen the overall roadway footprint by 3 feet to provide extra space for barrier and offsets along with added safety requirements for oncoming traffic at the termination of rail (i.e., safety end treatments). This alternative would still lead to additional ROW required for the barrier. In addition, the barrier could potentially cause sight distance issues at all intersections.

5.0 Affected Environment and Environmental Consequences

In support of this EA, the following technical reports were prepared:

- *Community Impacts Assessment Technical Report Form* (TxDOT 2022a)
- *Archaeological Survey Report* (TxDOT 2022b)
- *Historical Resources Survey Report* (TxDOT 2022c)
- *Waters of the United States Delineation Report* (TxDOT 2022d)
- *Species Analysis Spreadsheet and Supplemental Attachments* (TxDOT 2022e)
- *Air Quality Technical Report* (TxDOT 2022f)
- *Hazardous Materials Initial Site Assessment* (TxDOT 2022g)

- *Traffic Noise Technical Report* (TxDOT 2022h)
- *Indirect Impacts Technical Report* (TxDOT 2022i)
- *Public Meeting Documentation* (TxDOT 2022j)

The technical reports[1] may be inspected and copied upon request at the TxDOT Dallas District office: 4777 US 80, Mesquite, Texas 75150, open 8 AM to 5 PM Monday through Friday.

5.1 Right-of-Way/Displacements

The proposed project would require the acquisition of approximately 124.4 acres of additional ROW. Refer to **Appendix C** for the Project Schematic. It is estimated that there would be four potential displacements resulting from the Build Alternative: two residential properties (D1 and D2), one commercial facility (D4), and one billboard (D3), (**Appendix E, Figure 1**).[2] The potential residential displacements consist of two single-family houses. The potential commercial displacement is an office facility structure for an RV park and storage business. Refer to *Community Impacts Assessment Technical Report Form* (TxDOT 2022a) for additional information.

TxDOT provides relocation resources to all displaced persons without discrimination in a manner consistent with U.S. Department of Transportation (DOT) policy as mandated by the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended in the Surface Transportation and Uniform Relocation Assistance Act of 1987 (the Uniform Act). All property owners from whom land is needed are entitled to receive just compensation for their property. Just compensation is based on the fair market value of the property. TxDOT also provides, through its Relocation Assistance Program, payment and services to aid in movement to a new location.

Both the United States and Texas Constitution provide that no private land may be taken for public purposes without adequate compensation being paid thereof. The TxDOT Right-of-Way Acquisition and Relocation Program would be conducted in accordance with the Uniform Act, and relocation resources are available to all residential and business relocatees without discrimination.

No-Build Alternative

Under the No-Build Alternative, the existing FM 1385 would remain as-is, and routine maintenance would be conducted. No ROW acquisition would be required, and no displacements or relocations would occur.

[1] Note: The dates following each technical report indicate the year that the report was finalized and approved. The lowercase letters correspond with the sequence of the report's reference within the EA's text as well as in Section 10.0 References.

[2] Note that a conservative approach was used to identify potential displacements, which includes a 10-foot buffer around the project area; any buildings or structures within the project area and this buffer are considered to be potentially displaced by the proposed project.

5.2 Land Use

The proposed FM 1385 project is located in a semi-rural area of north-central Texas outside the City of Prosper. Surrounding land uses include a mix of single-family residential, commercial, industrial, agricultural, and open space/undeveloped parcels. There are predominantly commercial businesses along the southern portion of the project corridor. The northern portion of the project area contains predominantly agricultural land and single-family residences. Community resources, such as places of worship, medical facilities, equestrian facilities, and retail establishments, are within or directly adjacent to the proposed project area and can be accessed by FM 1835, generally by car. Refer to the *Community Impacts Assessment Technical Report Form* (TxDOT 2022a) for additional information regarding existing land uses within and surrounding the project area.

The Build Alternative would change approximately 124.4 acres of land to transportation use. Although several displacements and conversion of land to transportation infrastructure (pavement, drainage, etc.) would occur, the proposed project is not anticipated to substantially alter the existing land use in the area.

No-Build Alternative

Under the No-Build Alternative, no impacts to land use would occur. Land use in the area would remain as-is or change to other land uses as the community and economy warrants.

5.3 Farmlands

The Farmland Protection Policy Act (FPPA), as detailed in Subtitle I of Title XV of the Agricultural and Food Act of 1981, provides protection to the following: (1) prime farmland, (2) unique farmland, and (3) farmland of local or statewide importance. Transportation projects conducted by a federal agency or with federal agency assistance that irreversibly convert protected farmland (directly or indirectly) to non-agricultural use are required to coordinate with the Natural Resources Conservation Service (NRCS) under the FPPA. NRCS uses a land evaluation and site assessment system to establish a farmland conversion impact rating score on proposed sites. This score is used as an indicator for the project sponsor to consider alternative sites if the potential adverse impacts on the farmland exceed the recommended allowable level.

The proposed project would require new ROW and is located in a “non-urbanized area” as designated by the USCB. There are approximately 106.2 total acres of farmland soils that would potentially be impacted by the Build Alternative. The rating score on Part IV of the FPPA Evaluation Form was 46 and the threshold established by the FPPA requiring coordination with the NRCS is 59. Since the project does not meet or exceed this threshold, coordination with the NRCS is not required.

No-Build Alternative

Under the No-Build Alternative, no impacts to farmland soils would occur. Undeveloped lands used for agriculture would continue to be used as such.

5.4 Utility Relocation

It is reasonably foreseeable that utilities would have to be relocated as a result of this project. The impacts resulting from removal of any utilities from within existing highway ROW (e.g., construction noise, potential disturbance to archeological resources, and potential impacts to species habitat) have been considered as part of the overall project footprint impacts within this EA. Additionally, if utilities will be relocated within highway ROW, the impacts resulting from re-installation of the utilities within highway ROW have also been considered as part of the project impacts under each of the resource area subheadings within this EA. To the extent the owner of any displaced utility determines to re-install the displaced utility at a location outside of highway ROW, such location will be determined by the owner of the utility subject to the rules and policies governing the utility relocation process.

An electrical substation is situated adjacent east of FM 1385, north of Arrowbrooke Avenue, where ROW acquisition is proposed. It is not considered an environmental concern to the project. ROW acquisition along FM 1385 is proposed from this site. Additionally, there are six pipelines that cross the project and are as follows:

- 6.63" natural gas at approx. STA 142+50 (on the south side of Fishtrap Rd)
- 6.63" highly volatile liquid (HVL) at approx. STA 246+00 (south side of Aubrey Pkwy)
- 30" natural gas at approx. STA 311+00 (south side of Ranchette Rd)
- 36" natural gas at approx. STA 537+25 (in the new location area south of Mustang Rd)
- 24" natural gas at approx. STA 571+75 (on the south side of Mustang Rd; also parallels FM 1385, within ROW, northward to 9105 FM 1385)
- 36" natural gas at approx. STA 750+80 (on the south side of Lights Ranch Rd)

No-Build Alternative

Under the No-Build Alternative, no impacts to utilities would occur.

5.5 Bicycle and Pedestrian Facilities

Currently, no sidewalks or designated bicycle lanes exist along the proposed project limits. No bus stops or lanes are present. Sidewalks are limited to adjacent neighborhoods and a 1,000-foot-long bicycle lane along Magnolia Boulevard between FM 1385 and Peachtree Drive. A 10-foot-wide shared use path is proposed along the east and west side of the proposed roadway; thus, the project would comply with TxDOT's Bicycle Accommodation Design Guidance and improve the current accessibility for bicycles and pedestrians throughout the project area. TxDOT's guidance implements the U.S. Department of Transportation Policy Statement on Bicycle and Pedestrian Accommodations, as well as FHWA policy.

No-Build Alternative

Under the No-Build Alternative, pedestrians and cyclists would continue to use the existing transportation network as it is currently provided.

5.6 Community Impacts

A *Community Impact Assessment Technical Report Form* (TxDOT 2022a) was completed in accordance with TxDOT's Community Impacts, Environmental Justice, Limited English Proficiency, and Title VI Compliance guidance (TxDOT 2020a).

The proposed project would require new ROW, which would result in four potential displacements. The potential residential displacements consist of two single-family houses. The potential commercial displacement is an office facility structure for an RV park and storage business. There are some replacement properties for sale in the same zip codes for both the potential residential and commercial displacements. In 2021, there were single family homes for sale of a comparable type, size, and cost to one of the residential displacements; however, there were no single family houses for sale in the same zip code for less than $90,000, per Central Appraisal District data, that would be comparable to the other residential displacement. It should be noted that TxDOT offers fair market values for properties, which are typically higher than the appraised value available in Central Appraisal District data. The potentially displaced business, the Mustang RV Park and Storage, is not unique in the area, and there are similar businesses as close as 2.4 miles away. However, it should be noted that the potentially displaced residential and office structures could be relocated further back on their respective parcels outside of the proposed ROW. Similarly, a potentially displaced billboard is anticipated to be relocated.

Changes in travel patterns are anticipated due to the proposed medians. Some travelers on FM 1385 and various cross streets may have to travel in the opposite direction and then complete a legal U-turn in order to access some properties along FM 1385 or the two one-way access streets. The potential changes in travel patterns could result in slightly longer travel times for some residents, employees, or commercial customers along FM 1385 and various cross streets. However, safety would be enhanced for all users of the FM 1385 roadway due to the proposed median and shared use paths. Overall, these improvements offer safety benefits for all members of the public and would not affect the frequency with which people access other parts of the community.

No existing neighborhoods would be divided because FM 1385 is an existing roadway. The improvements would not substantially change the degree of separation between existing residential and commercial uses. The roadway improvements would shift the alignment of the roadway closer to the existing residential neighborhoods and commercial businesses at various locations where the proposed ROW would be added on both sides of the existing two-lane roadway and the two new-location alignment portions. Additionally, the proposed project would construct shared use paths on both sides of the roadway, which would increase pedestrian and bicycle access in the community study area. The proposed project would not affect, separate, or isolate any distinct neighborhoods, ethnic groups, or other specific groups as FM 1385 is an existing roadway.

No-Build Alternative

The No-Build Alternative would not result in any negative effects or improvements to congestion, mobility, efficiency of access within the project area.

5.6.1 Environmental Justice

An environmental justice analysis was completed in accordance with Executive Order (EO) 12898 "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." EO 12898 directs federal agencies to avoid disproportionately high and adverse human health or environmental effects on low-income and minority populations. The Build Alternative is anticipated to increase mobility for existing and future residences, businesses, and public facilities within the project vicinity. Environmental justice populations occur in 36 of the 65 populated census blocks in the community study area. The census blocks containing environmental justice populations contain populations of more than 50 percent minority persons (See **Figure 2** in **Appendix E**). No low-income census block groups exist in the study area. Areas anticipated to have permanent changes in access and travel patterns occur within the census blocks containing a predominantly minority population. No existing neighborhoods would be divided, but permanent disruptions to normal daily activities are expected due to the proposed median, which would render some properties accessible only when one is traveling in a specific direction. In some cases, travelers would have to proceed in the opposite direction and then complete a legal U-turn, or turnaround, to reach their destination, adding up to two minutes of travel time.

Four potential displacements are anticipated due to the proposed project. The potential residential displacements are located in an EJ census geography. The potentially displaced business is not located in an EJ census geography and does not cater to minority or low-income populations. Although access and travel patterns changes are anticipated due to the proposed median, the project would not permanently adversely impact the community and would not have disproportionately high and adverse impacts on minority and/or low-income populations. Improved mobility for pedestrians and cyclists and enhanced safety in the project area would benefit all nearby residential communities. It is anticipated that the proposed project would not result in disproportionately high and adverse impacts to minority and/or low-income populations when compared to impacts to non-environmental justice populations. The requirements of EO 12898 are satisfied. Refer to the *Community Impacts Assessment Technical Report Form* (TxDOT 2022a) for additional information regarding minority and low-income populations within the project area.

No-Build Alternative

The No-Build Alternative would not have impacts on low-income or minority populations.

5.6.2 Limited English Proficiency

Limited English Proficiency (LEP) is defined as persons who speak English "less than very well." EO 13166 requires that LEP persons can effectively participate in or benefit from federally assisted activities and services. The project area contains LEP populations ranging from approximately 0.0 to 24.5 percent of the total population over the age of five in the adjacent block groups. Of the population over five years of age in the adjacent block groups, approximately 5.9 percent speak English "less than very well." A majority of the LEP population speaks Spanish, with smaller percentages speaking Indo-European, Asian/Pacific Islander, and other languages. Please refer to

the *Community Impacts Assessment Technical Report Form* (TxDOT 2022a) for additional information regarding LEP populations within the project area.

A virtual public meeting was held on September 15, 2020, and an in-person public meeting with virtual option was held on May 16, 2022. LEP persons were afforded the opportunity to participate in the decision-making process during those events. Notices for the public hearing were published in English and Spanish in local newspapers and mailed to adjacent property owners. Translation services have been and are provided on request.

Reasonable steps have been and will continue to be taken to ensure all persons have meaningful access to the programs, services, and information TxDOT provides. Translation services have been and are provided upon request. Therefore, the requirements of EO 13166, pertaining to LEP, are satisfied.

No-Build Alternative

The No-Build Alternative would have no targeted impacts to LEP populations. Increased congestion and reduced mobility are anticipated as a result of not implementing the Build Alternative, which may result in adverse effects to the communities of the project area, including LEP populations. Beneficial impacts from the Build Alternative, including improving mobility and enhanced safety, would not be attained under the No-Build Alternative and would be unavailable to all communities, including LEP populations.

5.7 Visual/Aesthetics Impacts

Although the proposed project consists of widening the existing FM 1385 and expanding it onto new ROW, adverse visual impacts are not anticipated as part of the proposed project. The area is currently traversed by a network of transportation facilities; therefore, the widening of FM 1385 is not anticipated to appreciably change the visual environment. The addition of a median between divided travel lanes would slightly change existing sight lines but would not block any views. There are no existing landscaping or decorative features that would be impacted.

No-Build Alternative

Under the No-Build Alternative, the viewshed would not be altered by the introduction of a new transportation facility.

5.8 Cultural Resources

Evaluation of impacts to cultural resources has been conducted under Section 106 of the National Historic Preservation Act in accordance with the Programmatic Agreement (PA) among FHWA, TxDOT, the Texas State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation (ACHP) Regarding the Implementation of Transportation Undertakings.

5.8.1 Archeology

In June 2022, under Texas Antiquities Permit #30600, an intensive archeological survey was completed to inventory and evaluate archeological resources within the footprint of the proposed project to support compliance with the National Historic Preservation Act, as amended, and the Antiquities Code of Texas (TxDOT 2022b). Fieldwork included a pedestrian survey of the area of potential effect (APE), augmented by the excavation of shovel test units within areas of higher Hybrid Potential Archeological Liability Maps (HPALM) probability within proposed ROW and proposed easement. At the time of the survey, landowner permission for access was granted for 44.3 acres of proposed ROW in high probability HPALM areas and low probability locations in undeveloped land. Land with no access permission in higher probability locations covered 18.1 acres. The properties for which access was denied or for which there was no response to an access request were examined from adjacent properties or the current ROW where possible. In all, 75 shovel test units were excavated within the APE. Only two of the shovel test excavations uncovered archeological materials of any age.

Areas of proposed ROW investigated during this evaluation were typically located within currently undeveloped parcels that had been used for agricultural or animal pastures in the past, agricultural cultivated fields, and sparse semi-rural residential development. Shovel test units excavated in the sections with access to the APE contained compact clay soils with many gravels and non-archeological modern refuse. All shovel test units, except two, excavated during this survey were negative, and none contained any buried materials or evidence of buried soil horizons that could contain intact archeological deposits. The two shovel tests that were positive uncovered unidentifiable metal and a clear glass shard at 10 and 20 centimeters below surface and were associated with an old road. These were considered isolated finds and not deemed eligible.

No other cultural resources or evidence of archeological features were identified anywhere on the ground surface or in any of the remaining shovel test units excavated within the APE, and no new sites were recorded. Further, no evidence of nearby previously recorded sites was found within the APE. See **Appendix G** for THC coordination.

No resources that are known to have potential to be eligible for listing on the National Register of Historic Places (NRHP) or as a State Antiquities Landmark (SAL) were found during this survey, and the proposed project is nearly identical in nature to existing improvements in the area. No evidence was found of preserved deposits with a high degree of integrity; associations with distinctive architectural and material culture styles; rare materials and assemblages; the potential to yield data important to the study of preservation techniques and the past in general; or potential attractiveness to relic hunters (13 TAC 26.10). Thus, the proposed project is highly unlikely to directly or indirectly impact any known or unknown NRHP- or SAL-eligible archeological resources. No further archeological work is recommended within the surveyed portions of the APE prior to construction.

Under the Build Alternative, no impacts to significant or potentially NRHP/SAL-eligible archeological resources are anticipated. However, all high probability areas of proposed ROW or easements that

have not been subjected to archeological survey should be subjected to archeological survey when right-of-entry comes available in the future. This work should include shovel testing or mechanical trenching of all areas of proposed ROW and easements within the higher probability HPALM zones (approximately 12.5 acres). Such deposits are most likely to occur along the east bank of Mustang Creek where no access was granted. Further coordination would be required with the THC with respect to this acreage once access becomes available.

If any unanticipated cultural materials or deposits are found at any stage of clearing, preparation, or construction, the work should cease in that area and TxDOT personnel should be notified immediately. During evaluation of any unanticipated finds and coordination between TxDOT and THC, clearing, preparation, and/or construction could continue in any other areas along the corridor where no such deposits or materials are observed.

No impacts to significant or potentially NRHP/SAL-eligible archeological resources would occur within the surveyed portion.

No-Build Alternative

Under the No-Build Alternative, no impacts to significant or potentially NRHP/SAL-eligible archeological resources would occur. Thus, no coordination would be required with the SHPO.

5.8.2 Historic Properties

According to TxDOT's Geographic Information System (GIS) data entitled “Historic Resources of Texas Aggregator,” no previously identified historic districts, bridges, or historic properties are in the Area of Potential Effect (APE) (TxDOT 2022c).

Project architectural historians conducted a reconnaissance survey of the APE, which was defined as 150 feet from proposed new ROW and easements in areas along existing ROW, and 300’ from proposed new ROW and easements in areas not along existing ROW. This APE is in accordance with the *Programmatic Agreement Among the Federal Highway Administration, the Texas Department of Transportation, the Texas State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding the Implementation of Transportation Undertakings*. Historians documented all resources constructed in 1980 or earlier (45 years before the proposed construction-letting date of 2025).

In all, 55 historic-age resources on 25 parcels were documented. (**Figure 3** in **Appendix E**). The report does not recommend any districts or properties eligible for listing in the National Register of Historic Places (NRHP) as a result of the survey and the project poses no effect to historic properties.

No-Build Alternative

Under the No-Build Alternative, no effects to historic resources would occur, and no coordination with THC would be required.

5.9 Protected Lands

Several parks and trails are located in or adjacent to residential subdivisions along the alignment. For example, Peach Tree Park is located near the intersection of FM 1385 and Brown Thrasher Boulevard and Magnolia Trail runs from East University Drive (US 380) to Fish Trap Road on the west side of FM 1385. Both of these facilities are owned, operated, and maintained by private homeowner associations; therefore, they are not subject to the requirements of Chapter 26 or Section 4(f).

5.9.1 Section 4(f)

There are no Section 4(f) properties present in the project area.

5.9.2 Section 6(f)

There are no Section 6(f) properties present in the project area.

5.9.3 Chapter 26 of the Texas Parks and Wildlife Code

There are no Chapter 26 properties present in the project area.

No-Build Alternative

Under the No-Build Alternative, there would be no impacts to properties protected by Section 4(f), Section 6(f), or Chapter 26.

5.10 Water Resources

5.10.1 Clean Water Act Section 404

This project would involve regulated activity in jurisdictional waters and therefore would require authorization under Section 404. Delineated water features are depicted in **Appendix E, Figure 6**. **Table 4** shows anticipated jurisdictional waters in which regulated activity is anticipated to take place. It also indicates whether the impacts are anticipated to be authorized under Section 404 by a non-reporting nationwide permit (NWP) (i.e., no pre-construction notification required), or if it is anticipated that a NWP with pre-construction notification, individual standard permit, letter of permission, or regional general permit will be required.

Table 4: Summary of Waterbody/Wetland Features

	Name of Water Feature	Type of Water Feature	Location of Water Feature	Covered by non-reporting NWP under Section 404?	NWP with pre-construction notification, individual standard permit, letter of permission, or regional general permit required under Section 404?
	Water 02 (unnamed tributary to Doe Branch)	Ephemeral stream	33.239902, -96.894971	Y	N
	Water 03 (unnamed tributary to Little Elm Creek)	Ephemeral stream	33.263547, -96.893549	N	Y

Name of Water Feature	Type of Water Feature	Location of Water Feature	Covered by non-reporting NWP under Section 404?	NWP with pre-construction notification, individual standard permit, letter of permission, or regional general permit required under Section 404?
Wetland 04	Palustrine emergent wetland	33.264744, -96.893718	N	Y
Water 04	Open water	33.265272, -96.893556	N	Y
Water 06 (unnamed tributary to Little Elm Creek)	Intermittent stream	33.275652, -96.892927	Y	N
Water 07 (unnamed tributary to Little Elm Creek)	Intermittent stream	33.277829, -96.892864	Y	N
Water 08 (unnamed tributary to Little Elm Creek)	Ephemeral stream	33.277694, -96.892631	Y	N
Water 09 (unnamed tributary to Little Elm Creek)	Ephemeral stream	33.280843, -96.892559	N	Y
Water 10 (unnamed tributary to Little Elm Creek)	Intermittent stream	33.281479, -96.892891	N	Y
Wetland 06	Palustrine emergent wetland	33.281749, -96.892363	N	Y
Wetland 07	Palustrine emergent wetland	33.283572, -96.892374	N	Y
Wetland 08	Palustrine forested wetland	33.284562, -96.892876	N	Y
Wetland 09	Palustrine emergent wetland	33.287639, -96.892625	N	Y
Wetland 10	Palustrine emergent wetland	33.288418, -96.892395	N	Y
Wetland 11	Palustrine emergent wetland	33.302393, -96.891299	N	Y
Wetland 12	Palustrine emergent wetland	33.302457, -96.891549	N	Y
Wetland 14	Palustrine forested wetland	33.314764, -96.898078	N	Y
Water 13	Ephemeral stream	33.314946, -96.898282	N	Y
Water 14 (unnamed tributary to Mustang Creek)	Ephemeral stream	33.316680, -96.901016	Y	N
Water 16 (unnamed tributary to Pecan Creek)	Ephemeral stream	33.335578, -96.902571	Y	N
Water 17 (unnamed tributary to Pecan Creek)	Ephemeral stream	33.340768, -96.902385	Y	N

	Name of Water Feature	Type of Water Feature	Location of Water Feature	Covered by non-reporting NWP under Section 404?	NWP with pre-construction notification, individual standard permit, letter of permission, or regional general permit required under Section 404?
	Water 18 (unnamed tributary to Pecan Creek)	Intermittent stream	33.342908, -96.902346	Y	N
	Water 19 (unnamed tributary to Pecan Creek)	Ephemeral stream	33.355082, -96.901897	Y	N

According to the Clean Water Act, coordination with the USACE would be required for this project. Unavoidable impacts on waters of the U.S. would require authorization from the USACE under Section 404 of the Clean Water Act. It is anticipated that impacts would be authorized via NWP 14 with a pre-construction notification. The need for an individual standard permit under Section 404 is not anticipated. If it is later determined that an individual standard permit under Section 404 is needed, compliance with EPA's Section 404(b)(1) Guidelines will be confirmed prior to submittal of the individual standard permit application.

Under the Build Alternative, impacts on waters of the U.S. would be minimized to the maximum extent practicable, and unavoidable impacts on waters of the U.S. would be authorized by the USACE.

No-Build Alternative

Under the No-Build Alternative, impacts on waters of the U.S. would not occur, and authorization by the USACE would not be needed.

5.10.2 Clean Water Act Section 401

For projects that require a NWP under Section 404 that is covered by TCEQ's blanket 401 water quality certification, regardless of whether the NWP is non-reporting, or requires the submission of a PCN, TxDOT complies with Section 401 of the Clean Water Act by implementing Texas Commission on Environmental Quality (TCEQ) conditions for NWPs. For projects that require authorization under a NWP under Section 404 that is not covered by TCEQ's blanket 401 water quality certification, or under an Individual Standard Permit, Letter of Permission, or Regional General Permit under Section 404, TxDOT will coordinate the Section 401 water quality certification with TCEQ. TCEQ will either approve or deny the Section 401 water quality certification or issue a waiver. The TCEQ Section 401 water quality certification decision must be submitted to the USACE before use of the NWP can be confirmed, or an Individual Standard Permit, Letter of Permission, or Regional General Permit decision can be made.

No-Build Alternative

Under the No-Build Alternative, no impacts to waters of the U.S. would occur. As a result, no 401 Certification would be required.

5.10.3 EO 11990 Wetlands

This project is federally funded and, therefore, is subject to EO 11990, Protection of Wetlands, and would involve construction in nine wetlands (see **Table 4**). Because several wetlands are located directly adjacent to the existing FM 1385 roadway within existing and proposed ROW, and grading and widening would be necessary to meet the purpose and need of the project, there is no practicable alternative to construction that includes placement of fill material in wetlands. The project would include all practicable measures to minimize harm to wetlands, including reducing work within wetlands to the minimum footprint necessary to safely complete the proposed project, and using sediment and erosion control BMPs.

Under the Build Alternative, there is no practicable alternative to construction in wetlands, but the project would include practicable measures to minimize harm to wetlands.

No-Build Alternative

Under the No-Build Alternative, construction impacts on wetlands would not occur, practicable alternatives to construction in wetlands would not need to be evaluated, and practicable measures to minimize harm to wetlands would not be needed.

5.10.4 Rivers and Harbors Act

Section 9 of the Rivers and Harbors Act (RHA) outlines the requirements for approval to construct dams, dikes, bridges, or causeways in or over a navigable waterway, and Section 10 of this act outlines the requirements for approval to construct smaller structures in these waterways. The proposed Build Alternative would not involve a regulated activity in a navigable waterway. Therefore, the project would not require a permit, bridge lighting authorization, or exemption from the United States Coast Guard under Section 9 or the USACE under Section 10 of the Rivers and Harbors Act.

No-Build Alternative

Under the No-Build Alternative, impacts to navigable waterways from the proposed construction activities associated with the Build Alternative would not occur, and therefore compliance with Sections 9 and 10 of the Rivers and Harbors Act and the General Bridge Act of 1946 would not be required.

5.10.5 Clean Water Act Section 303(d)

The project area is located within the Elm Fork Trinity River basin (HUC8: 12030103). The proposed Build Alternative is not located within five linear miles (not stream miles) of, is not located within the watershed of, and does not drain to an impaired assessment unit under Section 303(d) of the federal Clean Water Act.

No-Build Alternative

Under the No-Build Alternative, impacts to impaired waters from the proposed construction activities associated with the Build Alternative would not occur, and therefore compliance with Section 303(d) would not be required.

5.10.6 Clean Water Act Section 402

Since TPDES CGP authorization and compliance (and the associated documentation) occur outside of the environmental clearance process, compliance is ensured by the policies and procedures that govern the design and construction phases of the project. The Project Development Process Manual and the Plans, Specifications, and Estimates (PS&E) Preparation Manual require a storm water pollution prevention plan (SWP3) be included in the plans of all projects that disturb one or more acres. The Construction Contract Administration Manual requires that the appropriate CGP authorization documents (notice of intent (NOI) or site notice) be completed, posted, and submitted, when required by the CGP, to the TCEQ and the municipal separate storm sewer system (MS4) operator. It also requires that projects be inspected to ensure compliance with the CGP.

The PS&E Preparation Manual requires that all projects include Standard Specification Item 506 (Temporary Erosion, Sedimentation, and Environmental Controls), and the "Required Specification Checklists" require the current version of Special Provision 506 on all projects that need authorization under the CGP. These documents require the project contractor to comply with the CGP and SWP3, and to complete the appropriate authorization documents.

Under the Build Alternative, there would be earth disturbance and compliance with the TPDES CGP would be required.

No-Build Alternative

Under the No-Build Alternative, there would be no earth disturbance and compliance with the TPDES CGP would not be required.

5.10.7 Floodplains

The project area is located within the Trinity River basin. It lies within the Flood Insurance Rate Map (FIRM) Panels 48121C0410G, 48121C0270G, and 28121C0260G, and intersects the mapped 100-year Federal Emergency Management Agency (FEMA) floodplains and floodways associated with Doe Branch, Little Elm Creek, and Mustang Creek (**Figure 5** in **Appendix E**) (FEMA 2011). This project is subject to and would comply with federal EO 11988 on Floodplain Management. The department implements this EO on a programmatic basis through its Hydraulic Design Manual. Design of this project would be conducted in accordance with the department's Hydraulic Design Manual. Adherence to the TxDOT Hydraulic Design Manual ensures that this project does not result in a "significant encroachment" as defined by FHWA's rules implementing EO 11988 at 23CFR 650.105(q). Therefore, the proposed project is not anticipated to result in significant encroachment in the floodplain.

No-Build Alternative

Under the No-Build Alternative, no impacts to floodplains would occur.

5.10.8 Wild and Scenic Rivers

This project would not involve work within a segment of any river designated as a Wild and Scenic River, and it would not harm the free-flowing condition, water quality, or outstanding resource values of any designated Wild and Scenic Rivers. Therefore, the Wild and Scenic Rivers Act does not apply.

5.10.9 Coastal Barrier Resources

The Coastal Barrier Resources Act of 1982 (CBRA) does not apply.

5.10.10 Coastal Zone Management

The project is not located within the Texas Coastal Management Plan (TCMP) boundary. Therefore, a consistency determination is not required.

5.10.11 Edwards Aquifer

The TCEQ Edwards Aquifer Rules do not apply.

5.10.12 International Boundary and Water Commission

This project does not cross or encroach upon the floodway of the U.S. International Boundary Water Commission (USIBWC) ROW or an USIBWC flood control project.

5.10.13 Drinking Water Systems

The project area is located primarily over the Trinity Aquifer. A review of the Texas Water Development Board (TWDB) Water Data Interactive Viewer indicated that five water supply wells occur within one-quarter mile of the project area, one of which is mapped within 20 feet of the proposed ROW (TWDB 2022). In accordance with TxDOT's Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges (Item 103, Disposal of Wells), any drinking water wells would need to be properly removed and plugged during construction of the project.

No-Build Alternative

The No-Build Alternative would have no impacts to drinking water systems.

5.11 Biological Resources

5.11.1 Impacts to Vegetation

The project area is located within the Texas Blackland Prairie ecoregion of Texas, as mapped by the Ecological Mapping Systems of Texas (EMST) (TPWD et al. 2009-2014). The EMST identified several vegetation types within the project area; vegetation in the project area was field verified by qualified biologists in April 2022. Five general categories of vegetation were observed within the project area during field investigations (**Table 5**).

The proposed project area is composed of the following habitat types: Agriculture, Disturbed Prairie, Riparian, Tallgrass Prairie and Grassland, and Urban (**Table 5** and **Figure 6** in **Appendix E**) (TPWD et

al. 2009-2014). These habitat types are not considered rare or important remnant vegetation as mapped by the Texas Conservation Action Plan. The project area was investigated for the presence of unusual vegetation features as identified by the 2013 TxDOT–TPWD MOU. Unusual vegetation features identified within the project area include unmaintained vegetation, riparian vegetation, and fenceline vegetation. No remnant vegetation occurs in the project area. For more information, see the *Species Analysis Spreadsheet and Supplemental Attachments* (TxDOT 2022e) available in TxDOT's project files and located in TxDOT's Environmental Compliance Oversight System (ECOS).

Table 5: Observed Vegetation within the FM 1385 Project Area

MOU Habitat Type	Acres of Vegetation
Agriculture	27.0
Disturbed Prairie	1.8
Riparian	17.1
Tallgrass Prairie, Grassland	72.8
Urban	98.9

Impacts to vegetation would be restricted to the existing and proposed ROW and would be avoided/minimized by limiting disturbance to areas necessary to construct the project. The removal of native vegetation and woody vegetation would be avoided as much as practicable. Revegetation of disturbed areas would use TxDOT-approved seed mixes containing native species.

No-Build Alternative

Under the No-Build alternative, the existing vegetation would remain as it is presently, except for those areas where a landowner could decide to either harvest or clear the land for other uses. The No-Build Alternative would not require any conversion of vegetation to a transportation facility, nor would it impact unusual vegetation or special habitat features.

5.11.2 EO 13112 on Invasive Species

This project is subject to and will comply with federal EO 13112 on Invasive Species. The department implements this EO on a programmatic basis through its *Roadside Vegetation Management Manual* and *Landscape and Aesthetics Design Manual*.

No-Build Alternative

The No-Build Alternative would not be subject to EO 13112 on Invasive Species.

5.11.3 Executive Memorandum on Environmentally and Economically Beneficial Landscaping

This project is subject to and will comply with the federal Executive Memorandum on Environmentally and Economically Beneficial Landscaping, effective April 26, 1994. The department implements this

Executive Memorandum on a programmatic basis through its *Roadside Vegetation Management Manual* and *Landscape and Aesthetics Design Manual*.

No-Build Alternative

The No-Build Alternative would not be subject to the Executive Memorandum on Environmentally and Economically Beneficial Landscaping.

5.11.4 Wildlife

The vegetation of the Texas Blackland Prairies ecoregion provides habitat for a wide range of wildlife species that are common to this environment. It is anticipated that some wildlife species could occur within undeveloped portions of the existing and proposed ROW and adjacent land. Required clearing or other construction-related activities may directly or indirectly affect animals that reside on or adjacent to the project area ROW. Heavy machinery could kill small, low-mobility animals or could cause soil compaction, impacting animals that live underground. Larger, more-mobile species will typically avoid construction activities and move into adjacent areas. While substantial impacts to wildlife are not anticipated, construction of the roadway improvements could increase habitat fragmentation.

For information on threatened, endangered, and candidate species, see **Section 5.11.10**.

No-Build Alternative

Under the No-Build Alternative, no impacts to wildlife species or their habitats would occur.

5.11.5 Migratory Bird Treaty Act (MBTA)

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

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

Additional pre-emptive and preventative measures that may be applied, where appropriate and practicable, are described in TxDOT's Guidance – Avoiding Migratory Birds and Handling Potential Violations.

No-Build Alternative

The No-Build Alternative would not require any removal or disturbance of migratory birds, their nests, or their young, and there would be no impacts to migratory birds.

5.11.6 Fish and Wildlife Coordination Act

The project is anticipated to require a nationwide permit issued by the USACE. Compliance with the Fish and Wildlife Coordination Act will be accomplished by complying with the terms and conditions of the nationwide permit.

No-Build Alternative

The No-Build Alternative would not be required to comply with the Fish and Wildlife Coordination Act.

5.11.7 Bald and Golden Eagle Protection Act

This project is not within 660 feet of an active or inactive Bald Eagle (*Haliaeetus leucocephalus*) or Golden Eagle (*Aquila chrysaetos*) nest. Therefore, no coordination with U.S. Fish and Wildlife Service (USFWS) is required.

5.11.8 Magnuson-Stevens Fishery Conservation Management Act

The Essential Fish Habitat (EFH)/Magnuson-Stevens Fishery Conservation and Management Act (MSA) does not apply.

5.11.9 Marine Mammal Protection Act

The project area does not contain suitable habitat for marine mammals.

5.11.10 Threatened, Endangered, Rare, and Candidate Species

USFWS Official Species List and TPWD lists of endangered and threatened species were used for this analysis (USFWS 2023, TPWD 2023). A *Species Analysis Spreadsheet* was completed to document potential impacts to threatened and endangered species within the project area (TxDOT 2022e). One federal candidate species, the monarch butterfly (*Danaus plexippus*), was determined to have suitable habitat within the project area. Effects to the monarch butterfly could occur if caterpillar host plants (e.g., milkweeds) or foraging habitat is impacted during construction. This project is not anticipated to be completed prior to the species being listed; however, consultation is not required for candidate species. The USFWS intends to propose listing the monarch in Fiscal Year 2024. If the monarch butterfly is proposed for listing during the life of this project, effects to monarch butterflies will be reevaluated to determine the appropriate course of action, which may include conference or consultation with USFWS. Suitable habitat is present for the proposed threatened alligator snapping turtle (*Macrochelys temminckii*) and proposed endangered Texas heelsplitter (*Potamilus amphichaenus*), and may be present for the proposed endangered tricolored bat (*Perimyotis subflavus*). Consultation with USFWS is not required for proposed species; if the species is listed during the life of the project, effects to these species will be reevaluated. The project is not likely to jeopardize the continued existence of any proposed species and the project does not occur in proposed critical habitat; therefore, the requirement to confer under section 7(a)(4) and 50 CFR 402.10 does not apply. If proposed species are listed prior to construction of the project, the need to consult with USFWS under section 7(a)(2) will need to be determined. TxDOT will conduct

presence/absence freshwater mussel surveys at perennial stream crossings (Little Elm Creek and Mustang Creek) prior to construction.

No habitat was identified in the project area for any of the other federally listed or candidate species. Refer to the *Species Analysis Spreadsheet* (TxDOT 2022e) for additional information.

The project is located within the range of and contains suitable habitat for four state-listed threatened or endangered species, and 26 species of greatest conservation need (SGCNs), as listed below; therefore, the project could potentially impact these species. Refer to the *Species Analysis Spreadsheet* (TxDOT 2022e) for additional information.

State-Listed Species: white-faced Ibis (*Plegadis chihi*), Louisiana pigtoe (*Pleurobema riddellii*), sandbank pocketbook (*Lampsilis satura*), and Texas heelsplitter (*Potamilus amphichaenus*).

SGCNs: Strecker's chorus frog (*Pseudacris streckeri*), Woodhouse's toad (*Anaxyrus woodhousii*), Chestnut-collared Longspur (*Calcarius ornatus*), Franklin's Gull (*Leucophaeus pipixcan*), Mountain Plover (*Charadrius montanus*), Western Burrowing Owl (*Athene cunicularia hypugaea*), big brown bat (*Eptesicus fuscus*), big free-tailed bat (*Nyctinomops macrotis*), black-tailed prairie dog (*Cynomys ludovicianus*), eastern red bat (*Lasiurus borealis*), eastern spotted skunk (*Spilogale putorius*), hoary bat (*Lasiurus cinereus*), long-tailed weasel (*Mustela frenata*), muskrat (*Ondatra zibethicus*), tricolored bat (*Perimyotis subflavus*), western hog-nosed skunk (*Conepatus leuconotus*), eastern box turtle (*Terrapene carolina*), prairie skink (*Plestiodon septentrionalis*), slender glass lizard (*Ophisaurus attenuatus*), smooth softshell (*Apalone mutica*), Texas garter snake (*Thamnophis sirtalis annectens*), timber rattlesnake (*Crotalus horridus*), western box turtle (*Terrapene ornata*), western chicken turtle (*Deirochelys reticularia miaria*), western rattlesnake (*Crotalus viridis*), and Sutherland hawthorn (*Crataegus viridis var. glabriuscula*) (TxDOT 2022e).

Although the proposed project may result in the removal of potentially suitable habitat or the temporary disturbance of individuals of these species, the project is not anticipated to cause a substantial impact to any state-listed species or SGCNs. Any impacts to individuals would be incidental in nature. BMPs would be in place to avoid or minimize harm to individuals potentially occurring within the project area (**Appendix G**). Coordination with TPWD was initiated on February 3, 2023 and is ongoing.

No-Build Alternative

Under the No-Build Alternative, no impacts to SGCNs or state-listed species or effects to federally listed species or their habitats would occur, and no coordination would be required with USFWS or TPWD.

5.12 Air Quality

An *Air Quality Technical Report* was completed for the proposed project in accordance with TxDOT's *Environmental Handbook—Air Quality* and *Guidance for Preparing Air Quality Statements* (TxDOT 2021b, 2020b, 2022f).

5.12.1 Conformity

This project is located within an area that has been designated by the Environmental Protection Agency (EPA) as a severe and moderate nonattainment area for the 2008 and 2015 ozone national ambient air quality standards (NAAQS), respectively; therefore, transportation conformity rules apply. Conformity for older standards is satisfied by conformity to the more stringent 2008 and 2015 ozone NAAQS, as applicable.

The proposed action is consistent with North Central Texas Council of Governments' (NCTCOG) financially constrained Mobility 2045 MTP – 2022 Update and the 2023-2026 STIP, as amended. The STIP was initially found to conform to the Texas Commission on Environmental Quality (TCEQ) State Implementation Plan (SIP) by the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) on November 18, 2022. The 2045 MTP (2022 Update) was initially found to conform to the SIP by FHWA and FTA on December 15, 2022. All projects in the NCTCOG STIP that are proposed for federal or state funds were initiated in a manner consistent with federal guidelines in Section 450, of Title 23 Code of Federal Regulations (CFR) and Section 613.200, Subpart B, of Title 49 CFR.

5.12.2 Hot-Spot Analysis

The proposed project is not located within a carbon monoxide (CO) or particulate matter (PM) nonattainment or maintenance area; therefore, a project level hot-spot analysis is not required.

5.12.3 Carbon Monoxide Traffic Air Quality Analysis (TAQA)

Traffic data for the base year 2025 and design year 2049 is shown in **Table 6**. A prior TxDOT modeling study and previous analyses of similar projects demonstrated that it is unlikely that the CO standard would ever be exceeded as a result of any project with an average annual daily traffic (AADT) below 140,000 vehicles per day (vpd). The AADT projections for the project do not exceed 140,000 vpd; therefore, a Traffic Air Quality Analysis is not required.

Table 6: Traffic Data

TPP Traffic Section	Base year AADT (vpd)	Design Year AADT (vpd)
FM 1385 Section 1: From US 380 to FM 428	18,675	31,963
FM 1385 Section 2: From FM 428 to FM 455	3,225	5,520

5.12.4 Qualitative Mobile Source Air Toxics (MSAT) Analysis

A qualitative mobile source air toxics (MSAT) assessment has been conducted relative to the Build and No-Build Alternative. As documented in the technical report, all project alternatives may result in increased exposure to MSAT emissions in certain locations although the concentrations and duration of exposure are uncertain. Because of this uncertainty, the health effects from these emissions cannot be estimated. However, on a regional basis, EPA's vehicle and fuel regulations, coupled with

fleet turnover, will over time cause substantial reductions that, in almost all cases, will cause region wide MSAT levels to be significantly lower than today.

5.12.5 Congestion Management Process (CMP)

The proposed project is adding single-occupant vehicle capacity and is a project with FHWA/FTA involvement; therefore, a Congestion Management Process (CMP) analysis is required. The proposed project is within the Dallas-Fort Worth Transportation Management Area (TMA).

A CMP analysis was prepared in accordance with TxDOT's Standards Operating Procedure for Complying with CMP Requirements and Standard Operating Procedures for Preparing Air Quality Statements. Committed congestion reduction strategies and operational improvements within the study boundary will consist of addition of lanes, dedicated turn lanes, sidewalks, and intersection improvements. Individual projects are listed in Table 7.

Table 7: Congestion Mitigation Strategies

Operational Improvements in Travel Corridor		
Location	Type	Implementation Date
US 380 from US 377 to west of CR 26	Sidewalk improvements and the addition of new lanes	2021

5.12.6 Construction-Related Emissions

During the construction phase of this project, temporary increases in PM and MSAT emissions may occur from construction activities. The primary construction-related emissions of PM are fugitive dust from site preparation, and the primary construction-related emissions of MSAT are diesel PM from diesel powered construction equipment and vehicles.

The potential impacts of PM emissions would be minimized by using fugitive dust control measures contained in standard specifications, as appropriate. The Texas Emissions Reduction Plan (TERP) provides financial incentives to reduce emissions from vehicles and equipment. TxDOT encourages construction contractors to use this and other local and federal incentive programs to the fullest extent possible to minimize diesel emissions. Information about the TERP program can be found at: https://www.tceq.texas.gov/airquality/terp.

However, considering the temporary and transient nature of construction-related emissions, the use of fugitive dust control measures, the encouragement of the use of TERP, and compliance with applicable regulatory requirements, it is not anticipated that emissions from construction of this project would have any significant impact on air quality in the area.

No-Build Alternative

The No-Build Alternative would result in gradually increasing vehicle miles traveled as traffic volumes increase and traffic congestion worsens within the existing roadway system over time. Actual and predicted trends in both criteria pollutant and MSAT emissions would be expected to continue in the future, regardless of the alternative chosen.

5.13 Hazardous Materials

In May 2022, a Hazardous Materials Initial Site Assessment (ISA) was completed to summarize potential hazardous materials within and adjacent to the project corridor (TxDOT 2022g). The ISA included a site reconnaissance and environmental regulatory database search for the project area. The ISA was completed to identify sites or facilities that might pose a potential for hazardous materials impacts to the proposed project.

Based on an evaluation of the sites identified in the environmental regulatory database search and site reconnaissance, six sites or features were determined to be a low risk to the project. No moderate or high-risk sites were identified. The low environmental risk sites are shown on the **Project Resource Map** in **Appendix E**. Below is a summary of the low-risk sites:

1. TBK Materials (Map ID 4), listed at 1385 Ranchette Road, is situated adjacent east of the project. The Denton County Appraisal District (CAD) listed address for this site is 5006 FM 1385 in Celina. This facility is identified as a mulch yard, composting, recycling and natural stone sales facility. A Notice of Intent (NOI) to operate was submitted to TCEQ in 2016. The facility has no violations. ROW acquisition is proposed from this property. Based on the type of facility and no reported violations, this site is considered a low environmental risk to the project.
2. Circle K Store (Map ID 20), located at 27575 US Hwy 380 in Aubrey, is situated at the northwest corner of US 380 and FM 1385 adjacent west of the project. The facility is an active gas station that uses one 20,174-gallon gasoline, one 20,171-gallon split gasoline/diesel, and one 10,086-gallon ethanol underground petroleum storage tanks (PSTs), which were installed in 2010. No releases are reported for the facility. A minor amount of ROW is proposed from this site along FM 1385. The tank hold is situated approximately 215 feet west of proposed ROW. Based on no reported releases and the location of the tank hold in relation to the project, this site is considered a low environmental risk to the project.
3. Holt Cat Little Elm (Map ID 23), located at 27600 E Hwy 380 in Little Elm, is situated adjacent southeast of the beginning project limits. This is a large equipment rentals and maintenance facility with the nearest facility building approximately 380 feet southeast of project improvements. The facility uses one 5,000-gallon diesel aboveground petroleum storage tank (AST). A review of the current Google Maps satellite image shows an AST at the southeast boundary area of the facility property, approximately 860 feet from project improvements. No releases from the AST are reported. A spill is reported for this property.

The incident occurred in 2014 in which 900 gallons of motor oil was spilled due to a puncture in a pipe. This incident most likely occurred outside of or within one of the maintenance buildings onsite. Based on the distance of the facility buildings and AST from project improvements, this site is considered a low environmental risk to the project.

4. Ethridge Grocery (on Unplottable list) is listed as being on Mustang Road in Pilot Point. Based on a review of the dates of the PST as compared to historic aerials and deed ownership information found on Denton CAD online, this site is determined to have been located at the present address of 13306 Mustang Road in Pilot Point. This property is currently owned by and part of the Mustang Baptist Church. This location is adjacent south of project improvement on Mustang Road. The former business, Ethridge Grocery, used a 560-gallon gasoline underground PST registered in 1987 which was removed in 1992. No releases are reported for the site. No ROW is proposed from the site and work activity consists of shifting Mustang Road northward slightly and driveway improvement for the site. Based on no reported releases, current use of the site, and proposed work adjacent to this site, this location is considered a low environmental risk to the project.
5. Two natural gas transfer/compressor stations are situated adjacent to or within the project ROW. One is a smaller station at approximately STA 175+00 on the west side of FM 1385. ROW acquisition is proposed at this location but the transfer/compressor components will not be displaced. The second location is at approximately STA 310+00 to 311+25 on the east side of FM 1385, south of Ranchette Road. ROW acquisition is proposed at this location and the transfer/compressor components are a proposed displacement. Based on the contents of the transfer/compressor stations, these features are not considered environmental concerns to the project.
6. A drainage pipe of unknown connection was observed at the northeast corner of FM 1385 and FM 428. The only other feature in this area is a water main station of which the drainage pipe appears to be coming from its direction. Rust-colored water was observed to be coming from the pipe and a pool of water with an oily sheen was located at the discharge point of the pipe. The water main is not within proposed ROW but the drainage pipe is within existing ROW of FM 428. Work activity adjacent to the pipe location is regrading and resurfacing FM 428 within existing ROW. Although discolored water and an oily water sheen were observed in association with this pipe, based on the type of work activity adjacent to the pipe, this feature is considered a low environmental risk to the project.

The proposed project would also include the demolition of buildings and/or bridge structures. Asbestos-containing materials (ACM) and lead-containing paint (LCP) may be present in the structures. Asbestos and LCP inspections, notification, and removal, as applicable, would be addressed prior to demolition in accordance with regulatory requirements. Detailed information about the hazardous materials evaluation conducted for the project can be found in the *Hazardous Materials ISA* available for review at the TxDOT Dallas District office.

No-Build Alternative

Under the No-Build Alternative, as construction of the proposed FM 1385 improvements would not occur, there would be no project-related hazardous material impacts.

5.14 Traffic Noise

A traffic noise analysis was prepared in accordance with TxDOT's (FHWA-approved) *Traffic Noise Policy* (TxDOT 2019a, 2022h).

Existing and predicted traffic noise levels were modeled at representative land use activity areas (receptors) adjacent to the project that might be impacted by traffic noise and would potentially benefit from feasible and reasonable noise abatement. As shown in **Table 8**, modeled noise-sensitive locations were primarily residential, but also included a daycare and churches.

Table 8: Traffic Noise Levels dB(A) Leq

Receiver	NAC Category	NAC Level	Existing 2028	Predicted 2048	Change (+/-)	Noise Impact
R1 – Daycare	C	67	64	66	+2	Y
R2 – Residential	B	67	63	66	+3	Y
*R3 – Residential	B	67	62	65	+3	N
R4 – Residential	B	67	63	66	+3	Y
R5 – Residential	B	67	60	64	+4	N
R6 – Residential	B	67	61	65	+4	N
R7 – Residential	B	67	62	70	+8	Y
R8 – Residential	B	67	62	59	-3	N
R9 – Residential	B	67	66	70	+4	Y
R10 – Residential	B	67	57	61	+4	N
R11 – Residential	B	67	66	69	+3	Y
R12 – Residential	B	67	55	59	+4	N
R13 – Residential	B	67	66	70	+4	Y

Receiver	NAC Category	NAC Level	Existing 2028	Predicted 2048	Change (+/-)	Noise Impact
R14 – Residential	B	67	68	73	+5	Y
R15 – Residential	B	67	69	75	+6	Y
R16 – Residential	B	67	60	62	+2	N
R17 – Residential	B	67	55	59	+4	N
R18 – Residential	B	67	55	58	+3	N
R19 – Residential	B	67	58	61	+3	N
R20 – Residential	B	67	66	67	+1	Y
R21 – Residential	B	67	60	62	+2	N
R22 – Residential	B	67	62	63	+1	N
R23 – Residential	B	67	60	61	+1	N
R24 – Residential	B	67	58	61	+3	N
R25 – Residential	B	67	65	67	+2	Y
R26 – Residential	B	67	48	52	+4	N
R27 – Residential	B	67	50	54	+4	N
R28 – Residential	B	67	56	59	+3	N
R29 – Residential	B	67	58	61	+3	N
R30 – Residential	B	67	56	59	+3	N
R31 – Residential	B	67	53	56	+3	N
R32 – Residential	B	67	57	59	+2	N
R33 – Residential	B	67	61	63	+2	N

Receiver	NAC Category	NAC Level	Existing 2028	Predicted 2048	Change (+/-)	Noise Impact
R34 – Residential	B	67	62	64	+2	N
R35 – Church	C	67	62	56	-6	N
R36 – Residential	B	67	57	51	-6	N
R37 – Residential	B	67	55	49	-6	N
R38 – Church	C	67	59	53	-6	N
R39 – Residential	B	67	61	55	-6	N
R40 – Residential	B	67	60	54	-6	N
R41 – RV Park	B	67	54	57	+3	N
R42 – Residential	B	67	62	63	+1	N
R43 – Residential	B	67	57	58	+1	N
R44 – Residential	B	67	54	55	+1	N
R45 – Residential	B	67	55	55	0	N
R46 – Residential	B	67	53	54	+1	N
R47 – Residential	B	67	54	55	+1	N
R48 – Residential	B	67	55	58	+3	N
R49 – Residential	B	67	48	50	+2	N
R50 – Residential	B	67	52	55	+3	N
R51 – Residential	B	67	48	50	+2	N
R52 – Residential	B	67	54	57	+3	N
R53 – Residential	B	67	53	56	+3	N

Receiver	NAC Category	NAC Level	Existing 2028	Predicted 2048	Change (+/-)	Noise Impact
R54 – Residential	B	67	45	48	+3	N
R55 – Residential	B	67	48	50	+2	N
R56 – Residential	B	67	50	52	+2	N
R57 – Residential	B	67	47	49	+2	N
R58 – Residential	B	67	45	47	+2	N
R59 – Residential	B	67	46	47	+1	N
R60 – Residential	B	67	46	48	+2	N
R61 – Residential	B	67	50	51	+1	N
R62 – Residential	B	67	53	54	+1	N
R63 – Residential	B	67	58	58	0	N
R64 – Residential	B	67	51	52	+1	N
R65 – Residential	B	67	49	50	+1	N
R66 – Residential	B	67	49	50	+1	N
R67 – Residential	B	67	49	50	+1	N
R68 – Residential	B	67	47	49	+2	N
R69 – Residential	B	67	49	50	+1	N
R70 – Residential	B	67	53	53	0	N
R71 – Residential	B	67	59	57	-2	N

NAC – Noise Abatement Criteria
dB(A) – A-weighted decibel
Leq - Average/equivalent sound level
*Permitted development called Westside Apartments

The traffic noise analysis determined that out of 71 representative receptors, 11 were predicted to have noise levels that approach or exceed the FHWA noise abatement criteria or that substantially exceed the existing noise levels; therefore, the proposed project would result in traffic noise impacts (see **Figure 8** in **Appendix E**).

Noise abatement measures were considered and analyzed for each impacted receptor location. Before any abatement measure can be proposed for incorporation into the project, it must be both feasible and reasonable. In order to be "feasible" the abatement measure must benefit a minimum of two impacted receptors AND reduce the predicted noise level by at least five dB(A) at greater than 50% of first-row impacted receptors. In order to be "reasonable" the abatement measure must also reduce the predicted noise level by at least seven dB(A) for at least one benefited receptor (noise reduction design goal) and not exceed the standard barrier cost of 1,500 square feet per benefited receptor. In addition, an abatement measure may not be reasonable if the construction costs are unreasonably high due to site constraints, as determined through an alternate barrier cost assessment.

Four noise barriers were found to be both reasonable and feasible and are recommended for incorporation into the proposed project (see **Table 9**). Noise barriers were not reasonable and feasible for the remaining impacted representative receivers, and abatement is not proposed for those locations.

A noise barrier is proposed for the following locations (see **Appendix E**):

R2 – This receiver represents the Mezzo Apartments on the west side of FM 1385 just south of Magnolia Boulevard. Based on preliminary calculations, a segmented barrier 432 feet in total length and 14 feet in height would reduce noise levels by at least five dB(A) for 11 of the 15 impacted, first-row receivers and reduce the noise level at one or more receivers by at least seven dB(A). With a total area of abatement of 6,048 square feet or 550 square feet per benefited receptor, the barrier would also be cost reasonable. Therefore, a barrier at this location is proposed for incorporation into the project.

R4 – This receiver represents the Glenbrooke Neighborhood on the southeast corner of FM 1385 and Fishtrap Road. Based on preliminary calculations, a segmented barrier 2,627 feet in total length and 8 feet in height would reduce noise levels by at least five dB(A) for 10 of the 14 impacted, first-row receivers and reduce the noise level at one or more receivers by at least seven dB(A). With a total area of abatement of 21,016 square feet or 568 square feet per benefited receptor, the barrier would also be cost reasonable. Therefore, a barrier at this location is proposed for incorporation into the project.

R20 – This receiver represents the Arrowbrooke Neighborhood on the west side of FM 1385 just north of Arrowbrooke Avenue. Based on preliminary calculations, a segmented barrier 2,265 feet in total length and 8 feet in height would reduce noise levels by at least five dB(A) for 33 of the 38 impacted, first-row receivers and reduce the noise level at one or more receivers by at least seven

dB(A). With a total area of abatement of 18,120 square feet or 549 square feet per benefited receptor, the barrier would also be cost reasonable. Therefore, a barrier at this location is proposed for incorporation into the project.

R25 – This receiver represents the Sand Brock Ranch Neighborhood on the west side of FM 1385 just south of Aubrey Parkway. Based on preliminary calculations, a barrier 663 feet in length and 10 feet in height would reduce noise levels by at least five dB(A) for all 9 of the impacted, first-row receivers and reduce the noise level at one or more receivers by at least seven dB(A). With a total area of abatement of 6,630 square feet or 737 square feet per benefited receptor, the barrier would also be cost reasonable. Therefore, a barrier at this location is proposed for incorporation into the project.

Table 9: Noise Barrier Proposal (Preliminary)

Traffic Noise Barrier	Development	Representative Receiver(s)	Total # of Benefited Receivers	Height (feet)	Length (feet)	Total Square Feet	Square Feet per Benefited Receptor
Noise Wall 1	Mezzo Apartments	R2	11	14	432	6,048	550
Noise Wall 2	Glenbrooke Neighborhood	R4	37	8	2,627	21,016	568
Noise Wall 3	Arrowbrooke Neighborhood	R20	33	8	2,265	18,120	549
Noise Wall 4	Sand Brock Ranch Neighborhood	R25	9	10	663	6,630	737

Source: TxDOT 2022h

Any subsequent project design changes may require a reevaluation of this preliminary noise barrier proposal. The final decision to construct the proposed noise barriers will not be made until completion of the project design, utility evaluation, and polling of all benefited and adjacent property owners and residents.

To avoid noise impacts that may result from future development of properties adjacent to the proposed project, local officials responsible for land use control programs must ensure, to the maximum extent possible, that no new activities are planned or constructed along or within the following predicted (2045) noise impact contours (see **Table 10**).

Table 10: Land Use Contour for Undeveloped Land

Location	Land Use	Impact Contour*	Distance from Right of Way
East side of FM 1385 approx. 575 feet south of Parvin Road	NAC Category B & C	66 dB(A)	70 feet
	NAC Category E	71 dB(A)	15 feet
East side of FM 1385 approx. 0.61 mile south of Lights Ranch Road	NAC Category B & C	66 dB(A)	Inside ROW
	NAC Category E	71 dB(A)	Inside ROW

*Impact contours are one dB(A) lower than the NAC per category to reflect impacts that would occur as a result of approaching the NAC for the respective contours. The undeveloped areas identified above were based on aerial review and field verification conducted in November 2020. Permit research was conducted using the best available online data from Denton County and the City of Prosper as of April 2022.

A copy of this traffic noise analysis will be available to local officials to assist in future land use planning. On the date of approval of this document (Date of Public Knowledge), FHWA and TxDOT are no longer responsible for providing noise abatement for new development adjacent to the project.

No-Build Alternative

Under the No Build Alternative, the proposed project would not be constructed. If the No-Build Alternative were implemented, traffic noise levels would be expected to increase with an associated future increase in traffic volumes.

5.15 Induced Growth

An *Indirect Impacts Technical Report* (TxDOT 2022c) was prepared for the proposed project in accordance with TxDOT's *Indirect Impacts Analysis Guidance* (TxDOT 2019b).

This project area is rapidly developing, as evidenced by the Denton County Transportation Plan shown in **Appendix E, Figure 9**. Based on planning judgment and cartographic assessment, with some interview results, approximately 6,176.7 acres of land have indirect induced growth potential within the 20,644.9-acre Area of Influence (AOI). It is assumed that the provision of improved mobility and connectivity to local roads and the regional highway system would enhance development and redevelopment potential for the areas of induced growth illustrated in **Figure 10**.

Table 11 includes a description of resources present in the areas of induced growth within the AOI. Previous surveys have been conducted through some of the area of induced growth at the time of this report preparation for historic-age properties and archeological resources. Additionally,

preliminary consultation with TxDOT-developed HPALM indicates slight potential for archeological impacts within the area of induced growth.

Table 11: Resources Analyzed for Induced Growth Impacts

Resource	Could the resource be indirectly impacted by potential induced growth?	Could the potential indirect impacts to this resource be considered substantial?*
Waters of the U.S., including Wetlands	Potentially; the potential direct impacts of the project include nine wetlands and 20 crossings of waters of the U.S. A full assessment of wetlands and waters of the U.S. has not been completed in the AOI. However, if it was determined that the wetlands and waters were jurisdictional Waters of the U.S., then they would be protected by Section 404 of the Clean Water Act (CWA).	No. The U.S. Army Corps of Engineers (USACE) regulates the discharge of dredged and fill material into waters of the U.S., including wetlands, under Section 404 of the CWA.
Floodplains	No; while there are floodplains in the project area associated with Doe Branch, Little Elm Creek and Mustang Creek, development in the floodplain is typically prohibited or discouraged from a risk management perspective.	No. Future construction within the 100-year floodplain would be avoided or conducted in compliance with appropriate municipal permitting and general land use policies.
Federally Listed Threatened and Endangered Species	No. No suitable habitat is present for federally listed species within range of the project area. Additionally, the Texas Natural Diversity Database indicated that there was no occurrence for listed species in the areas of induced growth.	No; this project does not require consultation with or authorization from the USFWS under the Endangered Species Act.
Vegetation and Wildlife Habitat (Including Habitat for State-Listed Species)	Yes; the areas of induced growth are vegetated to varying degrees and provide wildlife habitat. General vegetation characteristics of the project area Agriculture, Disturbed Prairie, Riparian, Tallgrass Prairie and Grassland, and Urban. These habitat types are not considered rare or important remnant vegetation as mapped by the Texas Conservation action Plan. The project is within range with suitable habitat for 26 species of greatest conservation need (SGCN). No suitable habitat was identified for any state-threatened species.	No. The vegetation types provided do not represent particularly sensitive/rare vegetation or rare habitat types in a developed setting. Public and private development would be regulated by applicable municipal regulations. The Texas Parks and Wildlife Department maintain lists of potential occurrences for listed species in each Texas county. State regulations prohibit harm to individuals of state-listed species. All development, whether public or privately funded, is subject to State and Federal regulations.

Community Resources (includes businesses and residences)	Yes; property values could be influenced by future development. Additional tax revenue could be generated by potential induced development. Induced growth could result in additional denser commercial, retail, and residential developments along FM 1385 which could contribute to the suburbanizing character of the communities in the AOI.	No. Development is anticipated to be consistent with the land use plans and development requirements particular to various municipalities in the AOI. Development is also anticipated to be consistent with the guidance provided in the Denton County Transportation Plan.
Historic-Age Properties	No. A historic resources survey was conducted of historic-age buildings, structures, and resources 45 years old or older than the project letting date in the project's Area of Potential Effects (APE) in 2022. No historic properties were identified in the APE. Note that the APE is smaller than the AOI.	No. Section 106 of the National Historic Preservation Act requires federal agencies consider effects to historic properties. No historic properties were identified in the APE. The undertaking poses no effect to historic properties in the APE.
Archeological Resources	Potentially. The proposed project is highly unlikely to directly or indirectly impact any known or unknown NRHP- or SAL-eligible archeological resources. No further archeological work is recommended within the surveyed portions of the APE prior to construction. However, all areas of proposed ROW or easements that have not been subjected to archeological survey and should be subjected to archeological survey when right-of-entry comes available in the future. This work should include shovel testing or mechanical trenching of all areas of proposed ROW and easements within the higher probability HPALM zones. Such deposits are most likely to occur along the east bank of Mustang Creek where no access was allowed. Further coordination would be required with the THC with respect to this acreage once access becomes available.	Potentially, but unlikely. The Antiquities Code of Texas requires notification (to Texas Historical Commission) if public agencies sponsor ground-disturbing activity on public land. NRHP-listed or eligible archeological resources are protected by State and Federal regulations for publicly funded projects. However, these State and Federal regulations do not apply to privately funded projects.

Source: CMEC 2022.
Note – separate technical reports documenting the direct impacts of the proposed project have been or are being prepared for the resources listed in this table. Best available information was used at the time of this report preparation to assess the impacts associated with potential induced growth.
* substantial impacts are determined based on context, likelihood of occurrence, and the resource's ability to recover from the impact.

The overall consensus is that the proposed project would influence future land use within the AOI; however, such project-induced land use change is not only accounted for by local future planning documents and corresponding objectives, but is also considered positive for the future of Denton County in terms of increased mobility and overall community enhancement.

This step of the indirect impacts analysis assesses the consequences of the expected induced growth impacts and considers/develops strategies or mitigation measures available as part of the existing regulatory regimes that would apply to potential development projects. As shown in the various planning documents included in the Indirect Impacts Technical Report, the municipalities in and around the project area are planning for growth, particularly through residential subdivision development depicted on their future land use plans, development tracking maps, or transportation plans. The proposed improvements to FM 1385 have been anticipated for several years, not only in TxDOT's planning documents but also in the NCTCOG Mobility 2045 and the Denton County Transportation Plan. Safety improvements to FM 1385 likely respond to the rapid growth in the AOI as much as the improvements could contribute to accelerating the pace of development in the AOI.

The potential areas of indirect induced growth (approximately 6,176.7 acres) account for approximately 30 percent of the total AOI (20,644.9 acres).

Future land development activities would generally be private ventures regulated by relevant municipal plans and policies. Any development within the unincorporated portions of Denton County would be subject to few county-specific requirements other than subdivision planning and platting. However, several environmental regulations apply to all developments. The agencies and programs that would guide any development of a potential project would be similar to the typical mitigation and permitting measures required of TxDOT. As described in **Table 11**, for example, all development (public or private developers) must comply with flood control regulations under the FEMA and the local floodplain administration, the Endangered Species Act, the CWA, CWA Section 401 Water Quality Certification requirements, CWA Section 404 permits for projects impacting waters of the U.S., and other regulations requiring mitigation if there are effects on species habitat. Publicly funded projects would likely require compliance with Section 106 of the NRHP.

Ultimately, because the proposed project is not anticipated to conflict with development goals of the municipalities in the AOI or cause substantial negative indirect induced growth impacts, the consideration of mitigation for environmental impacts would be limited to mitigating only the direct impacts associated with this proposed project. Any mitigation for project-induced land development impacts that may arise after construction of the proposed project would be overseen by the applicable jurisdiction and would be the responsibility of the land developer. Mitigation for indirect induced growth impacts would not be required of the proposed project sponsors based on the analysis presented here.

No-Build Alternative

Under the No-Build Alternative, current development rates and patterns would remain constant, and no induced growth would occur.

5.16 Cumulative Impacts

The proposed project would not have substantial direct or indirect impacts on any resource, and there are no impacts of any kind to a resource in poor or declining health; therefore, a cumulative impacts analysis is not required, in accordance with TxDOT's *Cumulative Impacts Analysis Guidelines* (2019c).

No-Build Alternative

Under the No-Build Alternative, no cumulative impacts would be anticipated.

5.17 Construction Phase Impacts

Although temporary congestion may occur as a result of project construction, access to parcels in the project vicinity would be maintained during all phases of construction. All necessary steps would be taken to minimize the inconvenience to drivers using the intersecting roadways during the construction phase. People living and working in the immediate area of the proposed project may experience an increase in noise and dust due to the construction activities. Noise associated with the construction of the project is difficult to predict. Heavy machinery, the major source of noise in construction, is constantly moving in unpredictable patterns. However, construction normally occurs during daylight hours when occasional loud noises are more tolerable. None of the receptors are expected to be exposed to construction noise for a long duration; therefore, any extended disruption of normal activities is not expected. Provisions will be included in the plans and specifications that require the contractor to make every reasonable effort to minimize construction noise through abatement measures such as work -hour controls and proper maintenance of muffler systems.

Construction activities may result in the removal of potentially suitable habitat for or the temporary disturbance of state-listed species or SGCNs, though the project is not anticipated to cause a substantial impact to any species.

Temporary detours might also be required in the project area to assist with diverting traffic through surrounding areas while certain areas are under construction. During the construction phase of this project, temporary increases in PM and MSAT emissions may occur from construction activities. The primary construction-related emissions of PM are fugitive dust from site preparation, and the primary construction-related emissions of MSAT are diesel particulate matter from diesel powered construction equipment and vehicles. The potential impacts of PM emissions will be minimized by using fugitive dust control measures contained in standard specifications, as appropriate. Considering the temporary and transient nature of construction-related emissions, as well as the mitigation actions to be utilized including compliance with applicable regulatory requirements, it is not anticipated that emissions from construction of this project will have a significant impact on air quality in the area. Refer to **Section 5.12** for the discussion of construction-related air emissions.

No-Build Alternative

Under the No-Build Alternative, construction activities would not occur and temporary increases in traffic congestion, air pollution, and MSAT emissions would not occur.

5.18 Greenhouse Gas and Climate Change

TxDOT has prepared a *Statewide On-Road Greenhouse Gas Analysis and Climate Change Assessment* technical report (TxDOT 2021c). The report discloses: 1) an analysis of available data regarding statewide greenhouse gas (GHG) emissions for on-road GHG emissions[3], 2) TxDOT actions and funding that support reducing GHG emissions, 3) projected climate change effects for the state of Texas and 4) TxDOT's current strategies and plans for addressing the changing climate. A summary of key issues in this technical report is provided below. Please refer to the technical report for more details.

The earth has gone through many natural changes in climate over time. However, since the industrial revolution began in the 1700s, atmospheric concentration of greenhouse gas (GHG) emissions have continued to climb, primarily due to humans burning fossil fuel (e.g., coal, natural gas, gasoline, oil and/or diesel) to generate electricity, heat and cool buildings, and power industrial processes, vehicles, and equipment. According to the Intergovernmental Panel on Climate Change (IPCC), this increase in GHG emissions is projected to contribute to future changes in climate (Solomon et al. 2007, Stocker et al. 2013).

5.18.1 Statewide On-Road GHG

TxDOT prepared a GHG analysis for the statewide on-road transportation system and associated emissions generated by motor vehicle fuels processing called "fuel-cycle emissions." EPA's Motor Vehicle Emissions Simulator (MOVES) (2014 version) emissions model was used to estimate emissions. Texas on-road and fuel cycle GHG emissions are estimated to be 186 million metric tons (MMT) in 2050 and reach a minimum in 2032 at 161 MMT. Future on-road GHG emissions may be affected by changes that may alter where people live and work and how they use the transportation system, including but not limited to: 1) the results of federal policy including tailpipe and fuel controls, 2) market forces and economics, 3) individual choice decisions, 4) acts of nature (e.g. pandemic) or societal changes, and 5) other technological advancements. Such changes cannot be accurately predicted due to the inherent uncertainty in future projections related to demographics, social change, technology, and inability to accurately forecast where people work and live.[4]

5.18.2 Mitigation Measures

Strategies that reduce on-road GHG emissions fall under four major categories:

[3] Greenhouse gas (GHG) emissions consist of on-road tailpipe emissions and upstream fuel cycle emissions. Upstream fuel cycle emissions are the emissions generated by extracting, shipping, refining, and delivering fuels.

[4] Transportation Research Board Special Report 288 (2007) Metropolitan Travel Forecasting Current Practice and Future Direction.

- Federal engine and fuel controls under the Clean Air Act implemented jointly by EPA and U.S. Department of Transportation (USDOT), which includes CAFE standards;
- "Cash for clunker" programs which remove older, higher-emitting vehicles from roads;
- Traffic system management (TSM) which improves the operational characteristics of the transportation network (e.g., traffic light timing, pre-staged wrecker service to clear accidents faster, or traveler information systems); and
- Travel demand management (TDM) which provides reductions in vehicle miles travelled (VMT) (e.g., transit, rideshare, and bicycle and pedestrian facilities) and requires personal choice decisions.

TxDOT has implemented programmatic strategies that reduce GHG emissions including: 1) travel demand management projects and funding to reduce VMT, such as bicycle and pedestrian facilities, 2) traffic system management projects and funding to improve the operation of the transportation system, 3) participation in the national alternative fuels corridor program, 4) clean construction activities, 5) clean fleet activities, 6) Congestion Mitigation and Air Quality Improvement (CMAQ) funding, 7) transit funding, and 8) two statewide campaigns to reduce tailpipe emissions.

5.18.3 TxDOT and a Changing Climate

TxDOT has strategies that address a changing climate in accordance with TxDOT and FHWA design, asset management, maintenance, emergency response, and operational policies and guidance. The flexibility and elasticity in TxDOT transportation planning, design, emergency response, maintenance, asset management, and operation and maintenance of the transportation system are intended to consider any number of changing scenarios over time. Additional detail is in the Technical Report.

6.0 Agency Coordination

TxDOT initiated consultation under Section 106 of the National Historic Preservation Act; the PA among TxDOT, the SHPO, FHWA, and the ACHP; and the Antiquities Code of Texas MOU between THC and TxDOT on January 27, 2021 and received an approved permit response on April, 8 2022. An archeological survey was completed for the project in June 2022. The final report is under review by THC/SHPO and will be completed prior to issuance of a Final EA. TxDOT initiated project-specific consultation under Section 106 of the National Historic Preservation Act with federally recognized tribes on August 16, 2022. On September 26, 2022, the Delaware Nation responded that the project would have no effect on sites of cultural or religious significance to them. On September 27, 2022, the Comanche Nation responded that the project would have no effect on sites of cultural or religious significance to them. No other tribe has objected or otherwise responded. Coordination with THC and federally recognized tribes will resume once access to the remaining unsurveyed portions of the APE has been obtained and those studies have been completed.

Pursuant to Stipulation IX "Undertakings with Potential to Cause Effects per 36 CFR 800.16(i)" of the Section 106 PA and the MOU, should TxDOT historians determine that there are no adverse effects

to historic, non-archeological properties in the APE, individual project coordination with SHPO would not be required. Stantec does not recommend any districts or properties eligible for listing in the NRHP as a result of the survey and the project poses no effect to historic properties.

The proposed project may impact several state-listed species or SGCNs. Coordination with TPWD was initiated on February 3, 2023. In accordance with the MOU between the TxDOT and TPWD, TPWD has provided a set of recommended BMPs in a document titled, "Beneficial Management Practices – Avoiding, Minimizing, and Mitigating Impacts of Transportation Projects on State Natural Resources," which is available on TxDOT's Natural Resources Toolkit at https://www.txdot.gov/inside-txdot/division/environmental/compliance-toolkits/natural-resources.html. The MOU provides that application of specific BMPs to individual projects will be determined by TxDOT at its discretion. The TPWD-recommended BMPs that will be applied to this project are indicated in the Form – Documentation of Texas Parks and Wildlife Department Best Management Practices prepared for the project, which is included in **Appendix G**. Since there are no anticipated effects to any federally listed species, coordination with the USFWS would not be required; however, if proposed or candidate species are listed prior to construction of the project, TxDOT will need to determine the need to consult with USFWS under section 7(a)(2).

It is anticipated that any impacts to waters of the U.S. would be authorized through NWP 14 with a PCN. If coordination with the USACE is required based on final design, it would be completed prior to construction.

The proposed project includes work within a FEMA-designated 100-year floodplain; therefore, coordination with the local Floodplain Administrator would be required prior to construction. Coordination with TCEQ will be initiated at the completion of this draft EA.

7.0 Public Involvement

TxDOT engaged with the public and local stakeholders during the planning stage of the proposed project. To date, TxDOT has held two public meetings.

7.1 Public Meetings

The first public meeting was held virtually on Tuesday, Sept. 15, 2020, through Wednesday, Sept. 30, 2020. This public meeting did not include an in-person option due to state and federal guidance limiting public gatherings to help curtail transmission of the COVID-19 virus. The virtual public meeting included a pre-recorded video presentation explaining the proposed project, along with other exhibits, schematics, and materials available for review on the Keep It Moving Dallas website. The virtual public meeting notice was mailed to 42 elected/public officials and 425 abutting property owners. A display ad was published in English in the Denton-Record Chronicle and in Spanish in Al Día Dallas. In addition, notices were provided on www.keepitmovingdallas.com/FM1385 and www.txdot.gov keywords "FM 1385". During the virtual public meeting comment period, the meeting

webpage on Keep It Moving Dallas was viewed by 756 unique visitors online and the presentation video was viewed 212 times.

The comment period ended on Wednesday, Sept. 30, 2020, and, in total, 58 comments were submitted as a result of this meeting. Comments included concerns about construction impacts and traffic noise; suggestions about adding traffic lights and sidewalks/crosswalks at Gee Road/Fishtrap Road; potential displacements of homes/properties; and concerns about timeline of proposed project including the desire for the timeline to be accelerated. A public meeting summary report was prepared which included a comment and response matrix (TxDOT 2022j). The report may be inspected and copied upon request at the TxDOT Dallas District Office and is also located in TxDOT's Environmental Compliance Oversight System. In addition, the public meeting summary report is available for viewing at www.keepitmovingdallas.com/FM1385.

The following updates were made to the proposed project since the Sept. 2020, Virtual Public Meeting:

- Reduced ROW requirements at Gee Road/Fishtrap Road, Mustang Road, Friendship Road, Lights Ranch Road, Strittmatter Road, and FM 455.
- Revised ROW requirements at the FM 1385 and Crutchfield Road/Sandbrock Parkway to accommodate the recently built right-turn bay.
- Noise analysis completed. Sound barriers are proposed at various locations pending the outcome of noise workshops after the public hearing.

The second public meeting was held on Thursday, June 16, 2022, consisting of a virtual option available on the Keep It Moving Dallas website, as well as an in-person option held from 5:30 to 7:30 p.m. at Grace Chapel located at 14632 Fishtrap Rd, Aubrey, TX 76227. The virtual public meeting included a pre-recorded video presentation explaining the proposed project, along with other exhibits, schematics, and materials available for review on the Keep It Moving Dallas website. The public meeting notice was mailed to 73 elected/public officials and 424 abutting property owners. A display ad was published in English in the Denton-Record Chronicle and in Spanish in Al Día Dallas. In addition, notices were provided on www.keepitmovingdallas.com/FM1385 and www.txdot.gov keywords "FM 1385". The virtual meeting option was viewed by 695 unique visitors online and the in-person option was attended by 70 participants including 67 members of the public and three elected officials. The in-person option was held in an open house format with exhibit boards and schematics to present the proposed project. The same pre-recorded video presentation explaining the proposed project that was shown online was also displayed on a continuous loop at the in-person option at Grace Chapel.

The comment period ended on Friday, July 1, 2020, and, in total, 186 comments were submitted as a result of this meeting. Comments included participants wanting the timeline process accelerated; concerns about potential ROW acquisition or other impacts to private property; design questions and/or requests for nearby roads; and concerns on traffic noise and abatement. A public meeting summary report was prepared which included a comment and response matrix (TxDOT 2022j). The

report may be inspected and copied upon request at the TxDOT Dallas District Office and is also located in TxDOT's Environmental Compliance Oversight System. In addition, the public meeting summary report is available for viewing at www.keepitmovingdallas.com/FM1385.

7.2 Public Hearing

If the TxDOT Environmental Affairs Division approves the draft environmental assessment for circulation, the TxDOT Dallas District would schedule, advertise, and hold a public hearing per applicable regulations. The focus of the public hearing would be to present the draft environmental assessment and the recommended preferred alternative in order to encourage and solicit public comment. An open house session would be held prior to the formal presentation. This event, as well as all public comments received and associated responses, would be documented in the final environmental assessment.

If the proposed project is approved, a notice of impending construction would be provided to owners of adjoining property and affected local governments and public officials. The notice may be provided via a sign or signs posted in the ROW, mailed notice, printed notice distributed by hand, notice via website when the recipient has previously been informed of the relevant website address, or other means. This notice must be provided after the environmental decision (e.g., FONSI or recommendation to prepare an EIS), but before earthmoving or other activities requiring the use of heavy equipment begin.

8.0 Post-Environmental Clearance Activities and Design/Construction Commitments

All project-specific commitments and conditions of approval, including resource agency permitting compliance and monitoring requirements, would be incorporated in the project plan for the proposed project. These commitments and conditions of approval may vary depending on the project's final design and construction. Mitigation monitoring would be conducted by TxDOT and other federal, state, and local agencies to ensure compliance.

8.1 Post-Environmental Clearance Activities

The following is a list of unresolved environmental activities that TxDOT will be responsible for following issuance of a FONSI, obtaining environmental permits, or performing compensatory mitigation:

1. All high probability areas of proposed ROW or easements that were not subjected to archeological survey within the APE (approximately 18.1 acres) should be subjected to archeological survey when right-of-entry comes available in the future. This work should include shovel testing all areas of proposed ROW and easements, with mechanical trenching to be conducted in areas flanking drainages with the potential to contain intact and deeply buried archeological deposits

2. It is anticipated that the proposed project would impact jurisdictional waters. Additional field delineation should be performed in areas where right-of-entry was not obtained during the field surveys.

8.2 Design/Construction Commitments

All project-specific commitments and conditions of approval, including resource agency permitting, compliance, and monitoring requirements, would be incorporated into the project plan for the proposed project. These commitments and conditions of approval may vary depending on the project's final design and construction.

This section lists the elements that constitute the Environmental Permits, Issues, and Commitments (EPIC) sheet. The permits, impacts, and commitments relevant to the proposed project are as follows:

1. USACE NWP 14 (no pre-construction notification required)
2. TPDES includes:
    a. Construction General Permit
    b. SWP3
    c. Site Notice
    d. NOI
    e. Implementation of erosion control, sedimentation control, and post-construction Total Suspended Solids (TSS) control BMPs for the TCEQ's 401 Water Quality Certification Conditions for NWPs to prevent water quality impacts from occurring during and after construction.
3. As indicated above in **Section 6.0**, the TPWD-recommended BMPs that will be applied to this project are indicated in the Form – Documentation of Texas Parks and Wildlife Department Best Management Practices prepared for the project, which is included in **Appendix G**. If any species on the Denton County threatened and endangered species list is sighted in the project area during construction, construction would stop and the contractor would notify the TxDOT Area Engineer.
4. Freshwater mussel presence/absence surveys will be conducted in perennial stream crossings (Little Elm Creek and Mustang Creek) prior to construction.
5. Vegetation: Avoid and minimize disturbance of vegetation and soils. All disturbed areas would be revegetated according to TxDOT specifications as soon as it becomes practicable. In accordance with EO 13112 on Invasive Species, the Executive Memorandum on Beneficial Landscaping, and the 1999 FHWA guidance on invasive species, all revegetation would, to the extent practicable, use only native species. Furthermore, BMPs would be used to control and prevent the spread of invasive species.

6. MBTA compliance, including taking all appropriate actions to prevent the take of migratory birds, their active nests, eggs or young by the use of proper phasing of the project or other appropriate actions.
7. The traffic noise analysis and qualitative air quality analysis will be made available to local officials (timeframe: prior to construction).
8. If unanticipated archeological deposits are encountered during construction, work in the immediate area will cease and TxDOT archeological staff will be contacted to initiate post-review discovery procedures.
9. Implementation of dust control measures.
10. Any unanticipated hazardous materials and/or petroleum contamination encountered during construction would be handled according to applicable federal and state regulations per TxDOT Standard Specifications.

9.0 Conclusion

Implementation of the proposed project would not result in a significant impact on the human or natural environment. Therefore, a finding of no significant impact is recommended.

10.0 References

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11.0 Names and Qualifications of Persons Preparing the EA or Conducting an Independent Evaluation of the EA

TxDOT Dallas District

- Mohammed Shaikh, Environmental Program Manager, District Environmental Lead – 20 years
- Michael McIntire, Environmental Specialist, Project Manager – 4 years
- Kareem Doucette, P.E., Transportation Engineer, Project Manager – 21 years
- Adam Fouts, Environmental Specialist, District Water Resources Specialist – 11 years
- Christine Polito, Environmental Program Manager, NEPA Writer- 18 years
- Leslie Mirise, Environmental Specialist, District Biologist – 21 years
- Manuel Trevino, Environmental Specialist, District Traffic Noise Specialist – 16 years

TxDOT Environmental Affairs Division

- Doug Booher, Director of Environmental Affairs – 25 years
- Michelle Lueck, Project Delivery Manager – 22 years
- Ray Umscheid, Traffic Noise Specialist – 15 years
- Susan M. Shuffield, Environmental Specialist, Water Team Lead – 24 years
- Renee BennLee, Environmental Specialist – 17 years
- Scott Pletka, Archeology Program Manager – 19 years
- Spencer Ward, Community Impacts Specialist – 3 years
- Glendora Lopez, Air Quality Specialist – 2 years
- Stirling Robertson, Ph.D., Environmental Specialists, Biology Team Lead – 28 years
- Deborah Nixon, Environmental Specialist, Hazardous Materials Management – 20 years
- Nicolle Kord, Indirect and Cumulative Specialist – 15 years

Stantec

- Larry Cox, M.S., Project Manager, Stantec – 31 years of experience
- Meghan Lind, M.S., Project Manager & Senior Ecologist, Stantec – 12 years of experience
- Ellen Hall, M.S., Ecologist, Stantec – 5 years of experience
- Marissa Buschow, M.S., Ecologist, Stantec – 14 years of experience
- Brett Lang, Archeologist, Stantec – 15 years of experience
- Missi Green, M.A., Senior Archeologist, Stantec – 38 years of experience
- Emily Reed, M.S., Senior Historian, Stantec – 11 years of experience
- Amy E. Dase, M.A., Senior Historian, Stantec – 35 years of experience
- Marcus Huerta, M.S., Historian, Stantec – 5 years of experience
- Claire Parra, M.S., AWB, Ecologist, Stantec – 9 years of experience
- Ashley McLain, MSCRP, Senior Planner, Stantec – 25 years of experience
- Holly Bagot, Environmental Planner, Stantec – 6 years of experience

CP&Y

- John McGlone, GISP, M.S., Air Quality Specialist, CP&Y – 8 years of experience

- Melissa Cross, AWB, M.S., Biologist, CP&Y – 6 years of experience
- Daniel Wanke, B.S., Noise Specialist, CP&Y – 2 years of experience

Poznecki-Camarillo

- Lena Camarillo, Public Involvement Lead & Executive Vice President, Poznecki-Camarillo – 29 years of experience
- Jackie Lopez, Senior Environmental Specialist, Poznecki-Camarillo – 14 years of experience
- Lianna Ybarra, Public Involvement Specialist, Poznecki-Camarillo – 4 years of experience
- Kailey Butler, Environmental Specialist, Poznecki-Camarillo – 6 years of experience

Appendix A

Project Location Map (Aerial Base)

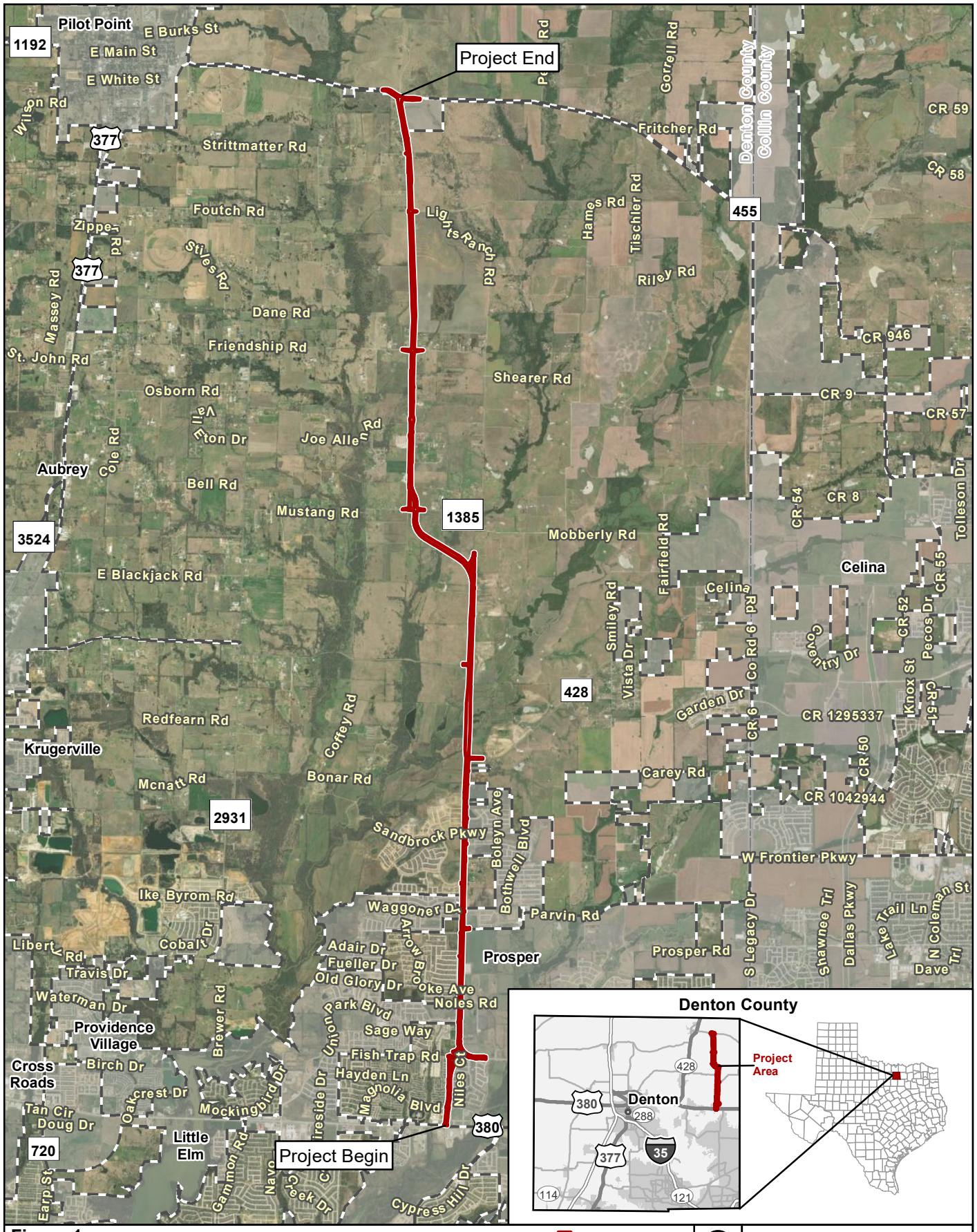


Figure 1.
Project Location (Aerial Base)

FM 1385 Environmental Assessment

Project Location
City Boundary

Data Sources: U.S. Census Bureau (2020)
Aerial Source: Maxar (2021)

CSJ: 1315-01-030

0 1.5 Miles
0 2 Kilometers

1 in = 1.5 miles
Scale: 1:95,040
Date: 7/27/2022

U:\23530164\03_data\gis_cad\gis\FM1385_EA_Figure 1_Project Location_Aerial_20220727_BMJ.mxd

Appendix B

Project Photos

Photo 1: The southern project terminus; viewing north.

Photo 2: The southern project terminus; viewing south.

Photo 3: Path of proposed project alignment as it splits from the existing FM 1385 roadway near Plantation Parkway; viewing northeast.

Photo 4: Project terminus on Gee Road, east of FM 1385, looking into the project area; viewing west.

Photo 5: Path of proposed project alignment as it joins the existing FM 1385 roadway north of the Gee Road intersection; viewing south.

Photo 6: Path of proposed project alignment as it exits the existing FM 1385 roadway near the bend located at Mustang Creek; viewing northwest.

Photo 7: The northern project terminus; viewing north.

Photo 8: The northern project terminus; viewing south.

Photo 9: Project terminus on Farm Road 455 east of FM 1385 intersection; viewing west into the project area.

Photo 10: Project terminus on Farm Road 455 west of FM 1385 intersection; viewing east into the project area.

Photo 11: View looking toward Map ID 4, TBK Materials. The proposed ROW area extends past the metal fence shown to about the midway point of the brick wall shown to the left in the photo. This site is a low risk for the project.

Photo 12: View of the natural gas transfer/compressor station located at STA 310+00 to STA 311+25, in front of Map ID 4 property along FM 1385. This site is not considered an environmental concern.

Photo 13: View of an electric substation located adjacent east of FM 1385 north of Arrowbrooke Ave. There is proposed ROW at this location.

Photo 14: View of Ethridge Grocery (on unplottable list) located immediately adjacent to the proposed project improvements along Mustang Rd. There is no proposed ROW at this location. This site is considered a low risk. Photo from Google Earth© 2021.

Photo 15: View of Map ID 20 from near the proposed ROW along FM 1385. The tank hold for the facility is located at the far end of the fuel island dispenser canopy seen in the photo. This site is considered a low risk.

Photo 16: View of a drainage pipe observed during the site survey. The pipe is discharging discolored water with an oily sheen. The source of the discharge is unknown. This location is considered a low risk for the project.

Photo 17: New right-of-way in old, terraced field southeast of Mustang Road; view southeast.

Photo 18: Mustang Creek along new right-of-way south of Mustang Road; view south.

Photo 19: Typical archeological shovel test showing clay on the surface; plan view.

Photo 20: Little Elm Creek from the north bank; view southeast.

Photo 21: Representative view of the Row Crops observed vegetation type; viewing southeast.

Photo 22: Representative view of the Central Texas: Riparian Herbaceous Vegetation observed vegetation type; viewing west.

Photo 23: Representative view of the Urban Low Intensity observed vegetation type; viewing north.

Photo 24: Representative view of the Central Texas: Riparian Deciduous Shrubland observed vegetation type; viewing north.

Photo 25: Representative view of the Blackland Prairie: Disturbance or Tame Grassland observed vegetation type; viewing northeast.

Photo 26: Representative view of the Central Texas: Riparian Hardwood Forest observed vegetation type; viewing northwest.

Photo 27: Upstream view of Little Elm Creek, which provides potentially suitable habitat for mussel species within the project area; viewing west.

Photo 28: Upstream view of Mustang Creek, a perennial stream that provides potentially suitable habitat for mussel species within the project area; viewing north.

Photo 29: Representative view of snags in tree branches that provide potential habitat for bats within the project area.

Photo 30: Representative photo of a palustrine emergent wetland (Wetland 14); viewing north.

Photo 31: Representative photo of a palustrine forested wetland (Wetland 08); viewing north.

Appendix C

Project Schematic

Texas Department of Transportation

DALLAS DISTRICT
DESIGN SCHEMATIC
MOHAMED K. BUR, P.E.
DISTRICT ENGINEER
DENTON COUNTY

FM 1385

FROM: US 380 TO FM 455
CSJ: 1315-01-030

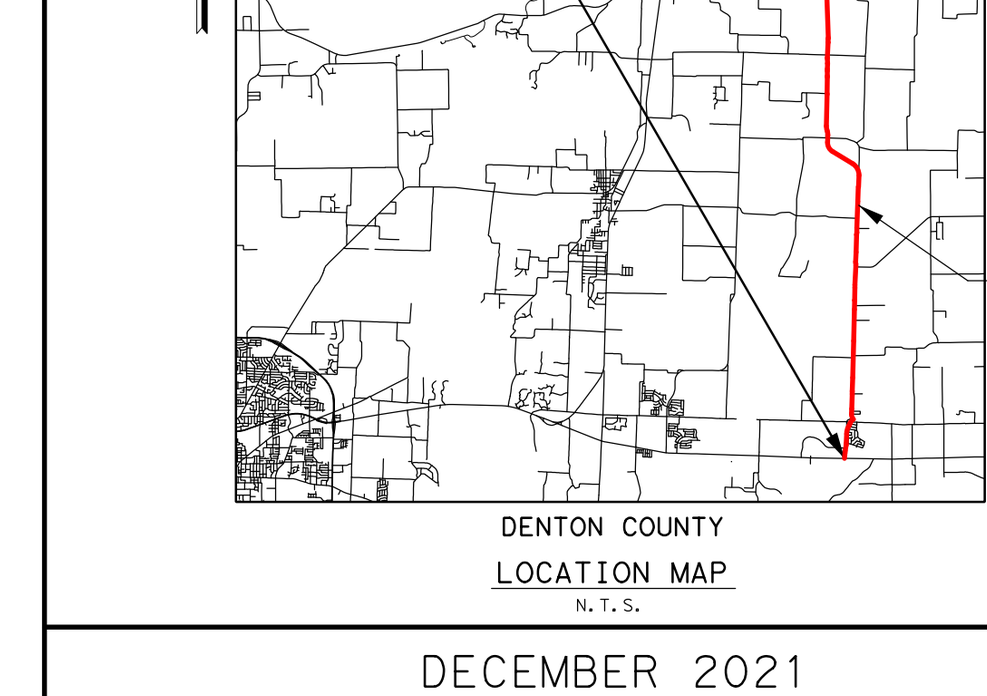
FUNCTIONAL CLASS: URBAN MAJOR COLLECTOR
PROJECT LENGTH: 12.01 MILES

DESIGN SPEED:
45 MPH = FM 1385

45 MPH = FM 455	45 MPH = FM 428 WEST
30 MPH = FISHTRAP RD	45 MPH = OLD FM 1385
45 MPH = GEE RD	45 MPH = MUSTANG RD
30 MPH = PARVIN RD	45 MPH = FRIENDSHIP RD
45 MPH = FM 428 EAST	30 MPH = LIGHTS RANCH RD
*30 MPH = ALL CONNECTIONS TO EXIST CROSS ST	30 MPH = STRITTMATTER RD

* MEETS OR EXCEEDS EXISTING CONDITIONS

END PROJECT
END CSJ: 1315-01-030
FM 1385 STA. 819+60.94
BEGIN PROJECT
BEGIN CSJ: 1315-01-030
FM 1385 STA 100+74.50



DENTON COUNTY
LOCATION MAP
N.T.S.

DECEMBER 2021

HORIZ SCALE: 1"=100'
VERTICAL SCALE: 1"=10'

HOWARD COLUMBUS GIBBS III, P.E.
(TX PE NO. 100239)

DATE SUBMITTED: 12/10/2021
DATE APPROVED:
DATE REVISED:

PRELIMINARY
NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES

ROLL 1 OF 9

Lina T. Ramey & Associates, Inc.
3320 Belt Line Rd
Farmers Branch, Texas 75234
TBPE Registration No. F-782

LEGEND:
PROPOSED MAINLANES
PROPOSED CROSS STREETS
PROPOSED DRIVEWAYS
PROPOSED SIDEWALKS
PROPOSED BRIDGE STRUCTURES
PAVEMENT REMOVAL
DISPLACEMENTS
PROPOSED RETAINING WALL
APPARENT EXISTING ROW
PROPOSED ROW
PROPOSED CENTERLINE/BASELINE
EXISTING EASEMENT
100 YR FLOODPLAIN LIMITS
FLOODWAY LIMITS
FUTURE PROJECT (BY OTHERS)
STREAM FLOW
DIRECTION OF TRAVEL
EXISTING CULVERT
PROPOSED CULVERT
CURVE NUMBER
PROPERTY OWNERSHIP LABELS

NOTES:
1. EXISTING FEATURES WERE NOT FIELD SURVEYED. SCHEMATICS ARE BASED ON EXISTING PLANS AND AERIAL SURVEYS DATED APRIL 2020 AND RECORD PLANS.
2. FINAL LOCATION OF MEDIAN OPENINGS WILL BE DETERMINED IN THE PS&E DEVELOPMENT PHASE IN COORDINATION WITH THE LOCAL GOVERNMENTS.
3. SUPERELEVATION AXIS OF ROTATION IS ABOUT THE PGL.
4. DIMENSIONS ARE TO THE EDGE OF PAVEMENT OR NOMINAL FACE OF CURB UNLESS NOTED OTHERWISE.
5. APPROXIMATE 100 YEAR FLOODPLAIN LIMITS ARE BASED UPON FEMA FLOOD INSURANCE RATE MAP 48121C0270G.
6. EXISTING CULVERT LOCATIONS, SIZE, AND ELEVATIONS OBTAINED FROM FIELD SURVEY FOR INFORMATIONAL PURPOSES ONLY.
7. EXISTING DRIVEWAYS WILL REMAIN UNLESS IT IS DETERMINED DURING DETAILED DESIGN STAGE AND COORDINATION WITH LOCAL GOVERNMENT THAT THE DRIVEWAY IS A SAFETY ISSUE AND/OR IS LOCATED WITHIN ACCESS DENIAL LIMITS SHOWN.
8. ALL CURBS ARE TYPE II (8") (UNLESS NOTED OTHERWISE).
9. CONVENTIONAL ROADWAY SIGNAGE (SMALL SIGNS) ARE NOT SHOWN AND WILL BE DEVELOPED DURING THE PS&E PHASE OF THE PROJECT.
10. WB-62 DESIGN VEHICLE WAS USED IN EVALUATION OF TURNING MOVEMENTS.
11. TRAFFIC VOLUMES BASED ON TRAFFIC COUNTS AND GROWTH RATES PROVIDED BY TP&P, TRAFFIC VOLUMES APPROVED BY TXDOT TP&P (MARCH 2020).
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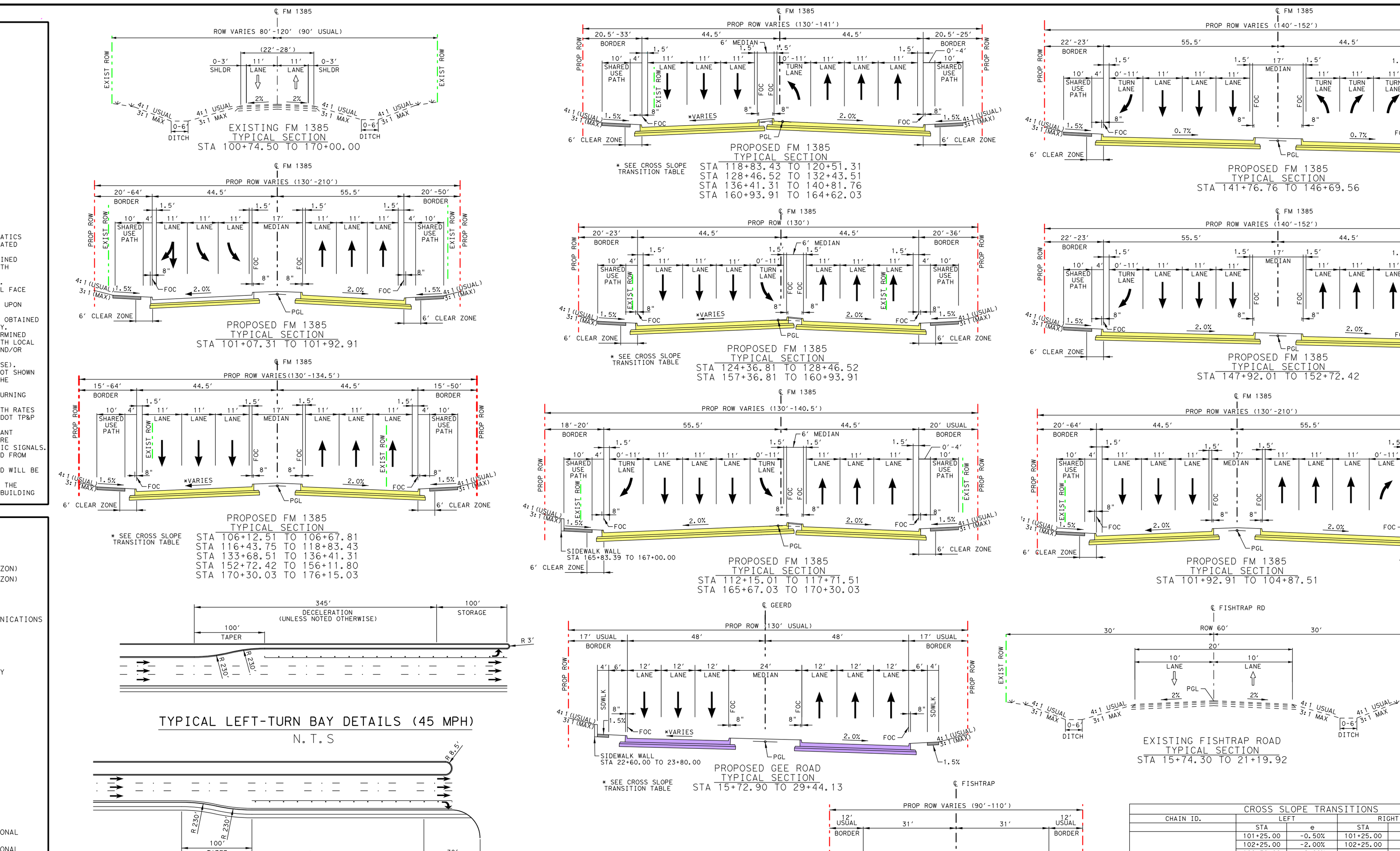
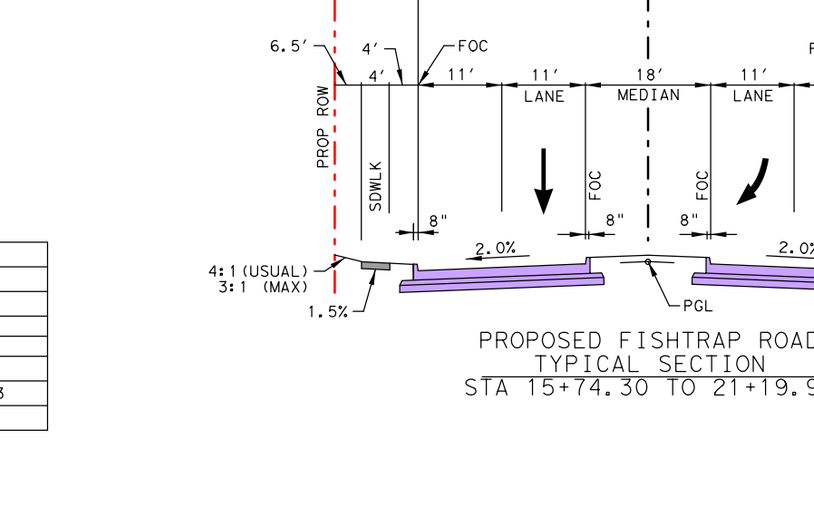
UTILITY LEGEND
TELEPHONE ATT
TELEPHONE ATT
TELEPHONE FRONTIER (VERIZON)
TELEPHONE FRONTIER (VERIZON)
T-DUCT ATT
FIBER OPTIC ATT
FIBER OPTIC ATT
FIBER OPTIC NORTEX COMMUNICATIONS
FIBER OPTIC GRANDE
FIBER OPTIC GRANDE
FIBER OPTIC SUDDENLINK
FIBER OPTIC ZAYO
FIBER OPTIC SPECTRUM
FIBER OPTIC UPPER TRINITY
REGIONAL WATER DISTRICT
ELECTRIC COSERV
ELECTRIC COSERV
FORCE MAIN MUSTANG SUD
GAS ATMOS
GAS COSERV
GAS COSERV
PIPELINE ATMOS
PIPELINE ATMOS
PIPELINE ENERGY TRANSFER
PIPELINE ENTERPRISE
STORM SEWER TXDOT
STORM SEWER TXDOT
WATER TOWN OF PROSPER
WATER TOWN OF PROSPER
WATER MUSTANG SUD
WATER UPPER TRINITY REGIONAL WATER DISTRICT
WATER UPPER TRINITY REGIONAL WATER DISTRICT
WATER ARCADIA WATER
(SEE OVERHEAD LEGEND)

OVERHEAD LEGEND

1	COSERV	ELECTRIC
2	ATT	COMMUNICATION
3	FRONTIER	COMMUNICATION
4	GRANDE	COMMUNICATION
5	SUDDENLINK	COMMUNICATION

UTILITY NOTE:
ALL UTILITIES SHOWN ARE LEVEL "B" WHICH WERE ARRIVED AT USING GEOPHYSICAL EQUIPMENT UNLESS NOTED. LEVEL "D" UTILITIES ARE DERIVED FROM FURNISHED RECORDS.





HORIZONTAL ALIGNMENT DATA

CHAIN NO.	POT STA	POT-NORTHING	POT-EASTING	BEARING	POT STA	POT-NORTHING	POT-EASTING
FM1385	100+20.36	7,131,419.42	2,458,739.79	N 5° 29' 37.13" E	--	--	--
FM1385	165+39.69	7,137,667.49	2,459,590.30	N 2° 01' 15.30" E	--	--	
FM1385	195+59.51	7,140,686.24	2,459,670.45	N 1° 31' 15.30" E	--	--	--
FM1385	237+82.50	7,144,907.71	2,459,783.08	N 1° 32' 17.20" E	--	--	--
FISHTRAP	10+00.00	7,135,619.44	2,458,292.85	S 89° 25' 49.18" E	--	--	--
	--	--	--	S 66° 05' 24.58" E	21+19.92	7,135,433.06	2,459,377.63
GEERD	10+00.00	7,135,506.37	2,461,571.22	N 88° 04' 32.11" W	--	--	--

HORIZONTAL CURVE DATA TABLE

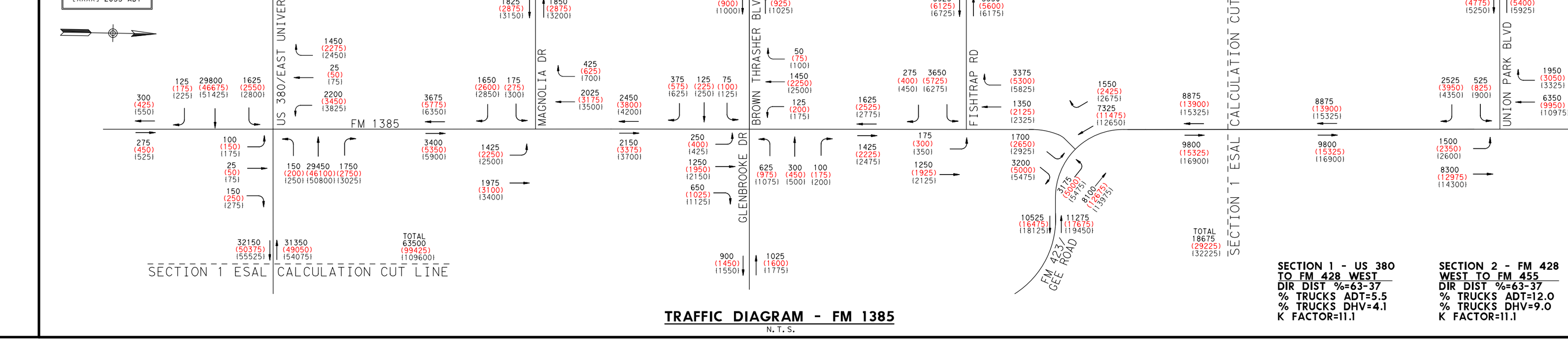
CURVE NO.	DELTA	DEGREE	TANGENT	LENGTH	RADUIS	PI STA	PC STA	PT STA
FM1385-1	3° 13' 30.43" (RT)	1° 15' 03.60"	128.94'	257.80'	4580.00'	107+95.89	106+66.96	109+24.76
FM1385-2	7° 09' 32.30" (LT)	5° 00' 14.39"	71.63'	143.07'	1145.00'	116+26.80	115+55.17	116+98.24
FM1385-3	29° 09' 38.15" (RT)	2° 51' 53.24"	520.23'	1017.90'	2000.00'	133+65.38	128+45.16	138+63.05
FM1385-4	6° 48' 38.00" (LT)	5° 09' 42.41"	66.05'	131.94'	1110.00'	140+20.18	139+54.13	140+86.07
FM1385-5	28° 39' 57.60" (RT)	5° 27' 24.27"	268.29'	525.33'	1050.00'	144+62.71	141+94.43	147+19.76
FM1385-6	39° 26' 42.28" (RT)	6° 01' 52.08"	340.57'	654.02'	950.00'	150+84.45	147+43.88	153+97.91
FISHTRAP-1	23° 20' 24.60" (RT)	11° 14' 04.08"	105.34'	207.76'	510.00'	16+79.64	15+74.30	17+82.06
GEERD-1	50° 39' 05.13" (RT)	6° 01' 52.08"	449.58'	839.83'	950.00'	25+53.88	21+04.30	29+44.13

CROSS SLOPE TRANSITIONS

CHAIN ID.	LEFT STA	LEFT e	RIGHT STA	RIGHT e	TRANSITION LENGTH
FM 1385	101+25.00	-0.50%	101+25.00	-0.50%	100'
	102+25.00	-2.00%	102+25.00	-2.00%	
	108+50.00	-2.00%	---	---	250'
	111+00.00	2.00%	---	---	
	116+00.00	2.00%	---	---	250'
	118+50.00	-2.00%	---	---	
	138+80.00	-2.00%	138+80.00	-2.00%	170'
	140+50.00	0.70%	140+50.00	-0.70%	
	162+00.00	2.00%	---	---	250'
	164+50.00	-2.00%	---	---	
GEE RD	16+70.00	-2.00%	---	---	250'
	19+20.00	2.00%	---	---	
FISHTRAP RD	19+40.00	-2.00%	19+40.00	-2.00%	80'
	20+20.00	0.50%	20+20.00	-0.50%	

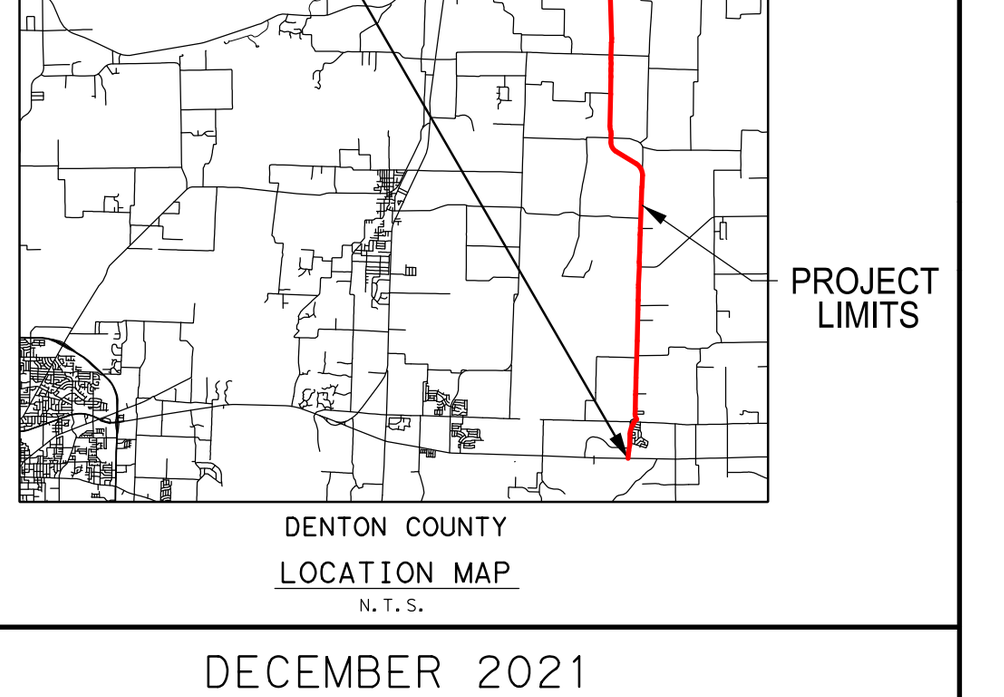
PROP ID	PROPERTY OWNERS' NAME
EB1	PROSPER 1385 INVESTMENTS LP
EB1A	1385 & 380 INVESTMENTS LP
EB43	HALIBUT LTD
EB44	GLENBROOKE ESTATES HOMEOWNERS ASSOCIATION INC
EB45	PROSPER, TOWN OF
EB46	THE PRESERVE AT DOE CREEK HOA
EB47	RED FISH BLUE FISH P/S FUND LTD
EB48	WEST PROSPER COMMERCIAL 39 LP
EB49	SMITH, MICHAEL P
EB50	LEIDECKER NOLES PROPERTIES LTD
EB51	RODRIGUEZ, JULIO
EB52	LEIDECKER PROPERTIES, LTD
EB52A	NORTH TEXAS CONFERENCE OF THE UNITED METHODIST CHURCH
EB79	MONK, LORENA & SHAYLIN
EB80	GLENBROOKE ESTATES HO ASSOC
WB1	BIG DIAMOND LLC
WB2	BLUESTONE SCHOOLS LLC
WB3	MEZZO OWNER LLC
WB16	DENTON CO FRESH WATER SUPPLY DIST 10
WB18	SMIRL, CLEO IRENE
WB19	SMIRL, WALTER E
WB20	ROLLINGHOUSE PROPERTIES LP
WB22	LOYD, MILDRED MAY
WB37	UNION PARK PHASE 3A LP
WB23	H4 LITTLE ELM LP

RDWY X-SLOPE



TRAFFIC DIAGRAM - FM 1385
N.T.S.

Texas Department of Transportation
DALLAS DISTRICT
DESIGN SCHEMATIC
MOHAMED K. BUR, P.E.
DISTRICT ENGINEER
DENTON COUNTY
FM 1385
FROM: US 380 TO FM 455
CSJ: 1315-01-030
FUNCTIONAL CLASS: URBAN MAJOR COLLECTOR
PROJECT LENGTH: 12.01 MILES



DECEMBER 2021
HOWARD COLUMBUS GIBBS III, P.E.
(TX PE NO. 100239)
DATE SUBMITTED 12/10/2021
ROLL 1 OF 9
Lina T. Ramey & Associates, Inc.
3320 Belt Line Rd
Farmers Branch, Texas 75234
TBPE Registration No. F-782

Texas Department of Transportation

DALLAS DISTRICT
DESIGN SCHEMATIC
MOHAMED K. BUR, P.E.
DISTRICT ENGINEER
DENTON COUNTY

FM 1385

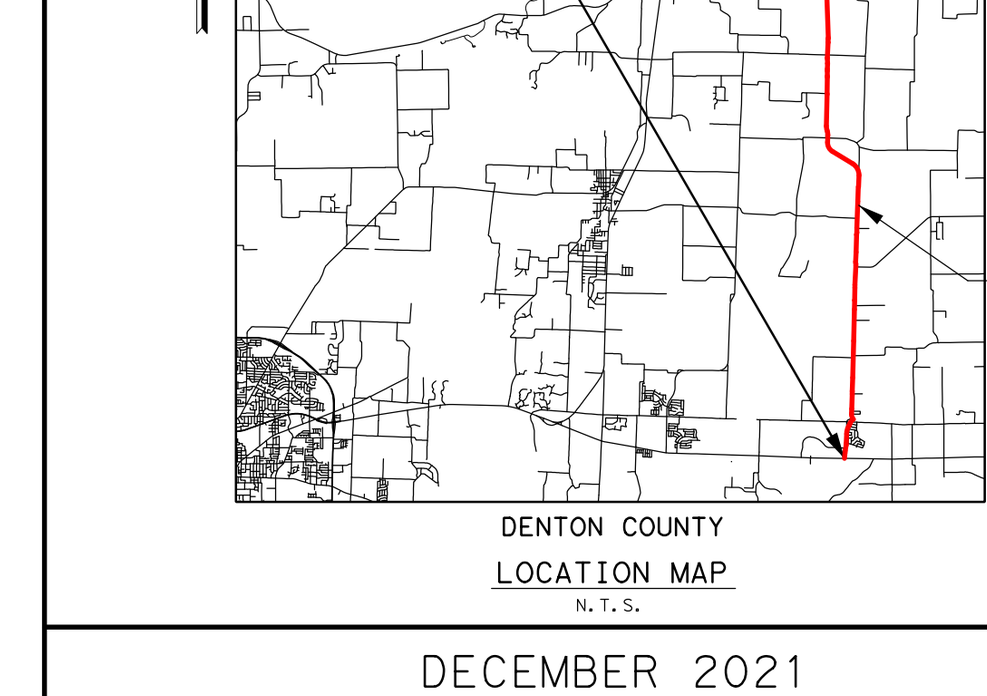
FROM: US 380 TO FM 455
CSJ: 1315-01-030
FUNCTIONAL CLASS: URBAN MAJOR COLLECTOR
PROJECT LENGTH: 12.01 MILES

DESIGN SPEED:
45 MPH = FM 1385

45 MPH = FM 455	45 MPH = FM 428 WEST
30 MPH = FISHTRAP RD	45 MPH = OLD FM 1385
45 MPH = GEE RD	45 MPH = MUSTANG RD
30 MPH = PARVIN RD	45 MPH = FRIENDSHIP RD
45 MPH = FM 428 EAST	30 MPH = LIGHTS RANCH RD
*30 MPH = ALL CONNECTIONS TO EXIST CROSS ST	30 MPH = STRITTMATTER RD

* MEETS OR EXCEEDS EXISTING CONDITIONS

INDEX OF SHEETS:



DENTON COUNTY
LOCATION MAP
N.T.S.

DECEMBER 2021

HORIZ SCALE: 1"=100'
VERTICAL SCALE: 1"=10'

HOWARD COLUMBUS GIBBS III, P.E.
(TX PE NO. 100239)

DATE SUBMITTED: 12/10/2021
DATE APPROVED
DATE REVISED

PRELIMINARY
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NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES

ROLL 2 OF 9

Lina T. Ramey & Associates, Inc.
3320 Belt Line Rd
Farmers Branch, Texas 75234
TBPE Registration No. F-782

LEGEND:

- PROPOSED MAINLANES
- PROPOSED CROSS STREETS
- PROPOSED DRIVEWAYS
- PROPOSED SIDEWALKS
- PROPOSED BRIDGE STRUCTURES
- PAVEMENT REMOVAL
- DISPLACEMENTS
- PROPOSED RETAINING WALL
- APPARENT EXISTING ROW
- PROPOSED ROW
- PROPOSED CENTERLINE/BASELINE
- EXISTING EASEMENT
- 100 YR FLOODPLAIN LIMITS
- FLOODWAY LIMITS
- FUTURE PROJECT (BY OTHERS)
- STREAM FLOW
- DIRECTION OF TRAVEL
- EXISTING CULVERT
- PROPOSED CULVERT
- CURVE NUMBER
- PROPERTY OWNERSHIP LABELS

NOTES:

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2. FINAL LOCATION OF MEDIAN OPENINGS WILL BE DETERMINED IN THE PS&E DEVELOPMENT PHASE IN COORDINATION WITH THE LOCAL GOVERNMENTS.
3. SUPERELEVATION AXIS OF ROTATION IS ABOUT THE PGL.
4. DIMENSIONS ARE TO THE EDGE OF PAVEMENT OR NOMINAL FACE OF CURB UNLESS NOTED OTHERWISE.
5. APPROXIMATE 100 YEAR FLOODPLAIN LIMITS ARE BASED UPON FEMA FLOOD INSURANCE RATE MAP 48121C0270G.
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UTILITY LEGEND

Line	Description
T1	TELEPHONE ATT
T1(D)	TELEPHONE ATT
T2	TELEPHONE FRONTIER (VERIZON)
T2(D)	TELEPHONE FRONTIER (VERIZON)
T-DUCT(D)	T-DUCT ATT
FOC1	FIBER OPTIC ATT
FOC1(D)	FIBER OPTIC ATT
FOC3	FIBER OPTIC NORTEX COMMUNICATIONS
FOC4	FIBER OPTIC GRANDE
FOC4(D)	FIBER OPTIC GRANDE
FOC5	FIBER OPTIC SUDDENLINK
FOC6	FIBER OPTIC ZAYO
FOC7	FIBER OPTIC SPECTRUM
FOC8	FIBER OPTIC UPPER TRINITY REGIONAL WATER DISTRICT
E1	ELECTRIC COSERV
E1(D)	ELECTRIC COSERV
FM1(D)	FORCE MAIN MUSTANG SUD
G1	GAS ATMOS
G2	GAS COSERV
G2(D)	GAS COSERV
PL1	PIPELINE ATMOS
PL1(D)	PIPELINE ATMOS
PL3	PIPELINE ENERGY TRANSFER
PL5(D)	PIPELINE ENTERPRISE
SD1	STORM SEWER TXDOT
SD1(D)	STORM SEWER TXDOT
W1	WATER TOWN OF PROSPER
W1(D)	WATER TOWN OF PROSPER
W2(D)	WATER MUSTANG SUD
W3	WATER UPPER TRINITY REGIONAL WATER DISTRICT
W3(D)	WATER UPPER TRINITY REGIONAL WATER DISTRICT
W4(D)	WATER ARCADIA WATER
OH	(SEE OVERHEAD LEGEND)

	OVERHEAD LEGEND	
1	COSERV	ELECTRIC
2	ATT	COMMUNICATION
3	FRONTIER	COMMUNICATION
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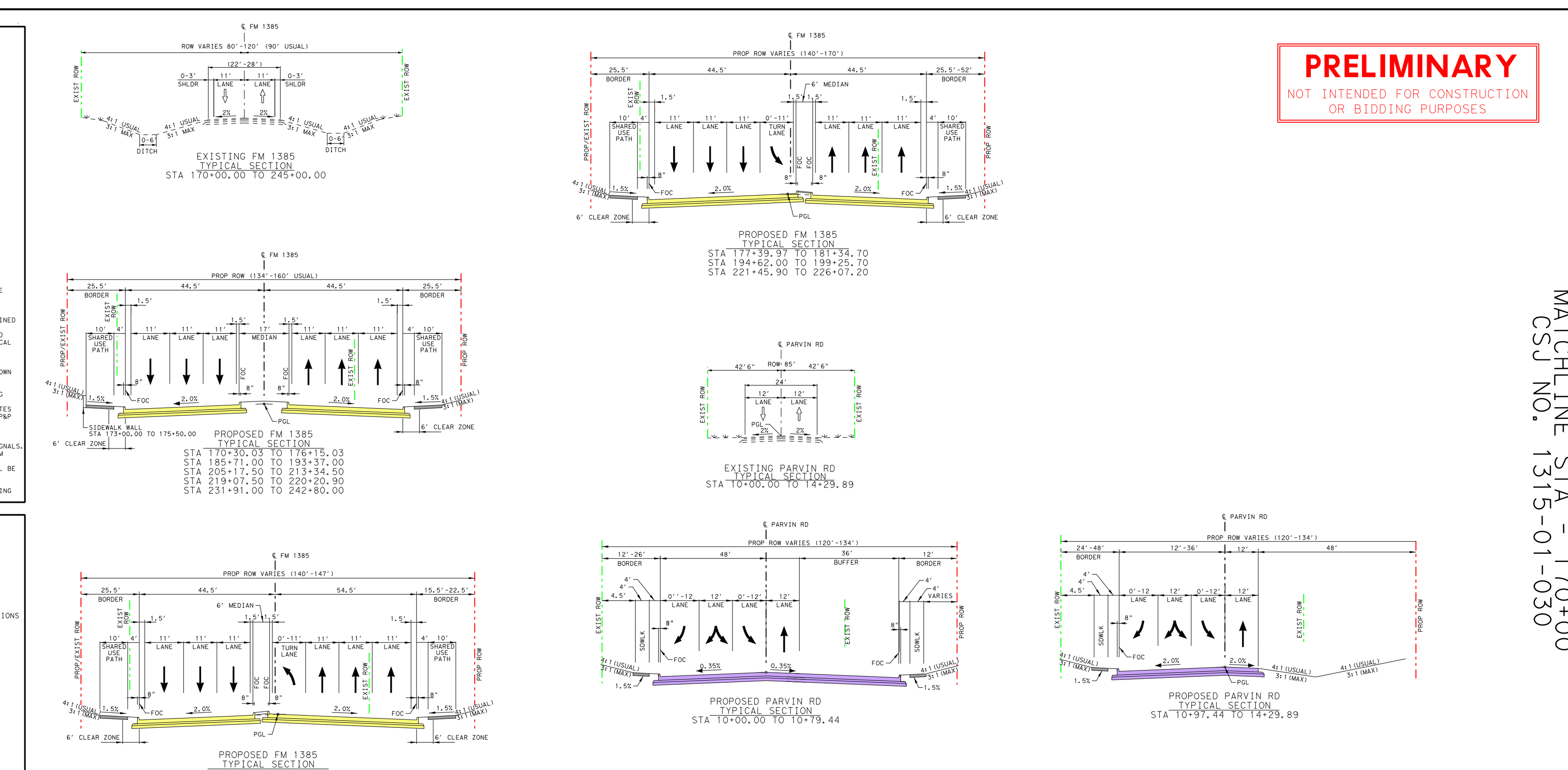

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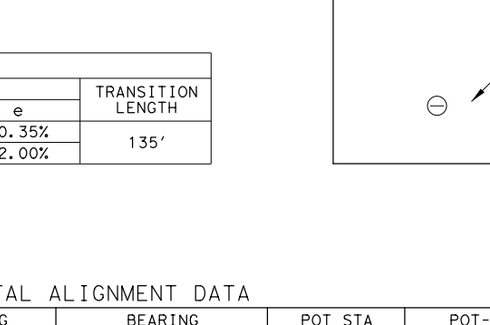


CROSS SLOPE TRANSITIONS

CHAIN ID.	LEFT STA	LEFT e	RIGHT STA	RIGHT e	TRANSITION LENGTH
PARVIN RD	10+80.00	0.35%	10+80.00	-0.35%	135'
	12+15.00	-2.00%	12+15.00	-2.00%	

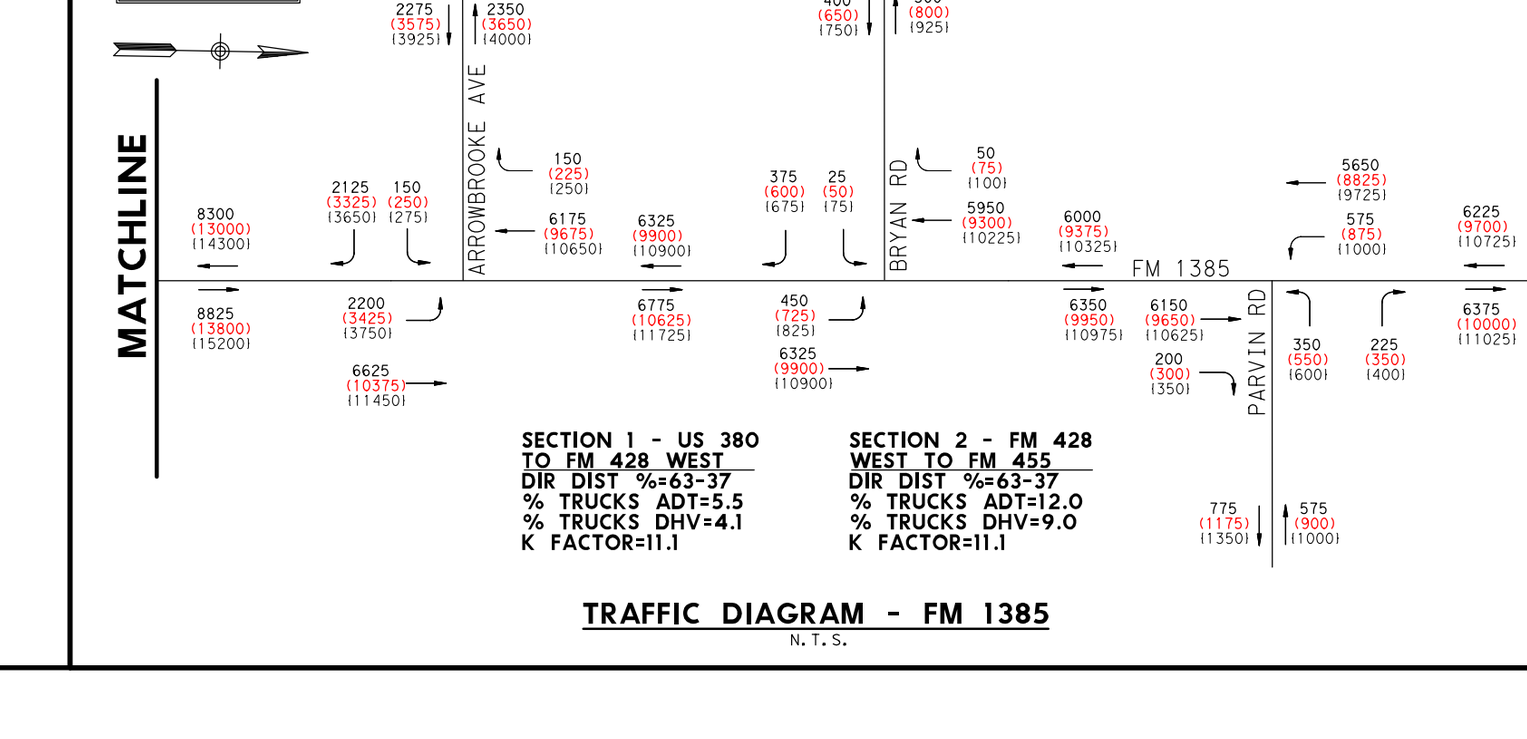
HORIZONTAL ALIGNMENT DATA

CHAIN NO.	POT STA	POT-NORTHING	POT-EASTING	BEARING	POT STA	POT-NORTHING	POT-EASTING
PARVIN	10+00.00	7,143,209.17	2,459,738.19	N 89° 24' 51.54" E	16+99.24	7,143,216.31	2,460,437.40

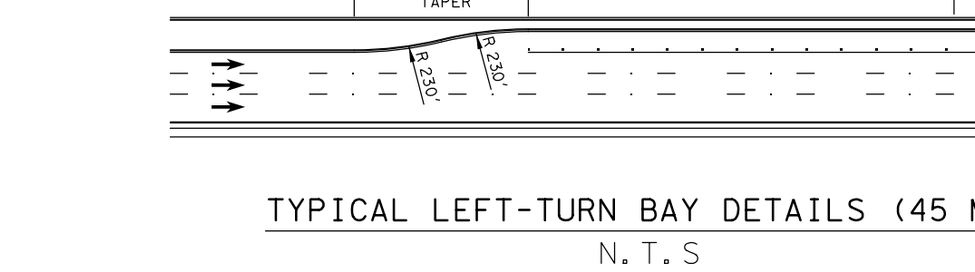
HORIZONTAL CURVE DATA TABLE

CURVE NO.	DELTA	DEGREE	TANGENT	LENGTH	RADIUS	PI STA	PC STA	PT STA
FM1385-6	39° 26' 42.28" (RT)	6° 01' 52.08"	340.57'	654.02'	950.00'	150+84.45	147+43.88	153+97.91

PROP ID	PROPERTY OWNERS' NAME
EB52A	NORTH TEXAS CONFERENCE OF THE UNITED METHODIST CHURCH
EB52B	DENTON ISD
EB53	DENTON INDEPENDENT SCHOOL DISTRICT
EB54	MNCS DEVELOPERS LLC
EB55	1385 LAND LLC
EB56	BRAZOS ELECTRIC POWER COOP INC
EB57	SWISHER PARTNERS LP P/S
EB58	TEXAS REPUBLIC REALTY LTD
EB60	HONG, ANNA LIZ
EB61	MRMS FM 1385 INVESTMENTS LLC
EB62	1385 MUSTANG PARK LP
WB23	H4 LITTLE ELM LP
WB23A	UNION PARK PHASE 6A LP
WB24	ARROWBROOKE HOMEOWNERS ASSOCIATION INC
WB25	DENTON, COUNTY OF
WB26	BRYAN ROAD RETAIL PARTNERS, LP
WB27	WINN RIDGE HOMEOWNERS ASSOCIATION INC
WB28	HERNANDEZ, OLIVER FLORES
WB29	SANDBROCK RANCH HOMEOWNERS ASSOCIATION, INC



TRAFFIC DIAGRAM - FM 1385
N.T.S.



TYPICAL LEFT-TURN BAY DETAILS (45 MPH)
N.T.S

Texas Department of Transportation

DALLAS DISTRICT
DESIGN SCHEMATIC
MOHAMED K. BUR, P.E.
DISTRICT ENGINEER
DENTON COUNTY

FM 1385

FROM: US 380 TO FM 455
CSJ: 1315-01-030
FUNCTIONAL CLASS: URBAN MAJOR COLLECTOR
PROJECT LENGTH: 12.01 MILES

DESIGN SPEED:
45 MPH = FM 1385

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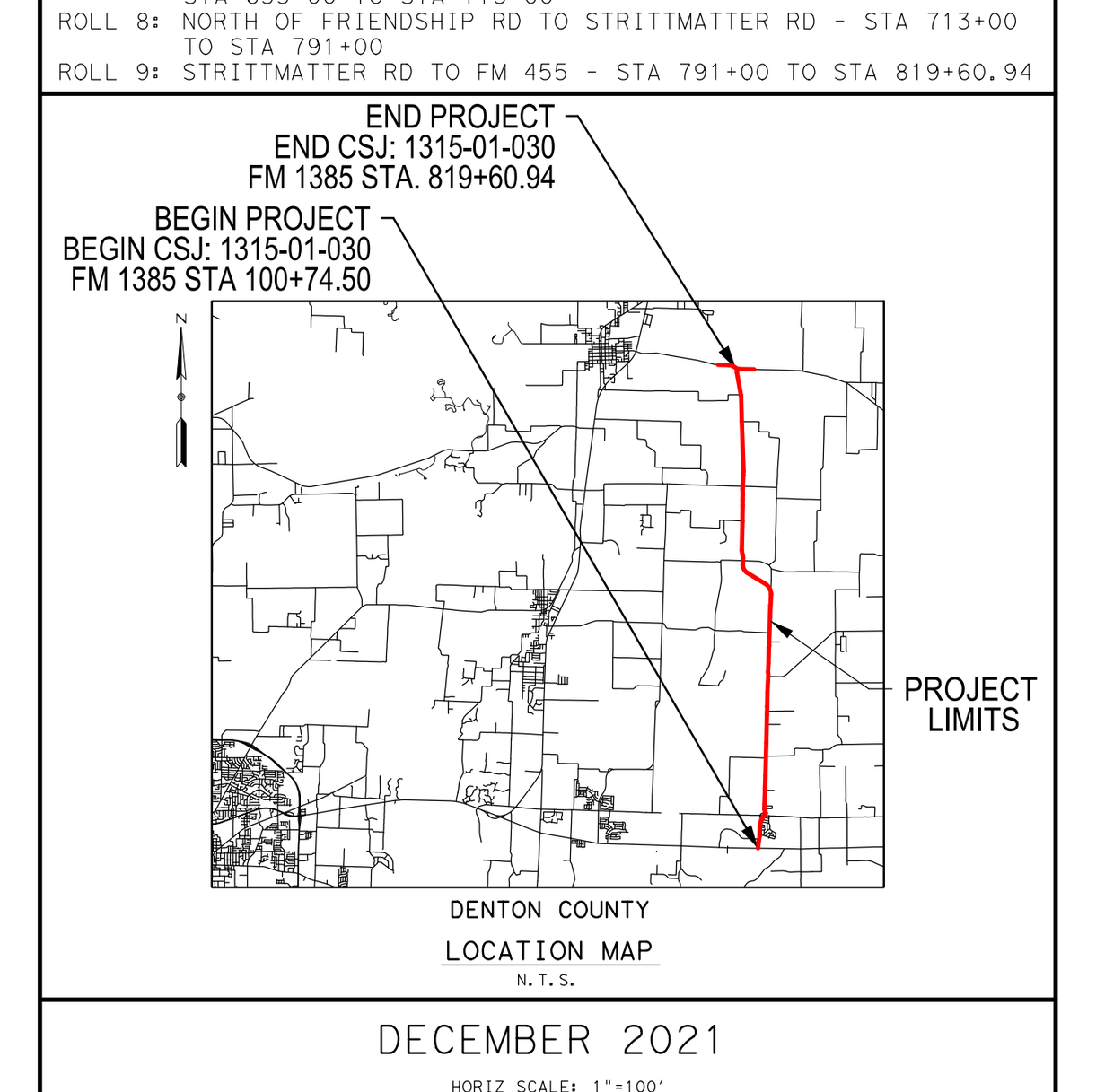

DENTON COUNTY
LOCATION MAP
N.T.S.

DECEMBER 2021

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HOWARD COLUMBUS GIBBS III, P.E.
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ROLL 3 OF 9

Lina T. Ramey & Associates, Inc.
3320 Belt Line Rd
Farmers Branch, Texas 75234
TBPE Registration No. F-782

LEGEND:

- PROPOSED MAINLANES
- PROPOSED CROSS STREETS
- PROPOSED DRIVEWAYS
- PROPOSED SIDEWALKS
- PROPOSED BRIDGE STRUCTURES
- PAVEMENT REMOVAL
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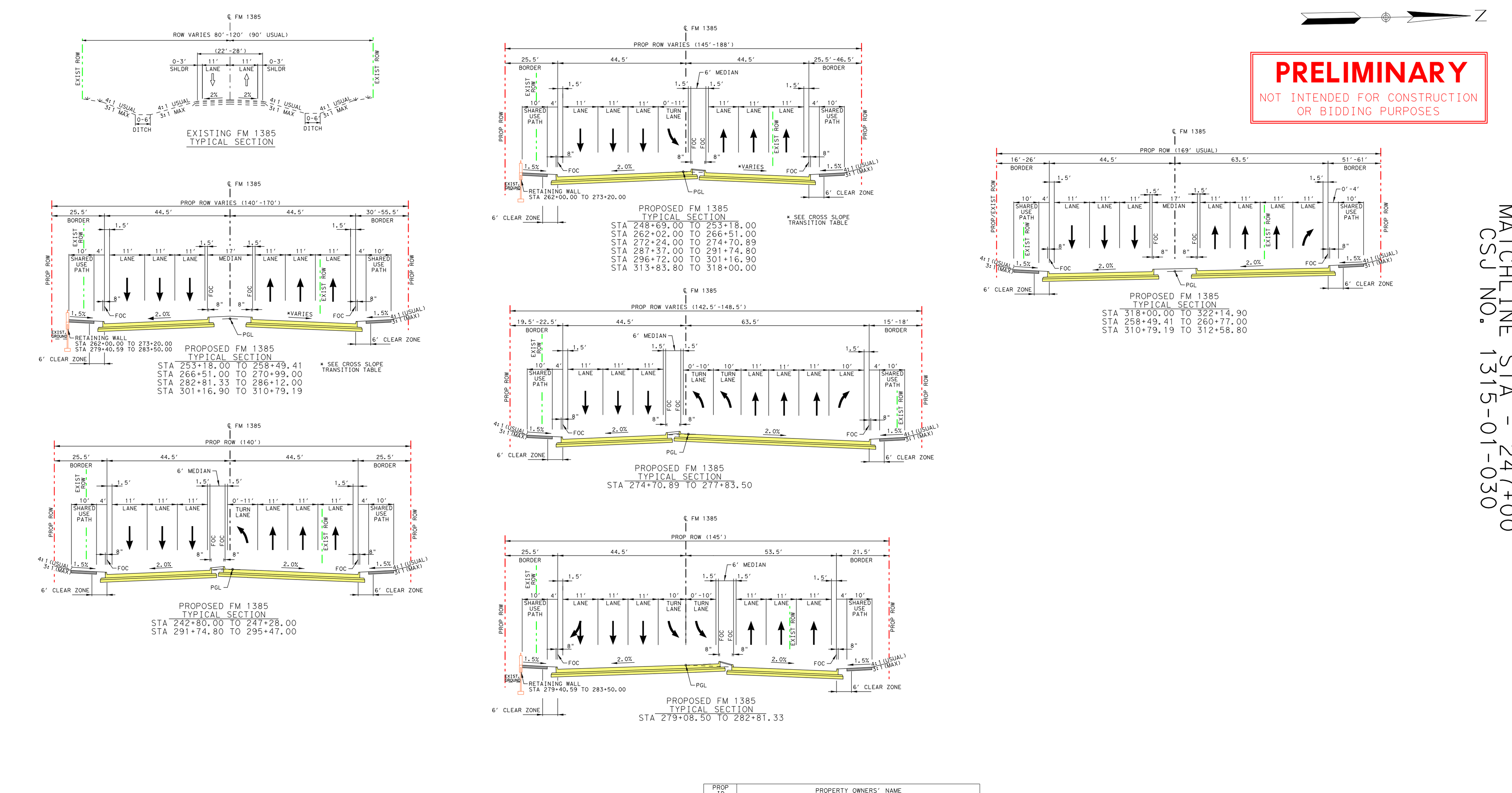
OH	(SEE OVERHEAD LEGEND)

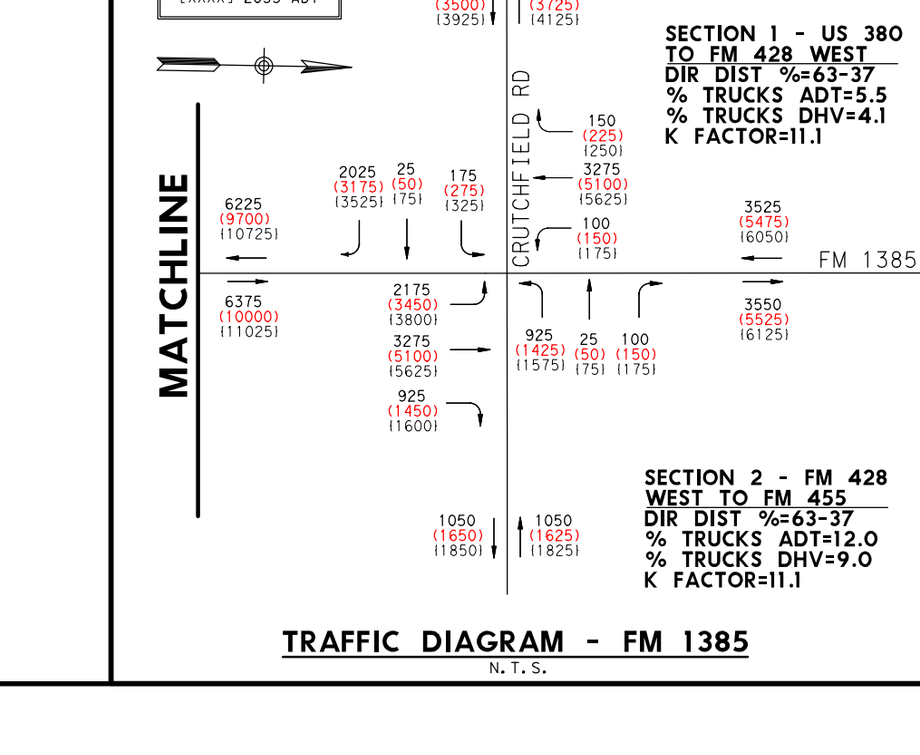
OVERHEAD LEGEND

1	COSERV	ELECTRIC
2	ATT	COMMUNICATION
3	FRONTIER	COMMUNICATION
4	GRANDE	COMMUNICATION
5	SUDDENLINK	COMMUNICATION

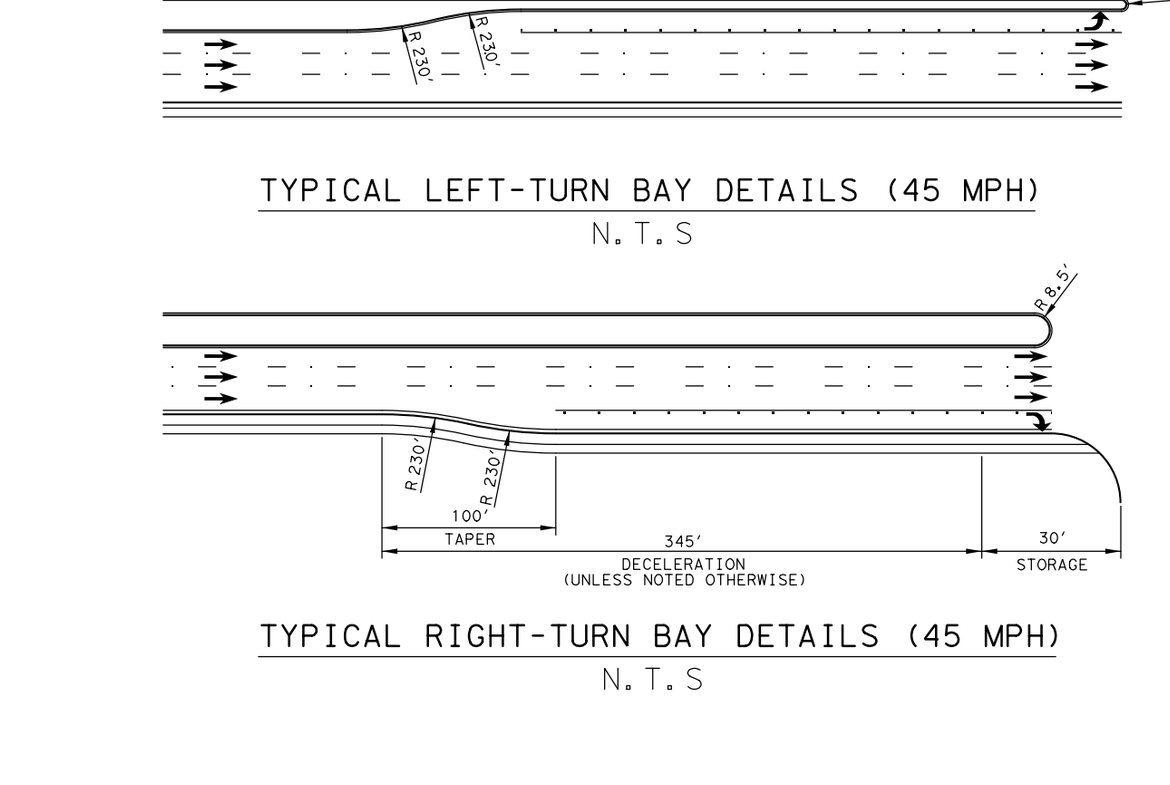
UTILITY NOTE:
ALL UTILITIES SHOWN ARE LEVEL "B" WHICH WERE ARRIVED AT USING GEOPHYSICAL EQUIPMENT UNLESS NOTED. LEVEL "D" UTILITIES ARE DERIVED FROM FURNISHED RECORDS.



PRELIMINARY
NOT INTENDED FOR CONSTRUCTION OR BIDDING PURPOSES



TRAFFIC DIAGRAM - FM 1385
N.T.S.



TYPICAL LEFT-TURN BAY DETAILS (45 MPH)
N.T.S

TYPICAL RIGHT-TURN BAY DETAILS (45 MPH)
N.T.S

PROP ID	PROPERTY OWNERS' NAME
EB62	1385 MUSTANG PARK LP
EB63	1385 MUSTANG PARK LP
EB64	BLYTHE, LARRY G & MARY C
EB65	BATES, RICK & TAMMY
EB66	MUSTANG WATER SUPPLY
EB67	CADG SUTTON FIELDS LLC
EB68	CELINA, CITY OF
EB70	MAGE PARTNERS LLC
EB71	RILEY, DENA E
EB72	HAMMER, JEFF
EB73	SS GROUP LLC
EB74	SF COLLIN COUNTY, LLC
EB75	TARSAN CORP
EB76	MONSALVE, ADOLFO I & LAURA A
WB29	SANDBROCK RANCH HOMEOWNERS ASSOCIATION, INC
WB29A	HORIZON/DEER CREEK DEVELOPMENT CORP
WB30	SANDBROCK INVESTMENTS INC
WB31	MUSTANG SPECIAL UTILITY DISTRICT
WB36	SANDBROCK RANCH HOMEOWNERS ASSOCIATION INC

HORIZONTAL ALIGNMENT DATA

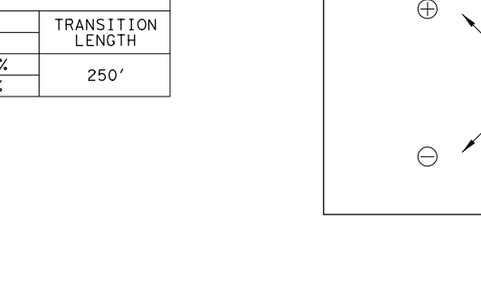
CHAIN NO.	POT STA	POT-NORTHING	POT-EASTING	BEARING	POT STA	POT-NORTHING	POT-EASTING
FM1385	274+03.68	7,148,527.76	2,459,874.68	N 1° 26' 17.20" E	--	--	--

HORIZONTAL CURVE DATA TABLE

CURVE NO.	DELTA	DEGREE	TANGENT	LENGTH	RADIUS	PI STA	PC STA	PT STA
FM1385-7	0° 52' 07.27" (RT)	1° 08' 45.30"	37.90'	75.81'	5000'	284+53.41	284+15.51	284+91.32
FM1385-8	1° 53' 52.21" (RT)	0° 34' 22.65"	165.63'	331.24'	10000'	300+65.35	298+99.71	302+30.95

CROSS SLOPE TRANSITIONS

CHAIN ID.	LEFT		RIGHT		TRANSITION LENGTH
	STA	e	STA	e	
FM 1385	---	---	285+00.00	-2.00%	250'
	---	---	287+50.00	2.00%	



Texas Department of Transportation
DALLAS DISTRICT
DESIGN SCHEMATIC
MOHAMED K. BUR, P.E.
DISTRICT ENGINEER
DENTON COUNTY
FM 1385
FROM: US 380 TO FM 455
CSJ: 1315-01-030
FUNCTIONAL CLASS: URBAN MAJOR COLLECTOR
PROJECT LENGTH: 12.01 MILES
DECEMBER 2021
ROLL 3 OF 9
Lina T. Ramey & Associates, Inc.
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Texas Department of Transportation

DALLAS DISTRICT
DESIGN SCHEMATIC
MOHAMED K. BUR, P.E.
DISTRICT ENGINEER
DENTON COUNTY

FM 1385

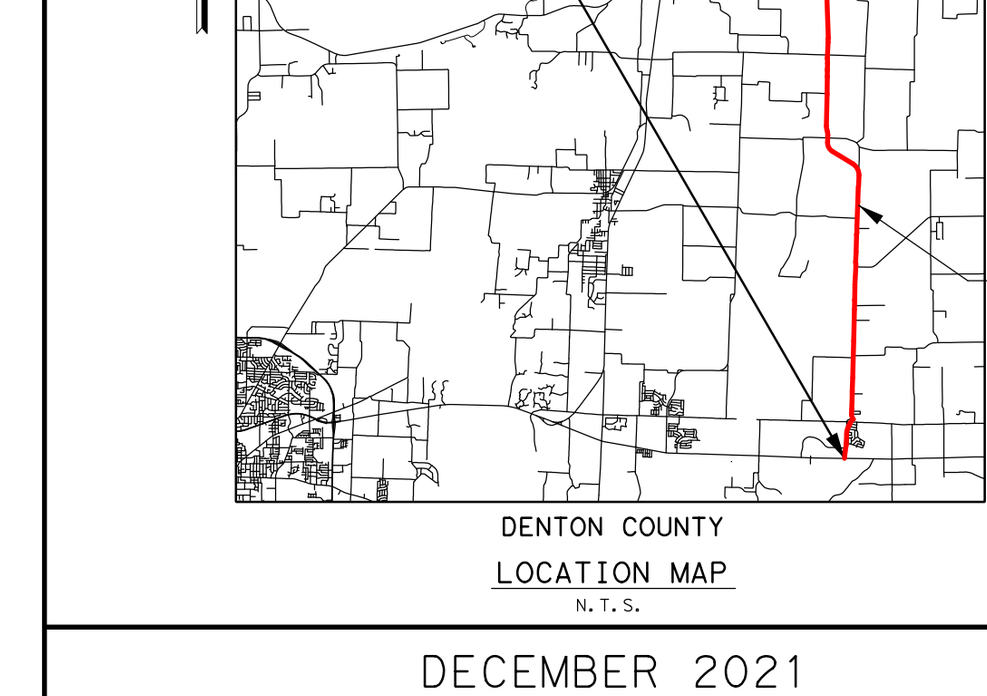
FROM: US 380 TO FM 455
CSJ: 1315-01-030

FUNCTIONAL CLASS: URBAN MAJOR COLLECTOR
PROJECT LENGTH: 12.01 MILES

DESIGN SPEED:
45 MPH = FM 1385

45 MPH = FM 455	45 MPH = FM 428 WEST
30 MPH = FISHTRAP RD	45 MPH = OLD FM 1385
45 MPH = GEE RD	45 MPH = MUSTANG RD
30 MPH = PARVIN RD	45 MPH = FRIENDSHIP RD
45 MPH = FM 428 EAST	30 MPH = LIGHTS RANCH RD
*30 MPH = ALL CONNECTIONS TO EXIST CROSS ST	30 MPH = STRITTMATTER RD

* MEETS OR EXCEEDS EXISTING CONDITIONS



DENTON COUNTY
LOCATION MAP
N.T.S.

DECEMBER 2021

HORIZ SCALE: 1"=100'
VERTICAL SCALE: 1"=10'

HOWARD COLUMBUS GIBBS III, P.E.
(TX PE NO. 100239)

DATE SUBMITTED: 12/10/2021
DATE APPROVED:
DATE REVISED:

PRELIMINARY
FOR INTERIM REVIEW ONLY. NOT FOR PERMITTING, BIDDING, OR CONSTRUCTION. Prepared by or under the Direct Supervision of HOWARD C. GIBBS III, P.E. 100239 12/10/2021

NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES

ROLL 4 OF 9

LTRA Lina T. Ramey & Associates, Inc.
3320 Belt Line Rd
Farmers Branch, Texas 75234
TBPE Registration No. F-782

LEGEND:
PROPOSED MAINLANES
PROPOSED CROSS STREETS
PROPOSED DRIVEWAYS
PROPOSED SIDEWALKS
PROPOSED BRIDGE STRUCTURES
PAVEMENT REMOVAL
DISPLACEMENTS
PROPOSED RETAINING WALL
APPARENT EXISTING ROW
PROPOSED ROW
PROPOSED CENTERLINE/BASELINE
EXISTING EASEMENT
100 YR FLOODPLAIN LIMITS
FLOODWAY LIMITS
FUTURE PROJECT (BY OTHERS)
STREAM FLOW
DIRECTION OF TRAVEL
EXISTING CULVERT
PROPOSED CULVERT
XXX-X CURVE NUMBER
XX PROPERTY OWNERSHIP LABELS

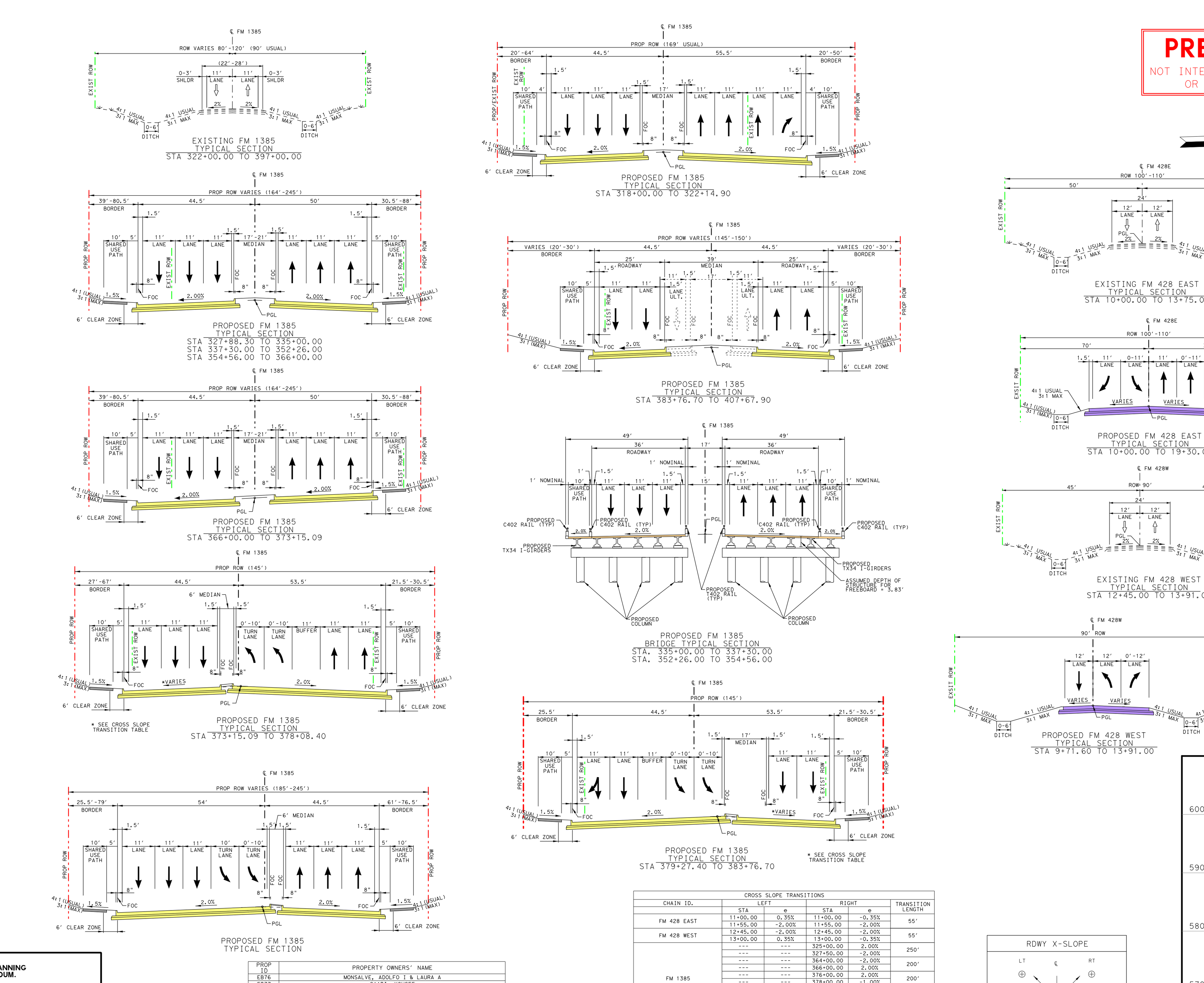
NOTES:
1. EXISTING FEATURES WERE NOT FIELD SURVEYED. SCHEMATICS ARE BASED ON EXISTING PLANS AND AERIAL SURVEYS DATED APRIL 2020 AND RECORD PLANS
2. FINAL LOCATION OF MEDIAN OPENINGS WILL BE DETERMINED IN THE PS&E DEVELOPMENT PHASE IN COORDINATION WITH THE LOCAL GOVERNMENTS.
3. SUPERELEVATION AXIS OF ROTATION IS ABOUT THE PGL.
4. DIMENSIONS ARE TO THE EDGE OF PAVEMENT OR NOMINAL FACE OF CURB UNLESS NOTED OTHERWISE.
5. APPROXIMATE 100 YEAR FLOODPLAIN LIMITS ARE BASED UPON FEMA FLOOD INSURANCE RATE MAP 48121C0270G.
6. EXISTING CULVERT LOCATIONS, SIZE, AND ELEVATIONS OBTAINED FROM FIELD SURREY FOR INFORMATIONAL PURPOSES ONLY.
7. EXISTING DRIVEWAYS WILL REMAIN UNLESS IT IS DETERMINED DURING DETAILED DESIGN STAGE AND COORDINATION WITH LOCAL GOVERNMENT THAT THE DRIVEWAY IS A SAFETY ISSUE AND/OR IS LOCATED WITHIN ACCESS DENIAL LIMITS SHOWN.
8. ALL CURBS ARE TYPE II (8") (UNLESS NOTED OTHERWISE).
9. CONVENTIONAL ROADWAY SIGNAGE (SMALL SIGNS) ARE NOT SHOWN AND WILL BE DEVELOPED DURING THE PS&E PHASE OF THE PROJECT.
10. WB-62 DESIGN VEHICLE WAS USED IN EVALUATION OF TURNING MOVEMENTS.
11. TRAFFIC VOLUMES BASED ON TRAFFIC COUNTS AND GROWTH RATES PROVIDED BY TP&P. TRAFFIC VOLUMES APPROVED BY TXDOT TP&P (MARCH 2020).
12. AS PER MUTCD REQUIREMENTS, A TRAFFIC SIGNAL WARRANT ANALYSIS WILL BE REQUIRED BEFORE INTERSECTIONS ARE CONSTRUCTED TO JUSTIFY THE INSTALLATION OF TRAFFIC SIGNALS.
13. OWNERSHIP INFORMATION SHOWN ON SCHEMATIC OBTAINED FROM DENTON COUNTY APPRAISAL DISTRICT (AUGUST 2020).
14. ADA RAMPS AND SIDEWALKS ARE DIAGRAMMATIC ONLY AND WILL BE DESIGNED DURING FINAL DESIGN PHASE (PS&E).
15. BUILDINGS ARE SHOWN AS POTENTIAL DISPLACEMENT IF THE PROPOSED ROW PHYSICALLY INTERSECTS THE EXISTING BUILDING STRUCTURE.

UTILITY LEGEND
T1 TELEPHONE ATT
T1(D) TELEPHONE ATT
T2 TELEPHONE FRONTIER (VERIZON)
T2(D) TELEPHONE FRONTIER (VERIZON)
T-DUCT ATT
FOC1 FIBER OPTIC ATT
FOC1(D) FIBER OPTIC ATT
FOC3 FIBER OPTIC NORTEX COMMUNICATIONS
FOC4 FIBER OPTIC GRANDE
FOC4(D) FIBER OPTIC GRANDE
FOC5 FIBER OPTIC SUDDENLINK
FOC6 FIBER OPTIC ZAYO
FOC7 FIBER OPTIC SPECTRUM
FOC8 FIBER OPTIC UPPER TRINITY REGIONAL WATER DISTRICT
E1 ELECTRIC COSERV
E1(D) ELECTRIC COSERV
FM1(D) FORCE MAIN MUSTANG SUD
G1 GAS ATMOS
G1(D) GAS COSERV
G2(D) GAS COSERV
PL1 PIPELINE ATMOS
PL1(D) PIPELINE ATMOS
PL3 PIPELINE ENERGY TRANSFER
PL5(D) PIPELINE ENTERPRISE
SD1 STORM SEWER TXDOT
SD1(D) STORM SEWER TXDOT
W1 WATER TOWN OF PROSPER
W1(D) WATER TOWN OF PROSPER
W2(D) WATER MUSTANG SUD
W3 WATER UPPER TRINITY REGIONAL WATER DISTRICT
W3(D) WATER UPPER TRINITY REGIONAL WATER DISTRICT
W4(D) WATER ARCADIA WATER
OH (SEE OVERHEAD LEGEND)

OVERHEAD LEGEND

1	COSERV	ELECTRIC
2	ATT	COMMUNICATION
3	FRONTIER	COMMUNICATION
4	GRANDE	COMMUNICATION
5	SUDDENLINK	COMMUNICATION

UTILITY NOTE:
ALL UTILITIES SHOWN ARE LEVEL "B" WHICH WERE ARRIVED AT USING GEOPHYSICAL EQUIPMENT UNLESS NOTED. LEVEL "D" UTILITIES ARE DERIVED FROM FURNISHED RECORDS.



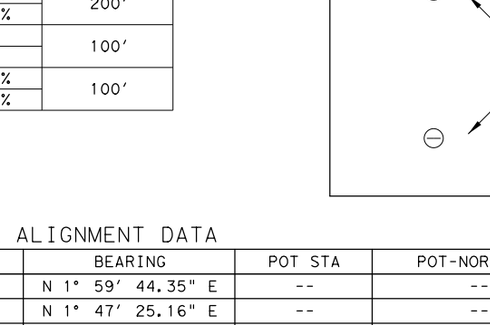
PRELIMINARY
NOT INTENDED FOR CONSTRUCTION OR BIDDING PURPOSES

PROP ID	PROPERTY OWNERS' NAME
EB76	MONSALVE, ADOLFO I & LAURA A
EB77	SAADI, YOUSEF
EB78	SHINEY HINEY PARTNERS I
WB30	SANDBROCK INVESTMENTS INC
WB32	PICKENS LAKE LLC
WB33	A1719 LLC

CROSS SLOPE TRANSITIONS

CHAIN ID.	LEFT STA	LEFT e	RIGHT STA	RIGHT e	TRANSITION LENGTH
FM 428 EAST	11+00.00	0.35%	11+00.00	-0.35%	55'
	11+55.00	-2.00%	11+55.00	-2.00%	
FM 428 WEST	12+45.00	-2.00%	12+45.00	-2.00%	55'
	13+00.00	0.35%	13+00.00	-0.35%	
FM 1385	---	---	325+00.00	2.00%	250'
	---	---	327+50.00	-2.00%	
	---	---	364+00.00	-2.00%	200'
	---	---	366+00.00	2.00%	
	---	---	376+00.00	2.00%	200'
	---	---	378+00.00	-1.00%	
	377+00.00	-2.00%	---	---	100'
	378+00.00	-1.00%	---	---	
	379+50.00	-1.00%	379+50.00	-1.00%	100'
	380+50.00	-2.00%	380+50.00	-2.00%	

RDWY X-SLOPE

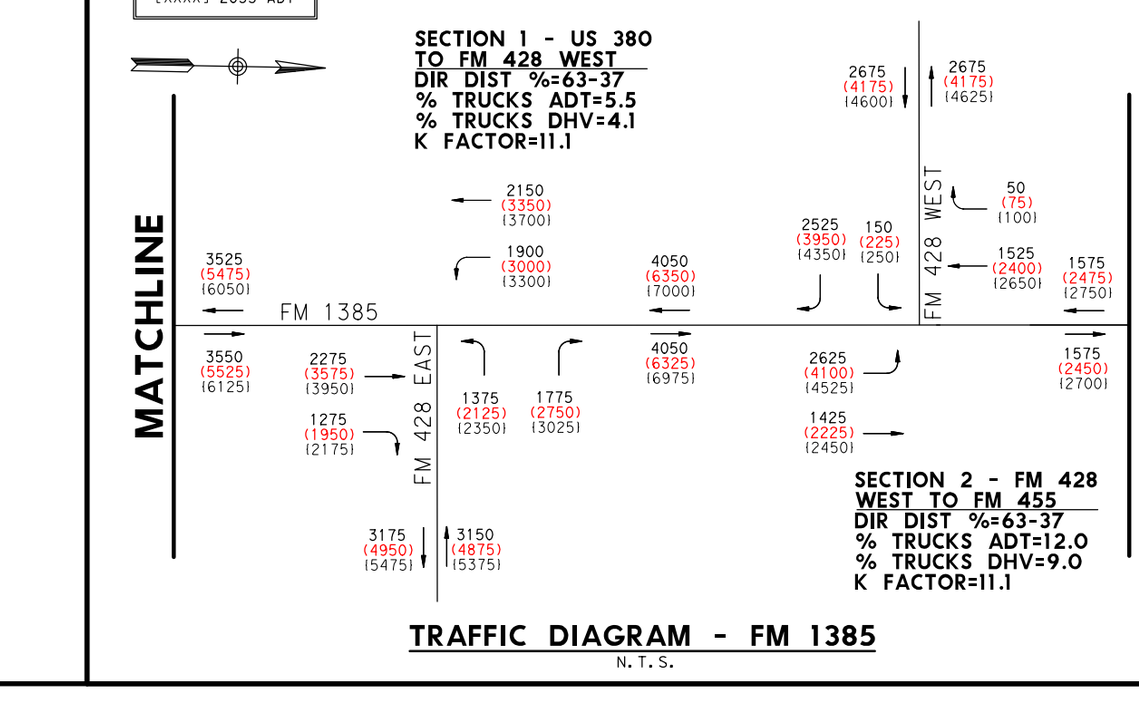


HORIZONTAL ALIGNMENT DATA

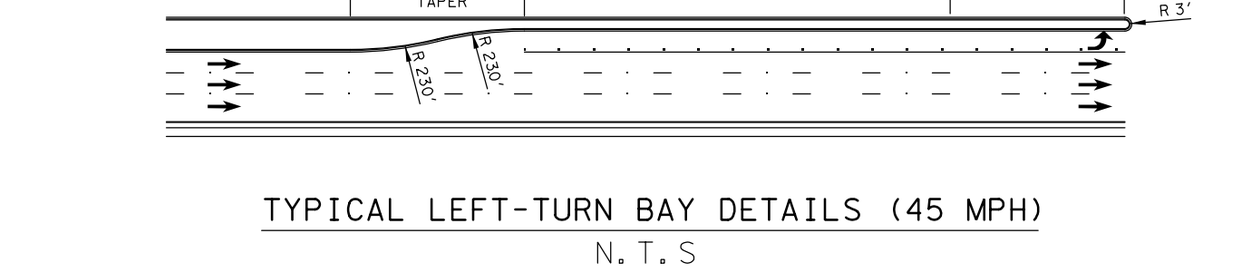
CHAIN NO.	POT STA	POT-NORTHING	POT-EASTING	BEARING	POT STA	POT-NORTHING	POT-EASTING
FM1385	339+80.41	7,155,100.37	2,460,066.33	N 1° 59' 44.35" E	--	--	--
FM1385	367+77.43	7,157,895.58	2,460,162.95	N 1° 47' 25.16" E	--	--	--
FM1385	398+26.56	7,160,942.83	2,460,270.15	N 2° 00' 53.44" E	--	--	--
FM1385	415+06.62	7,162,621.66	2,460,334.35	N 2° 11' 23.88" E	--	--	--
FM428E	10+00.00	7,153,382.32	2,460,028.83	S 89° 22' 23.26" E			
FM428W	10+00.00	7,159,003.55	2,459,810.73	S 87° 07' 23.19" E	13+91.00	7,158,983.93	2,460,210.24

HORIZONTAL CURVE DATA TABLE

CURVE NO.	DELTA	DEGREE	TANGENT	LENGTH	RADUIS	PI STA	PC STA	PT STA
FM1385-9	7° 00' 13.60" (LT)	2° 51' 53.24"	122.39'	244.48'	2000.00'	325+42.82	324+20.43	326+64.91
FM1385-10	6° 19' 42.65" (RT)	2° 51' 53.24"	110.57'	220.91'	2000.00'	327+75.48	326+64.91	328+85.82
FM1385-11	2° 10' 31.18" (RT)	2° 51' 53.24"	37.97'	75.93'	2000.00'	360+12.93	359+74.95	360+50.89
FM1385-12	2° 10' 31.18" (LT)	2° 51' 53.24"	37.97'	75.93'	2000.00'	362+56.61	362+18.64	362+94.57



TRAFFIC DIAGRAM - FM 1385
N.T.S.



TYPICAL LEFT-TURN BAY DETAILS (45 MPH)
N.T.S.

Texas Department of Transportation

DALLAS DISTRICT
DESIGN SCHEMATIC
MOHAMED K. BUR, P.E.
DISTRICT ENGINEER
DENTON COUNTY

FM 1385

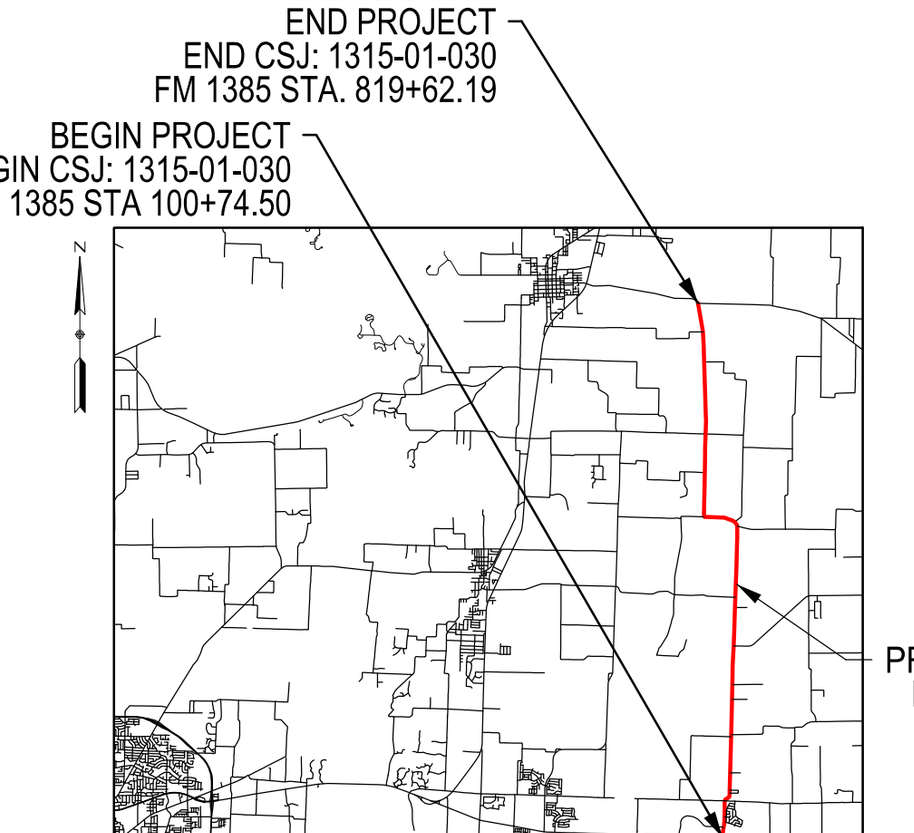
FROM: US 380 TO FM 455
CSJ: 1315-01-030
FUNCTIONAL CLASS: URBAN MAJOR COLLECTOR
PROJECT LENGTH: 12.01 MILES

DESIGN SPEED:
45 MPH = FM 1385

45 MPH = FM 455	45 MPH = FM 428 WEST
30 MPH = FISHTRAP RD	45 MPH = OLD FM 1385
45 MPH = GEE RD	45 MPH = MUSTANG RD
30 MPH = PARVIN RD	45 MPH = FRIENDSHIP RD
45 MPH = FM 428 EAST	30 MPH = LIGHTS RANCH RD
*30 MPH = ALL CONNECTIONS TO EXIST CROSS ST	30 MPH = STRITTMATTER RD

* MEETS OR EXCEEDS EXISTING CONDITIONS

END PROJECT
END CSJ: 1315-01-030
FM 1385 STA. 819+62.19
BEGIN PROJECT
BEGIN CSJ: 1315-01-030
FM 1385 STA 100+74.50



DENTON COUNTY
LOCATION MAP
N.T.S.

DECEMBER 2021

HORIZ SCALE: 1"=100'
VERTICAL SCALE: 1"=10'

HOWARD COLUMBUS GIBBS III, P.E. (TX PE NO. 100239)
TIMOTHY M. NESBITT, P.E. (TX PE NO. 66648)

DATE SUBMITTED: 12/10/2021
DATE APPROVED
DATE REVISED

PRELIMINARY — FOR INTERIM REVIEW ONLY, NOT FOR PERMITTING, BIDDING, OR CONSTRUCTION. Prepared by or under the Direct Supervision of HOWARD C. GIBBS III, P.E. 100239 12/10/2021

NOT INTENDED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES

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ROLL 5 OF 9

Lina T. Ramey & Associates, Inc.
3320 Belt Line Rd
Farmers Branch, Texas 75234
TBPE Registration No. F-782

CIVIL ASSOCIATES, INC. — 9330 LBJ Frwy, Ste. 1150, Dallas, Texas 75243, TBPE Firm Registration No. 4401

LEGEND:

- PROPOSED MAINLANES
- PROPOSED CROSS STREETS
- PROPOSED DRIVEWAYS
- PROPOSED SIDEWALKS
- PROPOSED BRIDGE STRUCTURES
- PAVEMENT REMOVAL
- DISPLACEMENTS
- PROPOSED RETAINING WALL
- APPARENT EXISTING ROW
- PROPOSED ROW
- PROPOSED CENTERLINE/BASELINE
- EXISTING EASEMENT
- 100 YR FLOODPLAIN LIMITS
- FLOODWAY LIMITS
- FUTURE PROJECT (BY OTHERS)
- STREAM FLOW
- DIRECTION OF TRAVEL
- EXISTING CULVERT
- PROPOSED CULVERT
- (XXX-X) CURVE NUMBER
- (XX) PROPERTY OWNERSHIP LABELS

NOTES:

1. EXISTING FEATURES WERE NOT FIELD SURVEYED. SCHEMATICS ARE BASED ON EXISTING PLANS AND AERIAL SURVEYS DATED APRIL 2020 AND RECORD PLANS
2. FINAL LOCATION OF MEDIAN OPENINGS WILL BE DETERMINED IN THE PS&E DEVELOPMENT PHASE IN COORDINATION WITH THE LOCAL GOVERNMENTS.
3. SUPERELEVATION AXIS OF ROTATION IS ABOUT THE PGL.
4. DIMENSIONS ARE TO THE EDGE OF PAVEMENT OR NOMINAL FACE OF CURB UNLESS NOTED OTHERWISE.
5. APPROXIMATE 100 YEAR FLOODPLAIN LIMITS ARE BASED UPON FEMA FLOOD INSURANCE RATE MAP 48121C0270G.
6. EXISTING CULVERT LOCATIONS, SIZE, AND ELEVATIONS OBTAINED FROM FIELD SURREY FOR INFORMATIONAL PURPOSES ONLY.
7. EXISTING DRIVEWAYS WILL REMAIN UNLESS IT IS DETERMINED DURING DETAILED DESIGN STAGE AND COORDINATION WITH LOCAL GOVERNMENT THAT THE DRIVEWAY IS A SAFETY ISSUE AND/OR IS LOCATED WITHIN ACCESS DENIAL LIMITS SHOWN.
8. ALL CURBS ARE TYPE II (8") (UNLESS NOTED OTHERWISE).
9. CONVENTIONAL ROADWAY SIGNAGE (SMALL SIGNS) ARE NOT SHOWN AND WILL BE DEVELOPED DURING THE PS&E PHASE OF THE PROJECT.
10. WB-62 DESIGN VEHICLE WAS USED IN EVALUATION OF TURNING MOVEMENTS.
11. TRAFFIC VOLUMES BASED ON TRAFFIC COUNTS AND GROWTH RATES PROVIDED BY TP&P. TRAFFIC VOLUMES APPROVED BY TXDOT TP&P (MARCH 2020).
12. AS PER MUTCD REQUIREMENTS, A TRAFFIC SIGNAL WARRANT ANALYSIS WILL BE REQUIRED BEFORE INTERSECTIONS ARE CONSTRUCTED TO JUSTIFY THE INSTALLATION OF TRAFFIC SIGNALS.
13. OWNERSHIP INFORMATION SHOWN ON SCHEMATIC OBTAINED FROM DENTON COUNTY APPRAISAL DISTRICT (AUGUST 2020).
14. ADA RAMPS AND SIDEWALKS ARE DIAGRAMMATIC ONLY AND WILL BE DESIGNED DURING FINAL DESIGN PHASE (PS&E).
15. BUILDINGS ARE SHOWN AS POTENTIAL DISPLACEMENT IF THE PROPOSED ROW PHYSICALLY INTERSECTS THE EXISTING BUILDING STRUCTURE.

UTILITY LEGEND

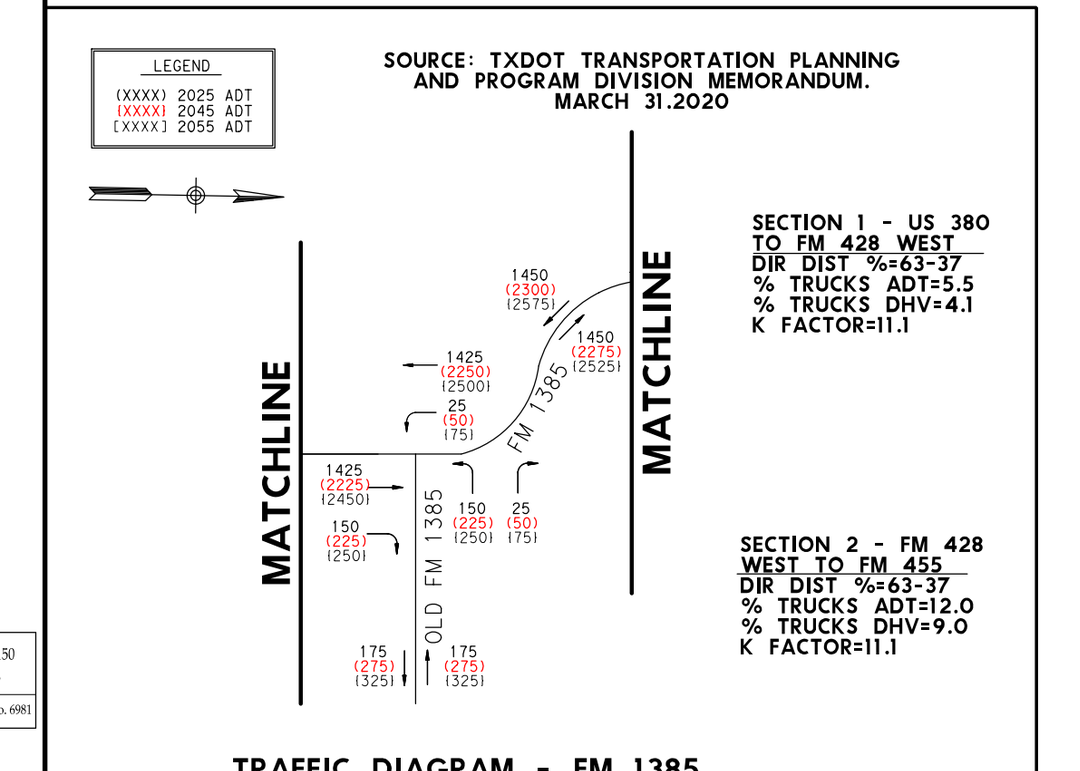
T1	TELEPHONE ATT
T1 (D)	TELEPHONE ATT
T2	TELEPHONE FRONTIER (VERIZON)
T2 (D)	TELEPHONE FRONTIER (VERIZON)
T-DUCT (D)	T-DUCT ATT
FOC1	FIBER OPTIC ATT
FOC1 (D)	FIBER OPTIC ATT
FOC2	FIBER OPTIC NORTEX COMMUNICATIONS
FOC3	FIBER OPTIC GRANDE
FOC4 (D)	FIBER OPTIC GRANDE
FOC5	FIBER OPTIC SUDDENLINK
FOC6	FIBER OPTIC ZAYO
FOC7	FIBER OPTIC SPECTRUM
FOC8	FIBER OPTIC UPPER TRINITY REGIONAL WATER DISTRICT
E1	ELECTRIC COSERV
E1 (D)	ELECTRIC COSERV
FM1 (D)	FORCE MAIN MUSTANG SUD
G1	GAS ATMOS
G2	GAS COSERV
G2 (D)	GAS COSERV
PL1	PIPELINE ATMOS
PL1 (D)	PIPELINE ATMOS
PL3	PIPELINE ENERGY TRANSFER
PL5 (D)	PIPELINE ENTERPRISE
SD1	STORM SEWER TXDOT
SD1 (D)	STORM SEWER TXDOT
W1	WATER TOWN OF PROSPER
W1 (D)	WATER TOWN OF PROSPER
W2 (D)	WATER MUSTANG SUD
W3	WATER UPPER TRINITY REGIONAL WATER DISTRICT
W3 (D)	WATER UPPER TRINITY REGIONAL WATER DISTRICT
W4 (D)	WATER ARCADIA WATER
OH	(SEE OVERHEAD LEGEND)

OVERHEAD LEGEND

1	COSERV	ELECTRIC
2	ATT	COMMUNICATION
3	FRONTIER	COMMUNICATION
4	GRANDE	COMMUNICATION
5	SUDDENLINK	COMMUNICATION

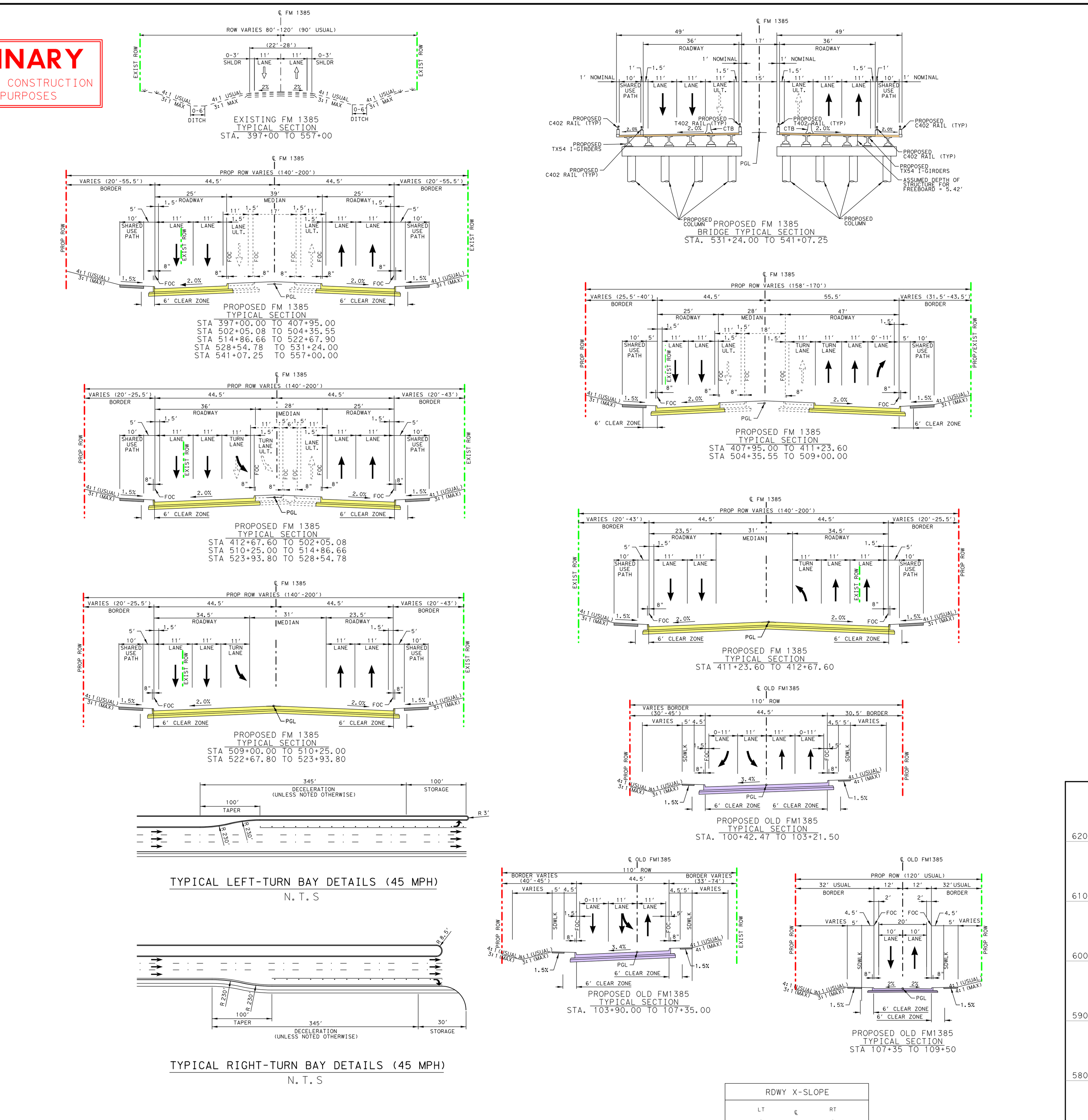
UTILITY NOTE:
ALL UTILITIES SHOWN ARE LEVEL "B" WHICH WERE ACQUIRED USING GEOPHYSICAL EQUIPMENT UNLESS NOTED. LEVEL "D" UTILITIES ARE DERIVED FROM FURNISHED RECORDS.

PROP ID	PROPERTY OWNERS' NAME
EB1000	SHINEY HINEY PARTNERS I
EB1001	MM MOBBERLY 236 LLC
WB1000	A1719 LLC
WB1001	PEMMASANI INTERESTS LLC


SOURCE: TXDOT TRANSPORTATION PLANNING AND PROGRAM DIVISION MEMORANDUM. MARCH 31,2020
(XXXX) 2025 ADT
(XXXX) 2045 ADT
(XXXX) 2055 ADT
MATCHLINE
MATCHLINE
OLD FM 1385
SECTION 1 - US 380 TO FM 428 WEST
DIR DIST %=63-37
% TRUCKS ADT=5.5
% TRUCKS DHV=4.1
K FACTOR=11.1
SECTION 2 - FM 428 WEST TO FM 455
DIR DIST %=63-37
% TRUCKS ADT=12.0
% TRUCKS DHV=9.0
K FACTOR=11.1

TRAFFIC DIAGRAM - FM 1385
N.T.S.

PRELIMINARY
NOT INTENDED FOR CONSTRUCTION OR BIDDING PURPOSES


EXISTING FM 1385 TYPICAL SECTION STA. 397+00 TO 557+00
PROPOSED FM 1385 BRIDGE TYPICAL SECTION STA. 531+24.00 TO 541+07.25
PROPOSED FM 1385 TYPICAL SECTION STA 397+00.00 TO 407+95.00 STA 502+05.08 TO 504+35.55 STA 514+86.66 TO 522+67.90 STA 528+54.78 TO 531+24.00 STA 541+07.25 TO 557+00.00
PROPOSED FM 1385 TYPICAL SECTION STA 407+95.00 TO 411+23.60 STA 504+35.55 TO 509+00.00
PROPOSED FM 1385 TYPICAL SECTION STA 412+67.60 TO 502+05.08 STA 510+25.00 TO 514+86.66 STA 523+93.80 TO 528+54.78
PROPOSED FM 1385 TYPICAL SECTION STA 411+23.60 TO 412+67.60
PROPOSED FM 1385 TYPICAL SECTION STA 509+00.00 TO 510+25.00 STA 522+67.80 TO 523+93.80
PROPOSED OLD FM1385 TYPICAL SECTION STA. 100+42.47 TO 103+21.50
PROPOSED OLD FM1385 TYPICAL SECTION STA. 103+90.00 TO 107+35.00
PROPOSED OLD FM1385 TYPICAL SECTION STA 107+35 TO 109+50

TYPICAL LEFT-TURN BAY DETAILS (45 MPH)
N.T.S

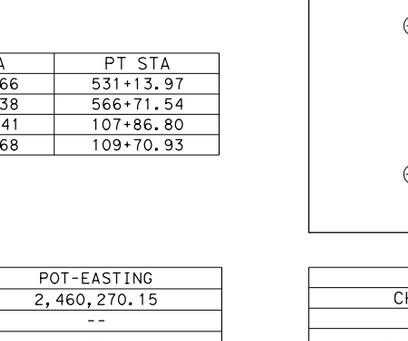
TYPICAL RIGHT-TURN BAY DETAILS (45 MPH)
N.T.S

HORIZONTAL CURVE DATA TABLE

CURVE NO.	DELTA	DEGREE	TANGENT	LENGTH	RADUIS	PI STA	PC STA	PT STA
FM1385-101	60° 22' 51.43" (LT)	3° 00' 56.04"	1105.40'	2,002.31	1900'	522+17.06	511+11.66	531+13.97
FM1385-102	60° 27' 17.69" (RT)	4° 46' 28.73"	699.19'	1,266.16	1200'	561+04.57	554+05.38	566+71.54
OLD_FM1385_1	51° 26' 37.18" (LT)	7° 38' 21.97"	361.30	673.40	750'	104+74.71	101+13.41	107+86.80
OLD_FM1385_2	1° 55' 29.83" (LT)	1° 59' 59.63"	48.13	96.25	2865'	109+22.81	108+74.68	109+70.93

HORIZONTAL ALIGNMENT DATA

CHAIN NO.	POT STA	POT-NORTHING	POT-EASTING	BEARING	POT STA	POT-NORTHING	POT-EASTING
FM1385	--	--	--	N 2° 00' 53.44" E	398+26.56	7,160,942.83	2,460,270.15
	500+00.00	7,162,621.66	2,460,334.35	N 1° 45' 17.20" E	--	--	--
OLD_FM1385	100+00.00	7,164,883.90	2,460,023.48	N 54° 53' 05.14" E	--	--	--
OLD_FM1385	--	--	--	--	110+56.28	7,165,786.81	2,460,445.17



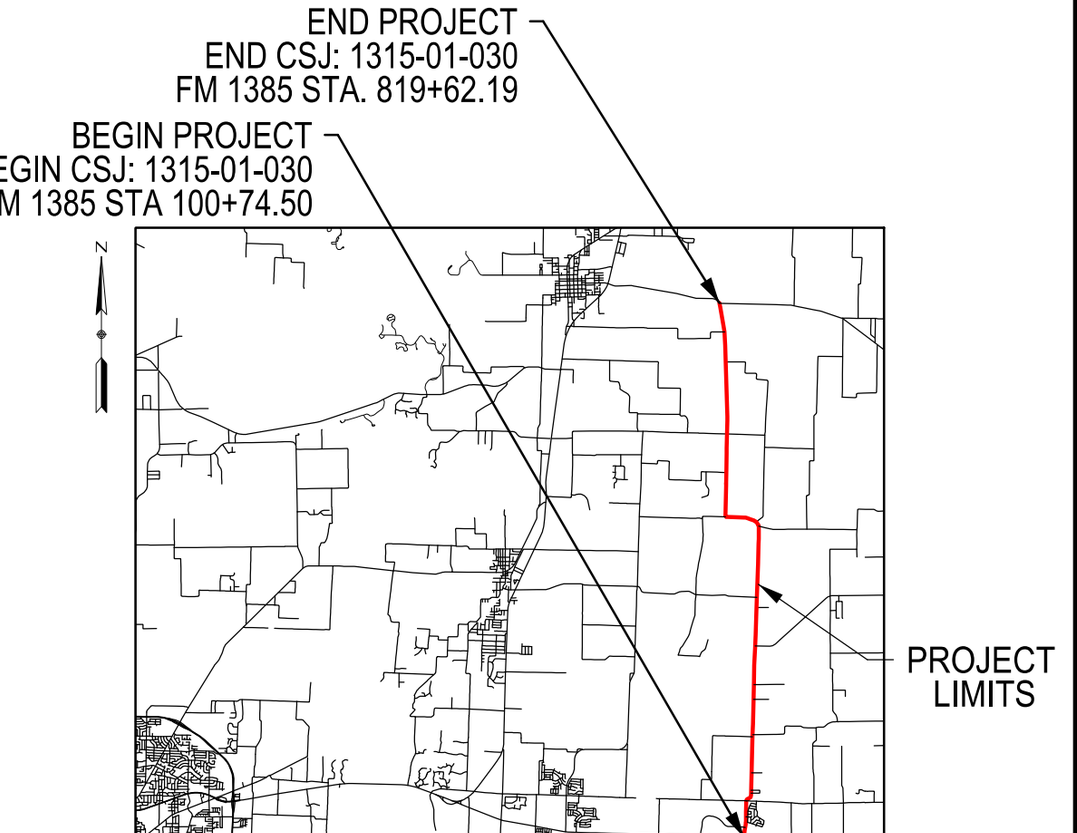
CROSS SLOPE TRANSITIONS

CHAIN ID.	LEFT STA	LEFT e	RIGHT STA	RIGHT e	TRANSITION LENGTH
OLD FM 1385	107+45.00	-3.41%	107+45.00	3.41%	180'
	109+25.00	-2.00%	109+25.00	-2.00%	


MATCHLINE STA - 397+00
CSJ NO. 1315-01-030
NOTE:
MEDIAN OPENINGS WERE DETERMINED IN COORDINATION WITH LOCAL GOVERNMENT. FINAL LOCATION OF MEDIAN OPENINGS WILL BE DETERMINED IN THE PS&E DEVELOPMENT PHASE IN COORDINATION WITH THE LOCAL GOVERNMENTS.
CULVERT 11
STA 404+99.58
PROP 2-5'x3' MBC
U.S. FLOWLINE EL 571.51
D.S. FLOWLINE EL 570.85
EXISTING 3-36" RCP (TO BE REMOVED)
EXISTING 24" RCP (TO BE REMOVED)
℄ FM 1385 STA 415+06.62 BK =
℄ FM 1385 STA 500+00.00 AH
EXISTING 18" RCP (TO BE REMOVED)
FM 1385
BIRCH FARM DRIVE
FENTON PARKWAY
FM1385-101
MATCHLINE STA 521+00
CSJ NO. 1315-01-030
℄ FM1385 STA 523+34.31=
℄ OLD FM1385 STA 100+00.00
℄ OLD FM1385 STA 103+45.62=
℄ FUTURE RD STA 100+00.00
PROP CULVERT 12
STA 104+85.64
PROP 5'X3' SBC
U.S. FLOWLINE EL 582.67
D.S. FLOWLINE EL 582.36
END CONSTRUCTION
℄ OLD FM 1385 STA 103+60.28
OFF 204.92
EXISTING PIPE 36" RCP (TO BE REMOVED)
END CONSTRUCTION
℄ OLD FM 1385 STA 104+01.29
OFF 171.33
BEGIN PAVEMENT TRANSITION
STA 107+35
24' LT
END PAVEMENT TRANSITION
STA 107+87
13' LT
END CONSTRUCTION
℄ OLD FM 1385 STA 109+50.00
MATCH EXISTING
OLD FM 1385
MUSTANG CREEK
BEGIN CTB
STA 531+04.00
BEGIN BRIDGE
℄ FM 1385
STA 531+24.00
STONE RIPRAP (3:1)
MUSTANG CREEK BRIDGE
PROP TOTAL 983'
END CTB
STA 541+27.25
END BRIDGE
℄ FM 1385
STA 541+07.25
CULVERT 14
STA 545+79.99
PROP 4'X4' SBC
U.S. FLOWLINE EL 570.15
D.S. FLOWLINE EL 569.29
CULVERT 15
STA 552+22.64
PROP 2-5'X3' MBC
U.S. FLOWLINE EL 581.21
D.S. FLOWLINE EL 580.56
FM1385-102
PROP ROW
MATCHLINE STA - 557+00
CSJ NO. 1315-01-030
OLD FM 1385 (45 MPH)
BEGIN CONSTRUCTION
MATCH FM 1385 PROP PROFILE
STA 100+00.00
EL= 593.27
END CONSTRUCTION
MATCH EXISITNG FM 1385 EXISTING PAVEMENT
STA 109+50.00
EL = 596.91
EXISTING GROUND AT PGL
PROPOSED GRADE AT PGL


FM 1385 (45 MPH)
MATCHLINE STA - 397+00
CSJ NO. 1315-01-030
BIRCH FARM DR
FENTON PARKWAY
PROPOSED GRADE AT PGL
EXISTING GROUND AT PGL
CULVERT 11
STA 404+99.58
PROP. 2-5'X 3' SBC
FL US EL.= 571.51
FL DS EL.= 570.85
STA = 413+25.00
EL = 580.27
ex = -0.14'
K = 204
L = 150.00
STA = 514+50
EL = 598.0
ex = -0.11'
K = 256
L = 150.00
MATCHLINE STA - 521+00
CSJ NO. 1315-01-030
OLD FM 1385
STA = 521+00
EL = 601.3
ex = -1.22'
K = 64
L = 250.00
STA = 529+00
EL = 574.0
ex = 2.76'
K = 82
L = 425.00
983.25'
TX54
BEGIN BRIDGE
℄ FM 1385
STA 531+24.00
END BRIDGE
℄ FM 1385
STA 541+07.25
STA = 536+25
EL = 587.0
ex = -1.27'
K = 89
L = 300.00
STONE RIPRAP (3:1)
WSEL 100YR=567.89
WSEL 25YR=567.29
STA = 543+00
EL = 576.3
ex = 0.52'
K = 96
L = 200.00
STA = 547+00
EL = 578.3
ex = 0.27'
K = 103
L = 150.00
CULVERT 14
STA 545+79.99
PROP 4'x4' SBC
FL US EL.= 570.15
FL DS EL.= 569.29
STA = 551+00
EL = 586.1
ex = -0.14'
K = 205
L = 150.00
CULVERT 15
STA 552+22.64
PROP 2-5'X3' MBC
FL US EL.= 581.21
FL DS EL.= 580.56
MATCHLINE STA - 557+00
CSJ NO. 1315-01-030

Texas Department of Transportation
DALLAS DISTRICT
DESIGN SCHEMATIC
MOHAMED K. BUR, P.E.
DISTRICT ENGINEER
DENTON COUNTY
FM 1385
FROM: US 380 TO FM 455
CSJ: 1315-01-030
FUNCTIONAL CLASS: URBAN MAJOR COLLECTOR
PROJECT LENGTH: 12.01 MILES
DECEMBER 2021
ROLL 5 OF 9



Texas Department of Transportation

DALLAS DISTRICT
DESIGN SCHEMATIC
MOHAMED K. BUR, P.E.
DISTRICT ENGINEER
DENTON COUNTY

FM 1385

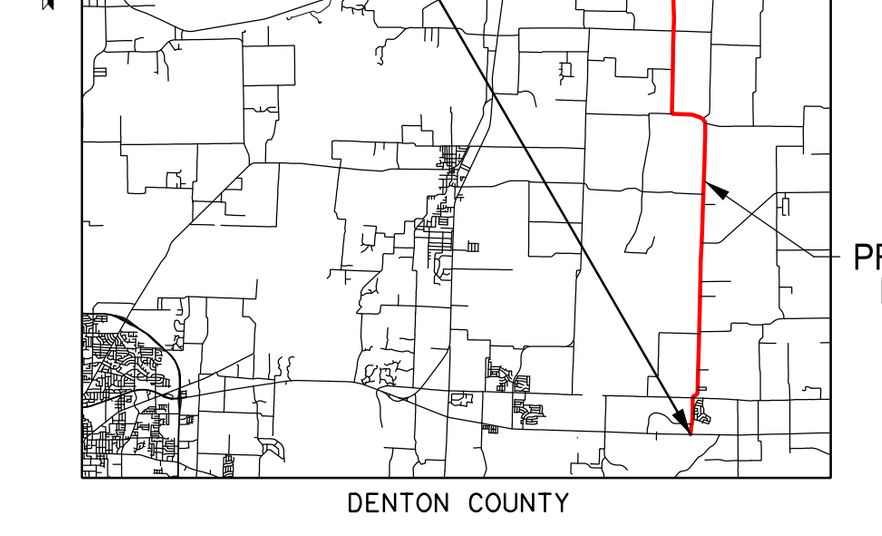
FROM: US 380 TO FM 455
CSJ: 1315-01-030
FUNCTIONAL CLASS: URBAN MAJOR COLLECTOR
PROJECT LENGTH: 12.01 MILES

DESIGN SPEED:
45 MPH = FM 1385

45 MPH = FM 455 | 45 MPH = FM 428 WEST
30 MPH = FISHTRAP RD | 45 MPH = OLD FM 1385
45 MPH = GEE RD | 45 MPH = MUSTANG RD
30 MPH = PARVIN RD | 45 MPH = FRIENDSHIP RD
45 MPH = FM 428 EAST | 30 MPH = LIGHTS RANCH RD
*30 MPH = ALL CONNECTIONS TO EXIST CROSS ST | 30 MPH = STRITTMATTER RD

* MEETS OR EXCEEDS EXISTING CONDITIONS

INDEX OF SHEETS:



DENTON COUNTY
LOCATION MAP
N.T.S.

DECEMBER 2021

HORIZ SCALE: 1"=100'
VERTICAL SCALE: 1"=10'

HOWARD COLUMBUS GIBBS III, P.E. (TX PE NO. 100239)
TIMOTHY M. NESBITT, P.E. (TX PE NO. 66648)

DATE SUBMITTED: 12/10/2021
DATE APPROVED
DATE REVISED

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ROLL 6 OF 9

Lina T. Ramey & Associates, Inc.
3320 Belt Line Rd
Farmers Branch, Texas 75234
TBPE Registration No. F-782

CIVIL ASSOCIATES, INC. — 9330 LBJ Frwy, Ste. 1150, Dallas, Texas 75243 — TBPE Firm Registration No. 4081

LEGEND:
PROPOSED MAINLANES
PROPOSED CROSS STREETS
PROPOSED DRIVEWAYS
PROPOSED SIDEWALKS
PROPOSED BRIDGE STRUCTURES
PAVEMENT REMOVAL
DISPLACEMENTS
PROPOSED RETAINING WALL
APPARENT EXISTING ROW
PROPOSED ROW
PROPOSED CENTERLINE/BASELINE
EXISTING EASEMENT
100 YR FLOODPLAIN LIMITS
FLOODWAY LIMITS
FUTURE PROJECT (BY OTHERS)
STREAM FLOW
DIRECTION OF TRAVEL
EXISTING CULVERT
PROPOSED CULVERT
CURVE NUMBER
PROPERTY OWNERSHIP LABELS

NOTES:

1. EXISTING FEATURES WERE NOT FIELD SURVEYED. SCHEMATICS ARE BASED ON EXISTING PLANS AND AERIAL SURVEYS DATED APRIL 2020 AND RECORD PLANS
2. FINAL LOCATION OF MEDIAN OPENINGS WILL BE DETERMINED IN THE PS&E DEVELOPMENT PHASE IN COORDINATION WITH THE LOCAL GOVERNMENTS.
3. SUPERELEVATION AXIS OF ROTATION IS ABOUT THE PGL.
4. DIMENSIONS ARE TO THE EDGE OF PAVEMENT OR NOMINAL FACE OF CURB UNLESS NOTED OTHERWISE.
5. APPROXIMATE 100 YEAR FLOODPLAIN LIMITS ARE BASED UPON FEMA FLOOD INSURANCE RATE MAP 48121C0270G.
6. EXISTING CULVERT LOCATIONS, SIZE, AND ELEVATIONS OBTAINED FROM FIELD SURVEY FOR INFORMATIONAL PURPOSES ONLY.
7. EXISTING DRIVEWAYS WILL REMAIN UNLESS IT IS DETERMINED DURING DETAILED DESIGN STAGE AND COORDINATION WITH LOCAL GOVERNMENT THAT THE DRIVEWAY IS A SAFETY ISSUE AND/OR IS LOCATED WITHIN ACCESS DENIAL LIMITS SHOWN.
8. ALL CURBS ARE TYPE II (8") (UNLESS NOTED OTHERWISE).
9. CONVENTIONAL ROADWAY SIGNAGE (SMALL SIGNS) ARE NOT SHOWN AND WILL BE DEVELOPED DURING THE PS&E PHASE OF THE PROJECT.
10. WB-62 DESIGN VEHICLE WAS USED IN EVALUATION OF TURNING MOVEMENTS.
11. TRAFFIC VOLUMES BASED ON TRAFFIC COUNTS AND GROWTH RATES PROVIDED BY TP&P, TRAFFIC VOLUMES APPROVED BY TXDOT TP&P (MARCH 2020).
12. AS PER MUTCD REQUIREMENTS, A TRAFFIC SIGNAL WARRANT ANALYSIS WILL BE REQUIRED BEFORE INTERSECTIONS ARE CONSTRUCTED TO JUSTIFY THE INSTALLATION OF TRAFFIC SIGNALS.
13. OWNERSHIP INFORMATION SHOWN ON SCHEMATIC OBTAINED FROM DENTON COUNTY APPRAISAL DISTRICT (AUGUST 2020).
14. ADA RAMPS AND SIDEWALKS ARE DIAGRAMMATIC ONLY AND WILL BE DESIGNED DURING FINAL DESIGN PHASE (PS&E).
15. BUILDINGS ARE SHOWN AS POTENTIAL DISPLACEMENT IF THE PROPOSED ROW PHYSICALLY INTERSECTS THE EXISTING BUILDING STRUCTURE.

UTILITY LEGEND

T1 — TELEPHONE ATT
T1(D) — TELEPHONE ATT
T2 — TELEPHONE FRONTIER (VERIZON)
T2(D) — TELEPHONE FRONTIER (VERIZON)
T-DUCT(D) — T-DUCT ATT
FOC1 — FIBER OPTIC ATT
FOC1(D) — FIBER OPTIC ATT
FOC2 — FIBER OPTIC NORTEX COMMUNICATIONS
FOC3 — FIBER OPTIC GRANDE
FOC4(D) — FIBER OPTIC GRANDE
FOC5 — FIBER OPTIC SUDDENLINK
FOC6 — FIBER OPTIC ZAYO
FOC7 — FIBER OPTIC SPECTRUM
FOC8 — FIBER OPTIC UPPER TRINITY REGIONAL WATER DISTRICT
E1 — ELECTRIC COSERV
E1(D) — ELECTRIC COSERV
FM1(D) — FORCE MAIN MUSTANG SUD
G1 — GAS ATMOS
G2 — GAS COSERV
G2(D) — GAS COSERV
PL1 — PIPELINE ATMOS
PL1(D) — PIPELINE ATMOS
PL2 — PIPELINE ENERGY TRANSFER
PL5(D) — PIPELINE ENTERPRISE
SD1 — STORM SEWER TXDOT
SD1(D) — STORM SEWER TXDOT
W1 — WATER TOWN OF PROSPER
W1(D) — WATER TOWN OF PROSPER
W2(D) — WATER MUSTANG SUD
W3 — WATER UPPER TRINITY REGIONAL WATER DISTRICT
W3(D) — WATER UPPER TRINITY REGIONAL WATER DISTRICT
W4(D) — WATER ARCADIA WATER
OH — (SEE OVERHEAD LEGEND)

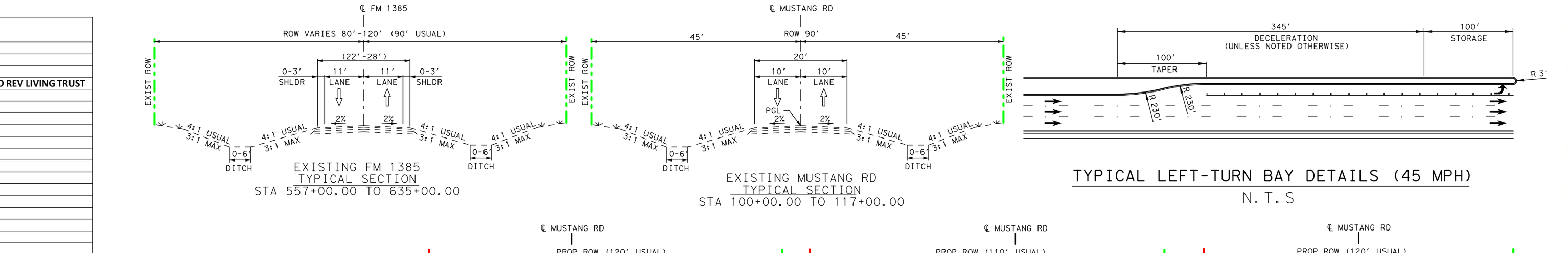
OVERHEAD LEGEND

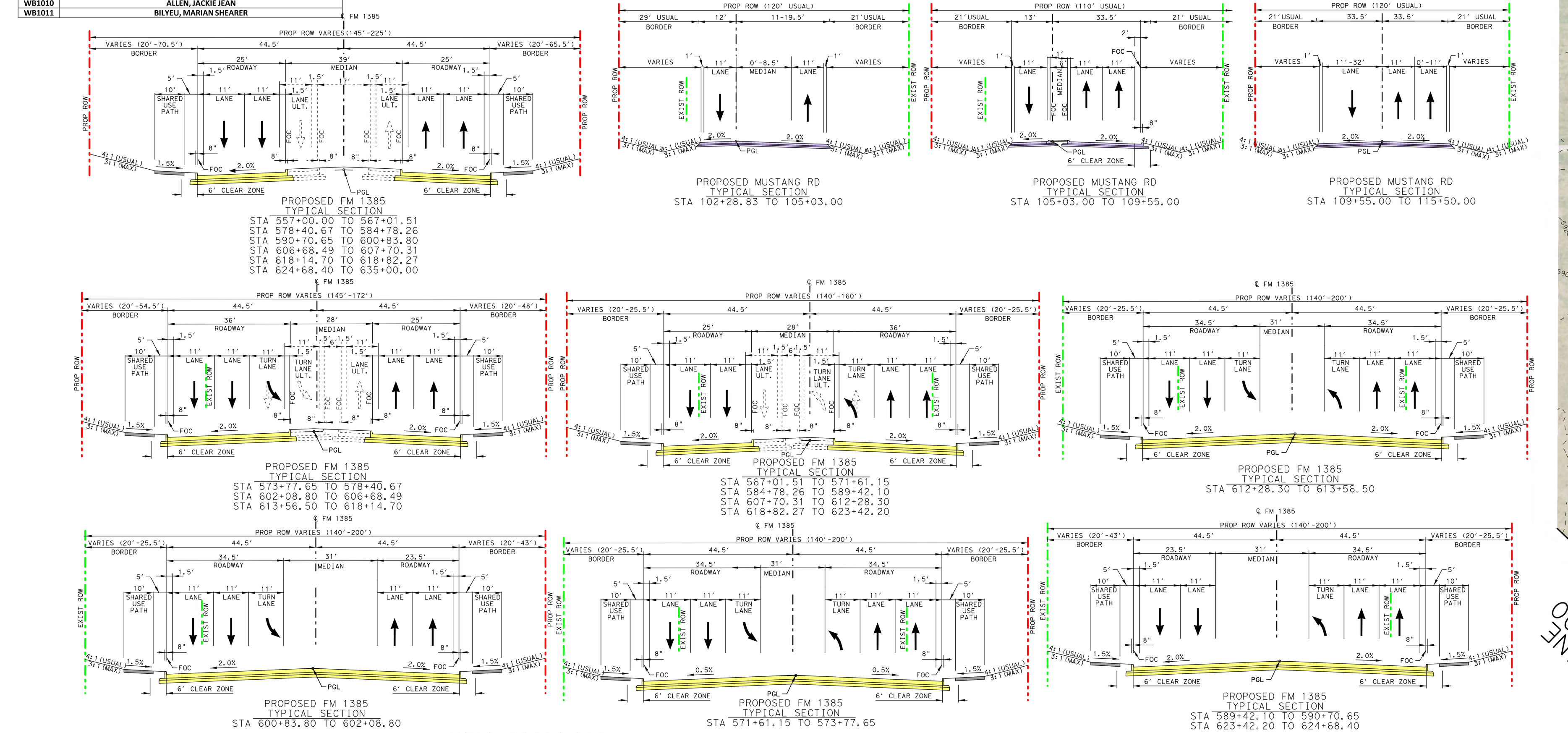
1	COSERV	ELECTRIC
2	ATT	COMMUNICATION
3	FRONTIER	COMMUNICATION
4	GRANDE	COMMUNICATION
5	SUDDENLINK	COMMUNICATION

UTILITY NOTE: ALL UTILITIES SHOWN ARE LEVEL "B" WHICH WERE ARRIVED AT USING GEOPHYSICAL EQUIPMENT UNLESS NOTED. LEVEL "D" UTILITIES ARE DERIVED FROM FURNISHED RECORDS.

PRELIMINARY
NOT INTENDED FOR CONSTRUCTION OR BIDDING PURPOSES

PROP ID	PROPERTY OWNERS' NAME
EB1010	GARDINER, ANDREW M & SHANNON
EB1011	GARDINER, ANDREW MAXWELL
EB1012	BROOKS, GERALD W
EB1013	SCOTT, JACQUELINE ANN TR OF JACQUELINE ANN SAVINO REV LIVING TRUST
EB1014	PHAM, HOA & TRAN,UYEN
EB1015	HOELZEL, TIMOTHY SHAWN
EB1016	GENE MCCUTCHIN LTD III
EB1017	ALEXANDER, MICHAEL & JACQUELYN
WB1001	PEMMASANI INTERESTS LLC
WB1002	MUSTANG BAPTIST CHURCH
WB1003	PICKREL, JAMES A
WB1004	MOORE, G A JR & LOIS A
WB1005	ATMOS ENERGY CORPORATION
WB1006	BRAZOS ELECTRIC POWER COOP INC
WB1007	WILKINSON, MATTHEW & RANDIE
WB1008	MUSTANG RV PARK LLC
WB1009	WILKINSON, PAUL VINCENT
WB1010	ALLEN, JACKIE JEAN
WB1011	BILYEU, MARIAN SHEARER





HORIZONTAL CURVE DATA TABLE

CURVE NO.	DELTA	DEGREE	TANGENT	LENGTH	RADUIS	PI STA	PC STA	PT STA
FM1385-102	60° 27' 17.69" (RT)	4° 46' 28.73"	699.19'	1,266.16	1200'	561+04.57	554+05.38	566+71.54
FM1385-103	28° 35' 24.56" (LT)	5° 27' 24.27"	267.55'	523.94'	1050'	578+25.39	575+57.84	580+81.79
FM1385-104	28° 01' 16.89" (RT)	5° 27' 24.27"	262.00'	513.52'	1050'	585+75.87	583+13.87	588+27.39
FM1385-105	1° 33' 26.03" (RT)	1° 08' 45.30"	67.95'	135.89'	5000'	620+93.42	620+25.47	621+61.36
FM1385-106	1° 52' 26.03" (LT)	2° 17' 30.59"	40.88	81.76	2500'	625+79.94	625+39.06	626+20.82
MUSTANG-1	8° 36' 22.33" (LT)	5° 27' 24.27"	79.00'	157.72'	1050'	103+07.84	102+28.83	103+86.55
MUSTANG-2	9° 20' 11.55" (RT)	5° 27' 24.27"	85.74'	171.10'	1050'	104+72.29	103+86.55	105+57.65
MUSTANG-3	6° 00' 35.15" (RT)	5°27' 24.27"	55.11'	110.13'	1050'	112+67.04	112+11.92	113+22.06
MUSTANG-4	5° 36' 52.97" (LT)	5° 27' 24.27"	51.48'	102.89'	1050'	114+92.69	114+41.20	115+44.09

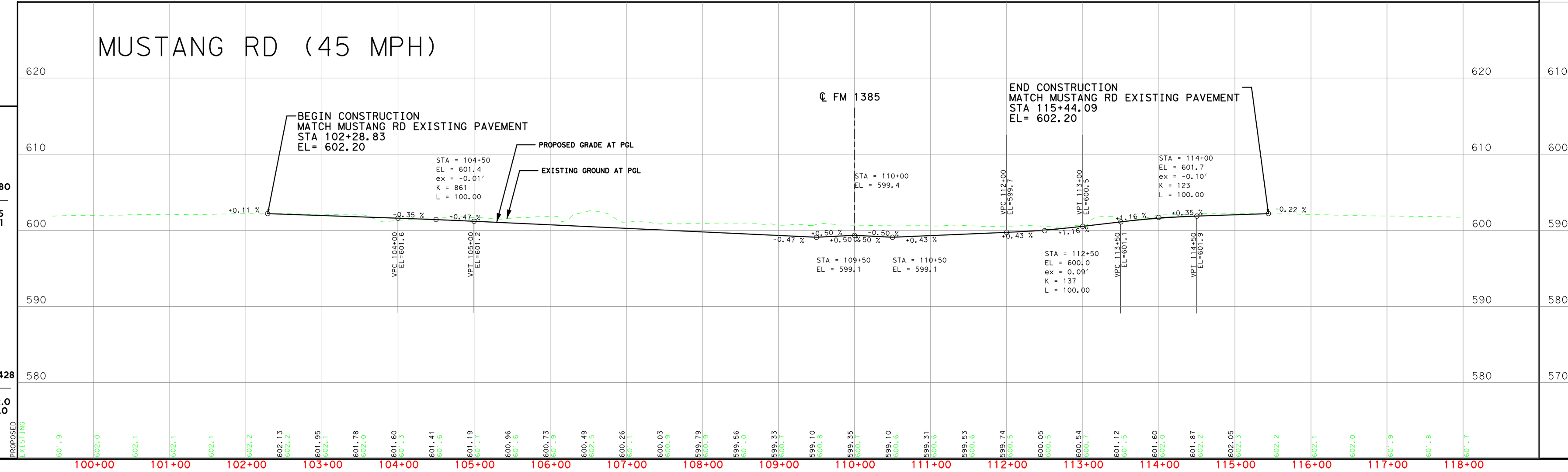
HORIZONTAL ALIGNMENT DATA

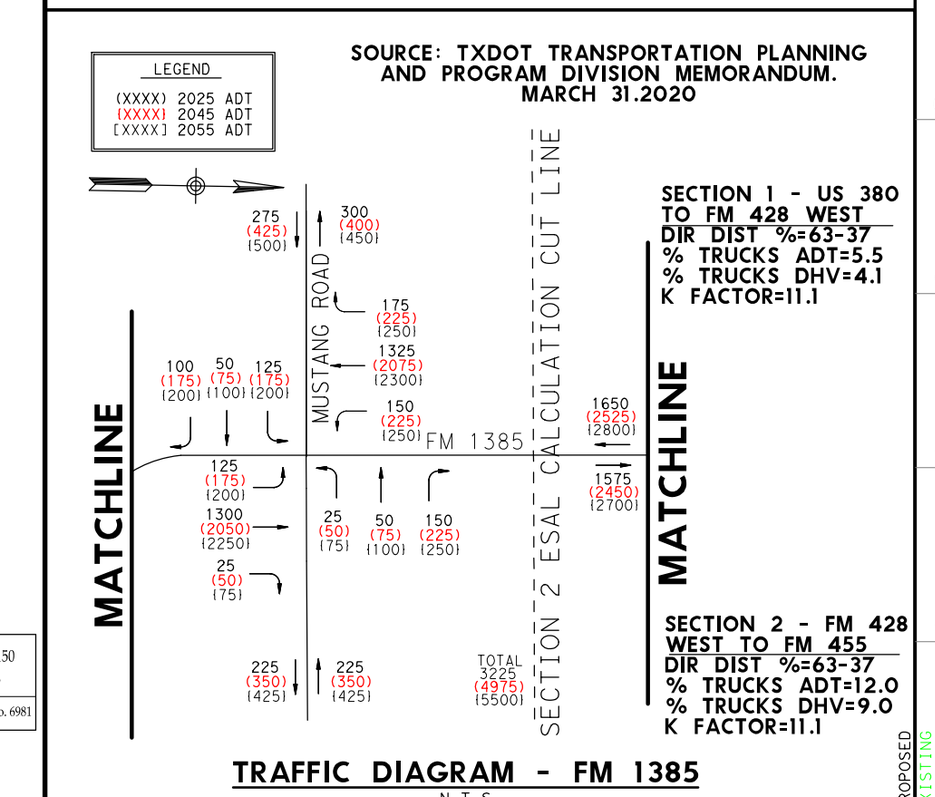
CHAIN NO.	POT STA	POT-NORTHING	POT-EASTING	BEARING	POT STA	POT-NORTHING	POT-EASTING
MUSTANG	98+00.00	7,177,800.58	2,455,889.45	S 88° 54' 05.76" E	--	--	--
MUSTANG	--	--	--	--	120+00.00	7,168,207.79	2,457,944.08

RDWY X-SLOPE

CROSS SLOPE TRANSITIONS

CHAIN ID.	LEFT STA	LEFT e	RIGHT STA	RIGHT e	TRANSITION LENGTH
FM 1385	570+60.00	-2.00%	570+60.00	-2.00%	100'
	571+60.00	-0.50%	571+60.00	-0.50%	
	573+75.00	-0.50%	573+75.00	-0.50%	100'
	574+75.00	-2.00%	574+75.00	-2.00%	
MUSTANG RD	107+30.00	-2.00%	107+30.00	-2.00%	150'
	108+80.00	0.35%	108+80.00	-0.35%	
	111+20.00	0.35%	111+20.00	-0.35%	150'
	112+70.00	-2.00%	112+70.00	-2.00%	





TRAFFIC DIAGRAM - FM 1385
N.T.S.

Texas Department of Transportation

DALLAS DISTRICT
DESIGN SCHEMATIC
MOHAMED K. BUR, P.E.
DISTRICT ENGINEER
DENTON COUNTY

FM 1385

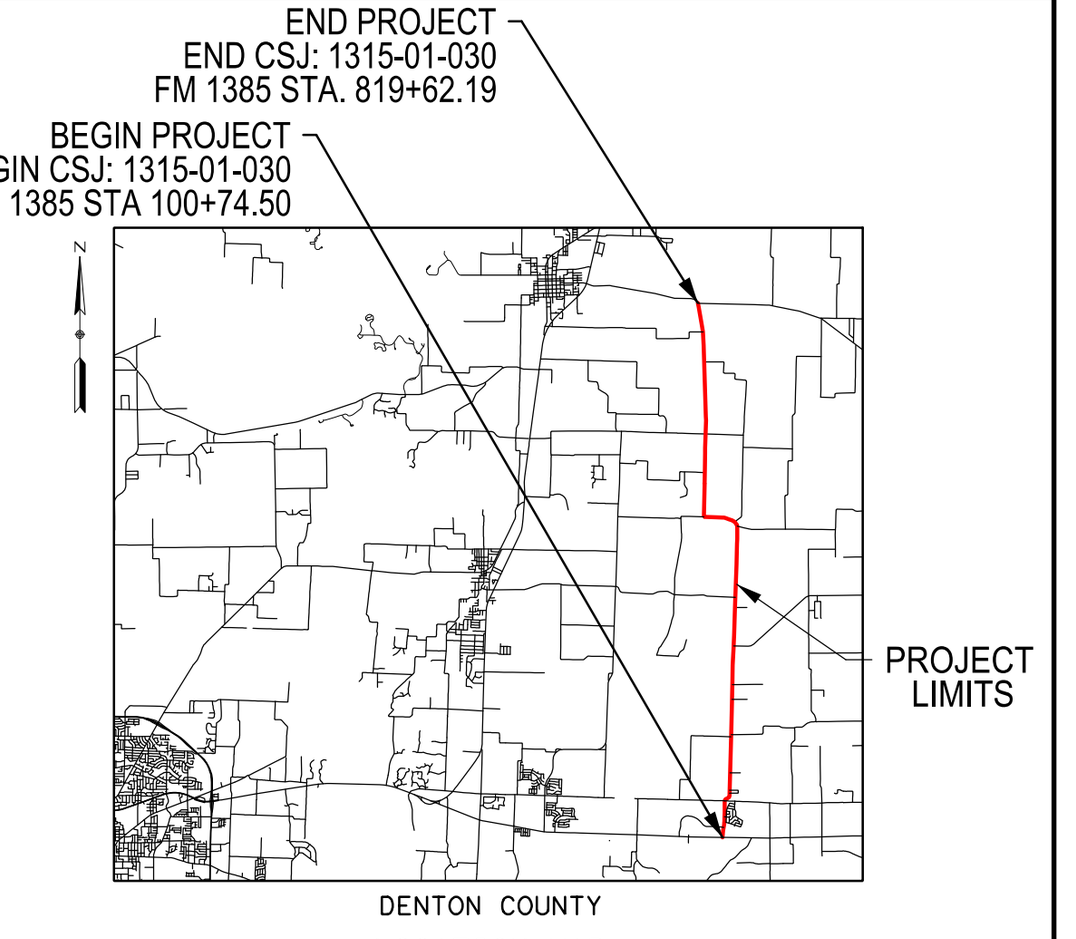
FROM: US 380 TO FM 455
CSJ: 1315-01-030

FUNCTIONAL CLASS: URBAN MAJOR COLLECTOR
PROJECT LENGTH: 12.01 MILES

DESIGN SPEED:
45 MPH = FM 1385

45 MPH = FM 455	45 MPH = FM 428 WEST
30 MPH = FISHTRAP RD	45 MPH = OLD FM 1385
45 MPH = GEE RD	45 MPH = MUSTANG RD
30 MPH = PARVIN RD	45 MPH = FRIENDSHIP RD
45 MPH = FM 428 EAST	30 MPH = LIGHTS RANCH RD
*30 MPH = ALL CONNCETIONS TO EXIST CROSS ST	30 MPH = STRITTMATTER RD

* MEETS OR EXCEEDS EXISTING CONDITIONS



DENTON COUNTY
LOCATION MAP
N.T.S.

DECEMBER 2021

HORIZ SCALE: 1"=100'
VERTICAL SCALE: 1"=10'

HOWARD COLUMBUS GIBBS III, P.E. (TX PE NO. 100239)
TIMOTHY M. NESBITT, P.E. (TX PE NO. 66648)

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ROLL 7 OF 9

LTRA Lina T. Ramey & Associates, Inc.
3320 Belt Line Rd
Farmers Branch, Texas 75234
TBPE Registration No. F-782

CIVIL ASSOCIATES, INC. 9330 LBJ Frwy, Ste. 1150 Dallas, Texas 75243 TBPE Firm Registration No. 4981

LEGEND:

PROPOSED MAINLANES
PROPOSED CROSS STREETS
PROPOSED DRIVEWAYS
PROPOSED SIDEWALKS
PROPOSED BRIDGE STRUCTURES
PAVEMENT REMOVAL
DISPLACEMENTS
PROPOSED RETAINING WALL
APPARENT EXISTING ROW
PROPOSED ROW
PROPOSED CENTERLINE/BASELINE
EXISTING EASEMENT
100 YR FLOODPLAIN LIMITS
FLOODWAY LIMITS
FUTURE PROJECT (BY OTHERS)
STREAM FLOW
DIRECTION OF TRAVEL
EXISTING CULVERT
PROPOSED CULVERT
XXX-X CURVE NUMBER
XX PROPERTY OWNERSHIP LABELS

NOTES:

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UTILITY LEGEND

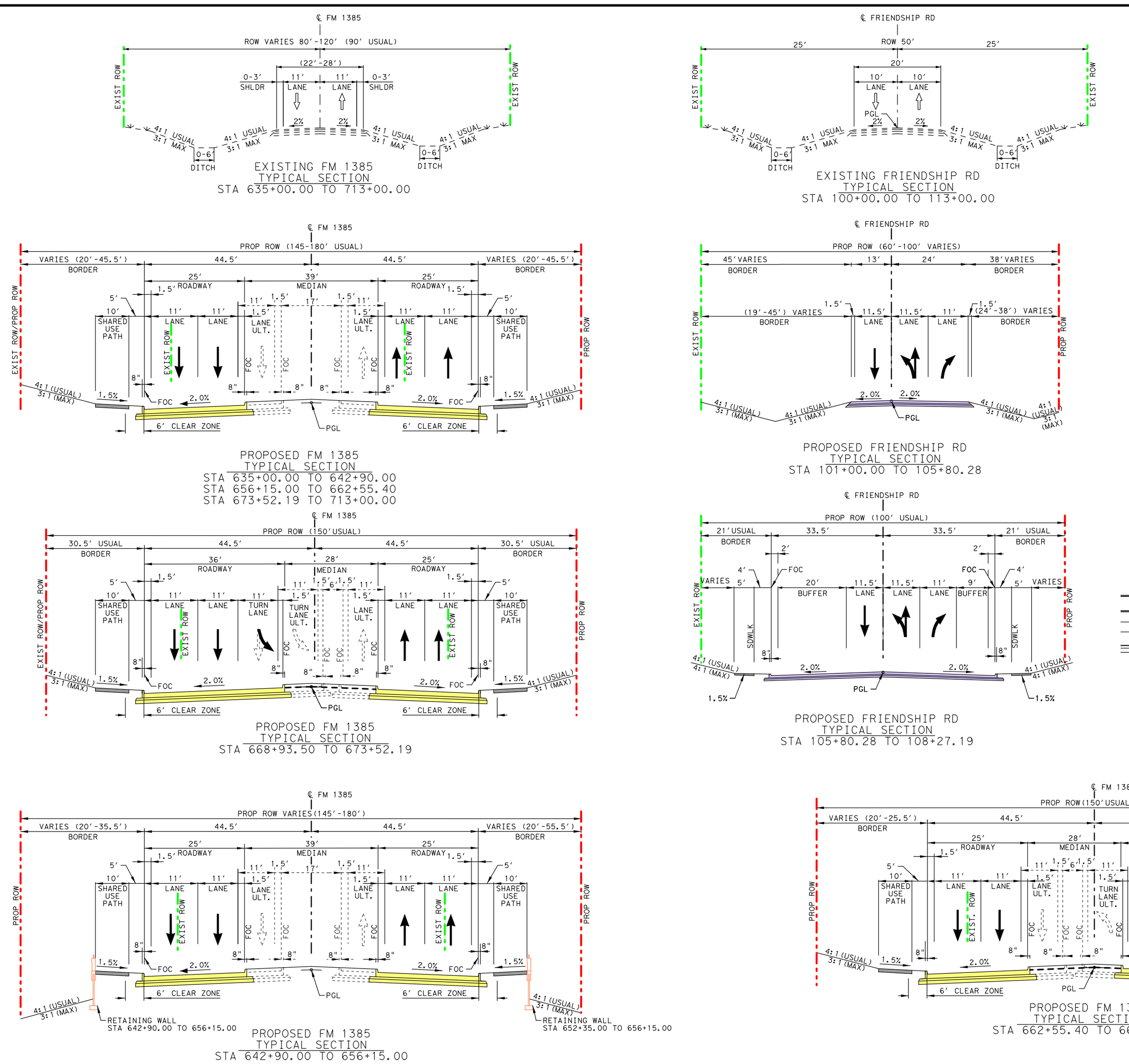
T1 TELEPHONE ATT
T1(D) TELEPHONE ATT
T2 TELEPHONE FRONTIER (VERIZON)
T2(D) TELEPHONE FRONTIER (VERIZON)
T-DUCT(D) T-DUCT ATT
FOC1 FIBER OPTIC ATT
FOC1(D) FIBER OPTIC ATT
FOC3 FIBER OPTIC NORTEX COMMUNICATIONS
FOC4 FIBER OPTIC GRANDE
FOC4(D) FIBER OPTIC GRANDE
FOC5 FIBER OPTIC SUDDENLINK
FOC6 FIBER OPTIC ZAYO
FOC7 FIBER OPTIC SPECTRUM
FOC8 FIBER OPTIC UPPER TRINITY REGIONAL WATER DISTRICT
E1 ELECTRIC COSERV
E1(D) ELECTRIC COSERV
FM1(D) FORCE MAIN MUSTANG SUD
G1 GAS ATMOS
G2 GAS COSERV
G2(D) GAS COSERV
PL1 PIPELINE ATMOS
PL1(D) PIPELINE ATMOS
PL3 PIPELINE ENERGY TRANSFER
PL5(D) PIPELINE ENTERPRISE
SD1 STORM SEWER TXDOT
SD1(D) STORM SEWER TXDOT
W1 WATER TOWN OF PROSPER
W1(D) WATER TOWN OF PROSPER
W2(D) WATER MUSTANG SUD
W3 WATER UPPER TRINITY REGIONAL WATER DISTRICT
W3(D) WATER UPPER TRINITY REGIONAL WATER DISTRICT
W4(D) WATER ARCADIA WATER
OH (SEE OVERHEAD LEGEND)

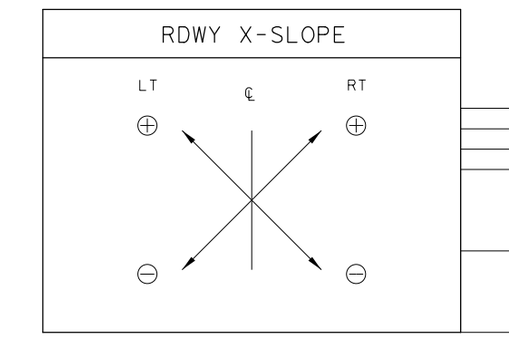
OVERHEAD LEGEND

1	COSERV	ELECTRIC
2	ATT	COMMUNICATION
3	FRONTIER	COMMUNICATION
4	GRANDE	COMMUNICATION
5	SUDDENLINK	COMMUNICATION

UTILITY NOTE:
ALL UTILITIES SHOWN ARE LEVEL "B" WHICH WERE ARRIVED AT USING GEOPHYSICAL EQUIPMENT UNLESS NOTED. LEVEL "D" UTILITIES ARE DERIVED FROM FURNISHED RECORDS.

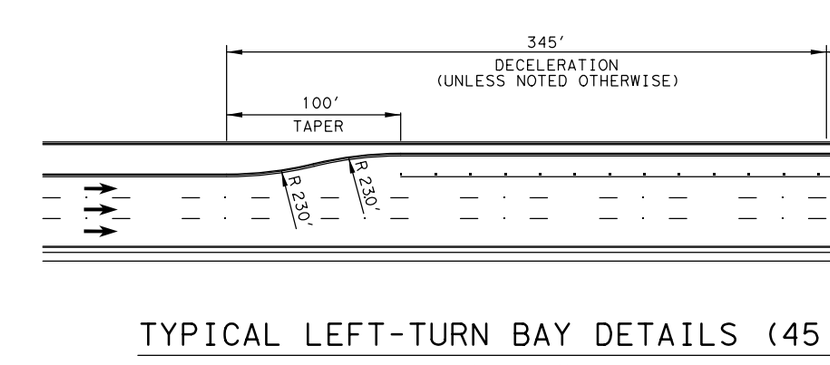
PRELIMINARY
NOT INTENDED FOR CONSTRUCTION OR BIDDING PURPOSES



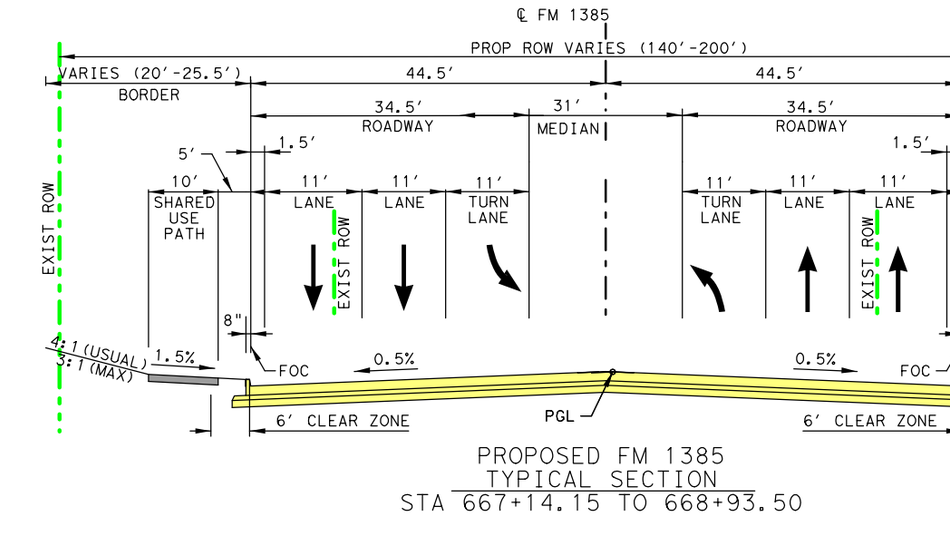


CROSS SLOPE TRANSITIONS

CHAIN ID.	LEFT STA	LEFT e	RIGHT STA	RIGHT e	TRANSITION LENGTH
FM 1385	666+15.00	-2.00%	666+15.00	-2.00%	100'
	667+15.00	-0.50%	667+15.00	-0.50%	
	669+10.00	-0.50%	669+10.00	-0.50%	100'
	670+10.00	-2.00%	670+10.00	-2.00%	
FRIENDSHIP RD	104+50.00	-2.00%	104+50.00	-2.00%	150'
	106+00.00	0.36%	106+00.00	-0.36%	
	108+00.00	0.36%	108+00.00	-0.36%	150'
	109+50.00	-2.00%	109+50.00	-2.00%	



TYPICAL LEFT-TURN BAY DETAILS (45 MPH)
N.T.S



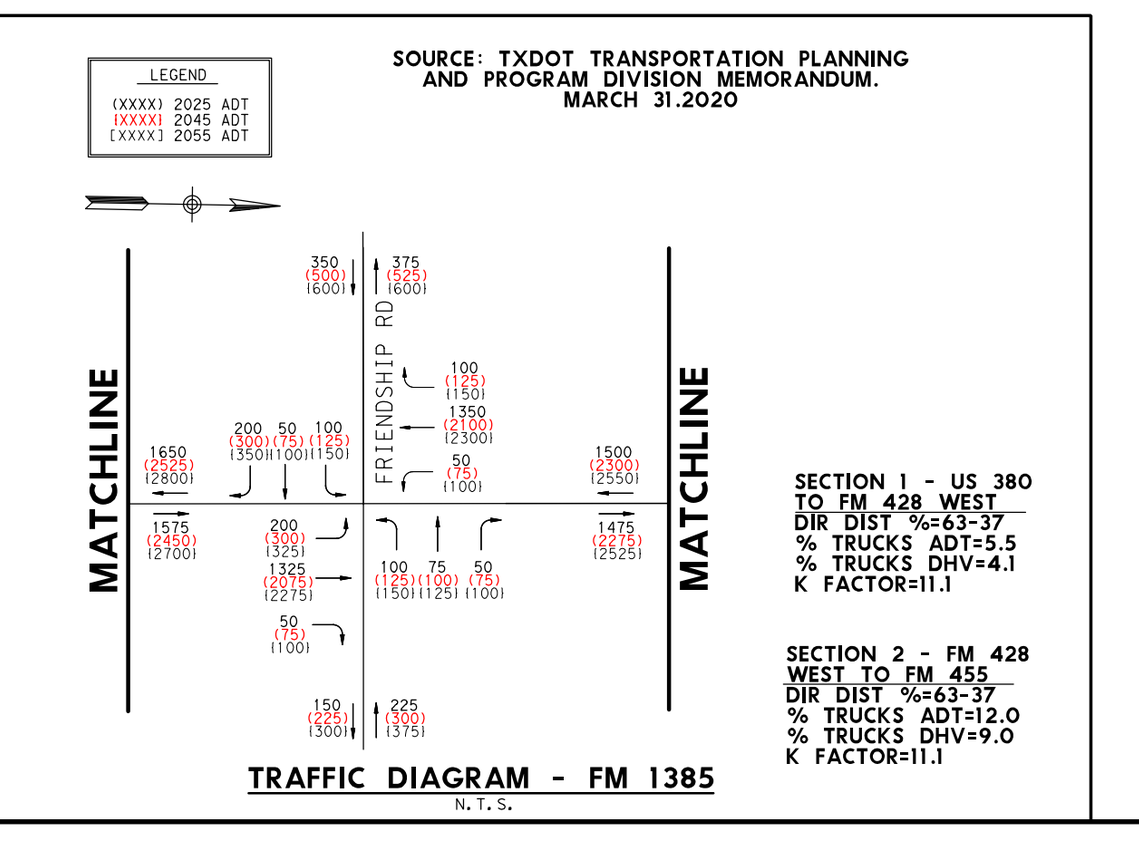
PROP ID	PROPERTY OWNERS' NAME
EB1017	ALEXANDER, MICHAEL & JACQUELYN
EB1018	MCGEE, JOHN G & SIDNEY JOAN T
EB1019	ILAPAKURTY, MADHAVI & PHANINDRA P & KAKARLA, ARUNA & BALUSU, PREM/64 KUMAR & GORUGANTULA, LAKSHMI MITREYI & KOOPELLA, SIR UDAY
EB1020	RODRIGUEZ, JOSE & VEGA, SONIA
EB1021	LOPEZ, CARLOS D & DUARTE, MARIA E
EB1022	SMITH, ROBERT & GRACE
EB1023	GEIGER, TAMMYLEE
EB1024	ELAND FARMS LP
WB1012	SHEARER, RICKY
WB1013	BROOKS, RETHA FERN
WB1014	PRICE FAMILY PARTNERS LTD
WB1015	STINSON, RYAN SCOTT
WB1016	YERUVA, VINIL REDDY & LOURDU ANUSHA & GADE, SLEEVA REDDY & PRASWEIHA SALIBENDIA
WB1017	KAREL, CHRISTOPHER & ABBEY
WB1018	GENE MCCUTCHIN LTD III

HORIZONTAL CURVE DATA TABLE

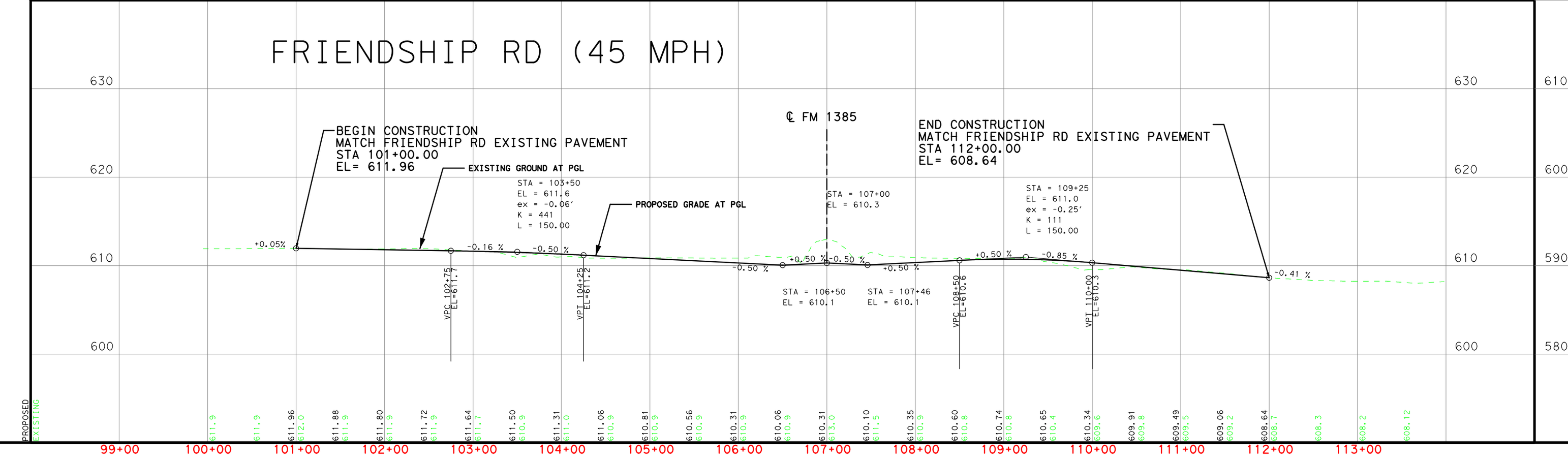
CURVE NO.	DELTA	DEGREE	TANGENT	LENGTH	RADUIS	PI STA	PC STA	PT STA
FM1385-107	1° 02' 00.00" (LT)	1° 08' 45.30"	45.08	90.18	5000'	637+59.84	637+14.75	638+04.93
FM1385-108	1° 43' 00.00" (RT)	1° 08' 45.30"	74.91	149.81	5000'	652+52.11	652+52.11	653+27.00
FM1385-109	1° 50' 32.01" (RT)	3° 49' 10.99"	24.12	48.23	1500'	682+97.43	682+73.32	683+21.55
FM1385-110	5° 35' 29.06" (LT)	3° 49' 10.99"	73.25	146.38	1500'	687+52.27	686+79.02	688+25.41
FRIENDSHIP-1	9° 13' 53.84" (RT)	5° 27' 24.27"	84.77'	169.18'	1050'	102+36.56	101+51.79	103+20.97
FRIENDSHIP-2	9° 51' 27.76" (LT)	5° 27' 24.27"	90.55'	180.65'	1050'	104+09.95	103+19.40	105+00.05
FRIENDSHIP-3	9° 17' 31.14" (LT)	5° 27' 24.27"	85.33'	170.28'	1050'	109+35.33	108+50.00	110+20.28
FRIENDSHIP-4	9° 17' 31.14" (RT	5° 27' 24.27"	85.33'	170.28'	1050'	111+05.61	110+20.28	111+90.57

HORIZONTAL ALIGNMENT DATA

CHAIN NO.	POT STA	POT-NORTHING	POT-EASTING	BEARING	POT STA	POT-NORTHING	POT-EASTING
FM1385 (PI)	--	--	--	--	663+59.30	7,177,294.18	2,456,771.31
FRIENDSHIP	98+00.00	7,168,271.85	2,455,747.62	S 87° 38' 50.49" E	--	--	--
FRIENDSHIP	--	--	--	--	115+00.00	7,177,740.74	2,457,585.12



TRAFFIC DIAGRAM - FM 1385
N.T.S.



Texas Department of Transportation
DALLAS DISTRICT
DESIGN SCHEMATIC
MOHAMED K. BUR, P.E.
DISTRICT ENGINEER
DENTON COUNTY
FM 1385
FROM: US 380 TO FM 455
CSJ: 1315-01-030
FUNCTIONAL CLASS: URBAN MAJOR COLLECTOR
PROJECT LENGTH: 12.01 MILES
DECEMBER 2021
ROLL 7 OF 9
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Texas Department of Transportation

DALLAS DISTRICT
DESIGN SCHEMATIC
MOHAMED K. BUR, P.E.
DISTRICT ENGINEER
DENTON COUNTY

FM 1385

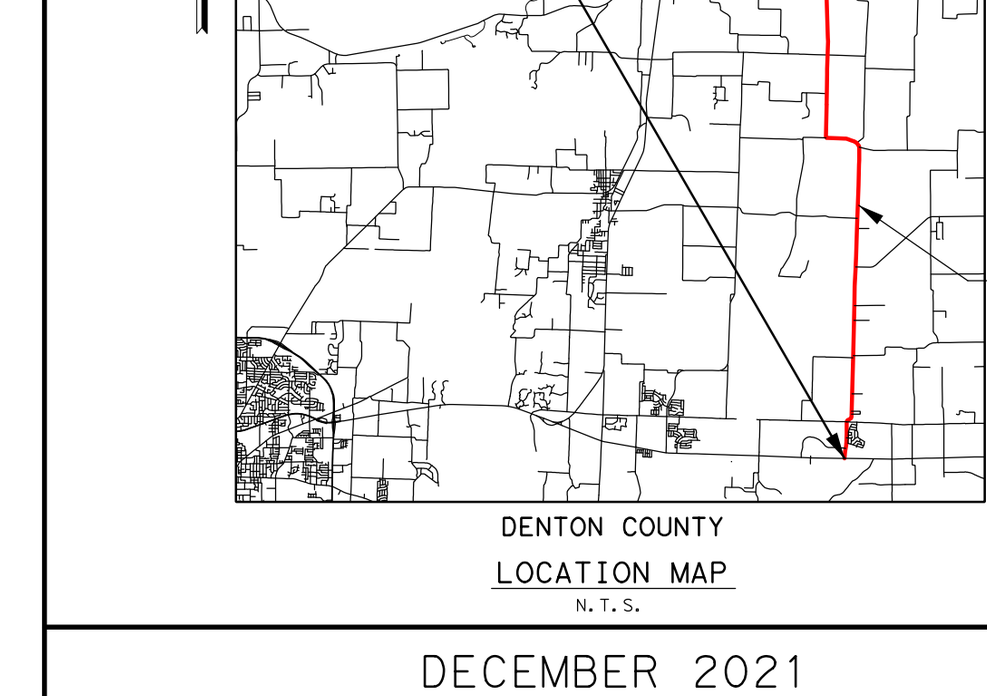
FROM: US 380 TO FM 455
CSJ: 1315-01-030
FUNCTIONAL CLASS: URBAN MAJOR COLLECTOR
PROJECT LENGTH: 12.01 MILES

DESIGN SPEED:
45 MPH = FM 1385

45 MPH = FM 455
30 MPH = FISHTRAP RD
45 MPH = GEE RD
30 MPH = PARVIN RD
45 MPH = FM 428 EAST
*30 MPH = ALL CONNECTIONS TO EXIST CROSS ST
45 MPH = FM 428 WEST
45 MPH = OLD FM 1385
45 MPH = MUSTANG RD
45 MPH = FRIENDSHIP RD
30 MPH = LIGHTS RANCH RD
30 MPH = STRITTMATTER RD

* MEETS OR EXCEEDS EXISTING CONDITIONS

END PROJECT
END CSJ: 1315-01-030
FM 1385 STA. 819+62.19
BEGIN PROJECT
BEGIN CSJ: 1315-01-030
FM 1385 STA 100+74.50



DENTON COUNTY
LOCATION MAP
N.T.S.

DECEMBER 2021

HORIZ SCALE: 1"=100'
0 50 100 150 200
VERTICAL SCALE: 1"=10'
0 5 10 15 20

HOWARD COLUMBUS GIBBS III, P.E. (TX PE NO. 100239)
TIMOTHY M. NESBITT, P.E. (TX PE NO. 66648)

DATE SUBMITTED: 12/10/2021
DATE APPROVED
DATE REVISED

PRELIMINARY — FOR INTERIM REVIEW ONLY. NOT FOR PERMITTING, BIDDING, OR CONSTRUCTION. Prepared by or under the Direct Supervision of HOWARD C. GIBBS III, P.E. 100239 12/10/2021

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ROLL 8 OF 9

Lina T. Ramey & Associates, Inc.
3320 Belt Line Rd
Farmers Branch, Texas 75234
TBPE Registration No. F-782

CIVIL ASSOCIATES, INC. — 9330 LBJ Frwy, Ste. 1150, Dallas, Texas 75243, TBPE Firm Registration No. 4981

LEGEND:

- PROPOSED MAINLANES
- PROPOSED CROSS STREETS
- PROPOSED DRIVEWAYS
- PROPOSED SIDEWALKS
- PROPOSED BRIDGE STRUCTURES
- PAVEMENT REMOVAL
- DISPLACEMENTS
- PROPOSED RETAINING WALL
- APPARENT EXISTING ROW
- PROPOSED ROW
- PROPOSED CENTERLINE/BASELINE
- EXISTING EASEMENT
- 100 YR FLOODPLAIN LIMITS
- FLOODWAY LIMITS
- FUTURE PROJECT (BY OTHERS)
- STREAM FLOW
- DIRECTION OF TRAVEL
- EXISTING CULVERT
- PROPOSED CULVERT
- CURVE NUMBER
- PROPERTY OWNERSHIP LABELS

NOTES:

1. EXISTING FEATURES WERE NOT FIELD SURVEYED. SCHEMATICS ARE BASED ON EXISTING PLANS AND AERIAL SURVEYS DATED APRIL 2020 AND RECORD PLANS.
2. FINAL LOCATION OF MEDIAN OPENINGS WILL BE DETERMINED IN THE PS&E DEVELOPMENT PHASE IN COORDINATION WITH THE LOCAL GOVERNMENTS.
3. SUPERELEVATION AXIS OF ROTATION IS ABOUT THE PGL.
4. DIMENSIONS ARE TO THE EDGE OF PAVEMENT OR NOMINAL FACE OF CURB UNLESS NOTED OTHERWISE.
5. APPROXIMATE 100 YEAR FLOODPLAIN LIMITS ARE BASED UPON FEMA FLOOD INSURANCE RATE MAP 48121C0270G.
6. EXISTING CULVERT LOCATIONS, SIZE, AND ELEVATIONS OBTAINED FROM FIELD SURVEY FOR INFORMATIONAL PURPOSES ONLY.
7. EXISTING DRIVEWAYS WILL REMAIN UNLESS IT IS DETERMINED DURING DETAILED DESIGN STAGE AND COORDINATION WITH LOCAL GOVERNMENT THAT THE DRIVEWAY IS A SAFETY ISSUE AND/OR IS LOCATED WITHIN ACCESS DENIAL LIMITS SHOWN.
8. ALL CURBS ARE TYPE II (8") (UNLESS NOTED OTHERWISE).
9. CONVENTIONAL ROADWAY SIGNAGE (SMALL SIGNS) ARE NOT SHOWN AND WILL BE DEVELOPED DURING THE PS&E PHASE OF THE PROJECT.
10. WB-62 DESIGN VEHICLE WAS USED IN EVALUATION OF TURNING MOVEMENTS.
11. TRAFFIC VOLUMES BASED ON TRAFFIC COUNTS AND GROWTH RATES PROVIDED BY TP&P, TRAFFIC VOLUMES APPROVED BY TXDOT TP&P (MARCH 2020).
12. AS PER MUTCD REQUIREMENTS, A TRAFFIC SIGNAL WARRANT ANALYSIS WILL BE REQUIRED BEFORE INTERSECTIONS ARE CONSTRUCTED TO JUSTIFY THE INSTALLATION OF TRAFFIC SIGNALS.
13. OWNERSHIP INFORMATION SHOWN ON SCHEMATIC OBTAINED FROM DENTON COUNTY APPRAISAL DISTRICT (AUGUST 2020).
14. ADA RAMPS AND SIDEWALKS ARE DIAGRAMMATIC ONLY AND WILL BE DESIGNED DURING FINAL DESIGN PHASE (PS&E).
15. BUILDINGS ARE SHOWN AS POTENTIAL DISPLACEMENT IF THE PROPOSED ROW PHYSICALLY INTERSECTS THE EXISTING BUILDING STRUCTURE.

UTILITY LEGEND

- T1 — TELEPHONE ATT
- T1(D) — TELEPHONE ATT
- T2 — TELEPHONE FRONTIER (VERIZON)
- T2(D) — TELEPHONE FRONTIER (VERIZON)
- T-DUCT1(D) — T-DUCT ATT
- FOC1 — FIBER OPTIC ATT
- FOC1(D) — FIBER OPTIC ATT
- FOC3 — FIBER OPTIC NORTEX COMMUNICATIONS
- FOC4 — FIBER OPTIC GRANDE
- FOC4(D) — FIBER OPTIC GRANDE
- FOC5 — FIBER OPTIC SUDDENLINK
- FOC6 — FIBER OPTIC ZAYO
- FOC7 — FIBER OPTIC SPECTRUM
- FOC8 — FIBER OPTIC UPPER TRINITY REGIONAL WATER DISTRICT
- E1 — ELECTRIC COSERV
- E1(D) — ELECTRIC COSERV
- FM1(D) — FORCE MAIN MUSTANG SUD
- G1 — GAS ATMOS
- G2 — GAS COSERV
- G2(D) — GAS COSERV
- PL1 — PIPELINE ATMOS
- PL1(D) — PIPELINE ATMOS
- PL3 — PIPELINE ENERGY TRANSFER
- PL5(D) — PIPELINE ENTERPRISE
- SD1 — STORM SEWER TXDOT
- SD1(D) — STORM SEWER TXDOT
- W1 — WATER TOWN OF PROSPER
- W1(D) — WATER TOWN OF PROSPER
- W2(D) — WATER MUSTANG SUD
- W3 — WATER UPPER TRINITY REGIONAL WATER DISTRICT
- W3(D) — WATER UPPER TRINITY REGIONAL WATER DISTRICT
- W4(D) — WATER ARCADIA WATER
- OH — (SEE OVERHEAD LEGEND)

OVERHEAD LEGEND		
1	COSERV	ELECTRIC
2	ATT	COMMUNICATION
3	FRONTIER	COMMUNICATION
4	GRANDE	COMMUNICATION
5	SUDDENLINK	COMMUNICATION

UTILITY NOTE:
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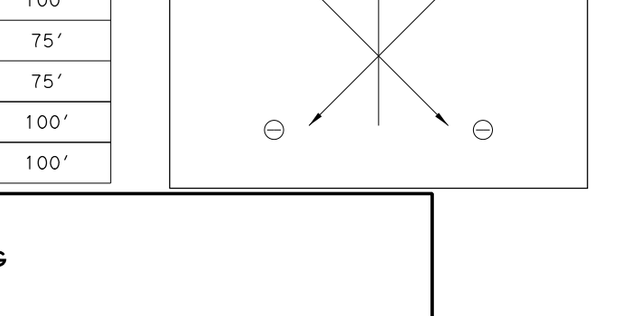
PRELIMINARY
NOT INTENDED FOR CONSTRUCTION OR BIDDING PURPOSES

CHAIN ID.	LEFT STA	LEFT e	RIGHT STA	RIGHT e	TRANSITION LENGTH
FM 1385	749+40.00	-2.00%	749+40.00	-2.00%	100'
	750+40.00	-0.50%	750+40.00	-0.50%	
	752+20.00	-0.50%	752+20.00	-0.50%	100'
	753+20.00	-2.00%	753+20.00	-2.00%	
	784+45.00	-2.00%	784+45.00	-2.00%	75'
	785+20.00	-1.00%	785+20.00	-1.00%	
	786+50.00	-1.00%	786+50.00	-1.00%	75'
	787+25.00	-2.00%	787+25.00	-2.00%	
LIGHTS RANCH RD	102+85.00	0.35%	102+85.00	-0.35%	100'
	103+85.00	-2.00%	103+85.00	-2.00%	
STRITTMATTER RD	100+00.00	-2.00%	100+00.00	-2.00%	100'
	101+00.00	-0.36%	101+00.00	0.36%	

CROSS SLOPE TRANSITIONS



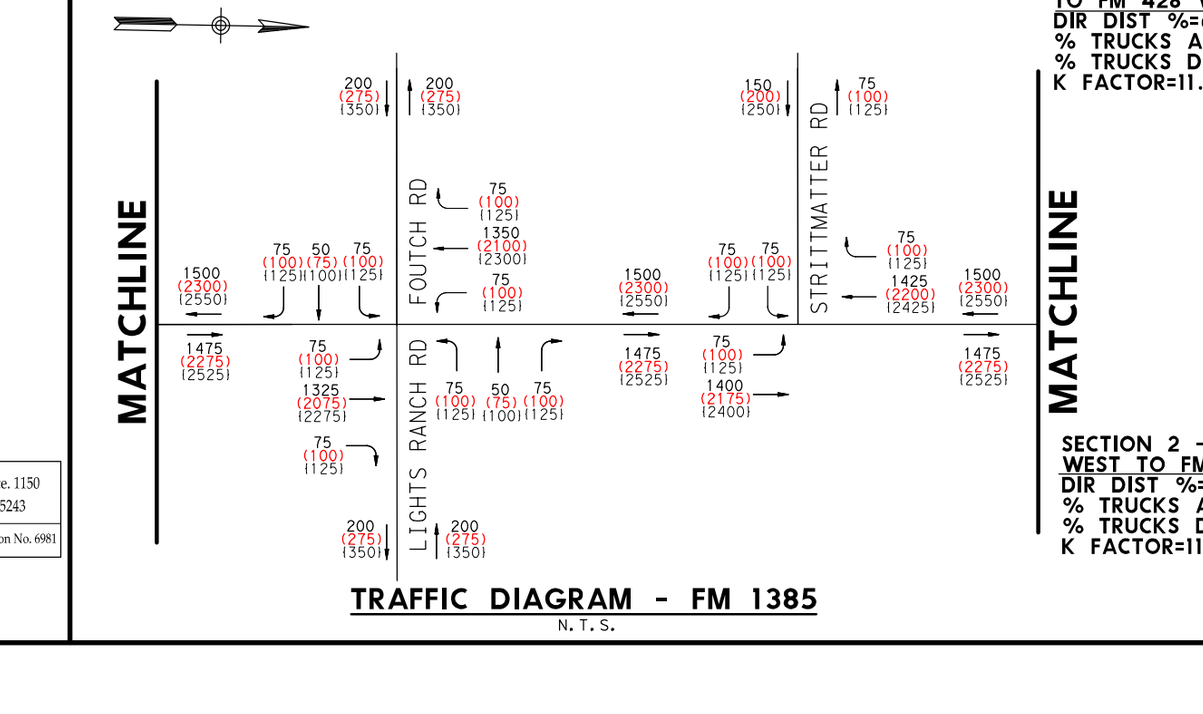
PROP ID	PROPERTY OWNERS' NAME
EB1024	ELAND FARMS LP
EB1025	L1719 LLC
WB1018	GENE MCCUTCHIN LTD III
WB1019	ANSELMI, MICHAEL F & DEBORAH
WB1020	KANDI, SANTOSH & KODUGANTI, SIRISHA & PULLABHOTLA, PRASAD S & ANUPAMA
WB1021	TUPY, MILTON R
WB1022	GABY, CRAIG & MARLA JEAN
WB1023	CAMPBELL, GUY & DI-ANN
WB1024	PARKER, JAMES T & MERIDITH D
WB1025	VICKERS, MARK E & MARY E
WB1026	CARAVELLA, MICHAEL & TIFFANY
WB1027	MILLER, CYNTHIA M
WB1028	MEXIA, STEPHANIE DIANE
WB1029	SWEARENGIN, CURTIS W & CEDANO, CESAR HEREDIA
WB1030	SHAW, ANDREW K & CHLADEK, MARISSA G

HORIZONTAL CURVE DATA TABLE

CURVE NO.	DELTA	DEGREE	TANGENT	LENGTH	RADIUS	PI STA	PC STA	PT STA
FM1385-111	7° 37' 23.14" (LT)	3° 49' 10.99"	99.93	199.57	1500'	784+41.92	783+41.99	785+41.56
STRITTMATTER1	1° 08' 22.48" (RT)	1° 08' 45.30"	49.73	99.45	5000'	97+06.94	96+57.22	97+56.66

HORIZONTAL ALIGNMENT DATA

CHAIN NO.	POT STA	POT-NORTHING	POT-EASTING	BEARING	POT STA	POT-NORTHING	POT-EASTING
FM1385 (PI)	751+62.41	7,186,082.06	2,456,660.21	N 1° 46' 16.56" W	--	--	--
LIGHTSRANCH	99+00.00	7,186,053.63	2,456,358.80	S 89° 54' 59.85" E	--	--	--
LIGHTSRANCH	--	--	--	--	106+00.00	7,186,052.61	2,457,058.80
STRITTMATTER	99+00.00	7,189,503.16	2,456,236.93	S 89° 14' 38.12" E	--	--	--



TRAFFIC DIAGRAM - FM 1385
N.T.S.

Texas Department of Transportation

DALLAS DISTRICT
DESIGN SCHEMATIC
MOHAMED K. BUR, P.E.
DISTRICT ENGINEER

DENTON COUNTY

FM 1385

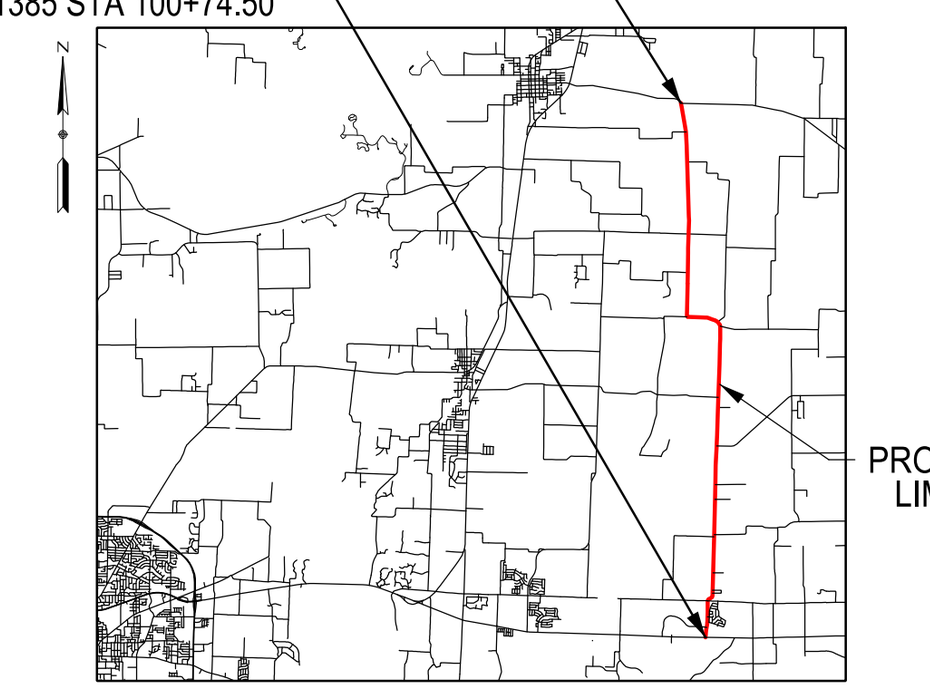
FROM: US 380 TO FM 455
CSJ: 1315-01-030

FUNCTIONAL CLASS: URBAN MAJOR COLLECTOR
PROJECT LENGTH: 12.01 MILES

DESIGN SPEED:
45 MPH = FM 1385

45 MPH = FM 455	45 MPH = FM 428 WEST
30 MPH = FISHTRAP RD	45 MPH = OLD FM 1385
45 MPH = GEE RD	45 MPH = MUSTANG RD
30 MPH = PARVIN RD	45 MPH = FRIENDSHIP RD
45 MPH = FM 428 EAST	30 MPH = LIGHTS RANCH RD
*30 MPH = ALL CONNCETIONS TO EXIST CROSS ST	30 MPH = STRITTMATTER RD

* MEETS OR EXCEEDS EXISTING CONDITIONS



DENTON COUNTY
LOCATION MAP
N.T.S.

DECEMBER 2021

HORIZ SCALE: 1"=100'
VERTICAL SCALE: 1"=10'

HOWARD COLUMBUS GIBBS III, P.E. (TX PE NO. 100239)
TIMOTHY M. NESBITT, P.E. (TX PE NO. 66648)

DATE SUBMITTED: 12/10/2021
DATE APPROVED:
DATE REVISED:

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ROLL 9 OF 9

LTRA Lina T. Ramey & Associates, Inc.
3320 Belt Line Rd
Farmers Branch, Texas 75234
TBPE Registration No. F-782

CIVIL ASSOCIATES, INC. — 9330 LBJ Frwy, Ste. 1150, Dallas, Texas 75243, TBPE Firm Registration No. 4981

LEGEND:

- PROPOSED MAINLANES
- PROPOSED CROSS STREETS
- PROPOSED DRIVEWAYS
- PROPOSED SIDEWALKS
- PROPOSED BRIDGE STRUCTURES
- PAVEMENT REMOVAL
- DISPLACEMENTS
- PROPOSED RETAINING WALL
- APPARENT EXISTING ROW
- PROPOSED ROW
- PROPOSED CENTERLINE/BASELINE
- EXISTING EASEMENT
- 100 YR FLOODPLAIN LIMITS
- FLOODWAY LIMITS
- FUTURE PROJECT (BY OTHERS)
- STREAM FLOW
- DIRECTION OF TRAVEL
- EXISTING CULVERT
- PROPOSED CULVERT
- (XXX-X) CURVE NUMBER
- (XX) PROPERTY OWNERSHIP LABELS

NOTES:

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UTILITY LEGEND

- T1 — TELEPHONE ATT
- T1 (D) — TELEPHONE ATT
- T2 — TELEPHONE FRONTIER (VERIZON)
- T2 (D) — TELEPHONE FRONTIER (VERIZON)
- T-DUCT1 (D) — T-DUCT ATT
- FOC1 — FIBER OPTIC ATT
- FOC1 (D) — FIBER OPTIC ATT
- FOC3 — FIBER OPTIC NORTEX COMMUNICATIONS
- FOC4 — FIBER OPTIC GRANDE
- FOC4 (D) — FIBER OPTIC GRANDE
- FOC5 — FIBER OPTIC SUDDENLINK
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- E1 — ELECTRIC COSERV
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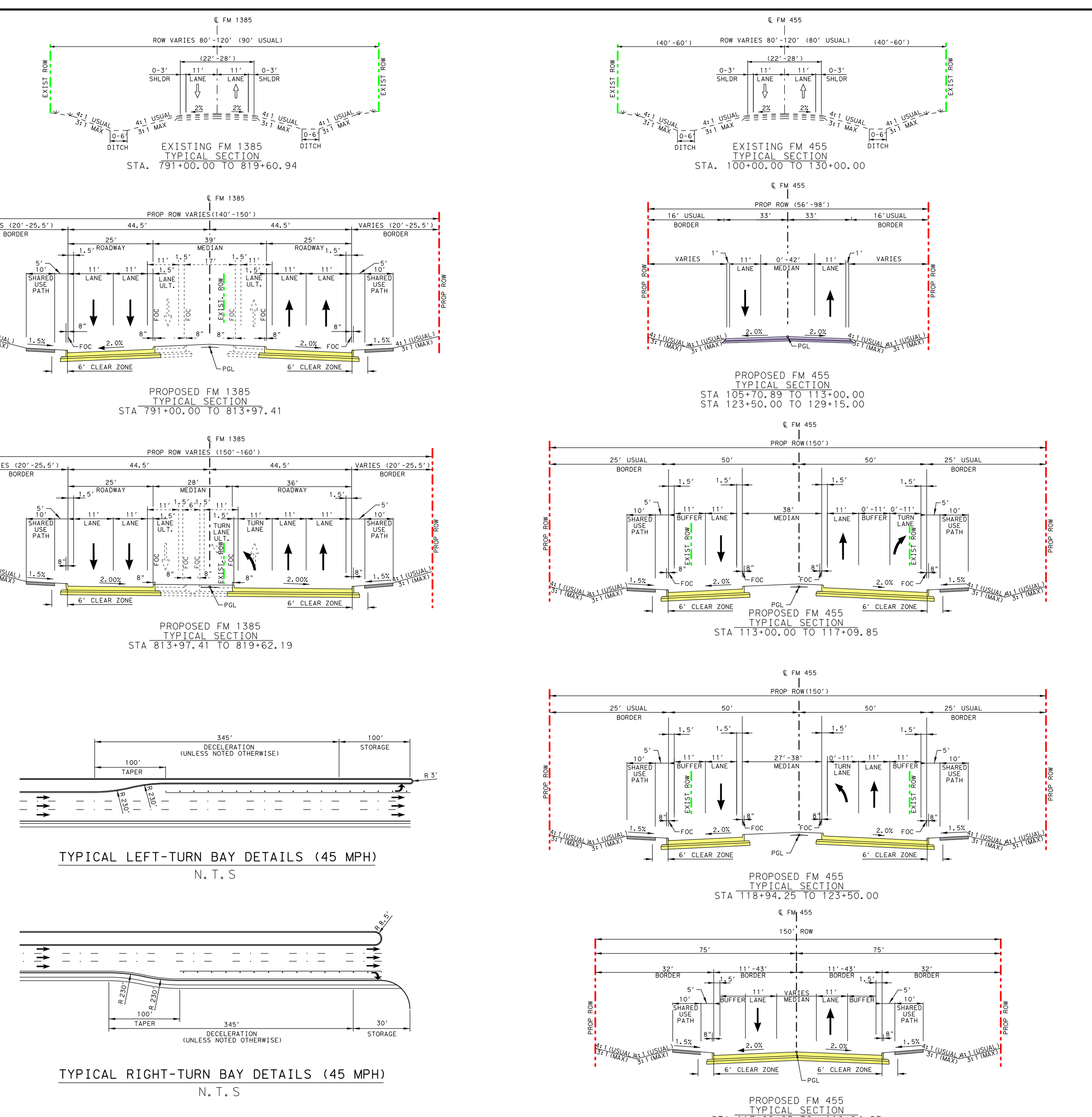
- PL1 (D) — PIPELINE ATMOS
- PL3 — PIPELINE ENERGY TRANSFER
- PL5 (D) — PIPELINE ENTERPRISE
- SD1 — STORM SEWER TXDOT
- SD1 (D) — STORM SEWER TXDOT
- W1 — WATER TOWN OF PROSPER
- W1 (D) — WATER TOWN OF PROSPER
- W2 (D) — WATER MUSTANG SUD
- W3 — WATER UPPER TRINITY REGIONAL WATER DISTRICT
- W3 (D) — WATER UPPER TRINITY REGIONAL WATER DISTRICT
- W4 (D) — WATER ARCADIA WATER
- OH — (SEE OVERHEAD LEGEND)

OVERHEAD LEGEND		
1	COSERV	ELECTRIC
2	ATT	COMMUNICATION
3	FRONTIER	COMMUNICATION
4	GRANDE	COMMUNICATION
5	SUDDENLINK	COMMUNICATION

UTILITY NOTE:
ALL UTILITIES SHOWN ARE LEVEL "B" WHICH WERE ARRIVED AT USING GEOPHYSICAL EQUIPMENT UNLESS NOTED. LEVEL "D" UTILITIES ARE DERIVED FROM FURNISHED RECORDS.

PRELIMINARY
NOT INTENDED FOR CONSTRUCTION OR BIDDING PURPOSES



EXISTING FM 1385 TYPICAL SECTION
STA. 791+00.00 TO 819+60.94

PROPOSED FM 1385 TYPICAL SECTION
STA 791+00.00 TO 813+97.41

PROPOSED FM 1385 TYPICAL SECTION
STA 813+97.41 TO 819+62.19

TYPICAL LEFT-TURN BAY DETAILS (45 MPH)
N.T.S

TYPICAL RIGHT-TURN BAY DETAILS (45 MPH)
N.T.S

EXISTING FM 455 TYPICAL SECTION
STA. 100+00.00 TO 130+00.00

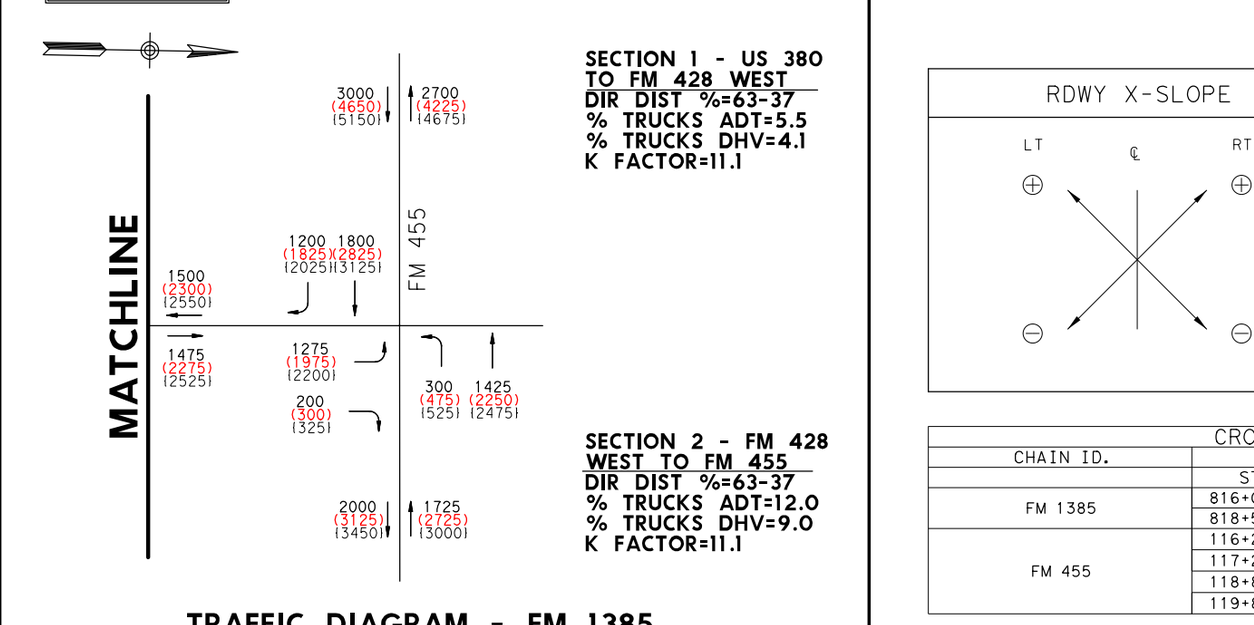
PROPOSED FM 455 TYPICAL SECTION
STA 105+70.89 TO 113+00.00
STA 123+50.00 TO 129+15.00

PROPOSED FM 455 TYPICAL SECTION
STA 113+00.00 TO 117+09.85

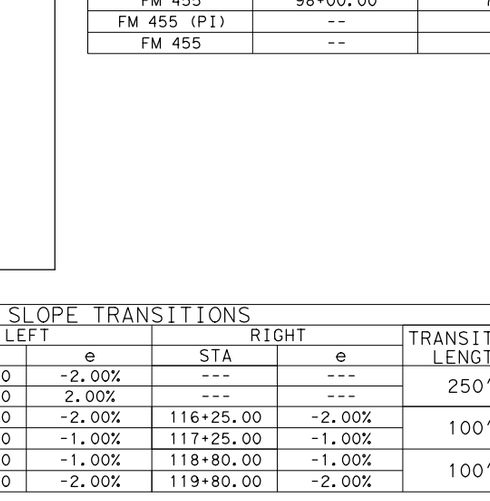
PROPOSED FM 455 TYPICAL SECTION
STA 118+94.25 TO 123+50.00

PROPOSED FM 455 TYPICAL SECTION
STA 117+09.85 TO 118+94.25

SOURCE: TXDOT TRANSPORTATION PLANNING AND PROGRAM DIVISION MEMORANDUM. MARCH 31.2020



TRAFFIC DIAGRAM - FM 1385
N.T.S.



HORIZONTAL CURVE DATA TABLE

CURVE NO.	DELTA	DEGREE	TANGENT	LENGTH	RADUIS	PI STA	PC STA	PT STA
FM1385-112	0° 51' 43.37" (LT)	0° 34' 22.65"	75.23	150.46	10000'	794+22.85	793+47.63	794+98.08
FM1385-113	28° 25' 47.19" (RT)	5° 27' 24.27"	265.98	521.00	1050'	816+64.70	813+98.72	819+19.72
FM455-1	30° 40' 25.00" (RT)	5° 27' 24.27"	287.97'	562.12'	1050'	108+58.86	105+70.89	111+33.01
FM455-2	30° 15' 16.00" (LT)	5° 27' 24.27"	283.85'	554.44'	1050'	118+30.14	115+46.30	121+00.74

HORIZONTAL ALIGNMENT DATA

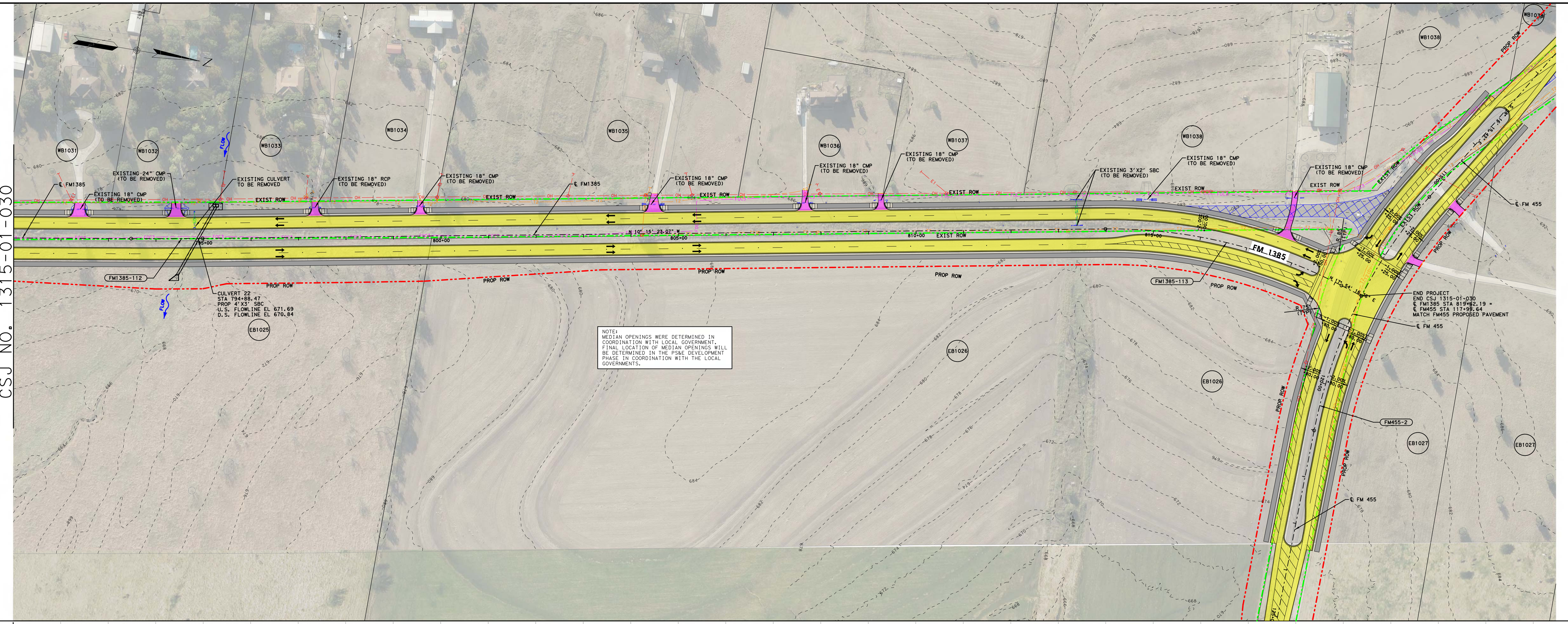
CHAIN NO.	POT STA	POT-NORTHING	POT-EASTING	BEARING	POT STA	POT-NORTHING	POT-EASTING
FM1385	--	--	--	--	819+62.19	7,192,835.98	2,456,095.32
FM 455	98+00.00	7,193,331.60	2,454,210.99	S 88° 54' 40.29" E	--	--	--
FM 455 (PI)	--	--	--	S 88° 31' 31.26" E	132+46.01	7,192,757.25	2,457,536.19
FM 455	--	--	--	S 88° 41' 07.38" E	137+00.00	7,192,746.84	2,457,990.06

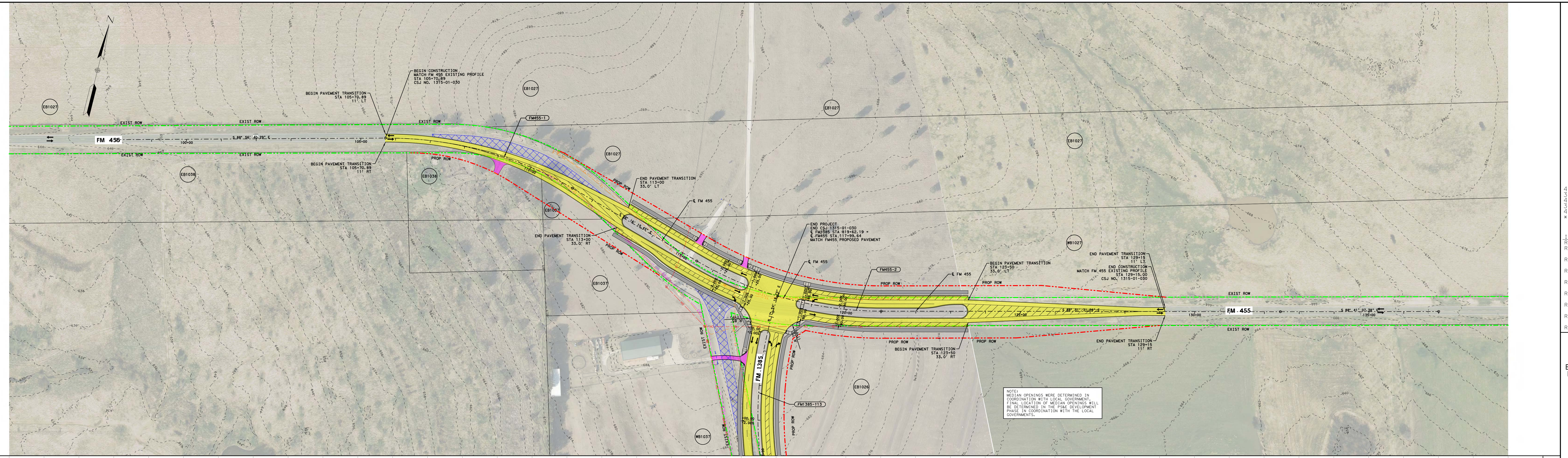
CROSS SLOPE TRANSITIONS

CHAIN ID.	LEFT		RIGHT		TRANSITION LENGTH
	STA	e	STA	e	
FM 1385	816+00.00	-2.00%	---	---	250'
	818+50.00	2.00%	---	---	
FM 455	116+25.00	-2.00%	116+25.00	-2.00%	100'
	117+25.00	-1.00%	117+25.00	-1.00%	
	118+80.00	-1.00%	118+80.00	-1.00%	100'
	119+80.00	-2.00%	119+80.00	-2.00%	

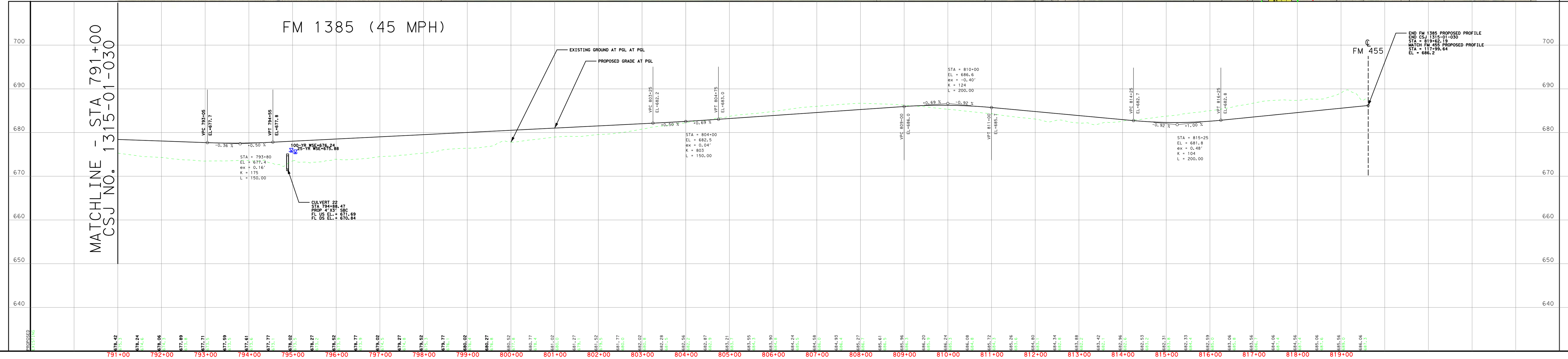
PROP ID	PROPERTY OWNERS' NAME
EB1025	L1719 LLC
EB1026	MCCUTCHIN, GENE P
EB1027	KIRK, SENNETT, III, TRS, CLAYTON D SKILES TRUST & CLAIRE
EB1038	PARAMM ESTATES LLC
WB1031	MCCAIN, PAUL & PAULA
WB1032	HALSELL, FURD III & JAMIE C
WB1033	DURAN, JOSEPH M & PAMELA K
WB1034	CONFIDENTIAL OWNER
WB1035	GOLDEN RIDGE LLC
WB1036	MARQUEZ, JOHNNY
WB1037	PATTERSON, WESLEY JOHN
WB1038	COULTER, DONALD & PHYLLIS

MATCHLINE - STA 791+00
CSJ NO. 1315-01-030

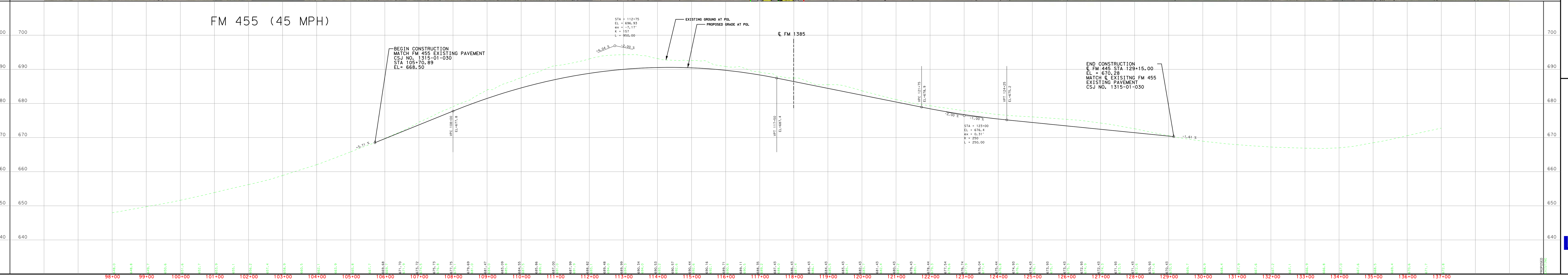




FM 1385 (45 MPH)



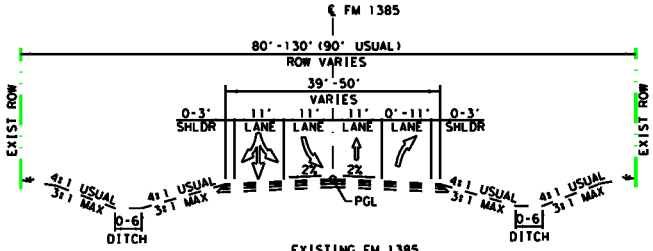
FM 455 (45 MPH)



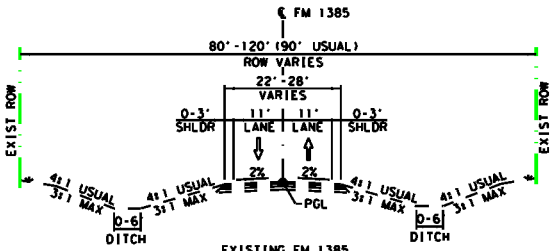
Texas Department of Transportation
DALLAS DISTRICT
DESIGN SCHEMATIC
MOHAMED K. BUR, P.E.
DISTRICT ENGINEER
DENTON COUNTY
FM 1385
FROM: US 380 TO FM 455
CSJ: 1315-01-030
FUNCTIONAL CLASS: URBAN MAJOR COLLECTOR
PROJECT LENGTH: 12.01 MILES
DECEMBER 2021
ROLL 9 OF 9

Appendix D

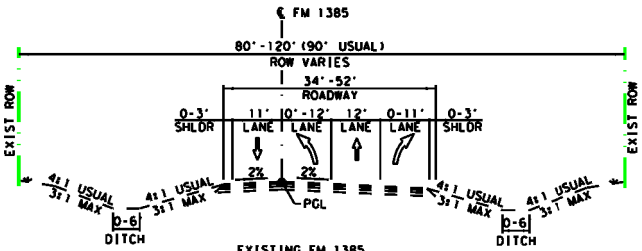
Typical Sections



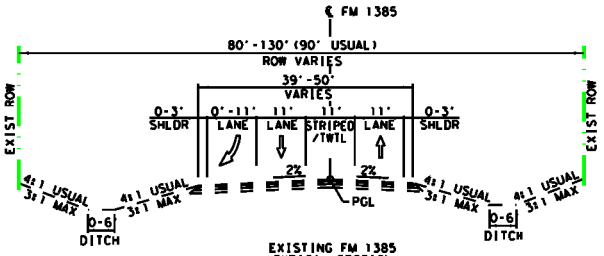
EXISTING FM 1385
TYPICAL SECTION
STA 100+74.50 TO STA 106+50.00



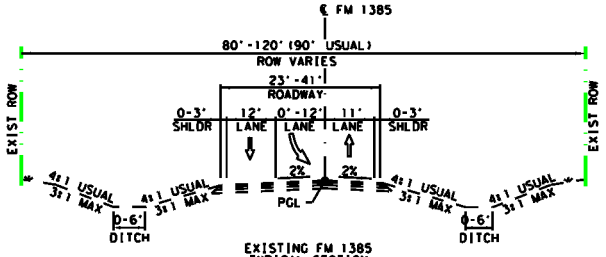
EXISTING FM 1385
TYPICAL SECTION
STA 106+50.00 TO STA 116+00.00
STA 123+50.00 TO STA 132+00.00
STA 152+00.00 TO STA 155+50.00
STA 174+00.00 TO STA 177+50.00
STA 193+00.00 TO STA 225+50.00
STA 234+00.00 TO STA 240+50.00
STA 250+50.00 TO STA 267+50.00
STA 286+50.00 TO STA 408+00.00
STA 411+50.00 TO STA 819+00.00



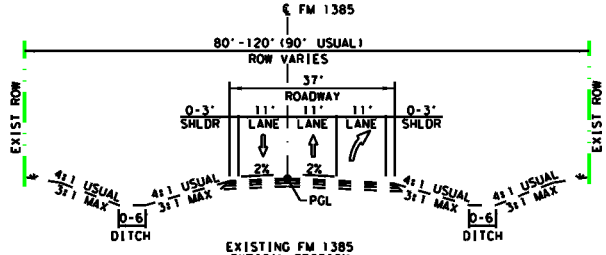
EXISTING FM 1385
TYPICAL SECTION
STA 132+00.00 TO STA 141+00.00
STA 155+00.00 TO STA 165+50.00
STA 225+50.00 TO STA 231+00.00
STA 240+50.00 TO STA 248+00.00
STA 272+00.00 TO STA 278+50.00



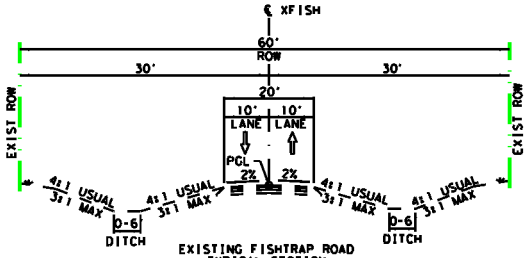
EXISTING FM 1385
TYPICAL SECTION
STA 143+00.00 TO STA 152+00.00
STA 165+50.00 TO STA 174+00.00
STA 185+50.00 TO STA 193+00.00
STA 231+00.00 TO STA 234+00.00
STA 248+00.00 TO STA 250+50.00



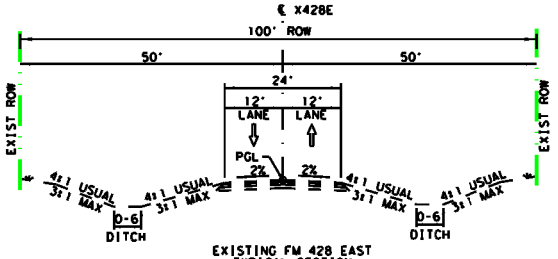
EXISTING FM 1385
TYPICAL SECTION
STA 141+00.00 TO STA 143+00.00
STA 278+50.00 TO STA 283+00.00



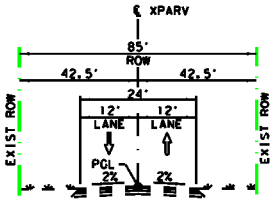
EXISTING FM 1385
TYPICAL SECTION
STA 116+00.00 TO STA 123+50.00
STA 267+50.00 TO STA 272+00.00
STA 283+00.00 TO STA 286+50.00
STA 408+00.00 TO STA 411+50.00



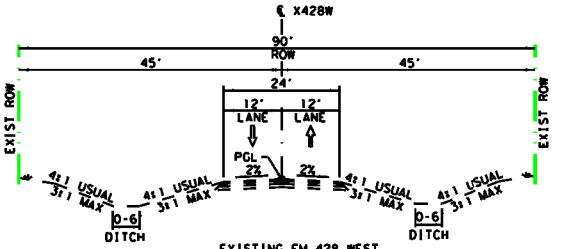
EXISTING FISHTRAP ROAD
TYPICAL SECTION
STA 15+74.30 TO STA 21+19.92



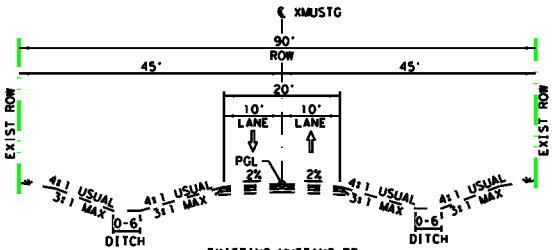
EXISTING FM 428 EAST
TYPICAL SECTION
STA 10+00.00 TO STA 13+75.00



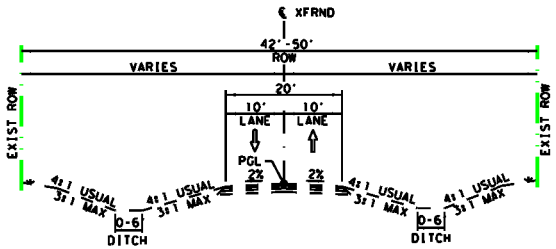
EXISTING PARVIN RD
TYPICAL SECTION
STA 10+00.00 TO STA 14+29.89



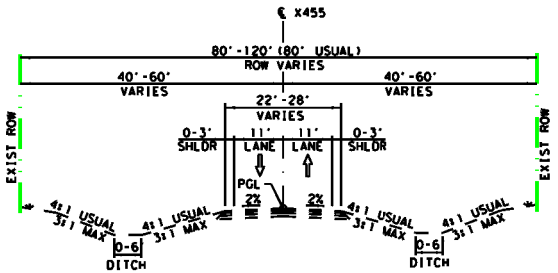
EXISTING FM 428 WEST
TYPICAL SECTION
STA 12+45.00 TO STA 13+91.00



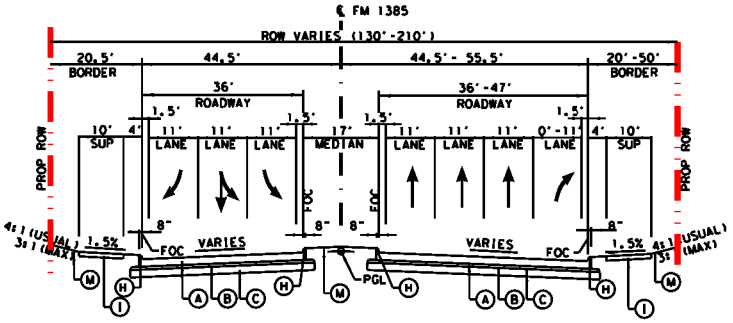
EXISTING MUSTANG RD
TYPICAL SECTION
STA 100+00.00 TO STA 117+00.00



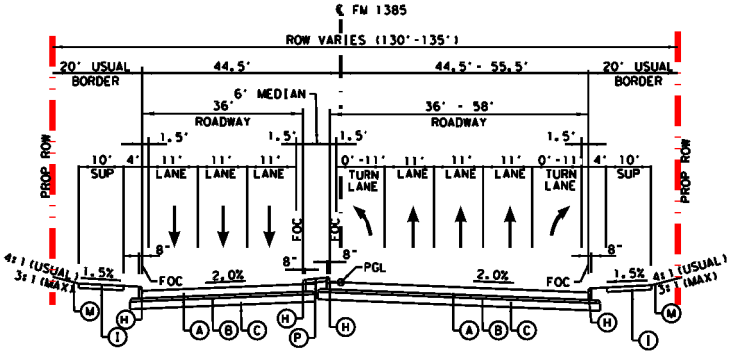
EXISTING FRIENDSHIP RD
TYPICAL SECTION
STA 100+00.00 TO STA 113+00.00



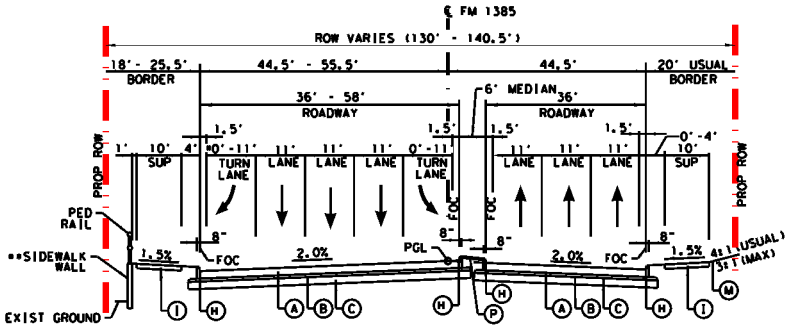
EXISTING FM 455
TYPICAL SECTION
STA 100+00.00 TO STA 130+00.00



PROPOSED FM 1385
TYPICAL SECTION
STA 100+78.52 TO STA 105+60.00

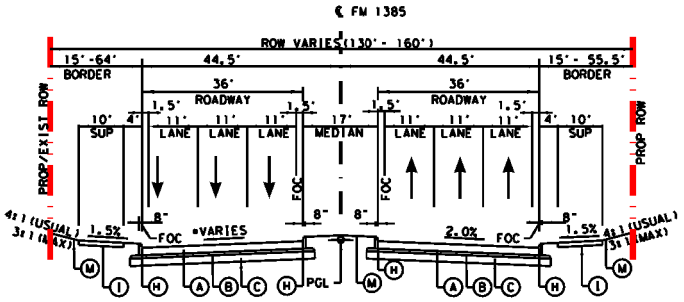


PROPOSED FM 1385
TYPICAL SECTION
STA 107+65.14 TO STA 111+70.00
STA 120+51.32 TO STA 123+70.00

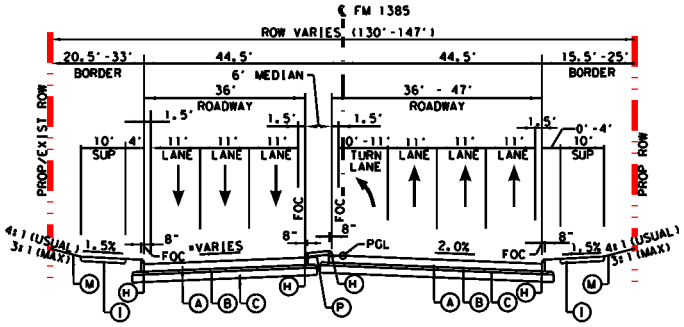


*10' AT WINN RIDGE
**FROM STA 112+51 TO STA 116+98

PROPOSED FM 1385
TYPICAL SECTION
STA 111+70.00 TO STA 115+99.09
STA 165+10.00 TO STA 169+50.00
STA 231+30.00 TO STA 235+18.12

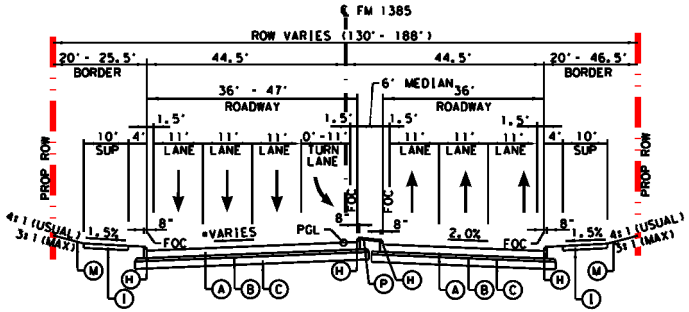


PROPOSED FM 1385
TYPICAL SECTION
STA 116+71.61 TO STA 118+57.31
STA 133+20.00 TO STA 135+00.00
STA 152+50.00 TO STA 156+75.00
STA 253+22.33 TO STA 258+45.05
STA 283+60.16 TO STA 286+75.00
STA 301+21.26 TO STA 310+69.43
STA 337+50.00 TO STA 352+11.48
STA 354+70.51 TO STA 371+95.00



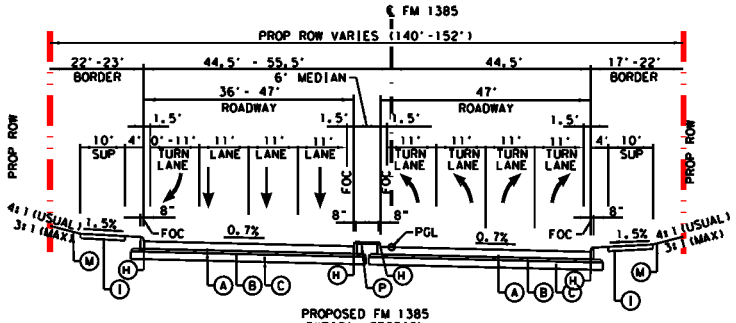
PROPOSED FM 1385
TYPICAL SECTION

STA 118+57.31 TO STA 120+51.21
STA 128+37.66 TO STA 132+20.00
STA 135+00.00 TO STA 141+30.00
STA 160+00.04 TO STA 165+10.00
STA 181+05.53 TO STA 185+25.00
STA 199+26.39 TO STA 204+00.00
STA 213+30.15 TO STA 218+31.22
STA 226+09.14 TO STA 231+30.00
STA 242+75.71 TO STA 253+22.33
STA 291+41.61 TO STA 300+40.00

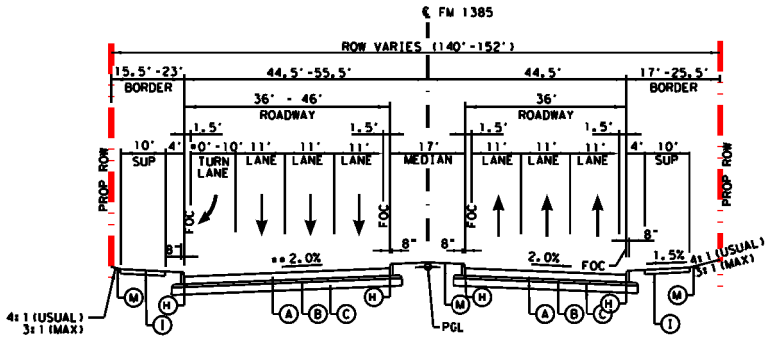


PROPOSED FM 1385
TYPICAL SECTION

STA 115+33.09 TO STA 116+71.61
STA 123+70.00 TO STA 128+37.66
STA 156+75.00 TO STA 161+00.04
STA 169+50.00 TO STA 170+19.70
STA 176+80.00 TO STA 181+08.53
STA 194+00.00 TO STA 199+26.39
STA 220+86.00 TO STA 226+09.14
STA 235+18.12 TO STA 236+48.91
STA 248+06.00 TO STA 253+22.33
STA 261+37.00 TO STA 266+51.31
STA 271+65.00 TO STA 274+07.88
STA 286+75.00 TO STA 291+41.61
STA 300+40.00 TO STA 301+21.26
STA 313+83.80 TO STA 318+00.00



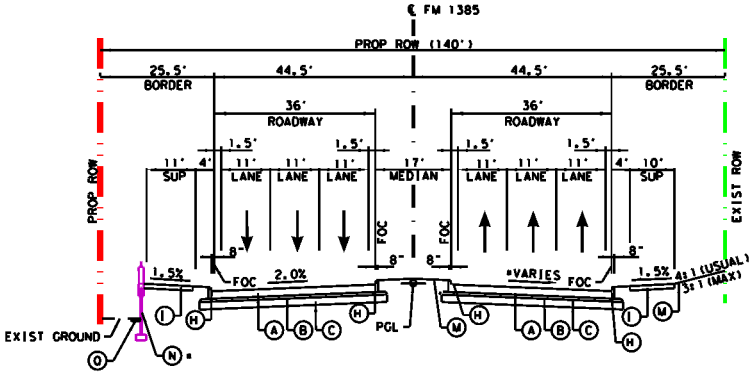
PROPOSED FM 1385
TYPICAL SECTION
STA 141+30.00 TO STA 146+88.39



*11' AT GEE RD
**(-2%) AT GEE RD

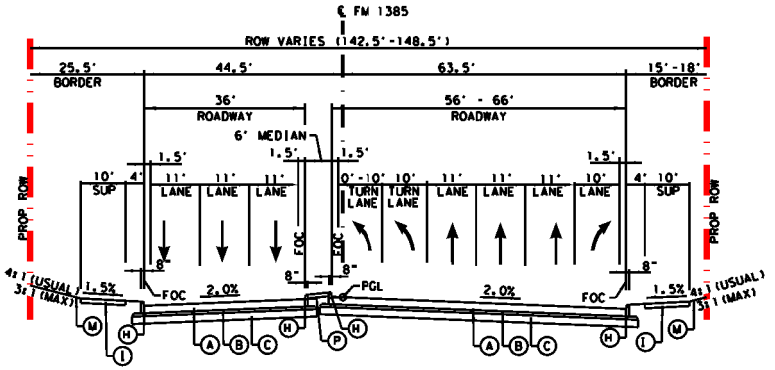
PROPOSED FM 1385
TYPICAL SECTION

STA 147+43.88 TO STA 152+50.00
STA 185+25.00 TO STA 189+60.78
STA 204+60.00 TO STA 208+78.52

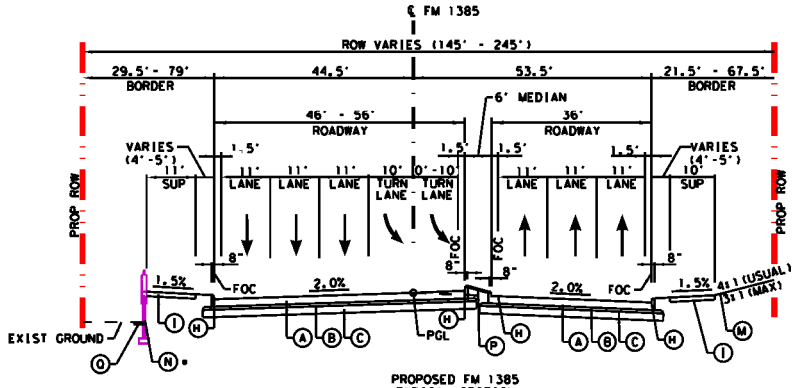


*STA 261+40 TO STA 273+20

PROPOSED FM 1385
TYPICAL SECTION
STA 266+55.31 TO STA 267+68.38

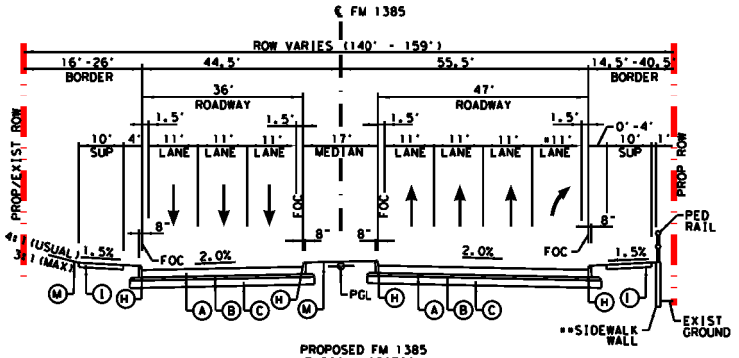


PROPOSED FM 1385
TYPICAL SECTION
STA 274+70.89 TO STA 277+85.50



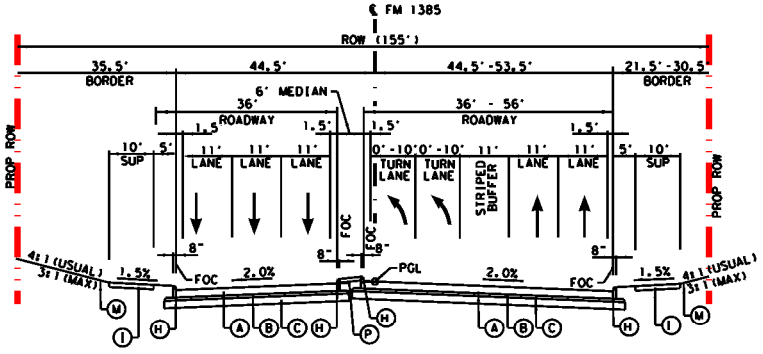
*STA 279+40 TO STA 283+50

PROPOSED FM 1385
TYPICAL SECTION
STA 278+44.00 TO STA 283+60.16
STA 322+76.00 TO STA 329+35.00

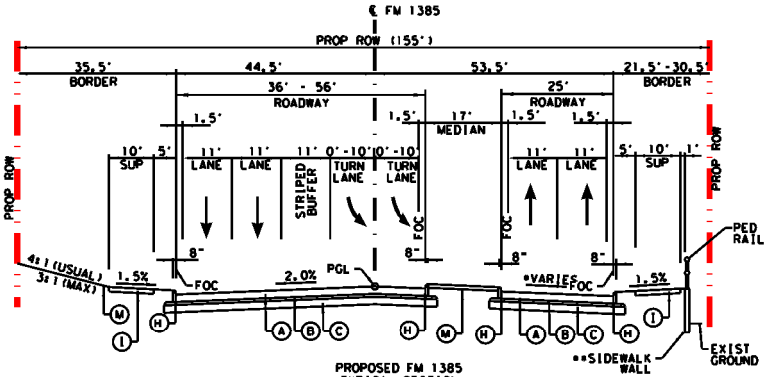


PROPOSED FM 1385
TYPICAL SECTION
STA 258+45.05 TO STA 261+37.00
STA 267+68.38 TO STA 271+65.00
STA 310+69.43 TO STA 313+20.00

*10' AT SUTTON FIELDS TRAIL
**FROM STA 258+76 TO STA 260+87

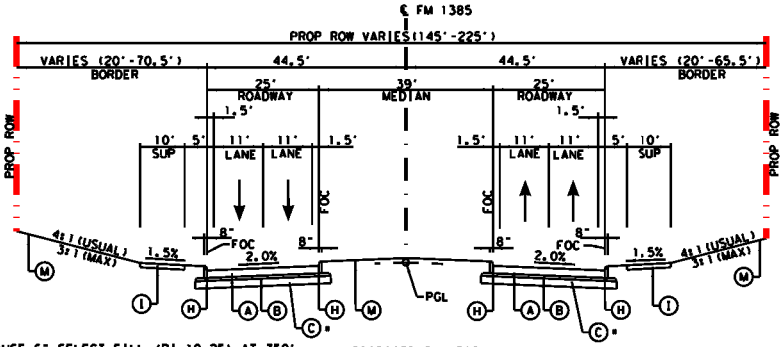


PROPOSED FM 1385
TYPICAL SECTION
STA 371+95.00 TO STA 378+66.00



PROPOSED FM 1385
TYPICAL SECTION
STA 378+66.00 TO STA 384+31.21

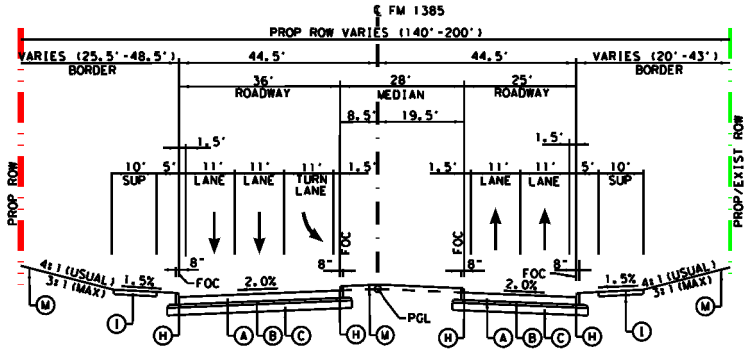
**FROM STA 374+00 TO STA 383+00



*USE 6" SELECT FILL (PI 10-25) AT 750' EACH DIRECTION FROM BORING P-33 (STA 667+22.77, 23.17' RT) IN PLACE OF LIME TREATED SUBGRADE

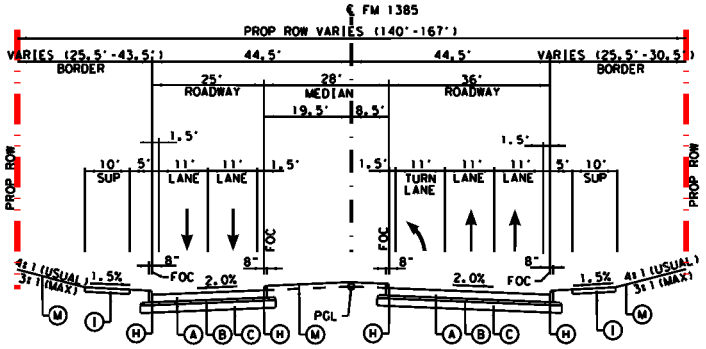
PROPOSED FM 1385
TYPICAL SECTION

STA 384+31.21 TO STA 407+88.85
STA 502+05.08 TO STA 504+35.55
STA 514+86.66 TO STA 517+54.24
STA 517+54.24 TO STA 522+67.90
STA 528+54.78 TO STA 531+24.00
STA 541+07.25 TO STA 567+01.51
STA 578+40.67 TO STA 584+78.26
STA 590+70.65 TO STA 600+59.50
STA 606+68.49 TO STA 607+70.31
STA 618+14.70 TO STA 618+82.27
STA 624+68.40 TO STA 642+90.00
STA 656+15.00 TO STA 662+55.40
STA 673+52.19 TO STA 728+47.65



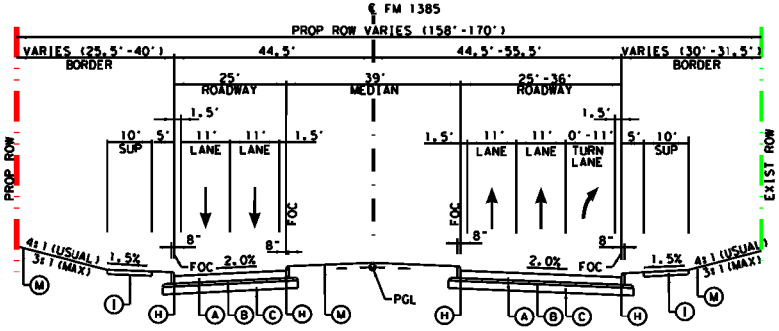
PROPOSED FM 1385
TYPICAL SECTION

STA 411+84.59 TO STA 502+05.08
STA 510+25.00 TO STA 514+86.66
STA 523+93.80 TO STA 528+54.78



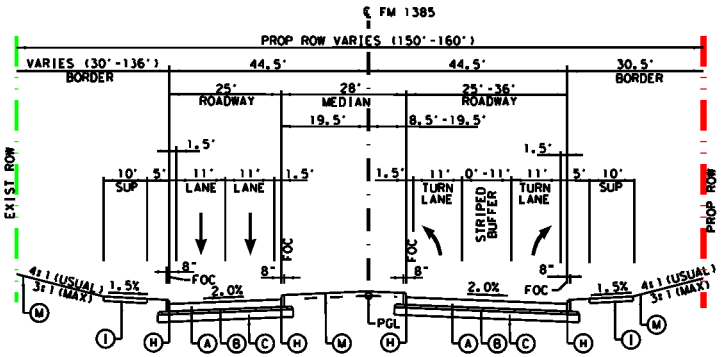
PROPOSED FM 1385
TYPICAL SECTION

STA 567+01.51 TO STA 571+61.15
STA 584+78.26 TO STA 589+42.10
STA 607+70.31 TO STA 612+28.30
STA 618+82.27 TO STA 623+42.20

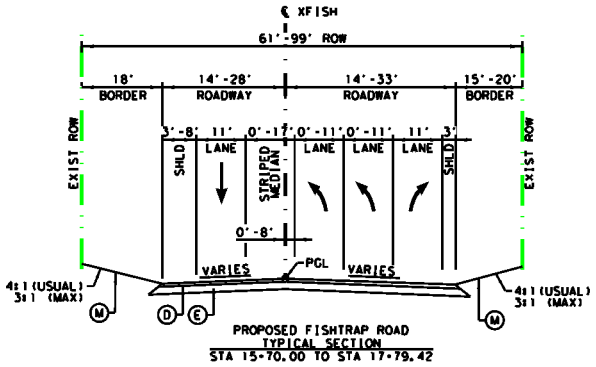


PROPOSED FM 1385
TYPICAL SECTION

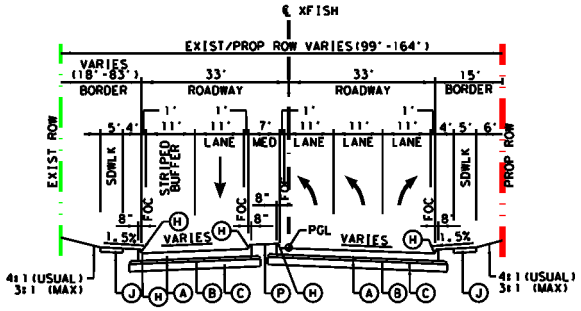
STA 407+88.85 TO STA 411+84.59
STA 504+35.55 TO STA 509+00.00



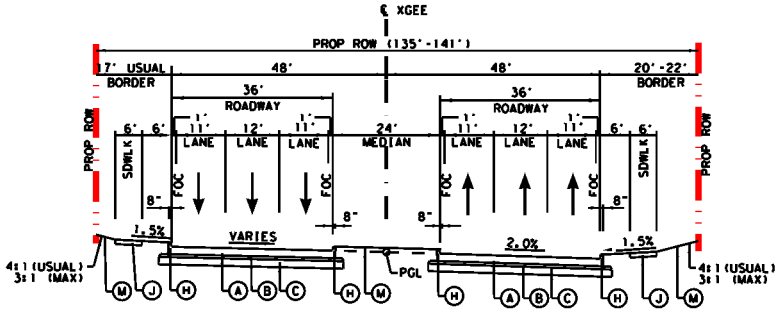
PROPOSED FM 1385
TYPICAL SECTION
STA 813+97.41 TO STA 819+62.19



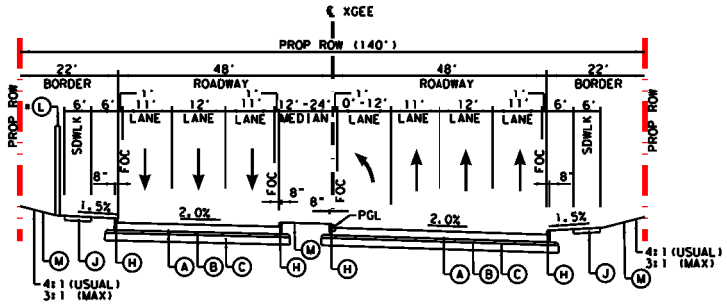
PROPOSED FISHTRAP ROAD
TYPICAL SECTION
STA 15+70.00 TO STA 17+79.42



PROPOSED FISHTRAP ROAD
TYPICAL SECTION
STA 17+79.42 TO STA 20+75.81

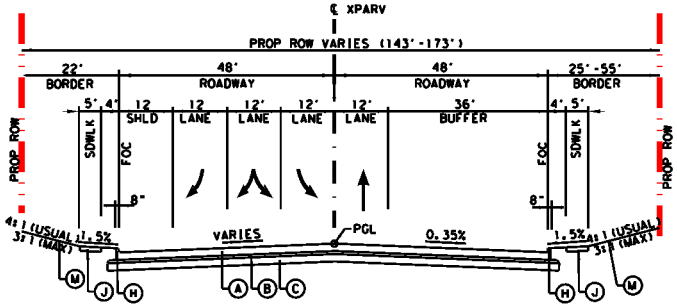


PROPOSED GEE ROAD
TYPICAL SECTION
STA 15+68.70 TO STA 19+01.11

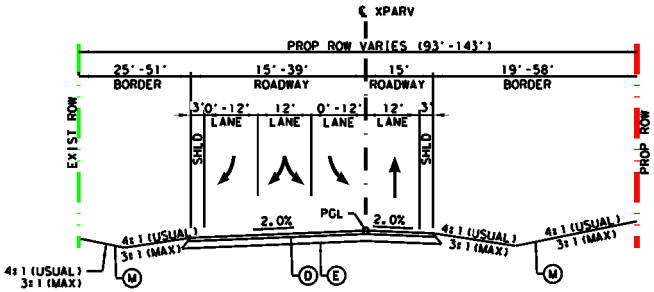


* STA 22+74 TO STA 23+68

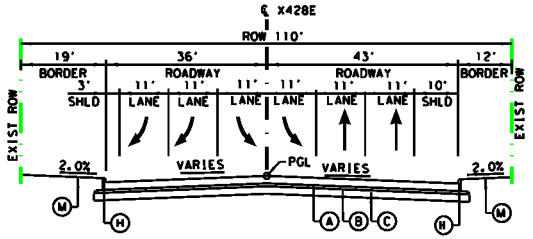
PROPOSED GEE ROAD
TYPICAL SECTION
STA 19+01.11 TO STA 29+44.13



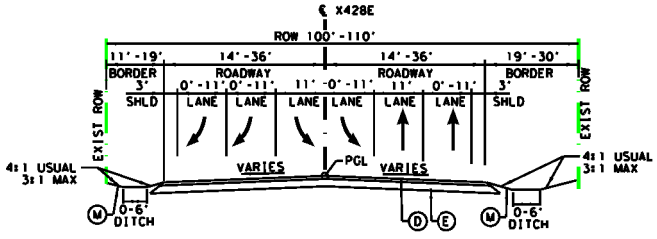
PROPOSED PARVIN RD
TYPICAL SECTION
STA 10+44.53 TO STA 10+97.23



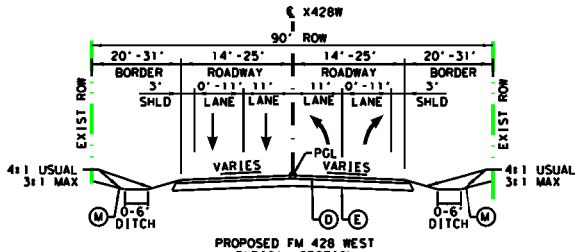
PROPOSED PARVIN RD
TYPICAL SECTION
STA 10+97.23 TO STA 14+77.00



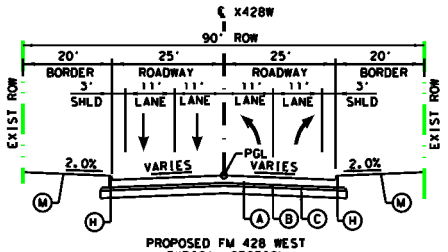
PROPOSED FM 428 EAST
TYPICAL SECTION
STA 10+63.54 TO STA 11+10.25



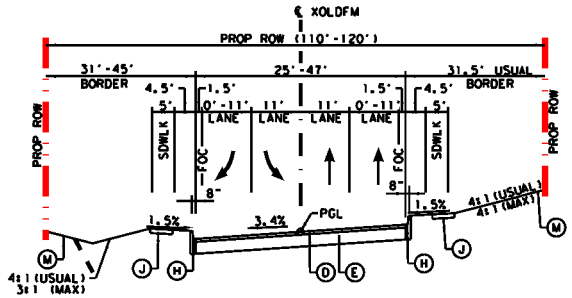
PROPOSED FM 428 EAST
TYPICAL SECTION
STA 11+10.25 TO STA 19+30.00



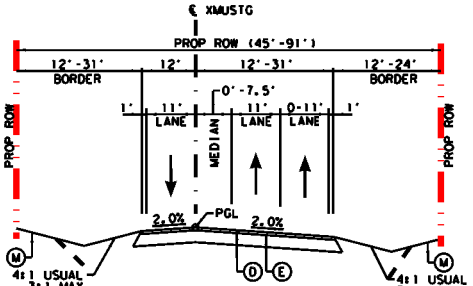
PROPOSED FM 428 WEST
TYPICAL SECTION
STA 7+45.00 TO STA 12+94.36



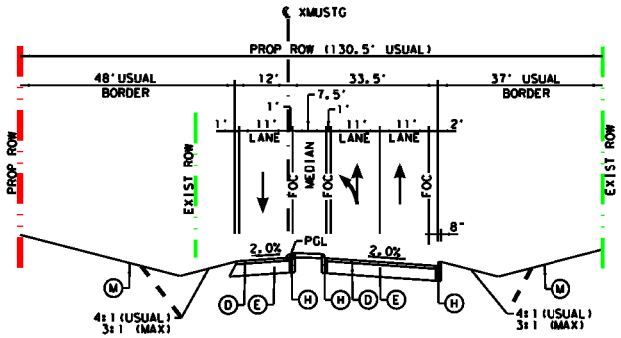
PROPOSED FM 428 WEST
TYPICAL SECTION
STA 12+94.36 TO STA 13+45.49



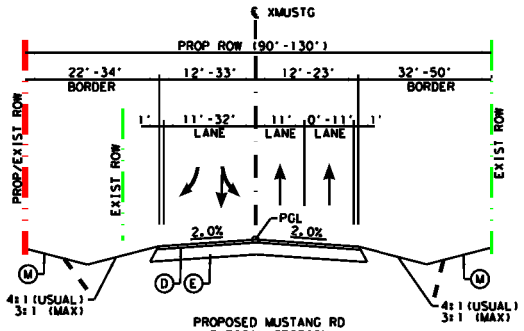
PROPOSED OLD FM1385
TYPICAL SECTION
STA 100+44.50 TO STA 109+50.00



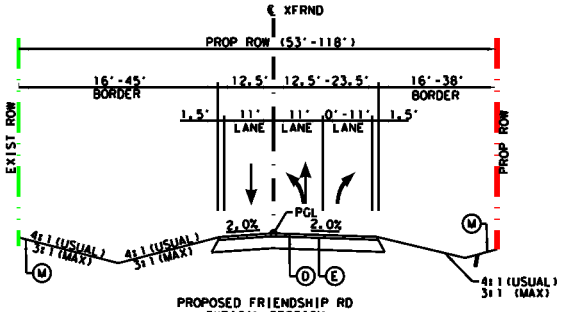
PROPOSED MUSTANG RD
TYPICAL SECTION
STA 102+28.83 TO STA 105+03.00



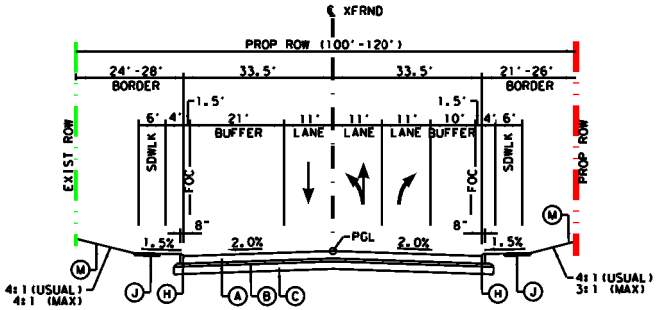
PROPOSED MUSTANG RD
TYPICAL SECTION
STA 105+03.00 TO STA 109+55.00



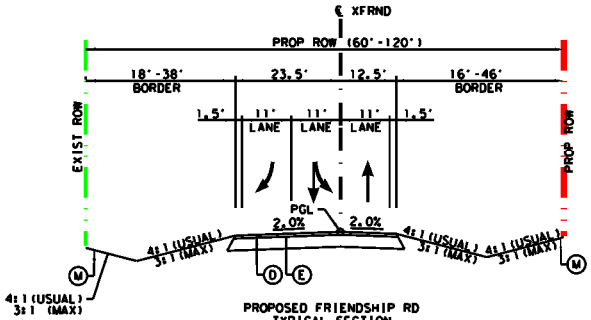
PROPOSED MUSTANG RD
TYPICAL SECTION
STA 109+55.00 TO STA 116+14.50



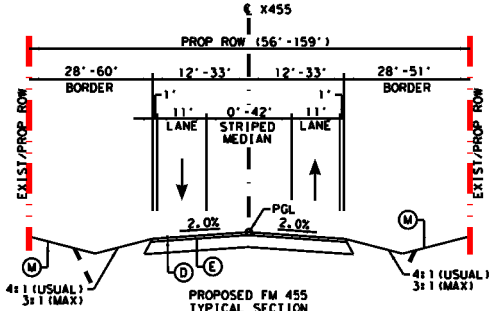
PROPOSED FRIENDSHIP RD
TYPICAL SECTION
STA 101+00.00 TO STA 105+80.28



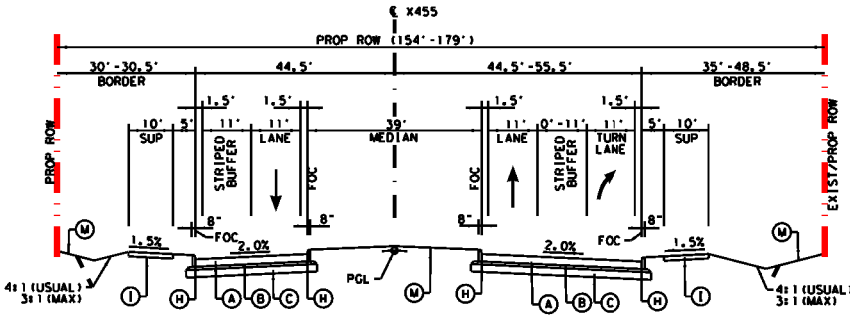
PROPOSED FRIENDSHIP RD
TYPICAL SECTION
STA 105+80.28 TO STA 106+50.00
STA 107+46.00 TO STA 108+27.19



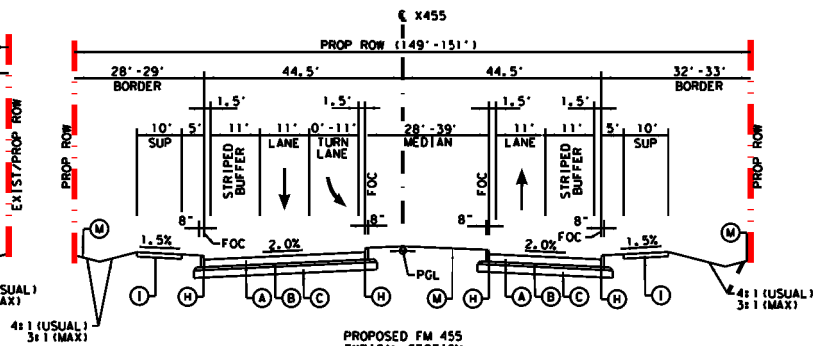
PROPOSED FRIENDSHIP RD
TYPICAL SECTION
STA 108+27.19 TO STA 112+00.00



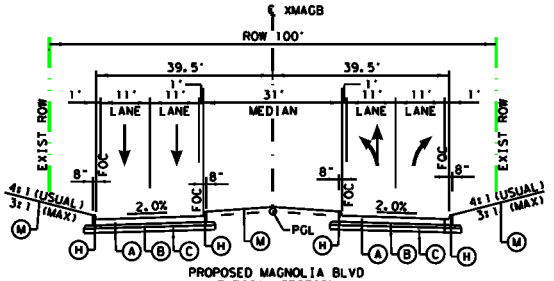
PROPOSED FM 455
TYPICAL SECTION
STA 105+70.89 TO STA 113+00.00
STA 123+50.00 TO STA 129+15.00



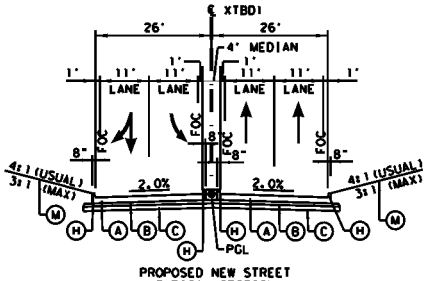
PROPOSED FM 455
TYPICAL SECTION
STA 113+00.00 TO STA 117+09.85



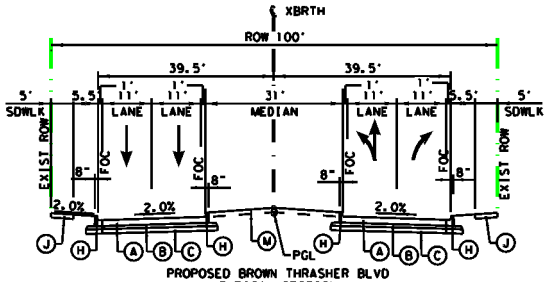
PROPOSED FM 455
TYPICAL SECTION
STA 118+94.25 TO STA 123+50.00



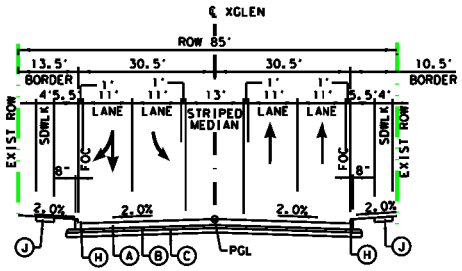
PROPOSED MAGNOLIA BLVD
TYPICAL SECTION
STA 10+50.00 TO STA 11+55.50



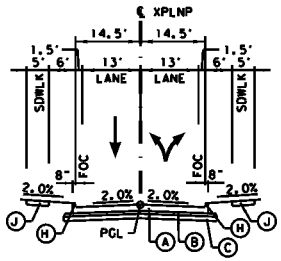
PROPOSED NEW STREET
TYPICAL SECTION
STA 10+44.50 TO STA 11+10.00



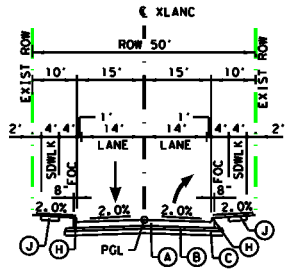
PROPOSED BROWN THRASHER BLVD
TYPICAL SECTION
STA 10+45.00 TO STA 11+05.50



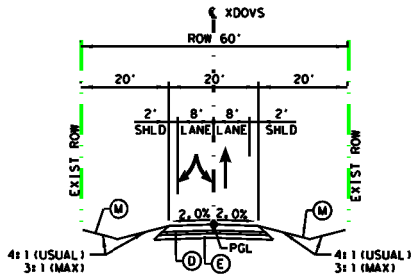
PROPOSED GLENBROOKE DRIVE
TYPICAL SECTION
STA 10+44.50 TO STA 10+91.00



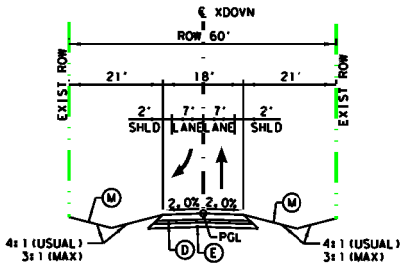
PROPOSED PLANTATION PKWY
TYPICAL SECTION
STA 11+80.00 TO STA 12+55.34



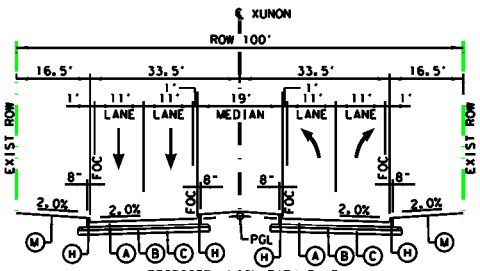
PROPOSED LANCASHIRE LANE
TYPICAL SECTION
STA 11+31.40 TO STA 12+02.00



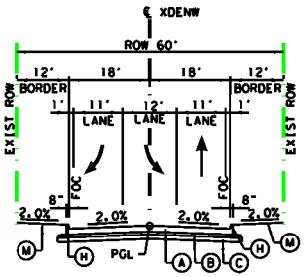
PROPOSED DOVE CREEK CIRCLE SOUTH
TYPICAL SECTION
STA 10+44.50 TO STA 11+00.00



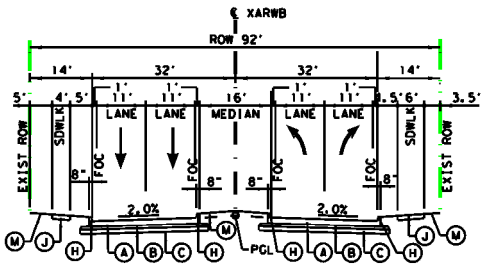
PROPOSED DOVE CREEK CIRCLE NORTH
TYPICAL SECTION
STA 10+44.54 TO STA 11+10.00



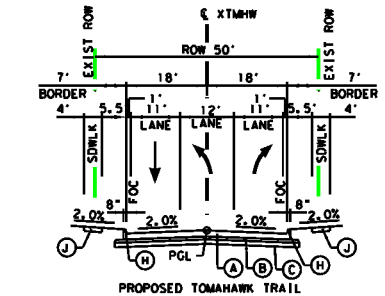
PROPOSED UNION PARK BLVD
TYPICAL SECTION
STA 11+50.00 TO STA 12+55.50



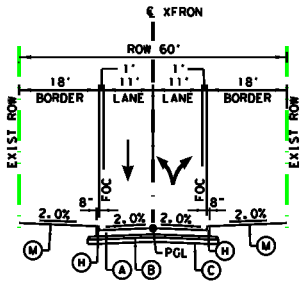
PROPOSED DENTON WAY
TYPICAL SECTION
STA 10+44.52 TO STA 10+85.00



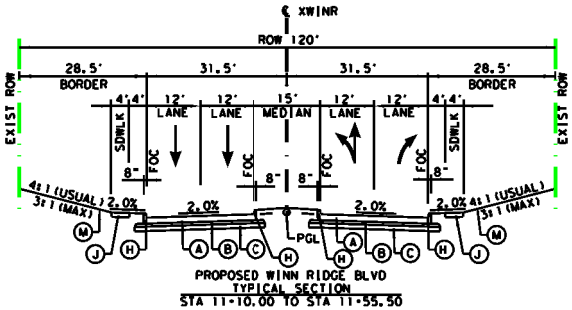
PROPOSED ARROW BROOKE AVE
TYPICAL SECTION
STA 11+60.00 TO STA 12+55.50



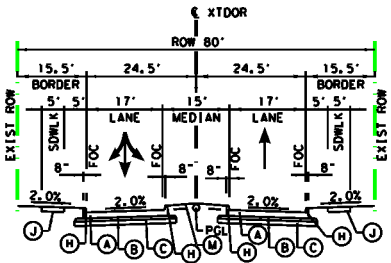
PROPOSED TOMAHAWK TRAIL
TYPICAL SECTION
STA 11+70.00 TO STA 12+55.50



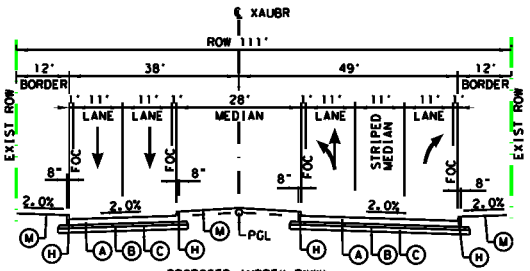
PROPOSED FRONTIER PKWY
TYPICAL SECTION
STA 10+90.00 TO STA 11+55.50



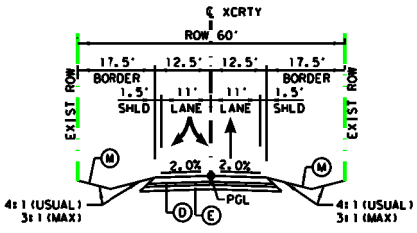
PROPOSED WINN RIDGE BLVD
TYPICAL SECTION
STA 11+10.00 TO STA 11+55.50



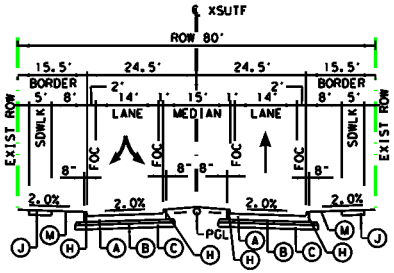
PROPOSED TUDOR PLACE
TYPICAL SECTION
STA 10+54.50 TO STA 11+07.00



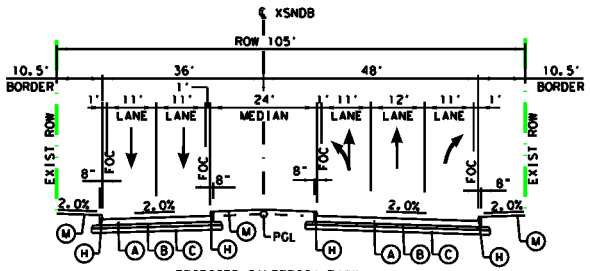
PROPOSED AUBREY PKWY
TYPICAL SECTION
STA 11+55.00 TO STA 12+55.50



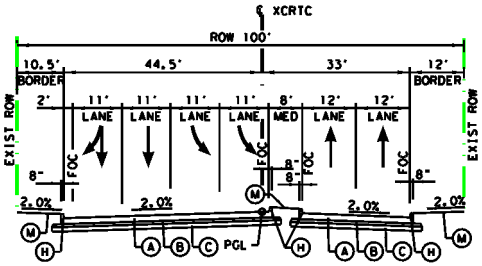
PROPOSED COUNTRYVIEW DRIVE
TYPICAL SECTION
STA 10+44.53 TO STA 11+30.00



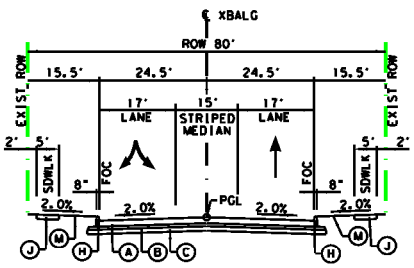
PROPOSED SUTTON FIELDS TRAIL
TYPICAL SECTION
STA 10+44.52 TO STA 11+50.00



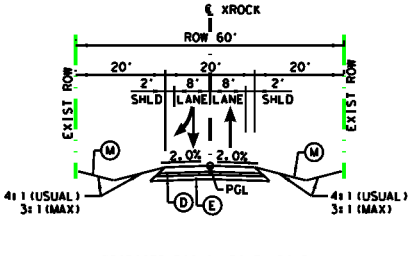
PROPOSED SANDBROCK PKWY
TYPICAL SECTION
STA 12+00.00 TO STA 12+55.50



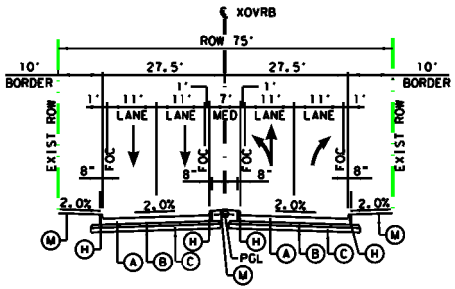
PROPOSED CRUTCHFIELD RD
TYPICAL SECTION
STA 10+53.53 TO STA 11+50.00



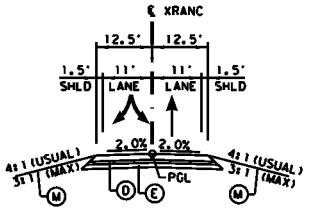
PROPOSED BALLINGER RD
TYPICAL SECTION
STA 10+44.50 TO STA 10+82.60



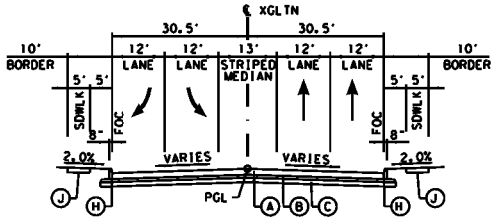
PROPOSED ROCKIN RILEY ROAD
TYPICAL SECTION
STA 10+44.50 TO STA 10+75.00



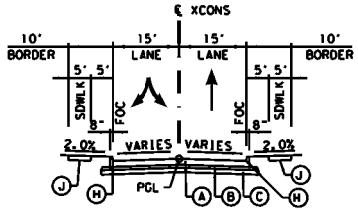
PROPOSED OVERBROOK PARKWAY
TYPICAL SECTION
STA 10+35.00 TO STA 12+05.50



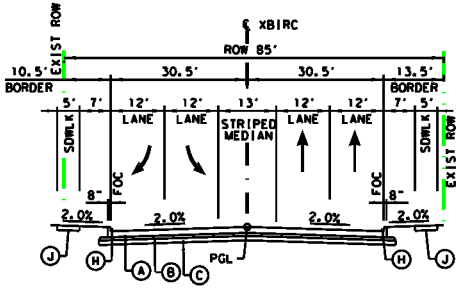
PROPOSED RANCHETTE ROAD
TYPICAL SECTION
STA 10+44.52 TO STA 11+70.00



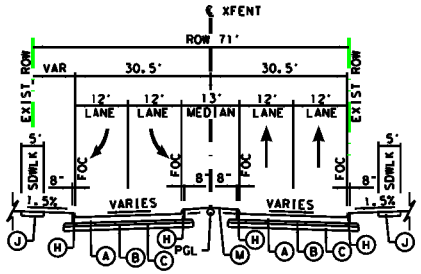
PROPOSED GALLATIN ST
TYPICAL SECTION
STA 10+44.50 TO STA 10+69.00



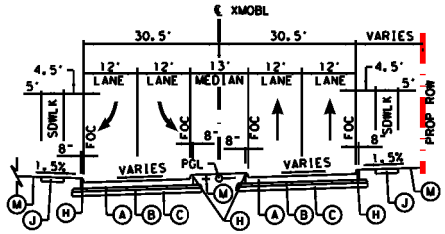
PROPOSED CONESS ST
TYPICAL SECTION
STA 10+44.50 TO STA 11+00.00



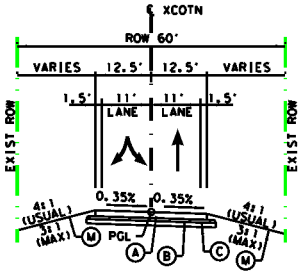
PROPOSED BIRCH FARM DRIVE
TYPICAL SECTION
STA 10+44.53 TO STA 10+74.50



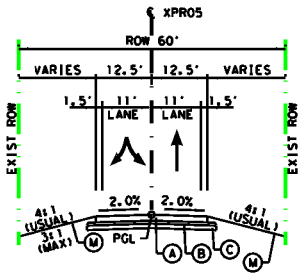
PROPOSED FENTON PARKWAY
TYPICAL SECTION
STA 10+44.50 TO STA 11+56.00



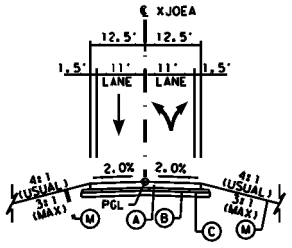
PROPOSED MOBBERLY FARMS
TYPICAL SECTION
STA 10+23.50 TO STA 12+16.02



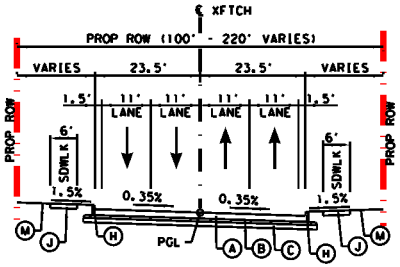
PROPOSED COTTON TRAIL
TYPICAL SECTION
STA 10+44.54 TO STA 11+20.00



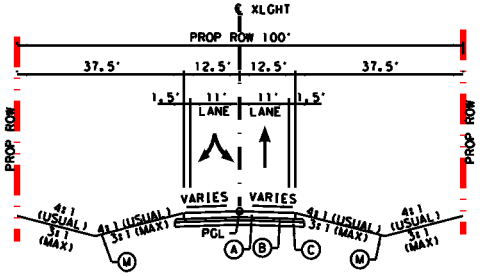
PROPOSED PRIVATE RD 5805
TYPICAL SECTION
STA 10+44.50 TO STA 11+90.00



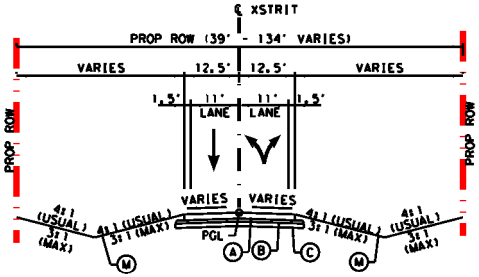
PROPOSED JOE ALLEN RD
TYPICAL SECTION
STA 10+25.00 TO STA 12+30.50



PROPOSED FUTURE FOUTCH RD
TYPICAL SECTION
STA 11+77.34 TO STA 12+55.47



PROPOSED LIGHTS RANCH RD
TYPICAL SECTION
STA 10+44.53 TO STA 12+47.26



PROPOSED STRITTMATTER RD
TYPICAL SECTION
STA 100+00.00 TO STA 101+54.78

Appendix E

Resource-Specific Maps

Figure 1a.
Proposed Displacements within the Project Area

FM 1385 Environmental Assessment

Data Source: CMEC (2021)
Aerial Source: Maxar (2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 7/27/2022

U:\23530164\03_data\gis_cad\gis\FM1385_EA_Figure 1_Potential Displacement_20220727_BMJ.mxd

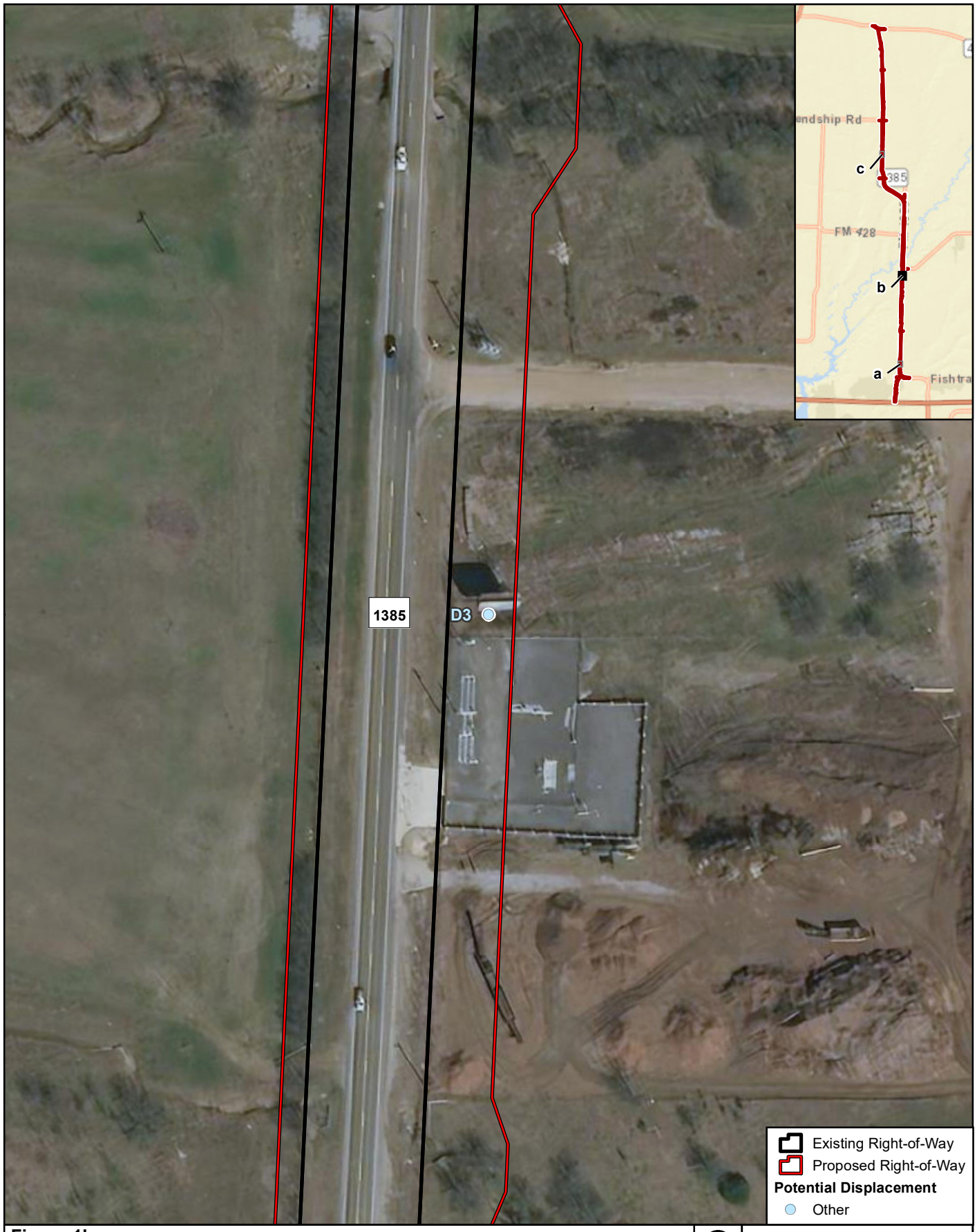


Figure 1b.
Proposed Displacements within the Project Area

FM 1385 Environmental Assessment

Data Source: CMEC (2021)
Aerial Source: Maxar (2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 7/27/2022

U:\23530164\03_data\gis_cad\gis\FM1385_EA_Figure 1_Potential Displacement_20220727_BMJ.mxd

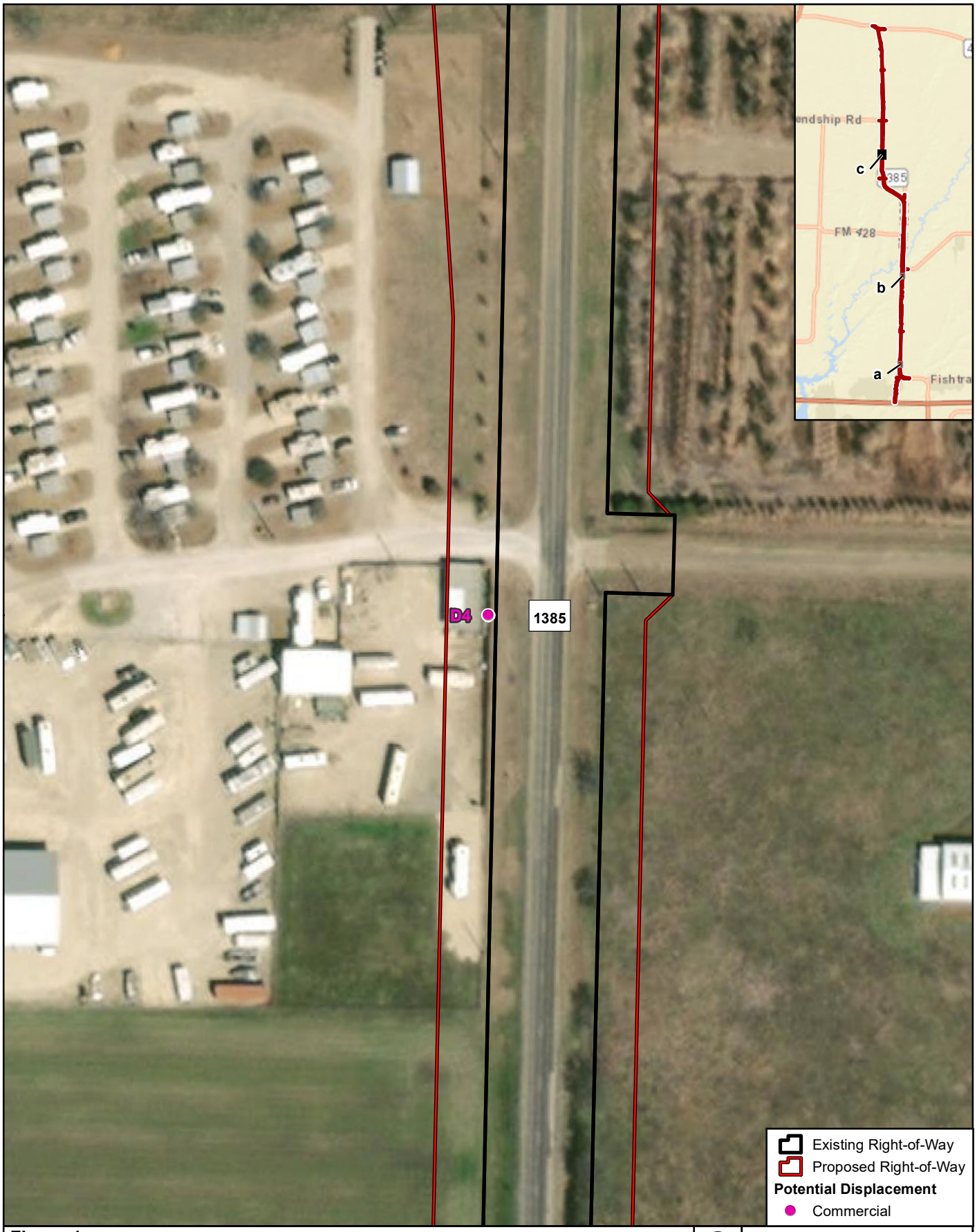


Figure 1c.
Proposed Displacements within the Project Area

FM 1385 Environmental Assessment

Data Source: CMEC (2021)
Aerial Source: Maxar (2021)

CSJ: 1315-01-030

0 100 Feet	1 in = 100 feet
0 30 Meters	Scale: 1:1,200
	Date: 7/27/2022

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 1_Potential Displacement_20220727_BMJ.mxd

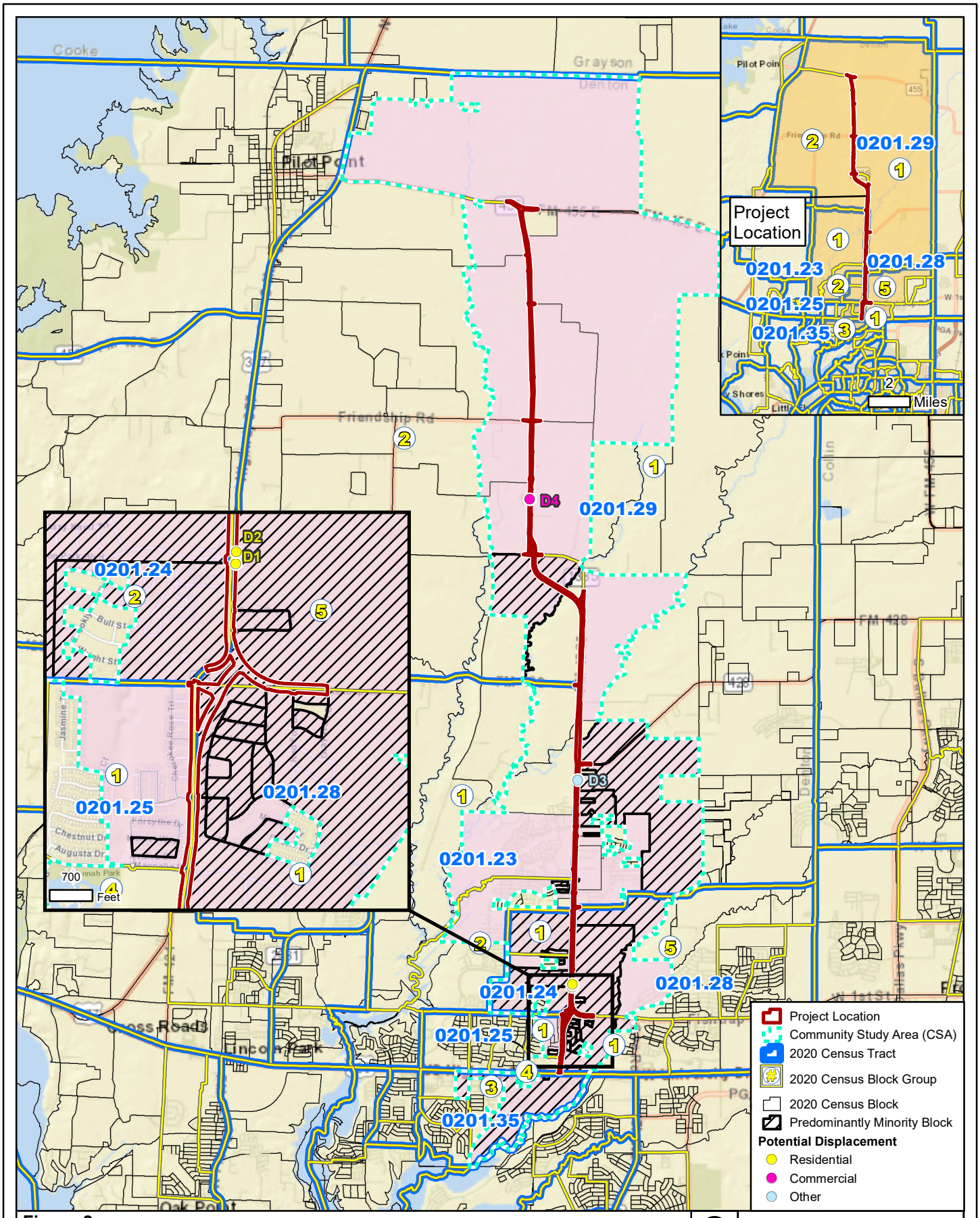


Figure 2.
Census Blocks with Minority Persons within the Project Area

CSJ: 1315-01-030

Data Source: US Census Bureau (2020)
Basemap Source: Esri (2022)

0 1.75 Miles
0 2.5 km

1 in = 1.75 miles
Scale:1:110,675
Date: 3/20/2023

FM 1385 Environmental Assessment

U:\23530164\03_data\gis_cad\gis\FM1385_EA_Figure 2_Census Geographies_20220727_BMJ.mxd

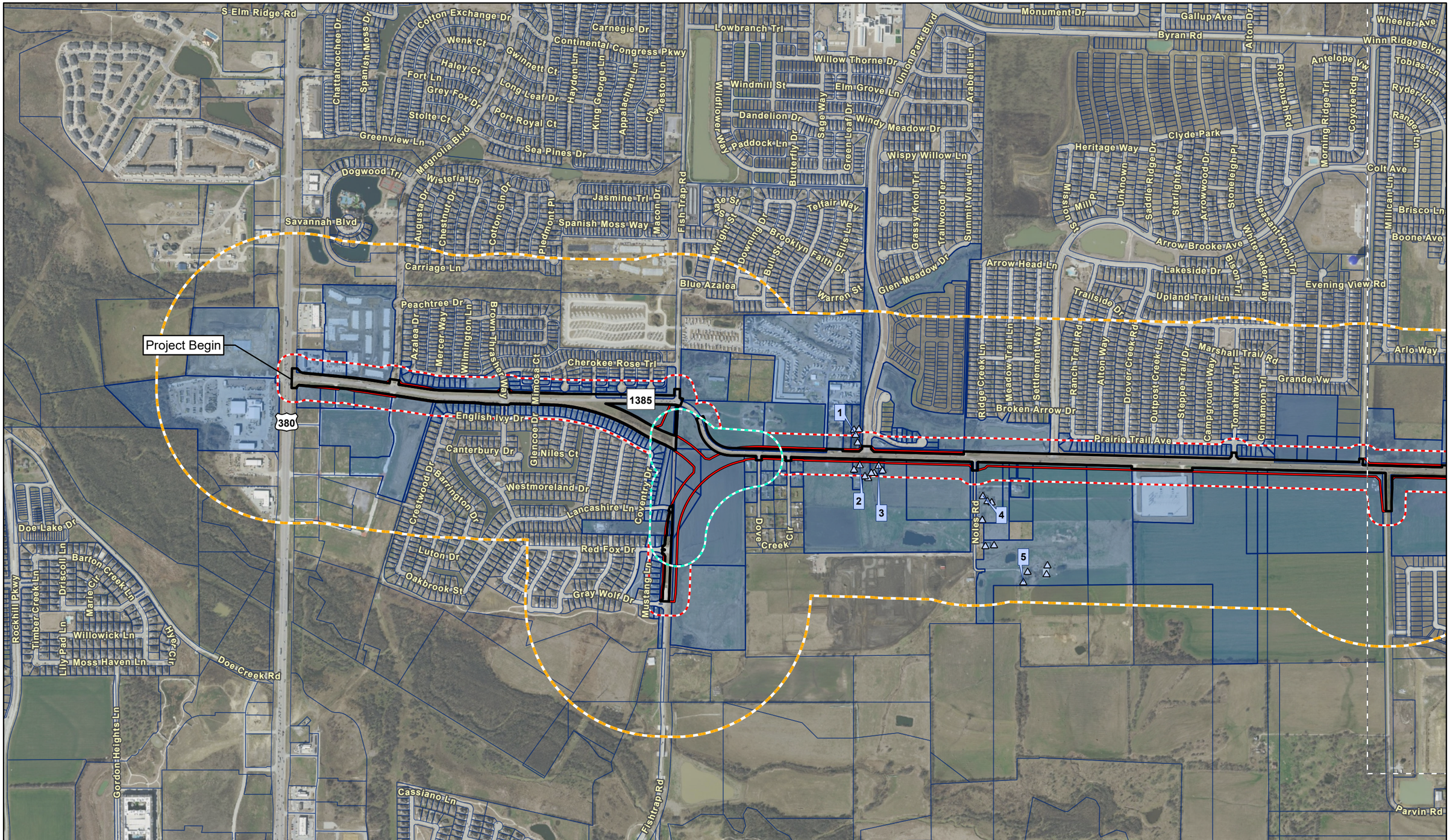


Figure 3a. Historic Age Resources within the Project Area APE

FM 1385 Environmental Assessment

Existing Right-of-Way
Proposed Right-of-Way
1,300-foot Study Area
Parcel Boundary
Parcel Intersecting the APE
Sheet Limits
Documented Resource
APE
300-foot
150-foot

Data Sources:
Stantec (2022), THC (2022),
TxDOT (2022), DCAD (2022)
Aerial Source: Hexagon (2020, 2021)

a b c d e

CSJ: 1315-01-030

0 1,000 Feet
0 300 Meters

1 in = 980 feet
Scale: 1:11,760
Date: 7/22/2022

Path: U:\235300164\03_data\gis_cad\gis\FM1385_Hist.aprx - FM 1385_EA_Figure 3_Historic Resources_20220727_BMJ

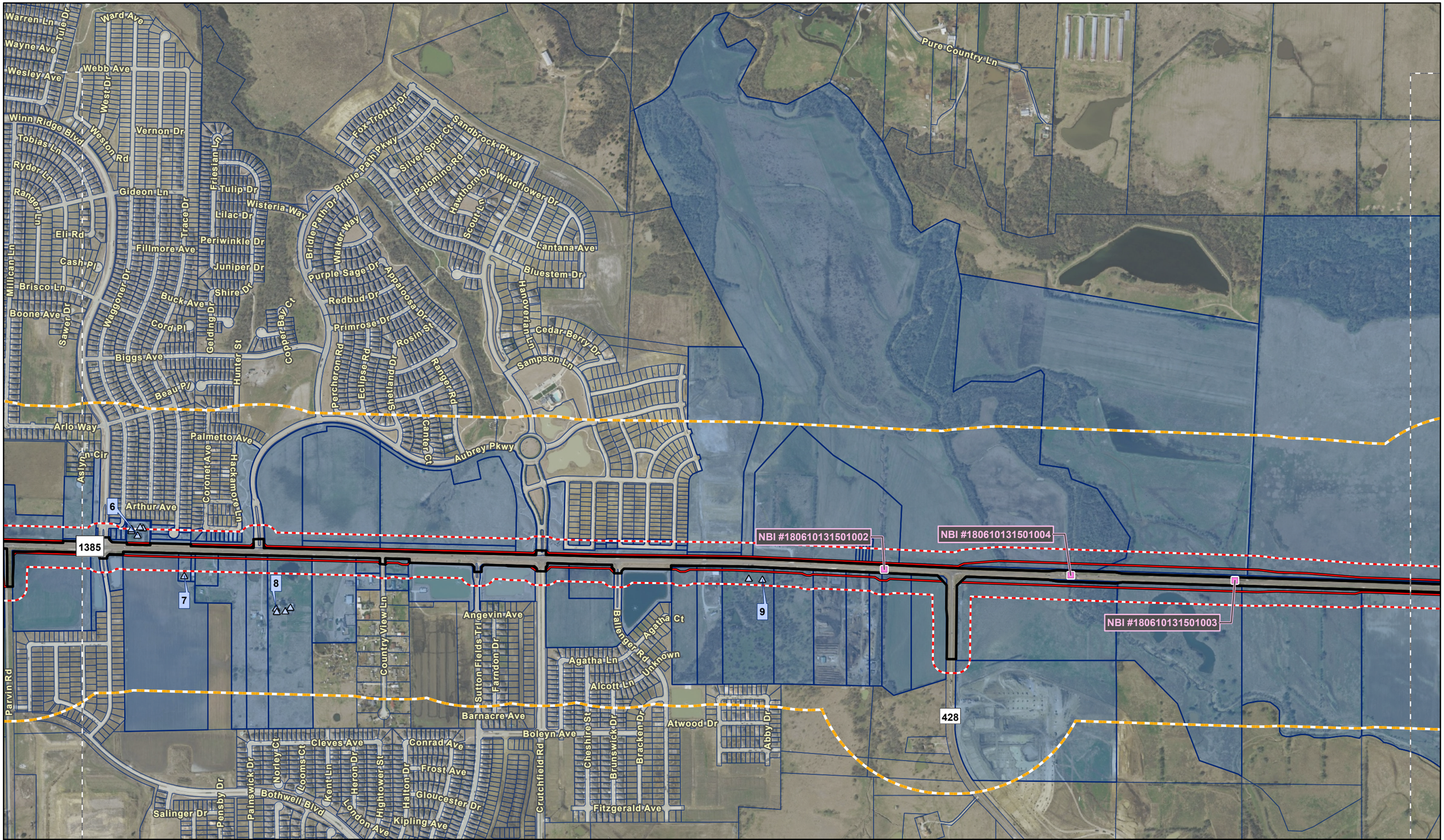


Figure 3b. Historic Age Resources within the Project Area APE

FM 1385 Environmental Assessment

Existing Right-of-Way
Proposed Right-of-Way
1,300-foot Study Area
Historic-Age Bridge
Parcel Boundary
Parcel Intersecting the APE
Sheet Limits
Documented Resource
APE
150-foot

Data Sources:
Stantec (2022), THC (2022),
TxDOT (2022), DCAD (2022)
Aerial Source: Hexagon (2020, 2021)

a b c d e

CSJ: 1315-01-030

0 1,000 Feet 1 in = 980 feet
0 300 Meters Scale: 1:11,760
Date: 7/22/2022

Path: U:\23530016\4\03_data\gis_cad\gis\FM1385_Hist.aprx - FM 1385_EA_Figure 3_Historic Resources_20220727_BMJ

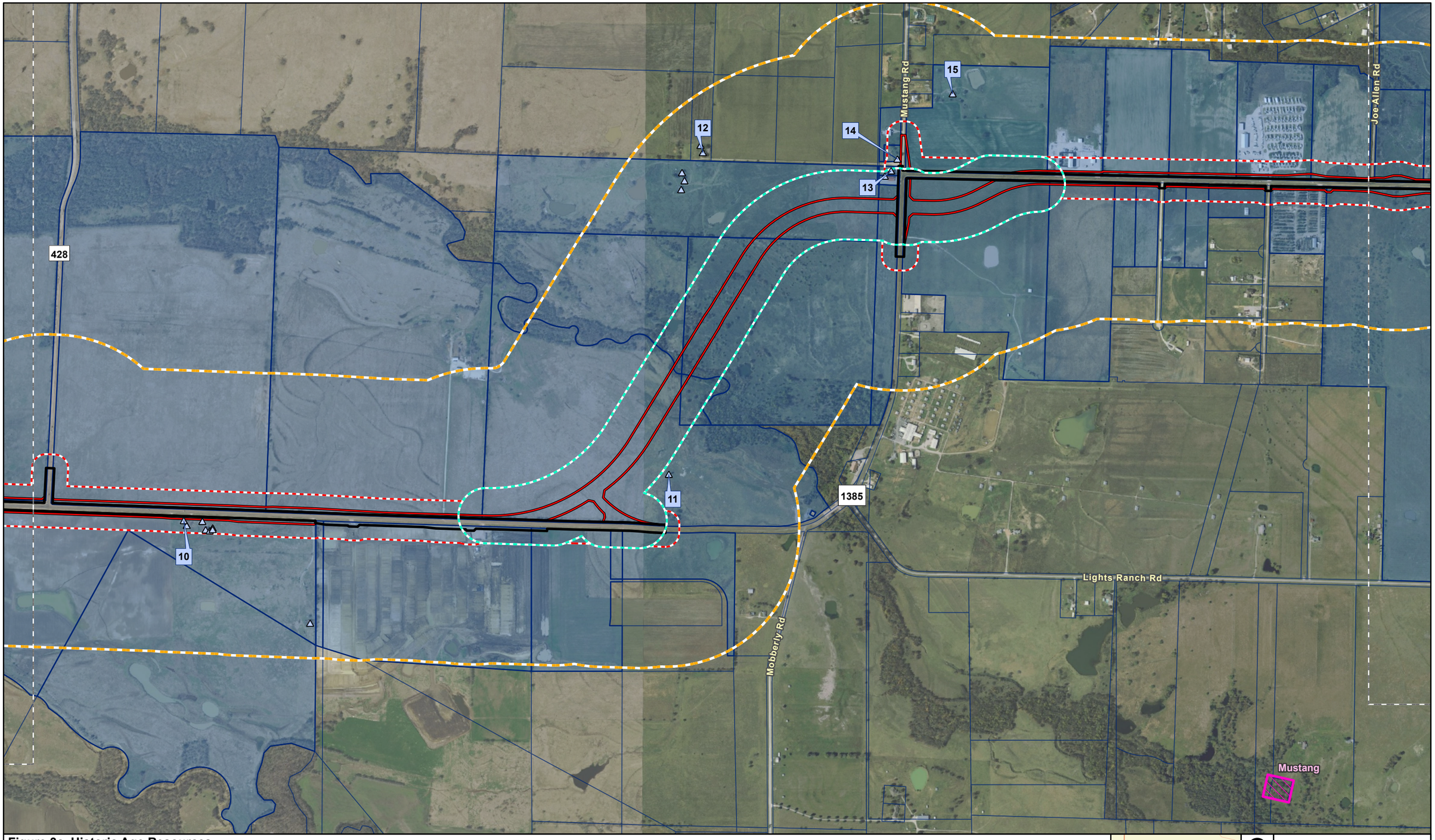


Figure 3c. Historic Age Resources within the Project Area APE

FM 1385 Environmental Assessment

Existing Right-of-Way
Proposed Right-of-Way
1,300-foot Study Area
Cemetery
Parcel Boundary
Parcel Intersecting the APE
Sheet Limits
Documented Resource
APE
300-foot
150-foot

Data Sources:
Stantec (2022), THC (2022),
TxDOT (2022), DCAD (2022)
Aerial Source: Hexagon (2020, 2021)

a b c d e

CSJ: 1315-01-030

0 1,000 Feet
0 300 Meters

1 in = 980 feet
Scale: 1:11,760
Date: 7/22/2022

Path: U:\23530164\03_data\gis_cad\gis\FM1385_Hist.aprx - FM 1385_EA_Figure 3_Historic Resources_20220727_BMJ

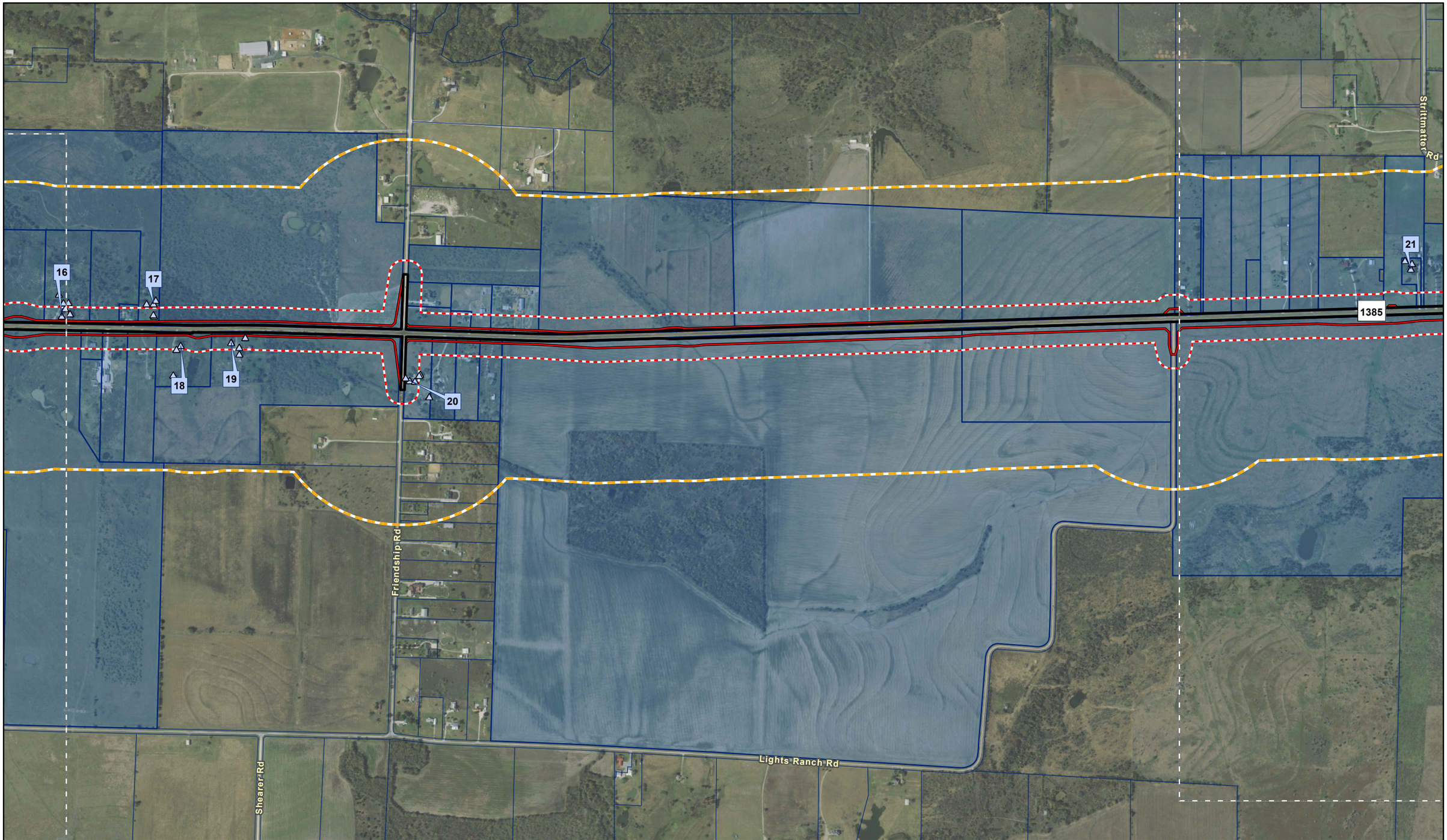


Figure 3d. Historic Age Resources within the Project Area APE

FM 1385 Environmental Assessment

Existing Right-of-Way
Proposed Right-of-Way
1,300-foot Study Area
Parcel Boundary
Parcel Intersecting the APE
Sheet Limits
Documented Resource
APE
150-foot

Data Sources:
Stantec (2022), THC (2022),
TxDOT (2022), DCAD (2022)
Aerial Source: Hexagon (2020, 2021)

a b c d e

CSJ: 1315-01-030

0 1,000 Feet
0 300 Meters

1 in = 980 feet
Scale: 1:11,760
Date: 7/22/2022

Path: U:\235300164\03_data\gis_cad\gis\FM1385_Hist.aprx - FM 1385_EA_Figure 3_Historic Resources_20220727_BMJ

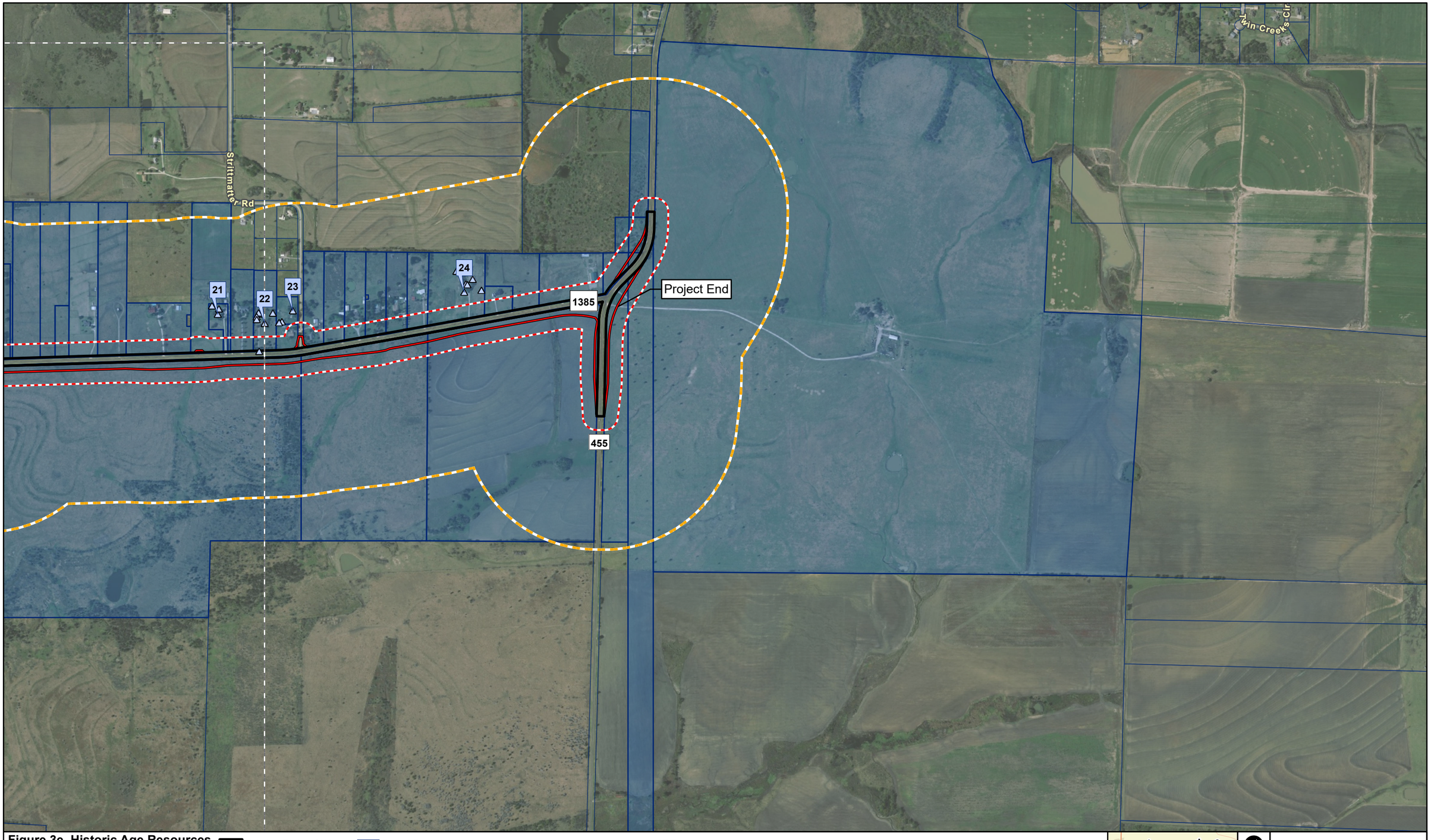


Figure 3e. Historic Age Resources within the Project Area APE

FM 1385 Environmental Assessment

Existing Right-of-Way
Proposed Right-of-Way
1,300-foot Study Area
Parcel Boundary
Parcel Intersecting the APE
Sheet Limits
Documented Resource
APE
150-foot

Data Sources:
Stantec (2022), THC (2022),
TxDOT (2022), DCAD (2022)
Aerial Source: Hexagon (2020, 2021)

a b c d e

CSJ: 1315-01-030

0 1,000 Feet
0 300 Meters

1 in = 980 feet
Scale: 1:11,760
Date: 7/22/2022

Path: U:\235300164\03_data\gis_cad\gis\FM1385_Hist.aprx - FM 1385_EA_Figure 3_Historic Resources_20220727_BMJ

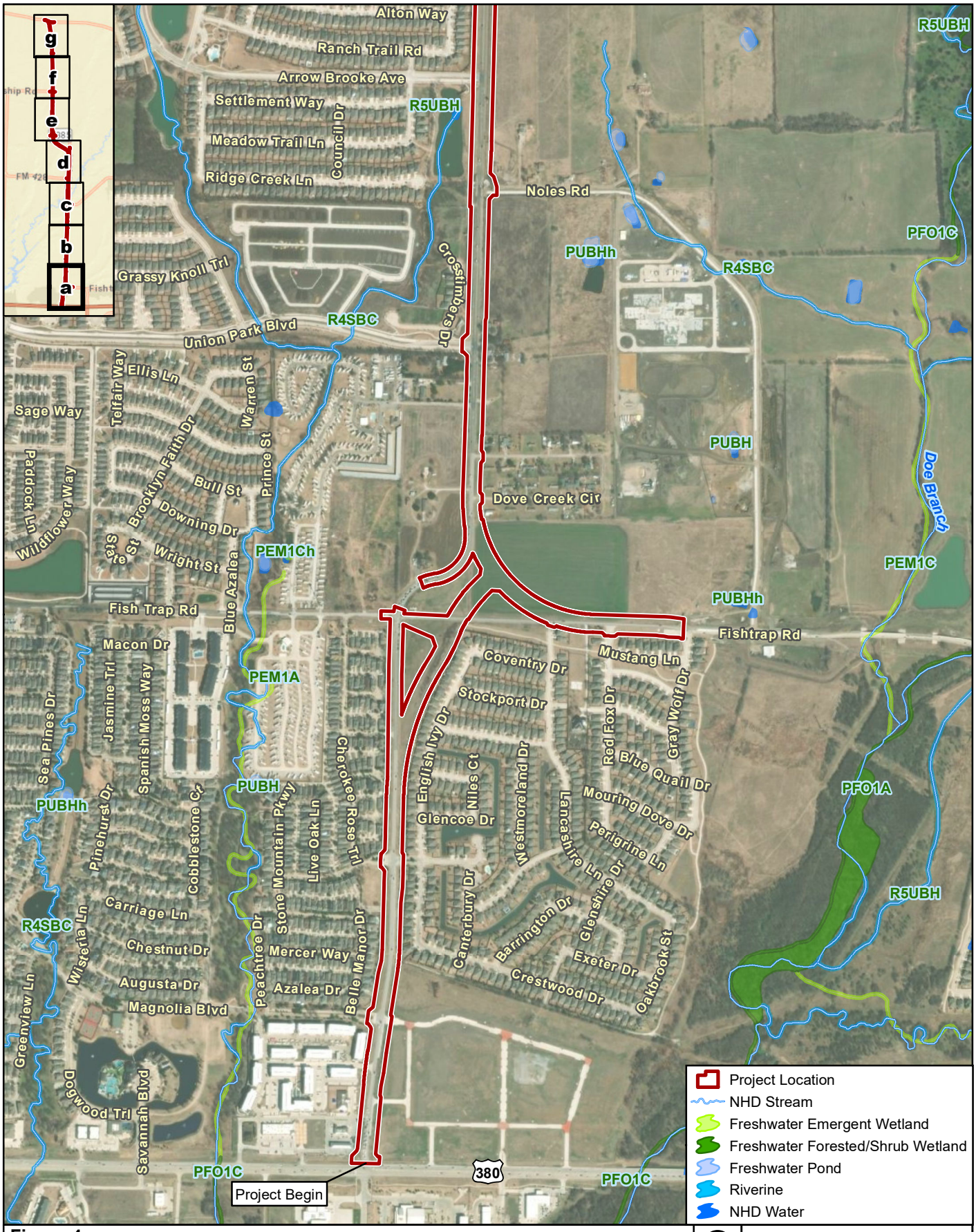


Figure 4a.
Water Resources within the Project Area

FM 1385 Environmental Assessment

Data Sources: NHD (2022), NWI (2020)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 1,000 Feet
0 300 Meters

1 in = 1,000 feet
Scale: 1:12,000
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 4_Water Resources_20220727_BMJ.mxd

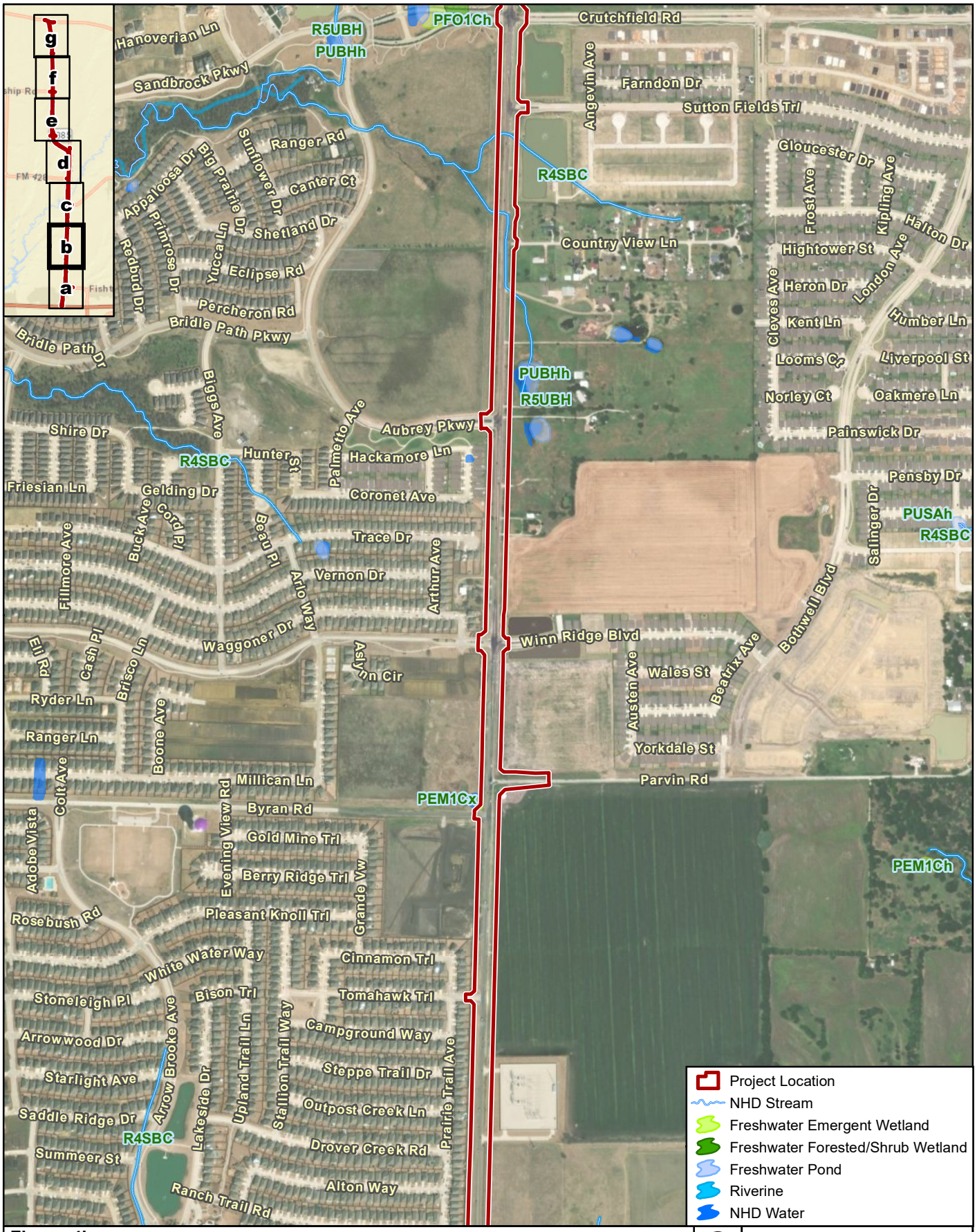


Figure 4b.
Water Resources within the Project Area

FM 1385 Environmental Assessment

Data Sources: NHD (2022), NWI (2020)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 1,000 Feet
0 300 Meters

1 in = 1,000 feet
Scale: 1:12,000
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 4_Water Resources_20220727_BMJ.mxd

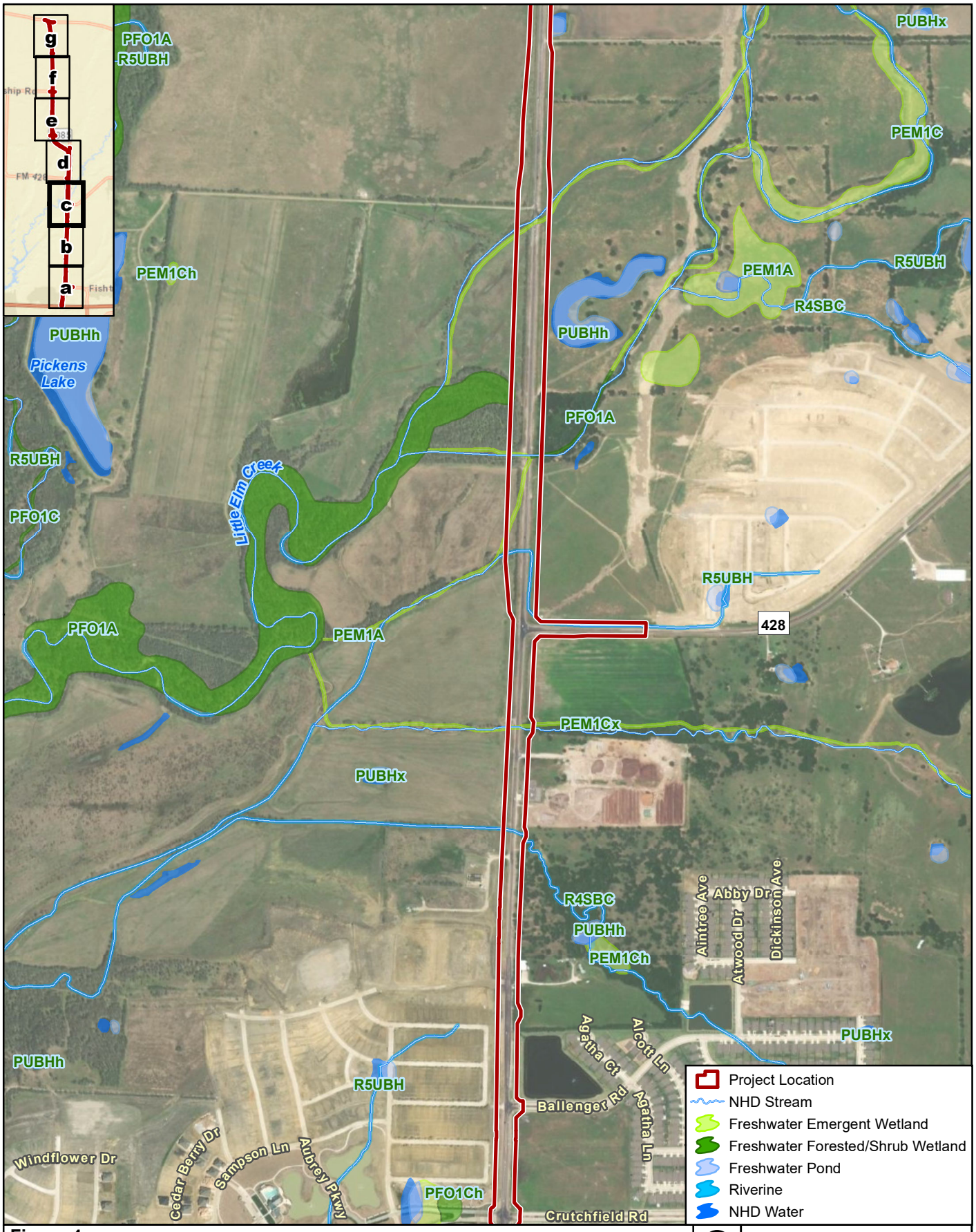


Figure 4c.
Water Resources within the Project Area

FM 1385 Environmental Assessment

Data Sources: NHD (2022), NWI (2020)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 1,000 Feet
0 300 Meters

1 in = 1,000 feet
Scale: 1:12,000
Date: 3/20/2023

U:\23530016\4\03_data\gis_cad\gis\FM1385_EA_Figure 4_Water Resources_20220727_BMJ.mxd

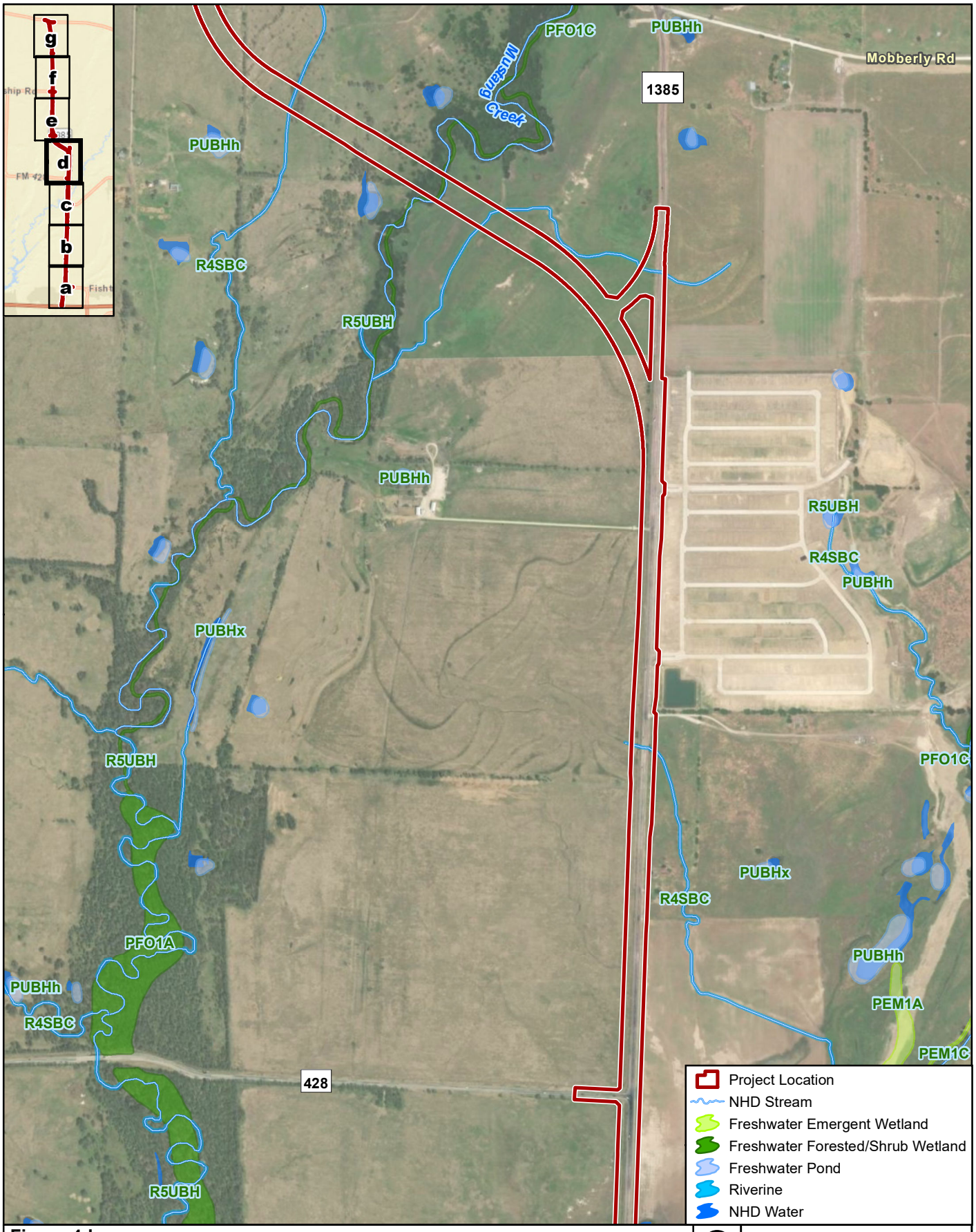


Figure 4d.
Water Resources within the Project Area

FM 1385 Environmental Assessment

Data Sources: NHD (2022), NWI (2020)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 1,000 Feet
0 300 Meters

1 in = 1,000 feet
Scale: 1:12,000
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 4_Water Resources_20220727_BMJ.mxd

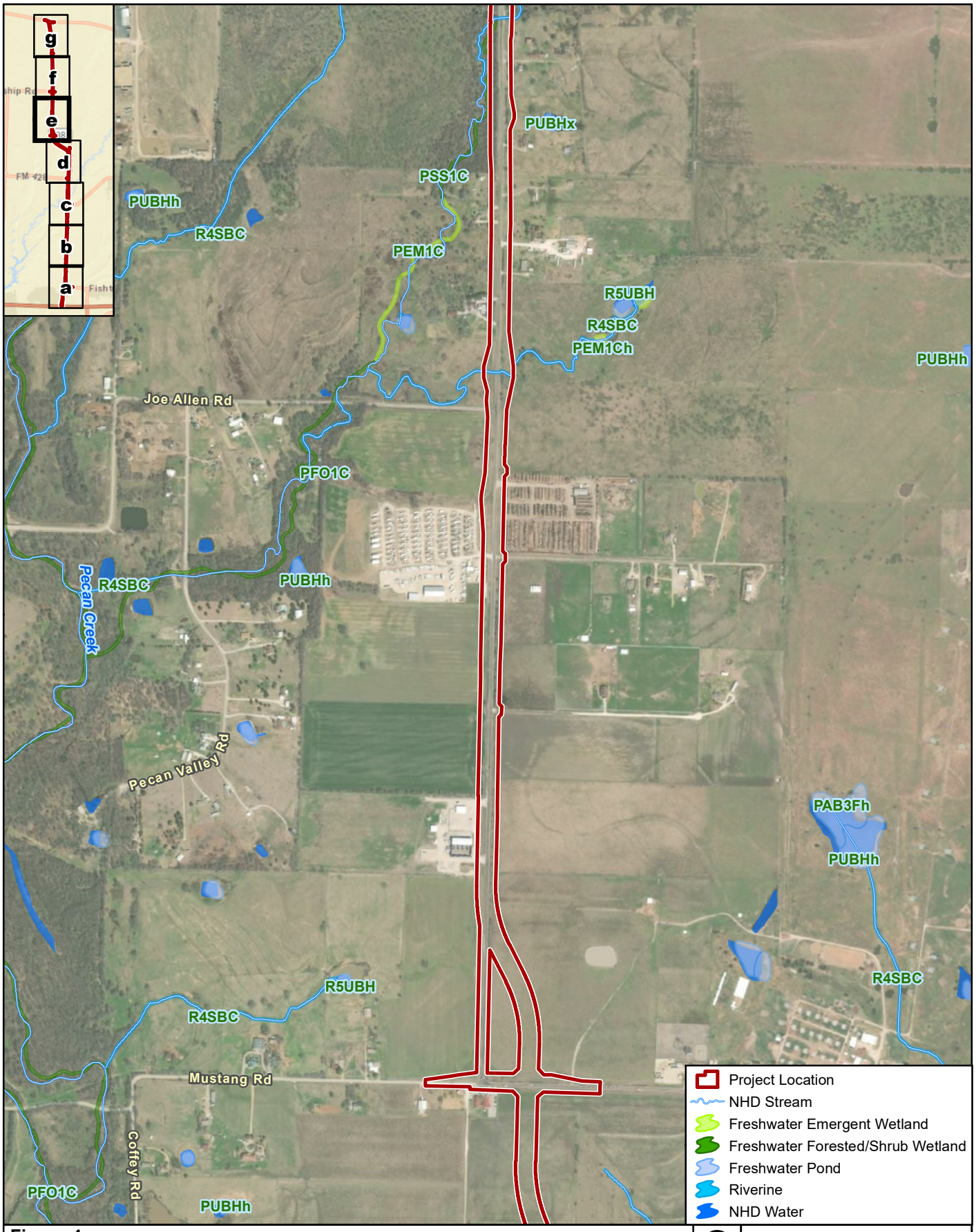


Figure 4e.
Water Resources within the Project Area

FM 1385 Environmental Assessment

Data Sources: NHD (2022), NWI (2020)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 1,000 Feet
0 300 Meters

1 in = 1,000 feet
Scale: 1:12,000
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 4_Water Resources_20220727_BMJ.mxd

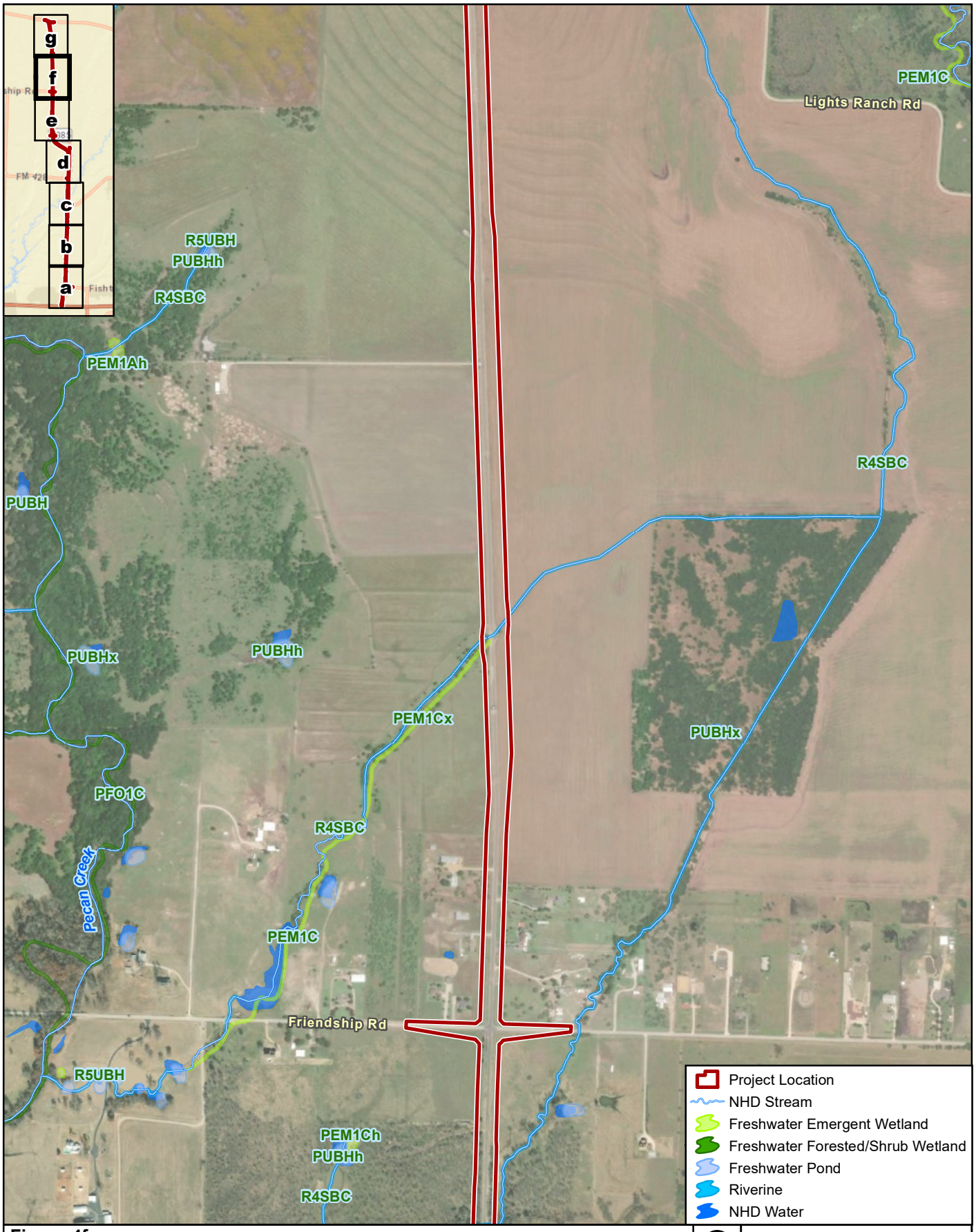


Figure 4f.
Water Resources within the Project Area

FM 1385 Environmental Assessment

Data Sources: NHD (2022), NWI (2020)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 1,000 Feet
0 300 Meters

1 in = 1,000 feet
Scale: 1:12,000
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 4_Water Resources_20220727_BMJ.mxd

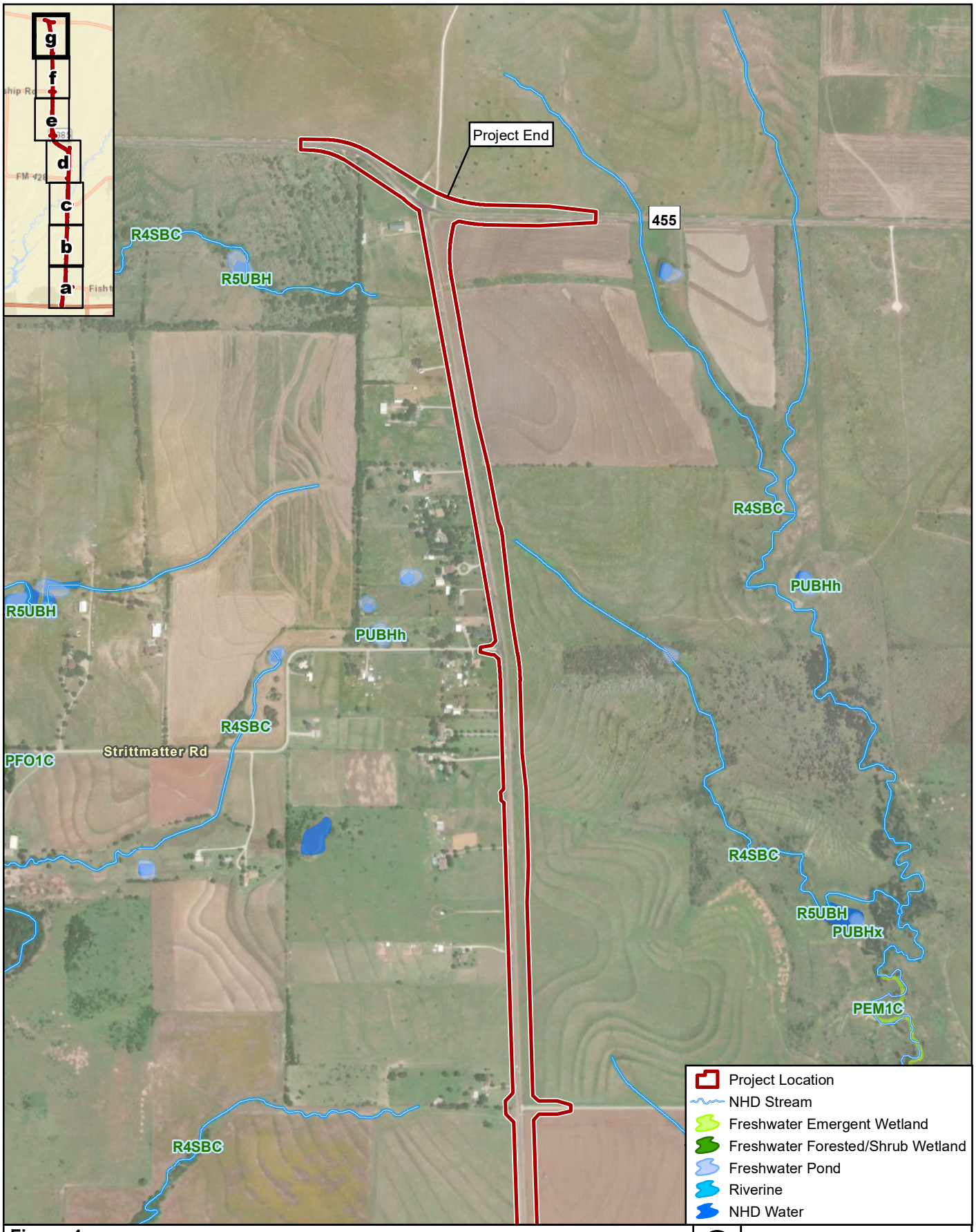


Figure 4g.
Water Resources within the Project Area

FM 1385 Environmental Assessment

Data Sources: NHD (2022), NWI (2020)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 1,000 Feet
0 300 Meters

1 in = 1,000 feet
Scale: 1:12,000
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 4_Water Resources_20220727_BMJ.mxd

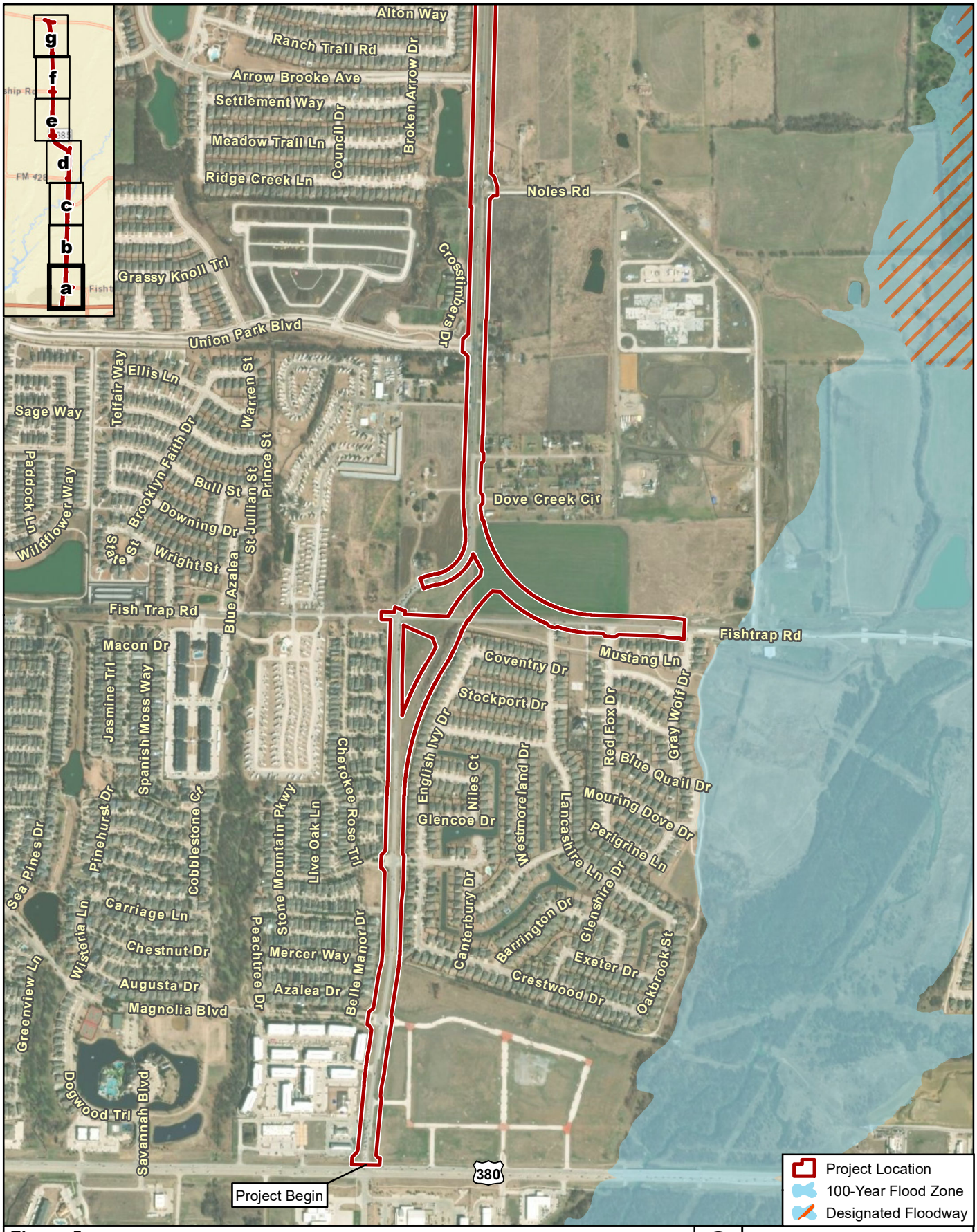


Figure 5a.
Floodplains within the Project Area

FM 1385 Environmental Assessment

Data Sources: FEMA NFHL (2022
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 1,000 Feet
0 300 Meters

1 in = 1,000 feet
Scale: 1:12,000
Date: 3/20/2023

U:\23530016\4\03_data\gis_cad\gis\FM1385_EA_Figure 5_Floodplains_20220727_BMJ.mxd

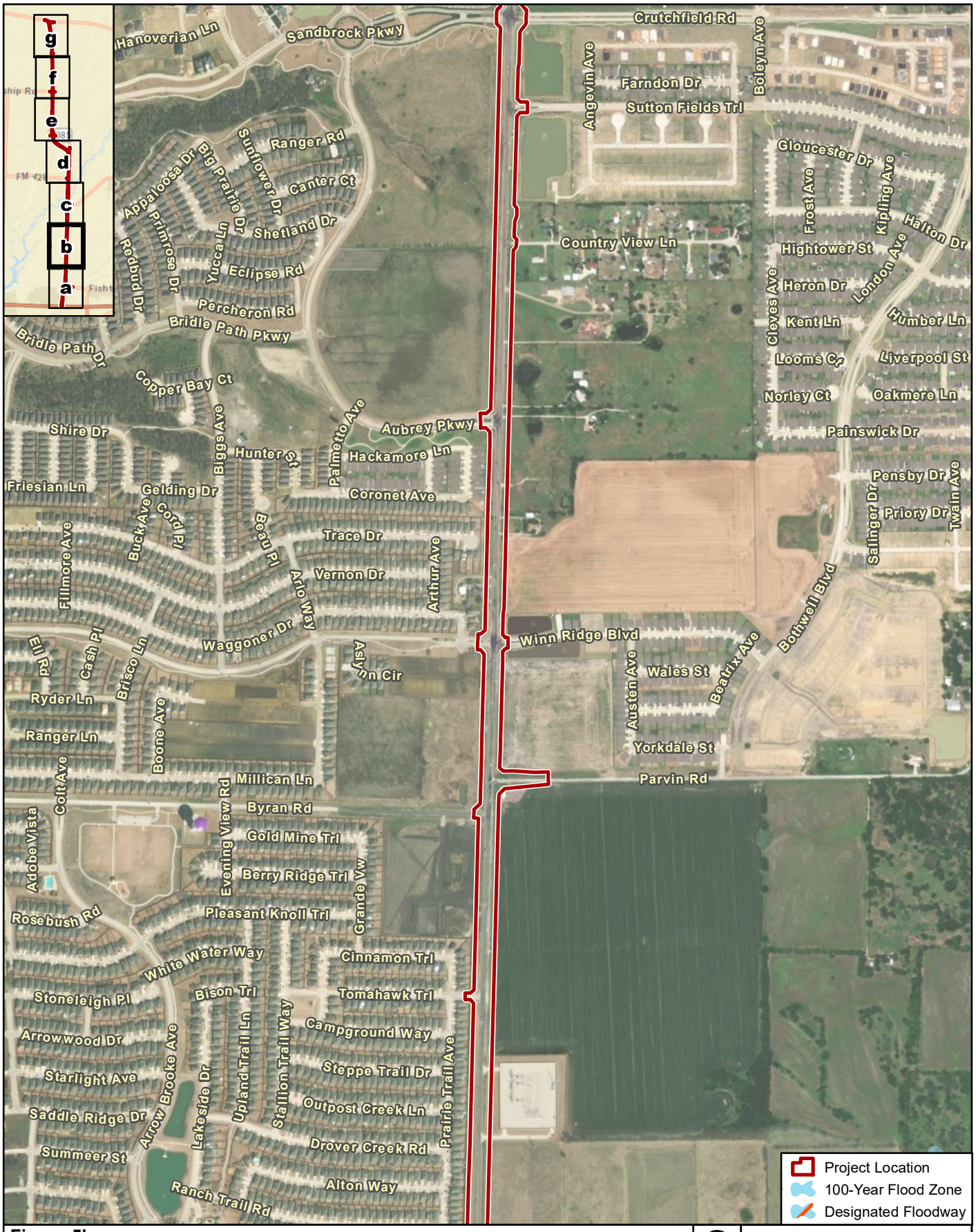


Figure 5b.
Floodplains within the Project Area

FM 1385 Environmental Assessment

Data Sources: FEMA NFHL (2022
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 1,000 Feet
0 300 Meters

1 in = 1,000 feet
Scale: 1:12,000
Date: 3/20/2023

U:\23530016\4\03_data\gis_cad\gis\FM1385_EA_Figure 5_Floodplains_20220727_BMJ.mxd

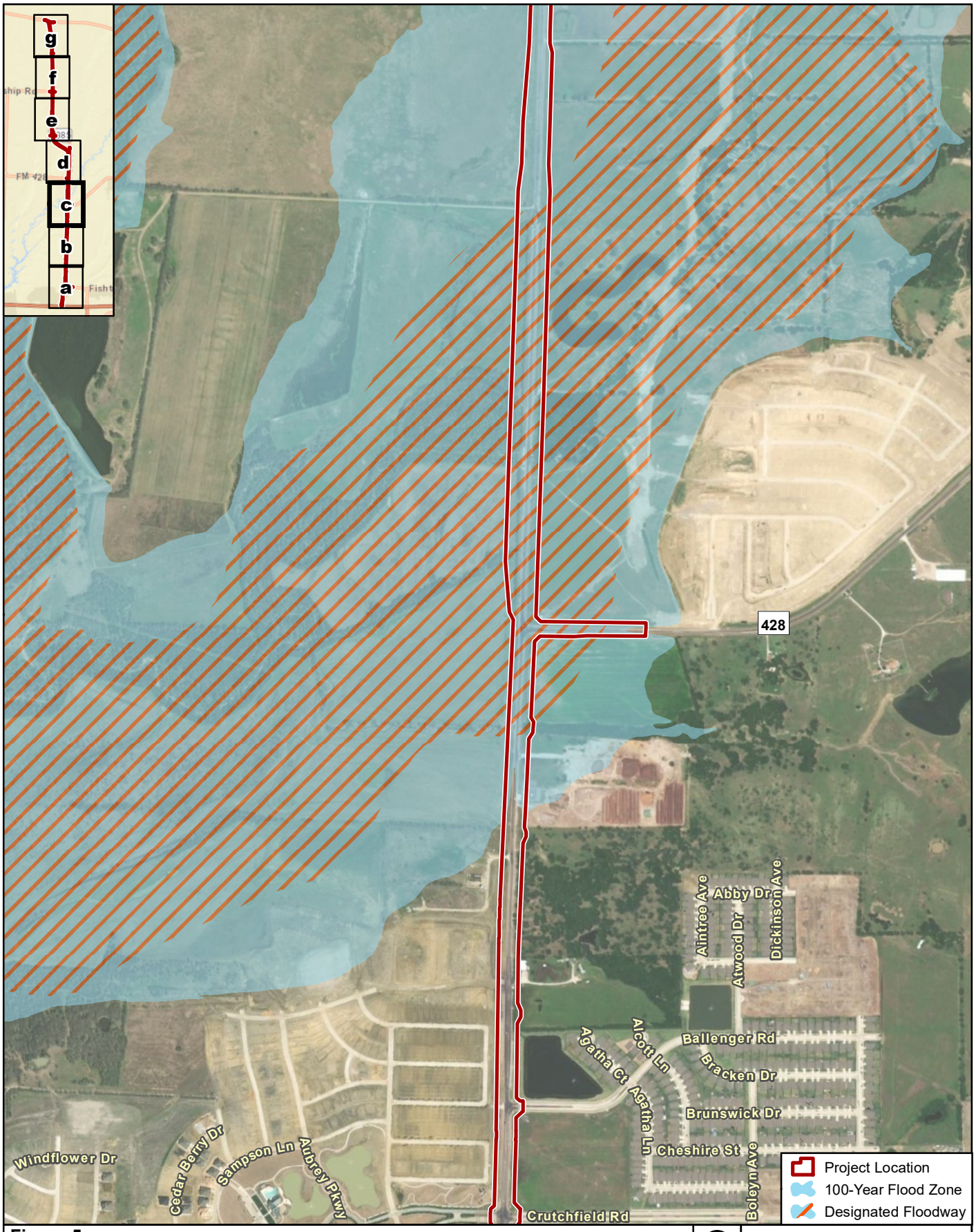


Figure 5c.
Floodplains within the Project Area

FM 1385 Environmental Assessment

Data Sources: FEMA NFHL (2022
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 1,000 Feet
0 300 Meters

1 in = 1,000 feet
Scale: 1:12,000
Date: 3/20/2023

U:\23530016\4\03_data\gis_cad\gis\FM1385_EA_Figure 5_Floodplains_20220727_BMJ.mxd

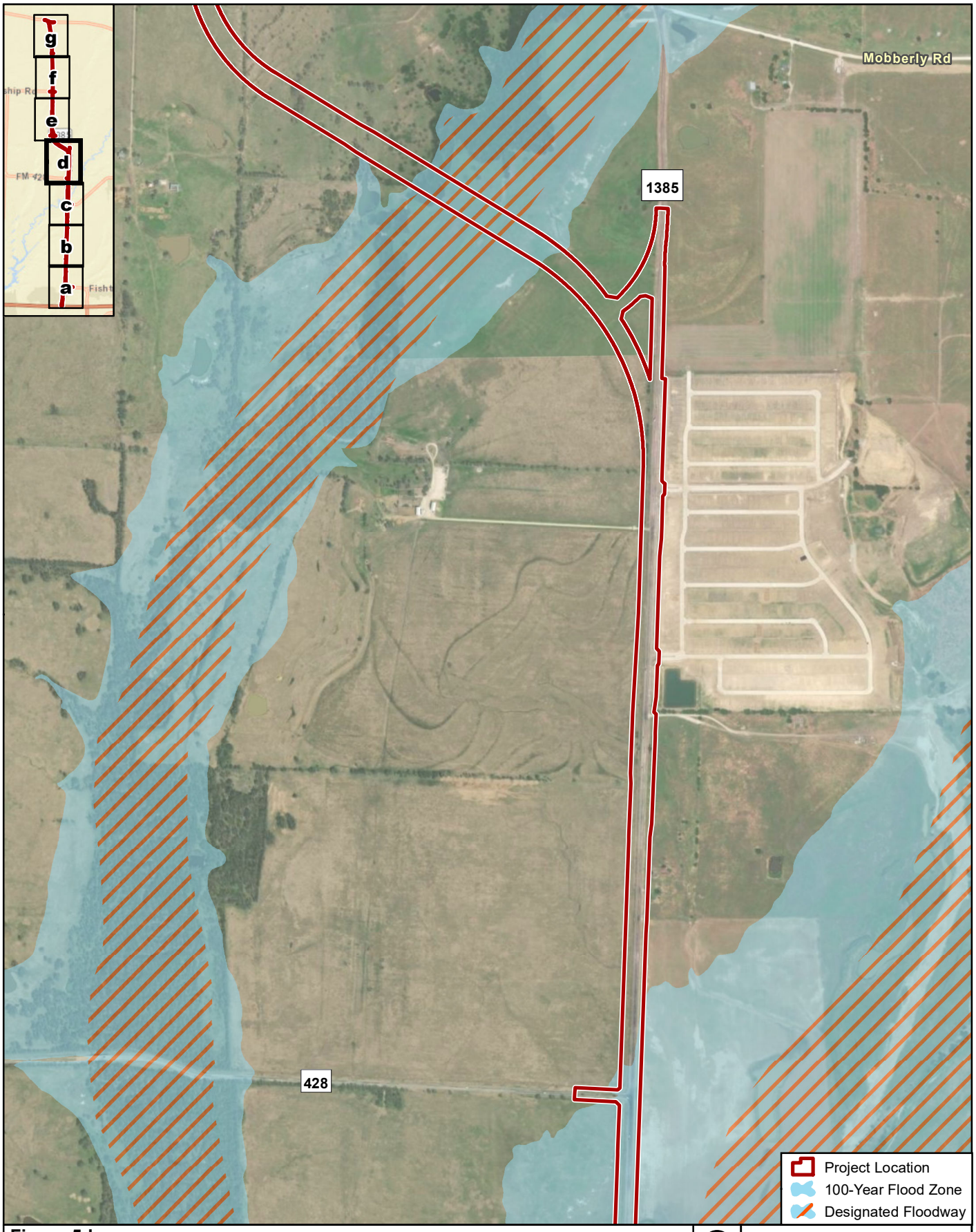


Figure 5d.
Floodplains within the Project Area

FM 1385 Environmental Assessment

Data Sources: FEMA NFHL (2022
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 1,000 Feet
0 300 Meters

1 in = 1,000 feet
Scale: 1:12,000
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 5_Floodplains_20220727_BMJ.mxd

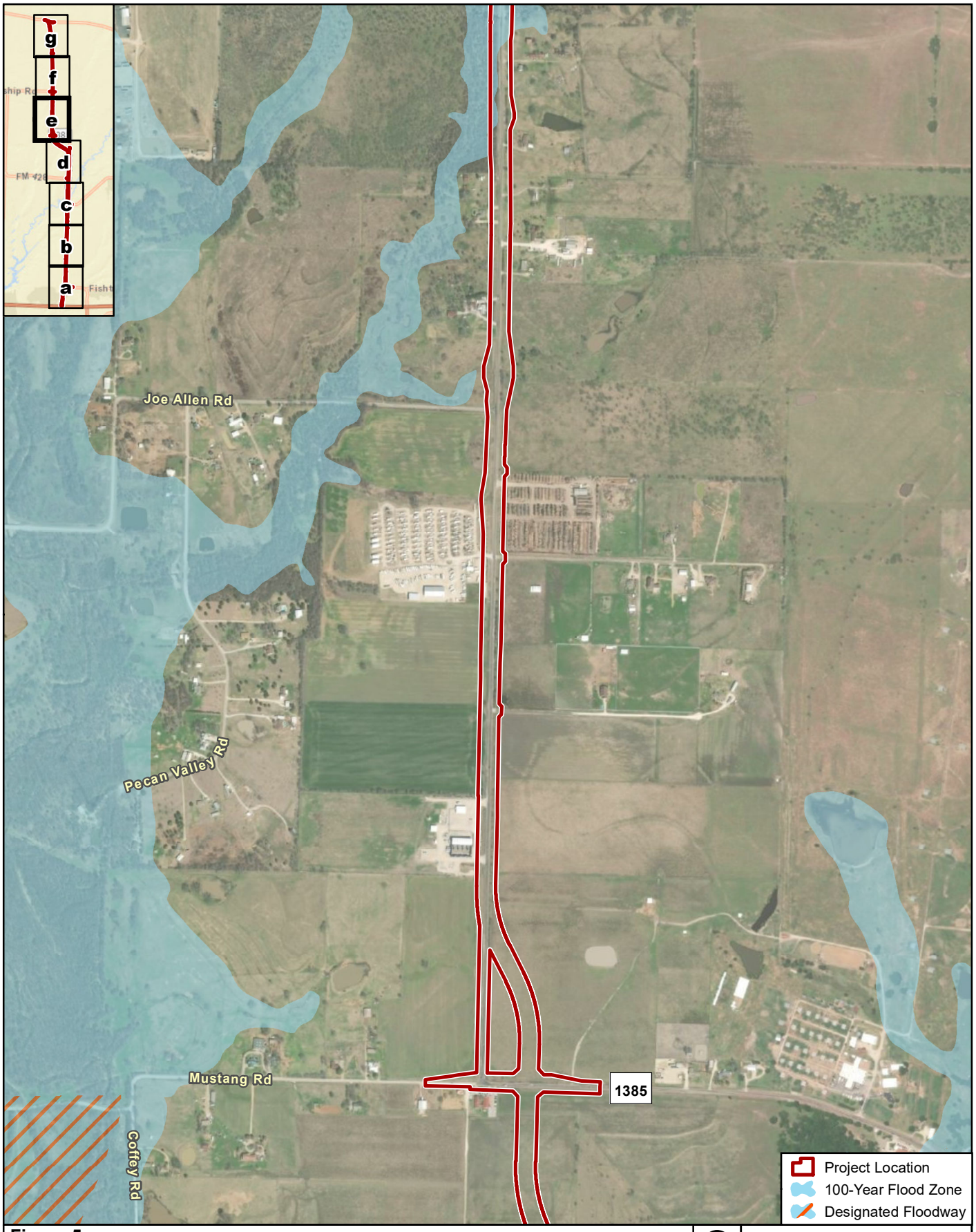


Figure 5e.
Floodplains within the Project Area

FM 1385 Environmental Assessment

Data Sources: FEMA NFHL (2022
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 1,000 Feet
0 300 Meters

1 in = 1,000 feet
Scale: 1:12,000
Date: 3/20/2023

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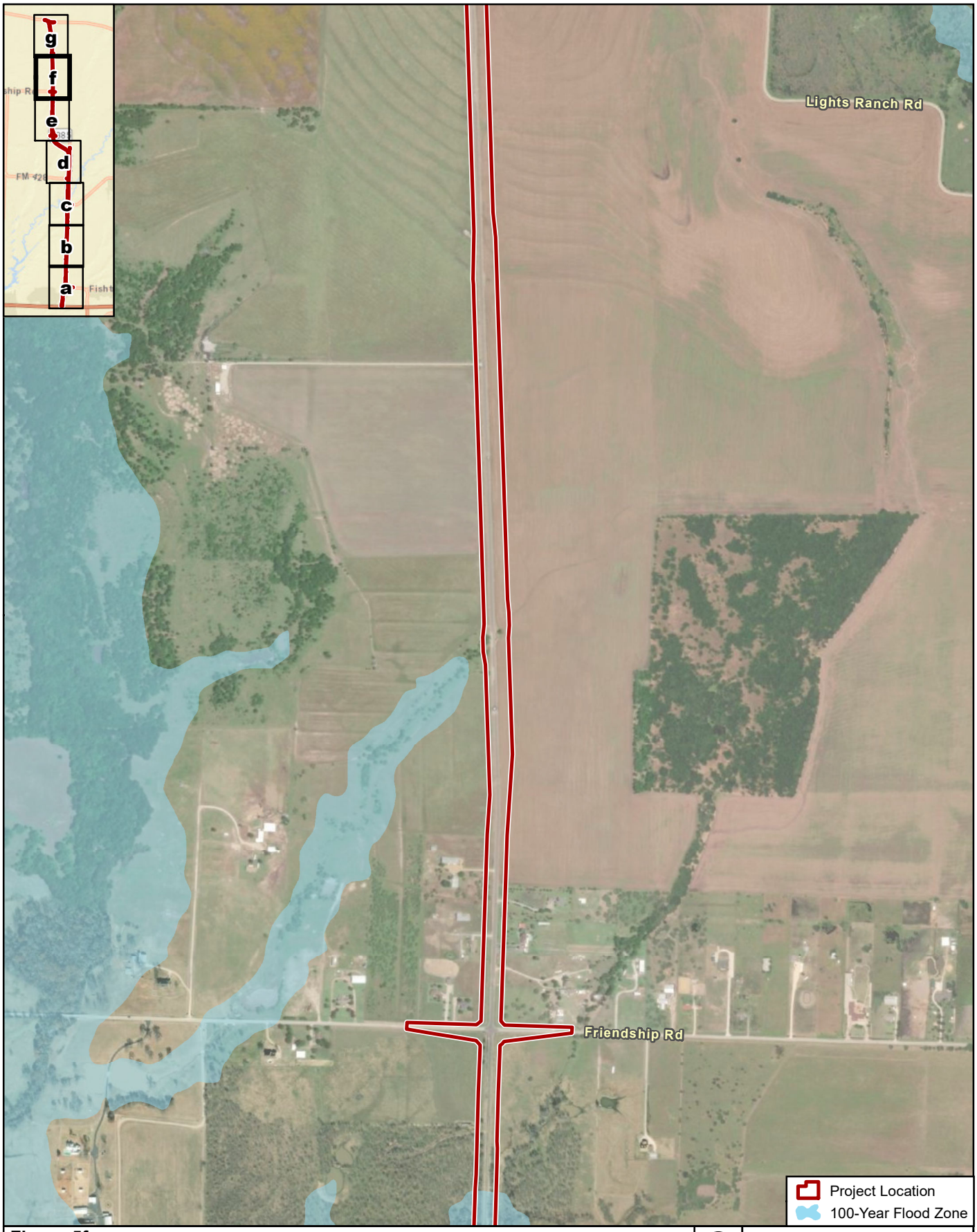

Figure 5f.
Floodplains within the Project Area

FM 1385 Environmental Assessment

Data Sources: FEMA NFHL (2022
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 1,000 Feet
0 300 Meters

1 in = 1,000 feet
Scale: 1:12,000
Date: 3/20/2023

U:\23530164\03_data\gis_cad\gis\FM1385_EA_Figure 5_Floodplains_20220727_BMJ.mxd

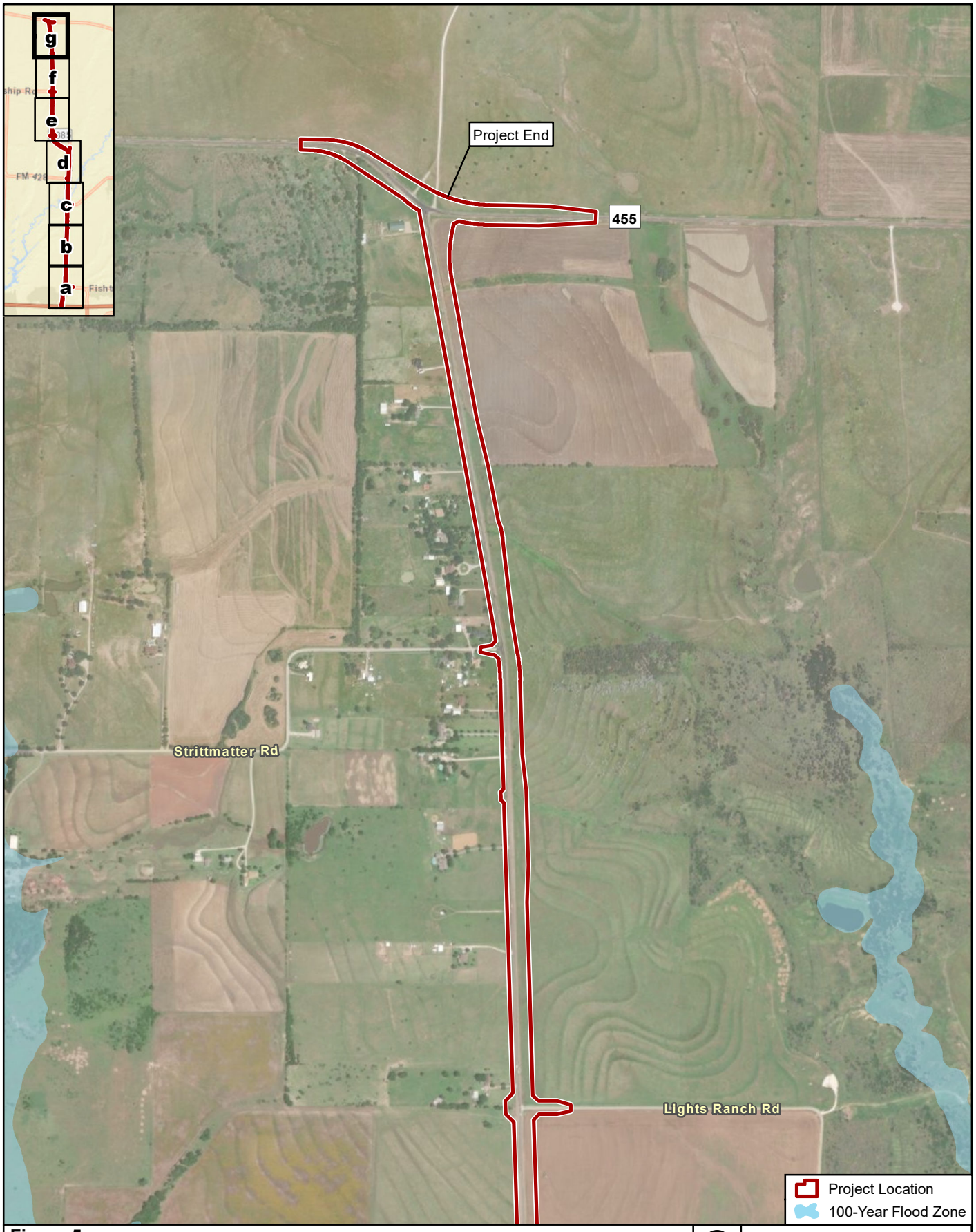

Figure 5g.
Floodplains within the Project Area

FM 1385 Environmental Assessment

Data Sources: FEMA NFHL (2022
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 1,000 Feet
0 300 Meters

1 in = 1,000 feet
Scale: 1:12,000
Date: 3/20/2023

U:\23530164\03_data\gis_cad\gis\FM1385_EA_Figure 5_Floodplains_20220727_BMJ.mxd

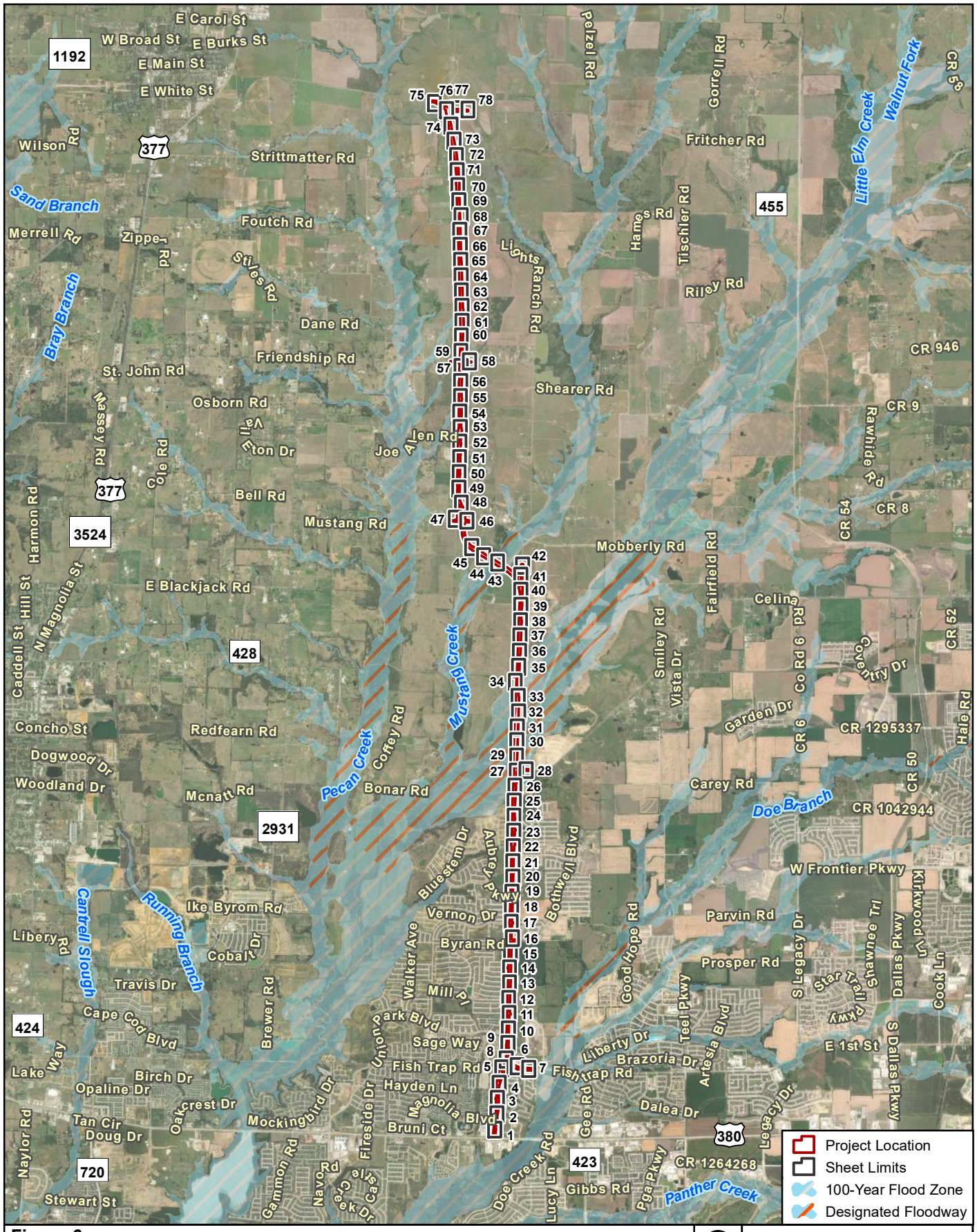

Figure 6.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: FEMA (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 1.5 Miles
0 2 Kilometers

1 in = 1.5 miles
Scale: 1:95,040
Date: 3/20/2023

U:\23530016\4\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_Overview_20230320_TLS.mxd

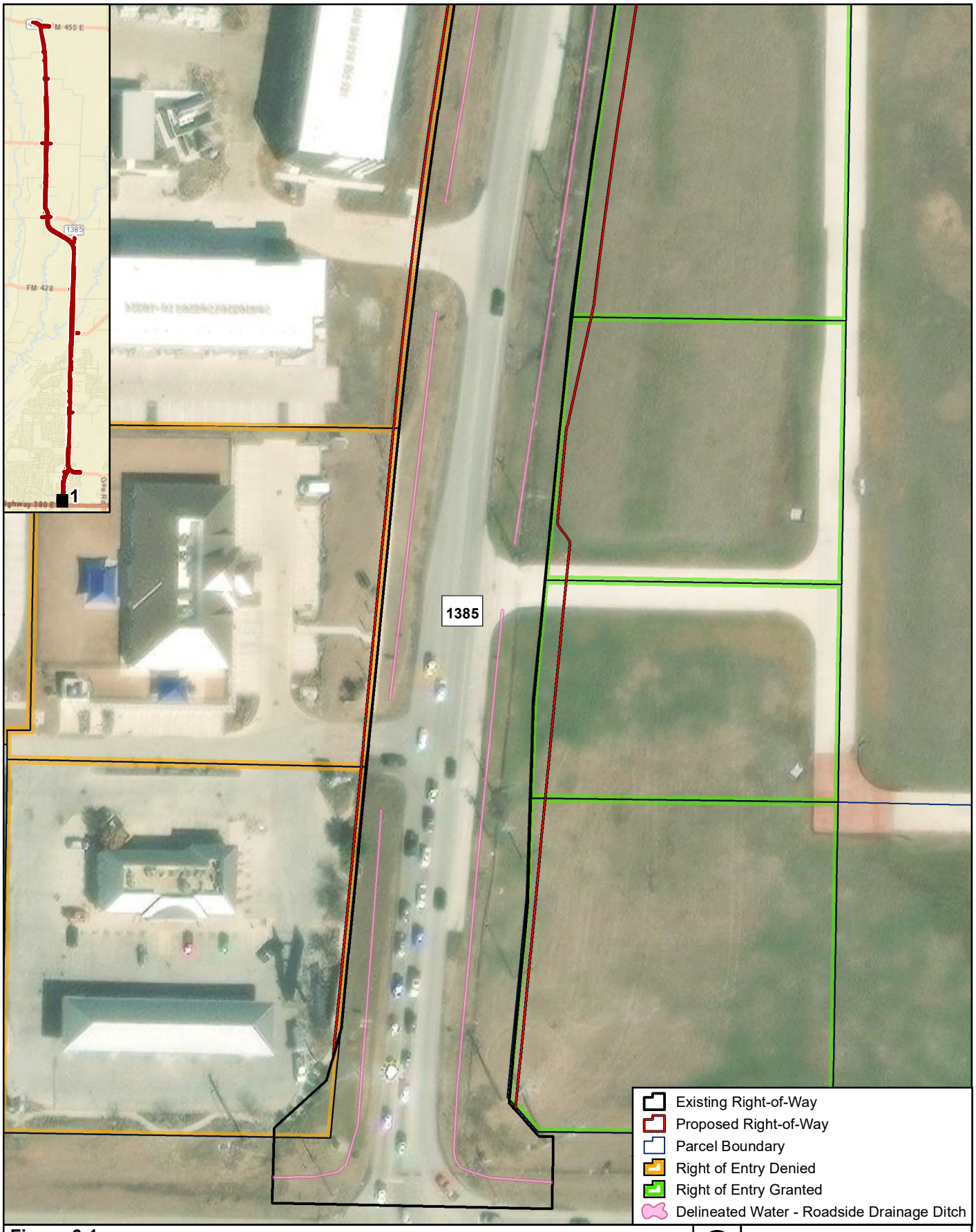

Figure 6-1.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

Figure 6-2.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

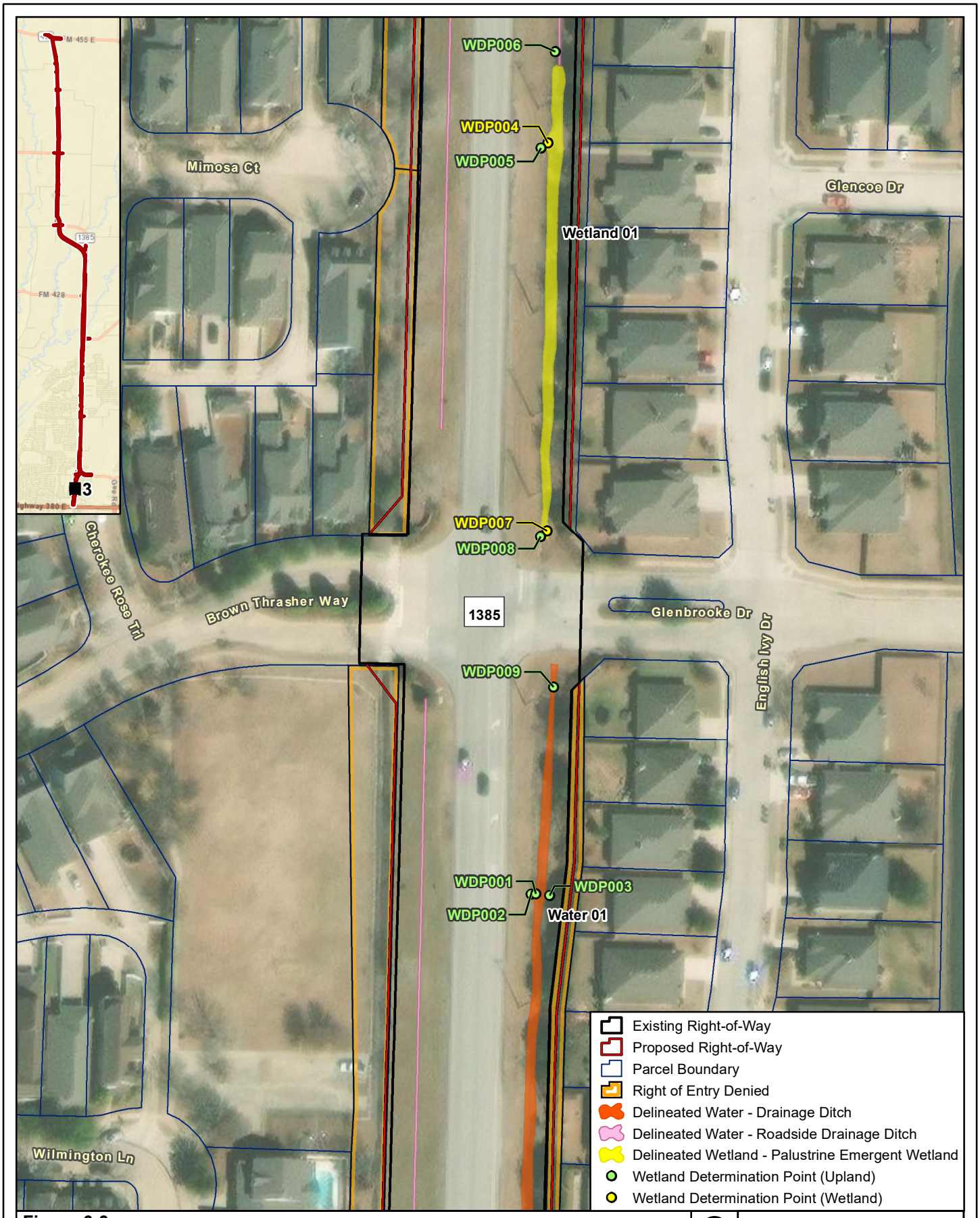

Figure 6-3.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\23530164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

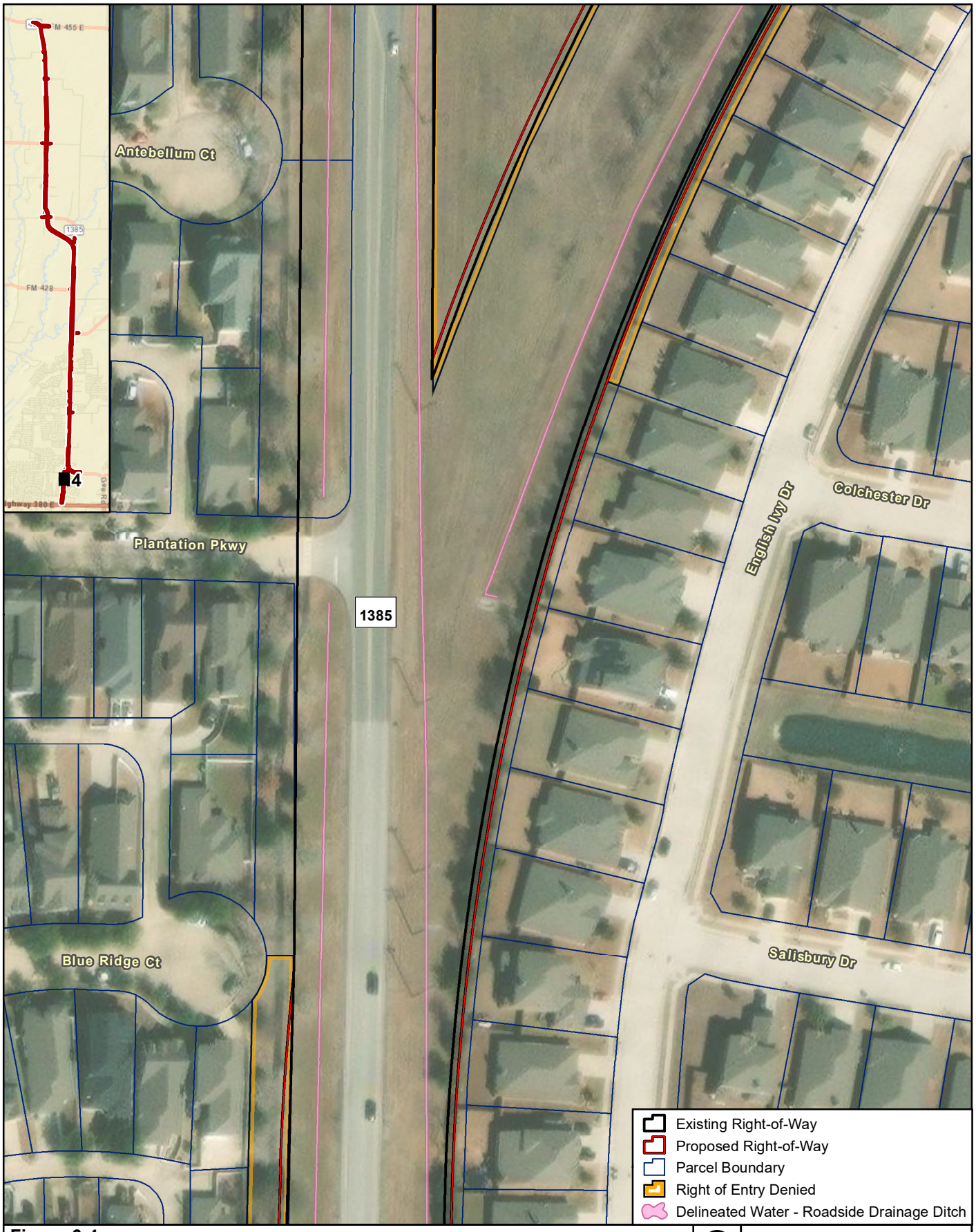

Figure 6-4.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

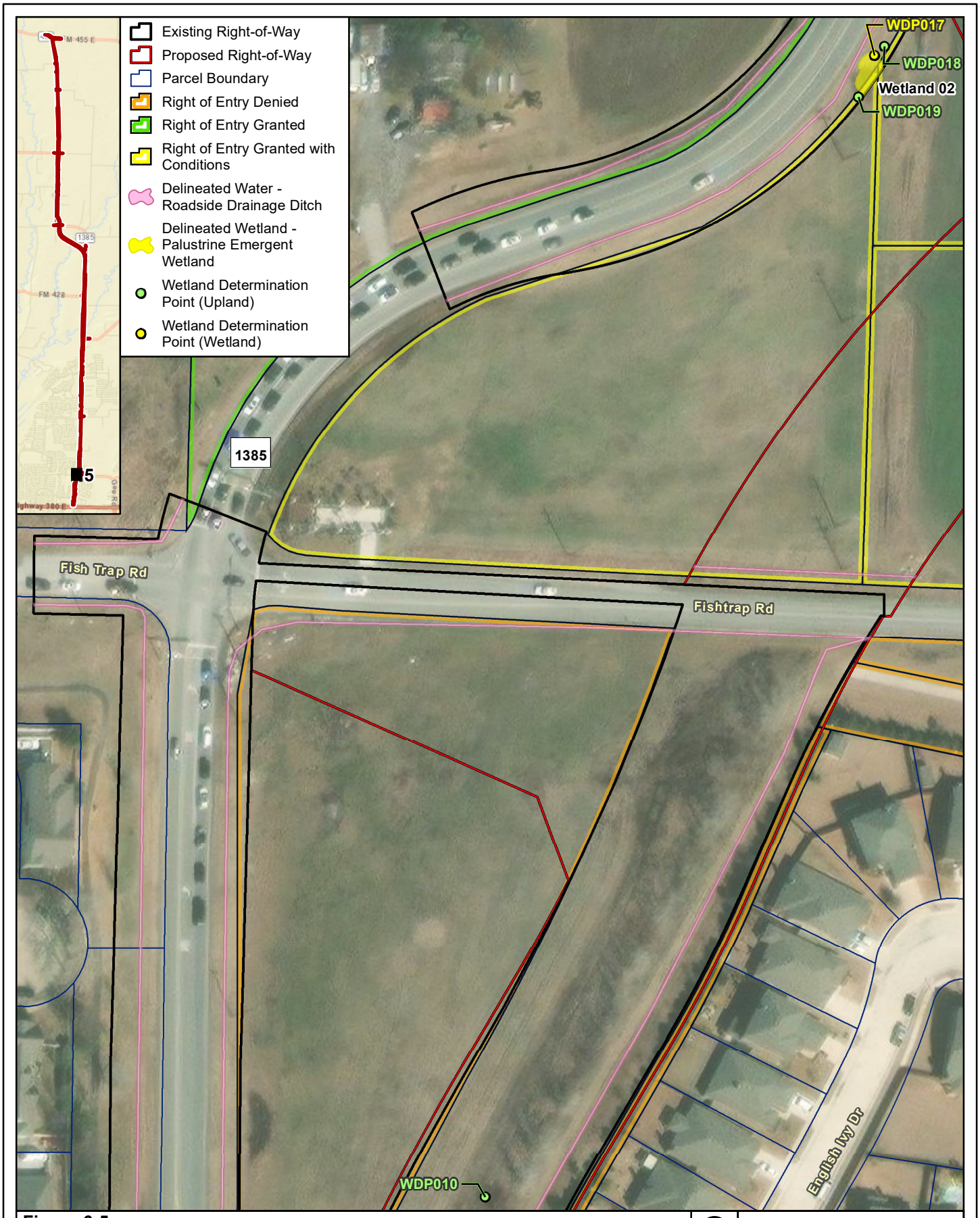

Figure 6-5.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\23530164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

Figure 6-6.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

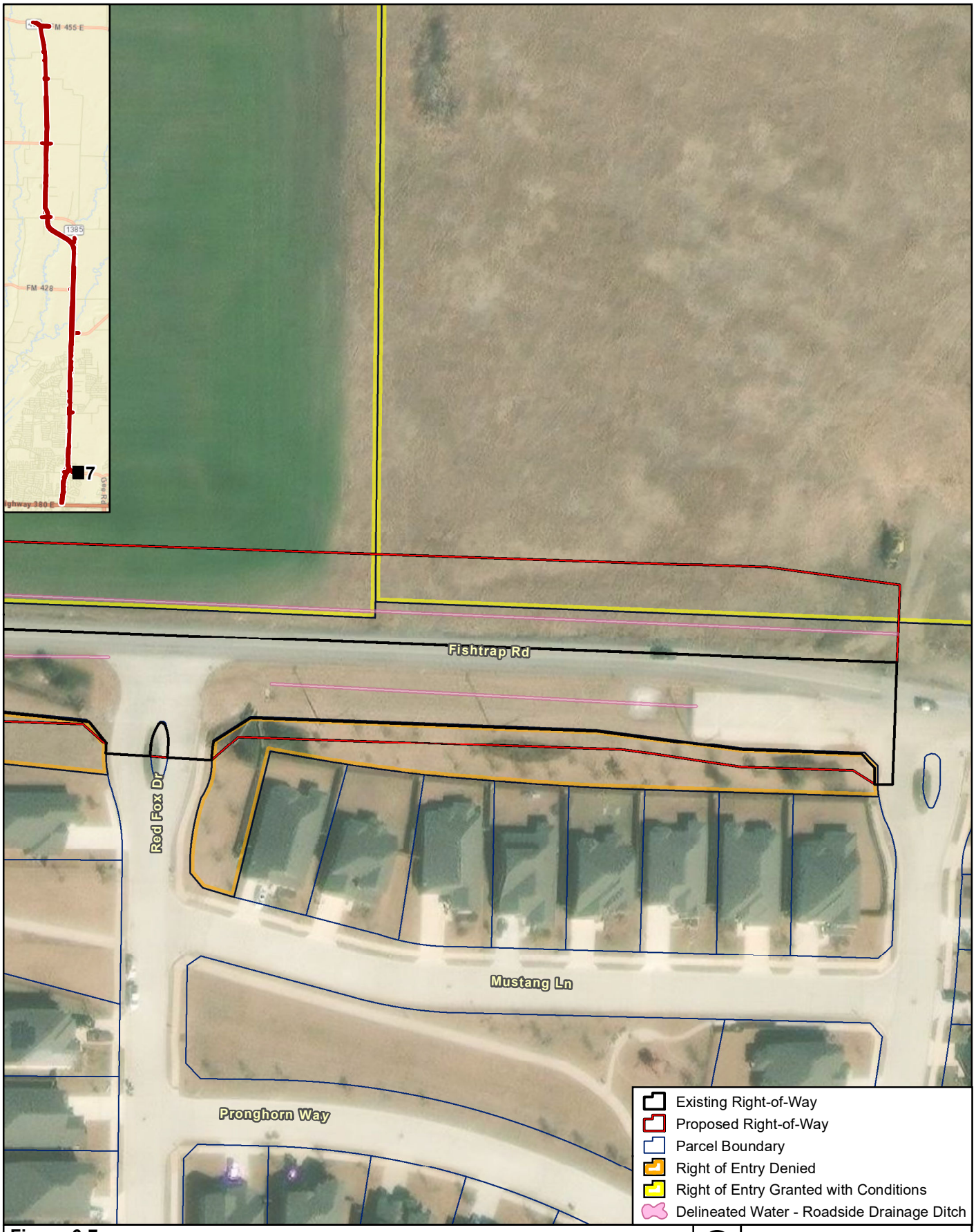

Figure 6-7.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

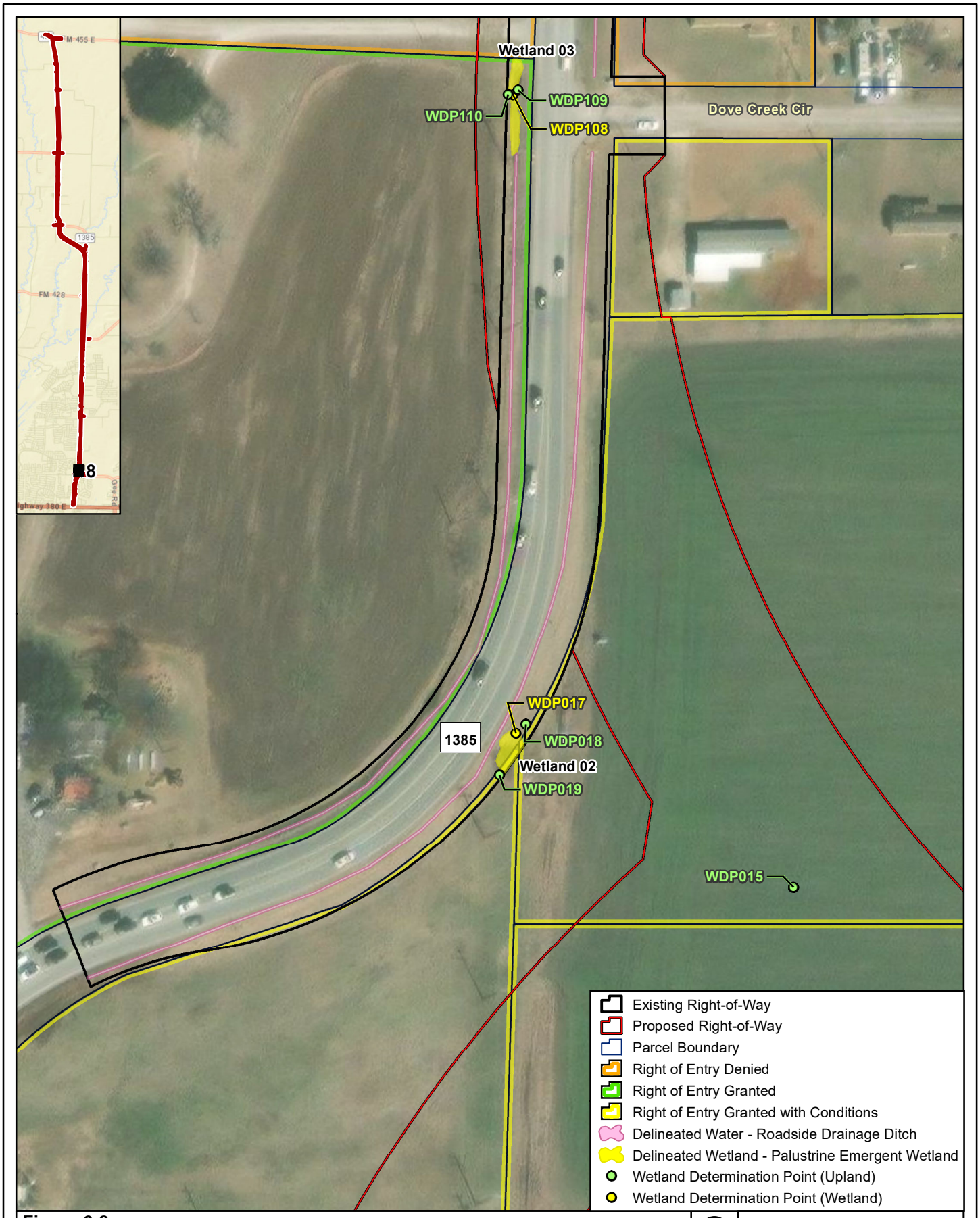

Figure 6-8.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

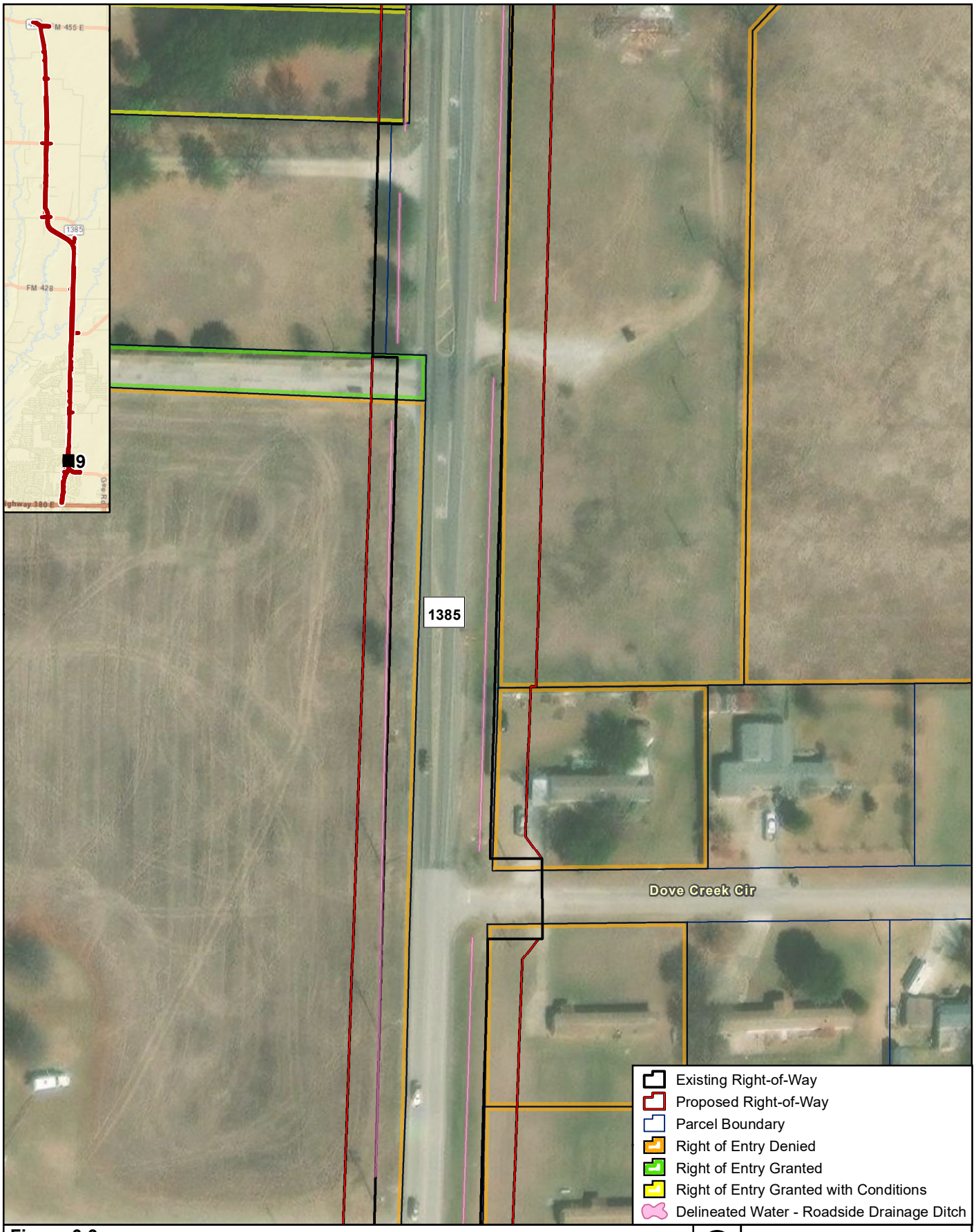

Figure 6-9.
Delineated Water Features

FM 1385 Environmental Assessment

CSJ: 1315-01-030

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

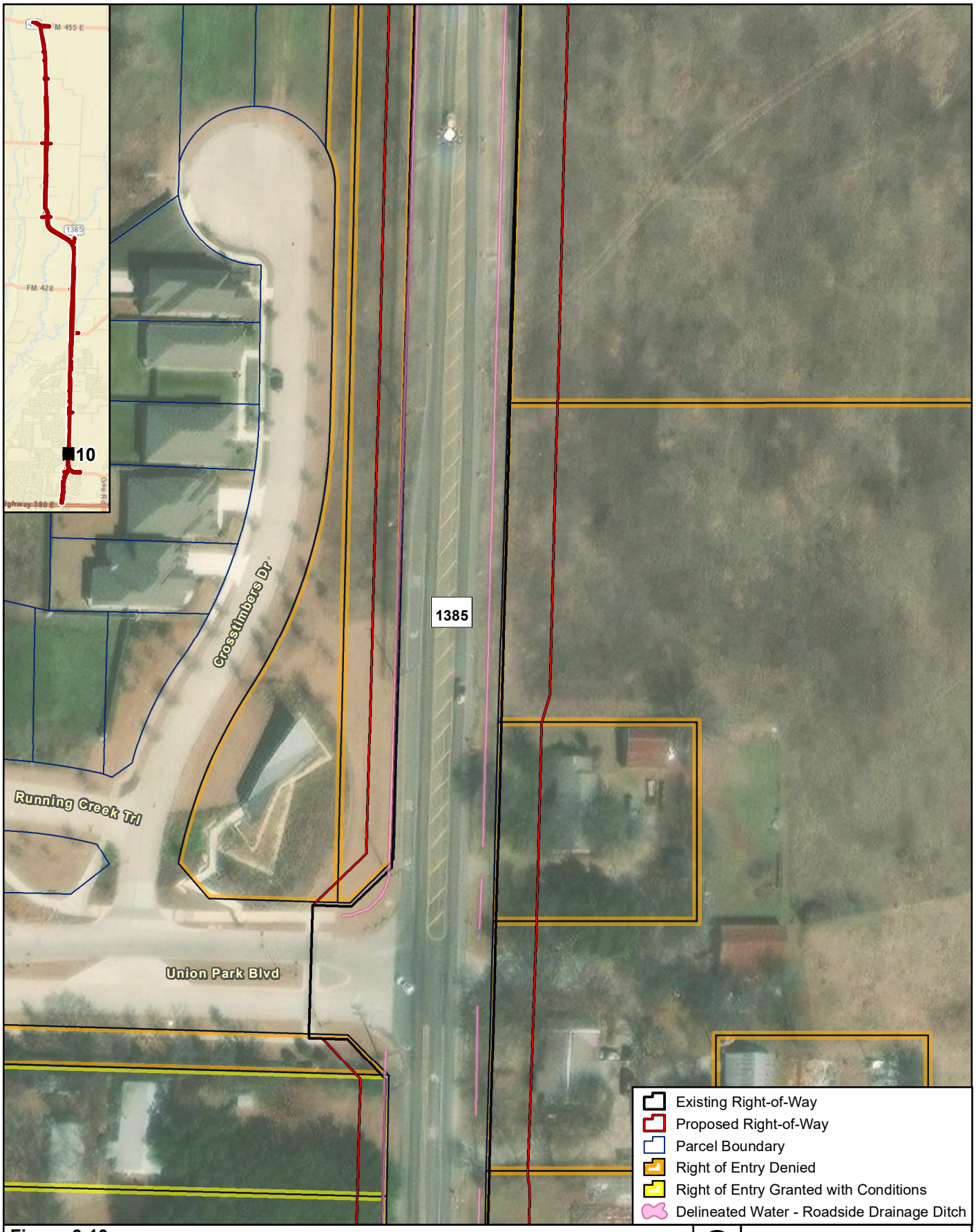

Figure 6-10.
Delineated Water Features

FM 1385 Environmental Assessment

CSJ: 1315-01-030

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

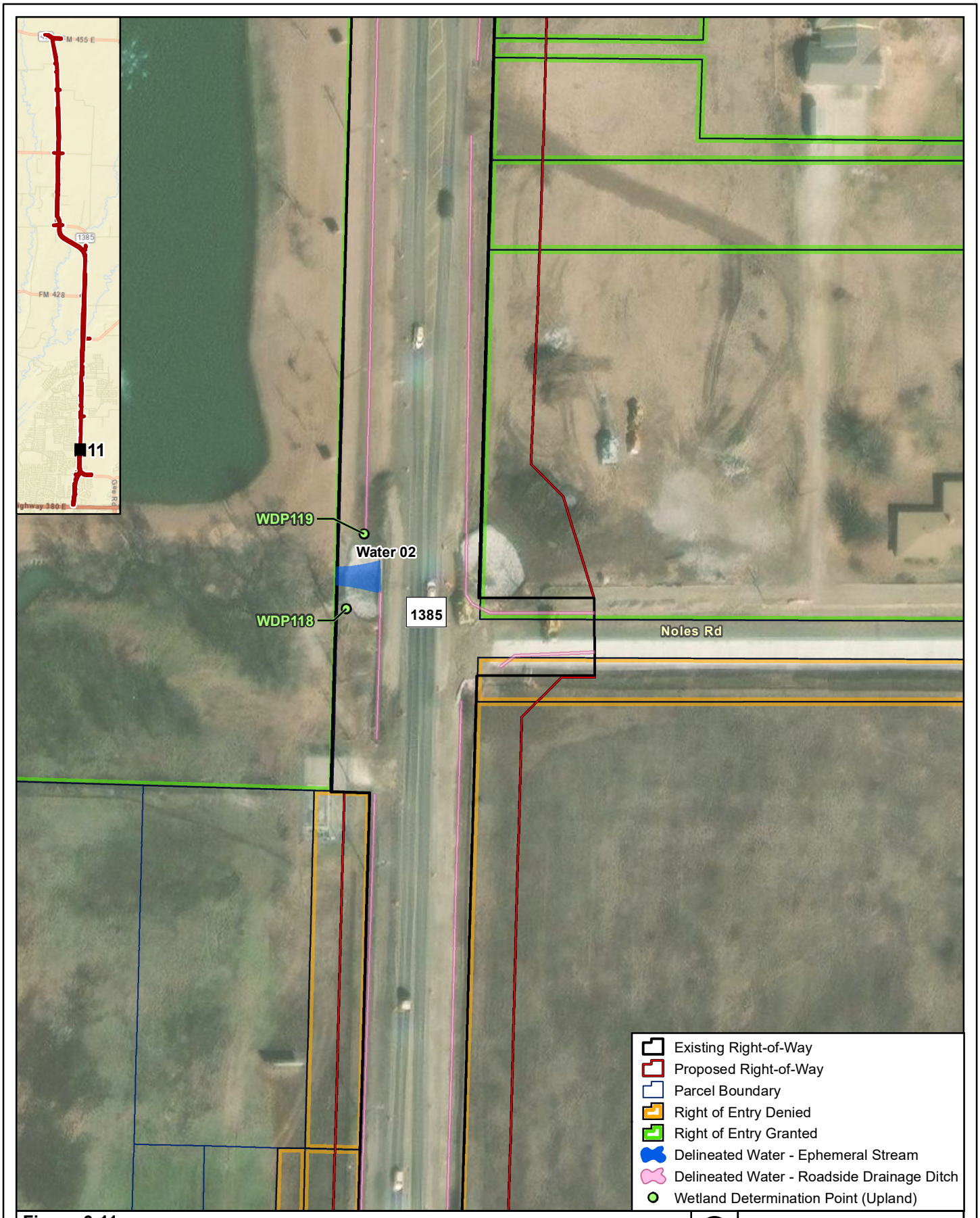

Figure 6-11.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

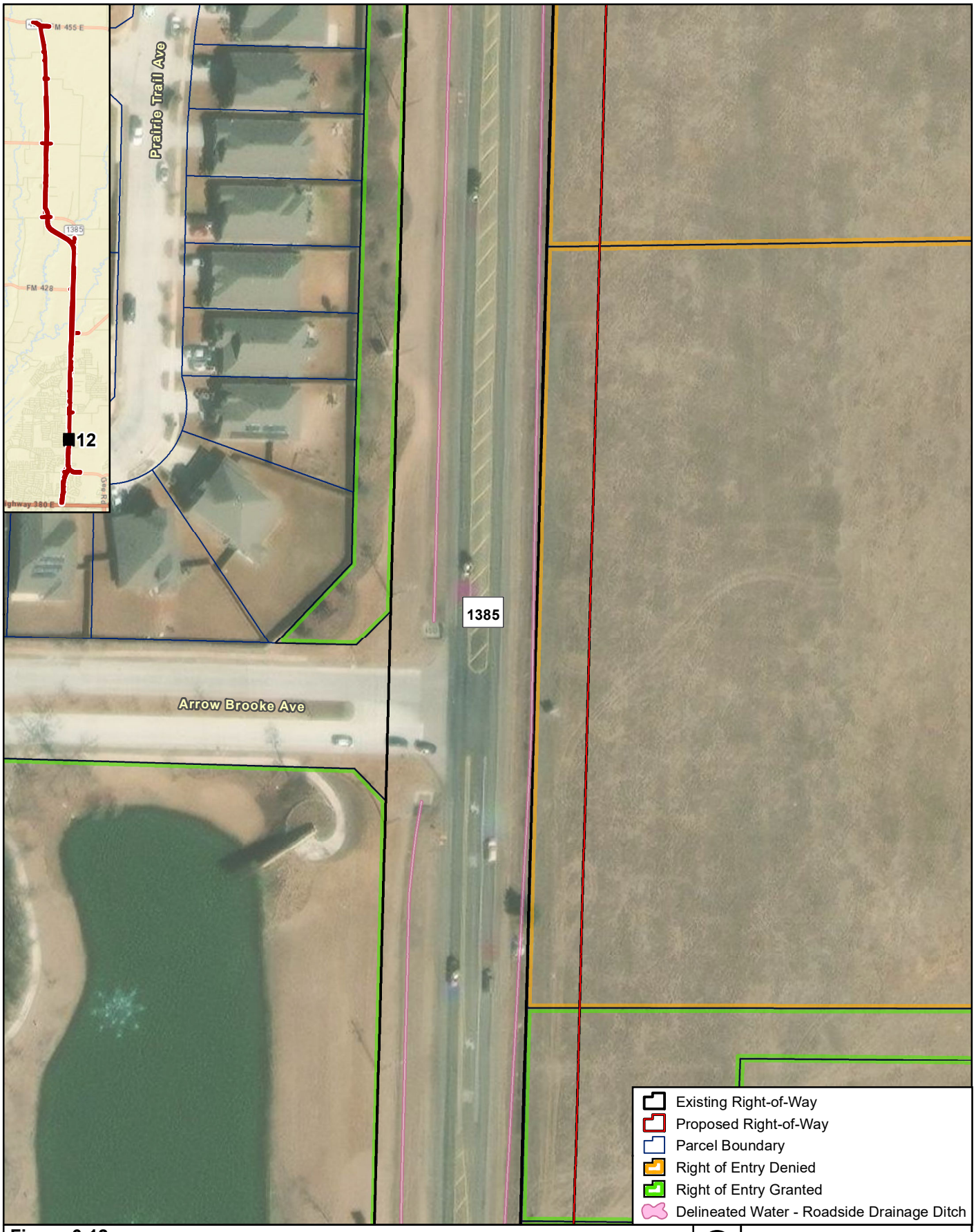

Figure 6-12.
Delineated Water Features

FM 1385 Environmental Assessment

CSJ: 1315-01-030

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

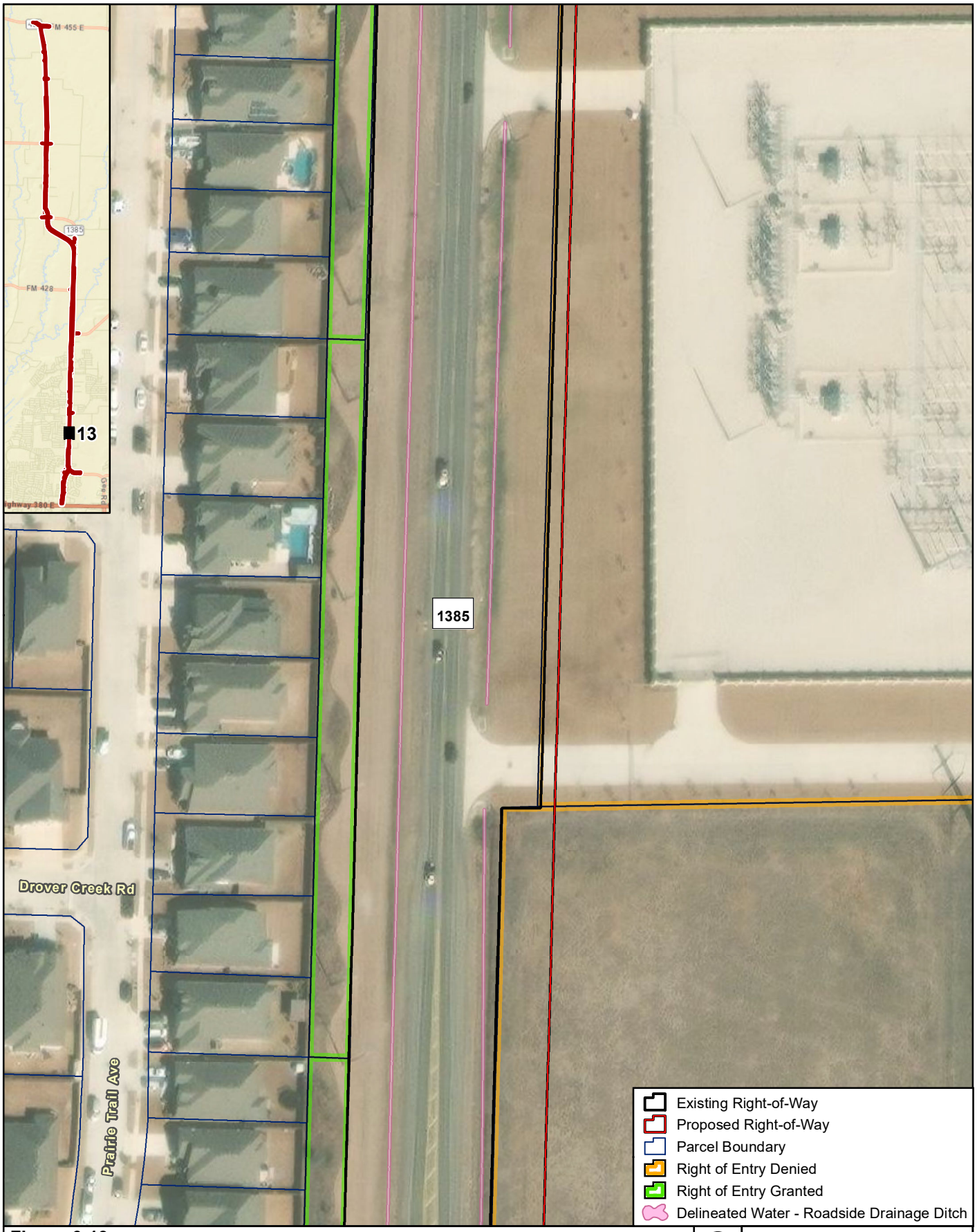

Figure 6-13.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

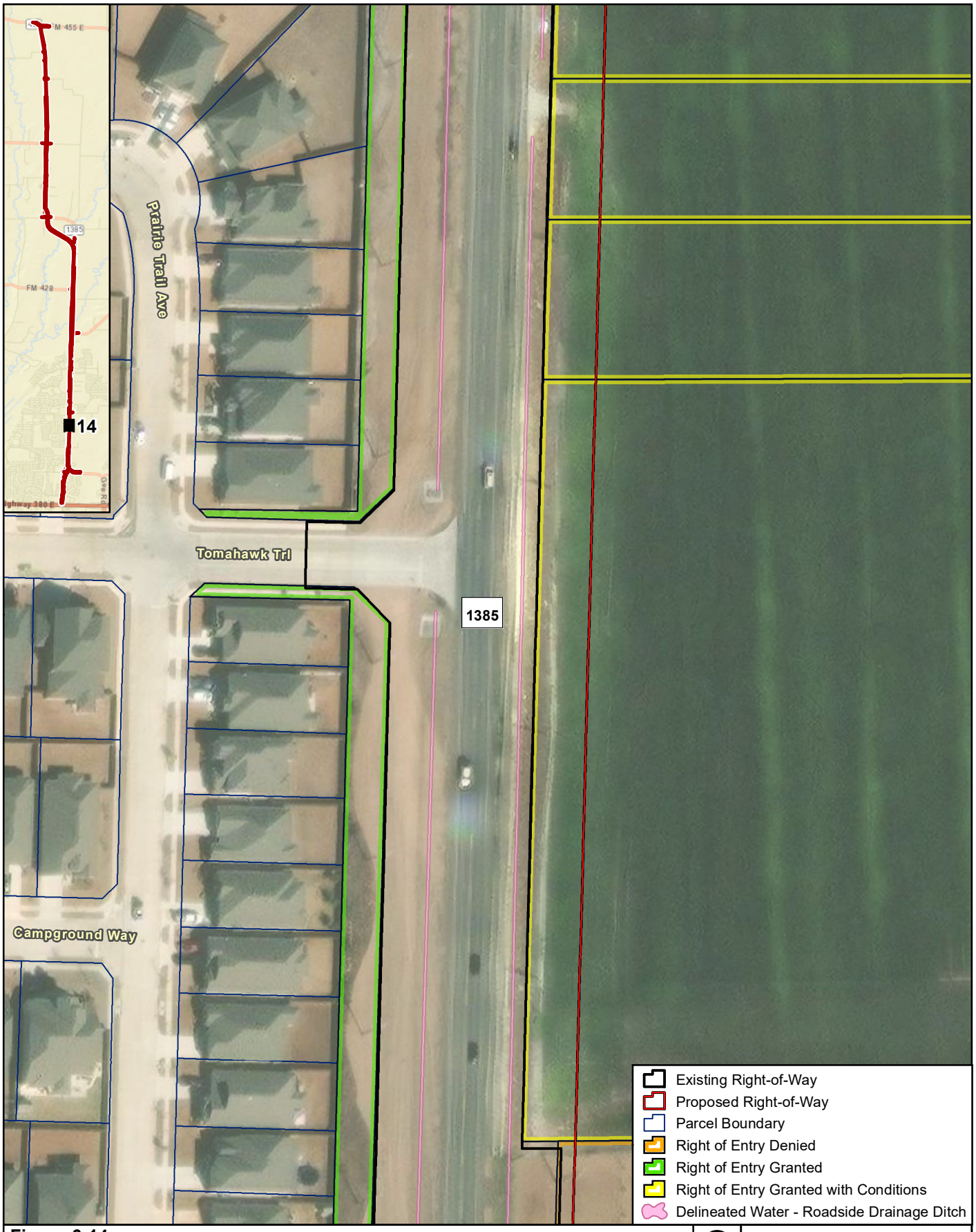

Figure 6-14.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\23530164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

Figure 6-15.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

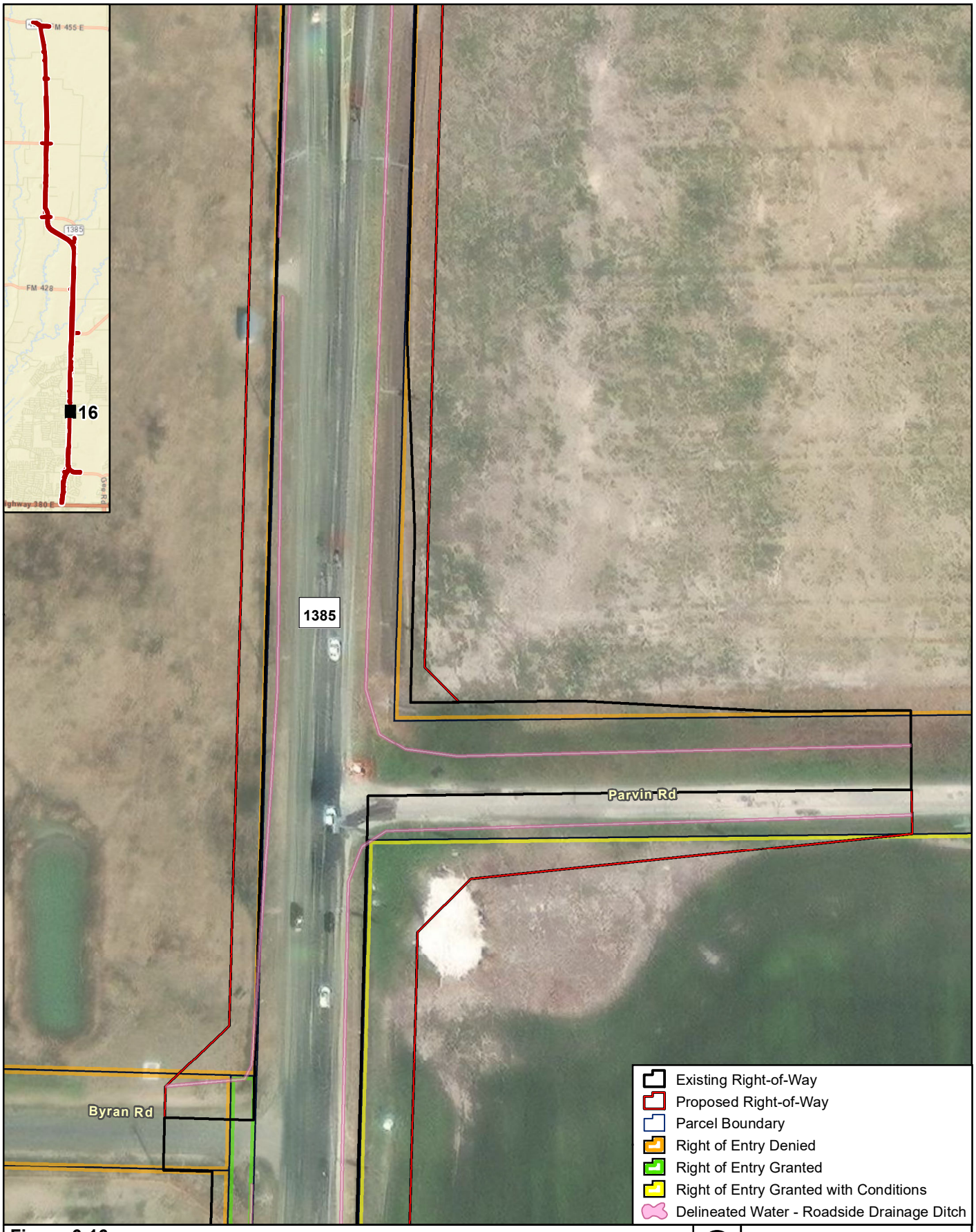

Figure 6-16.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

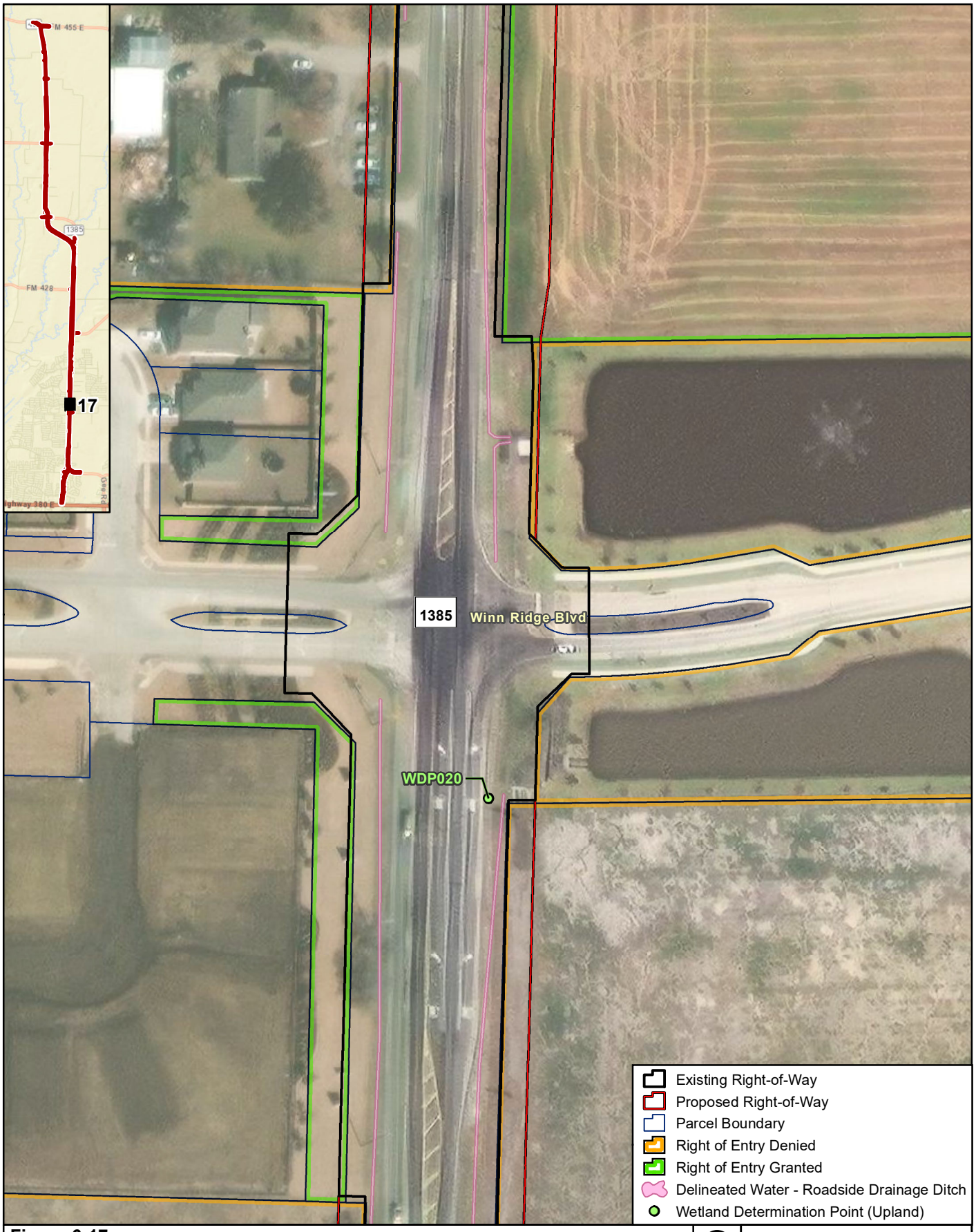

Figure 6-17.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\23530164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

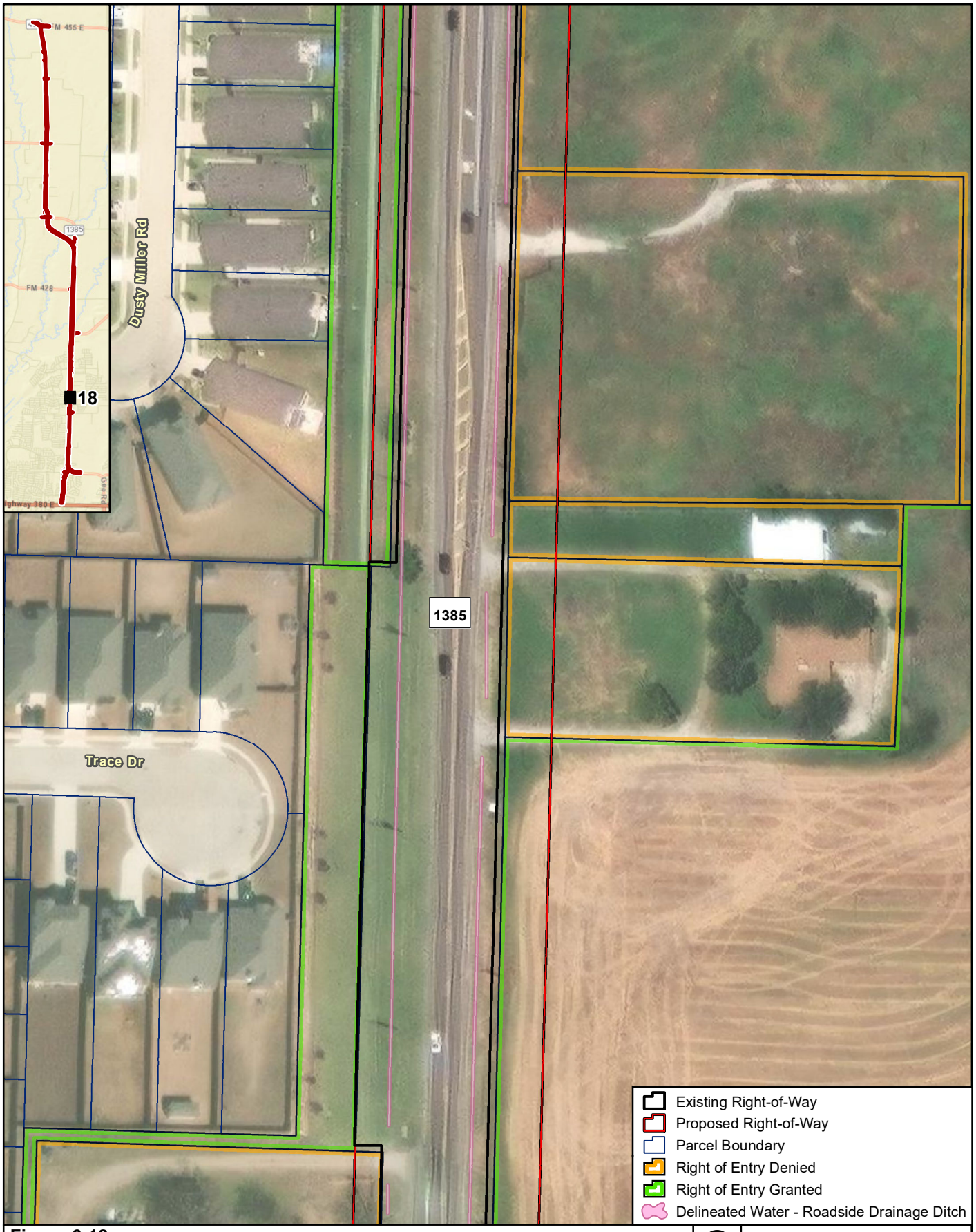

Figure 6-18.
Delineated Water Features

FM 1385 Environmental Assessment

CSJ: 1315-01-030

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

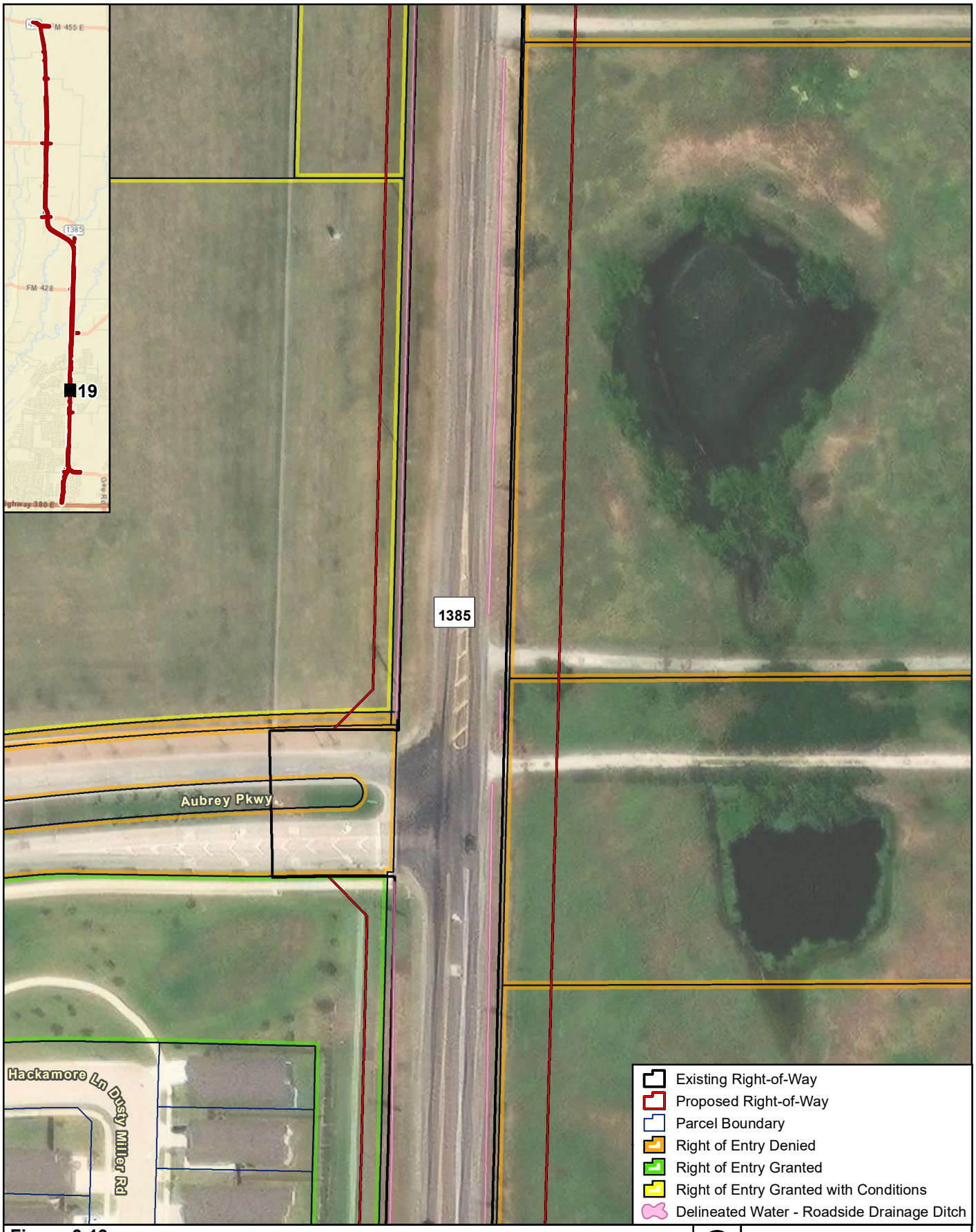

Figure 6-19.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\23530164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

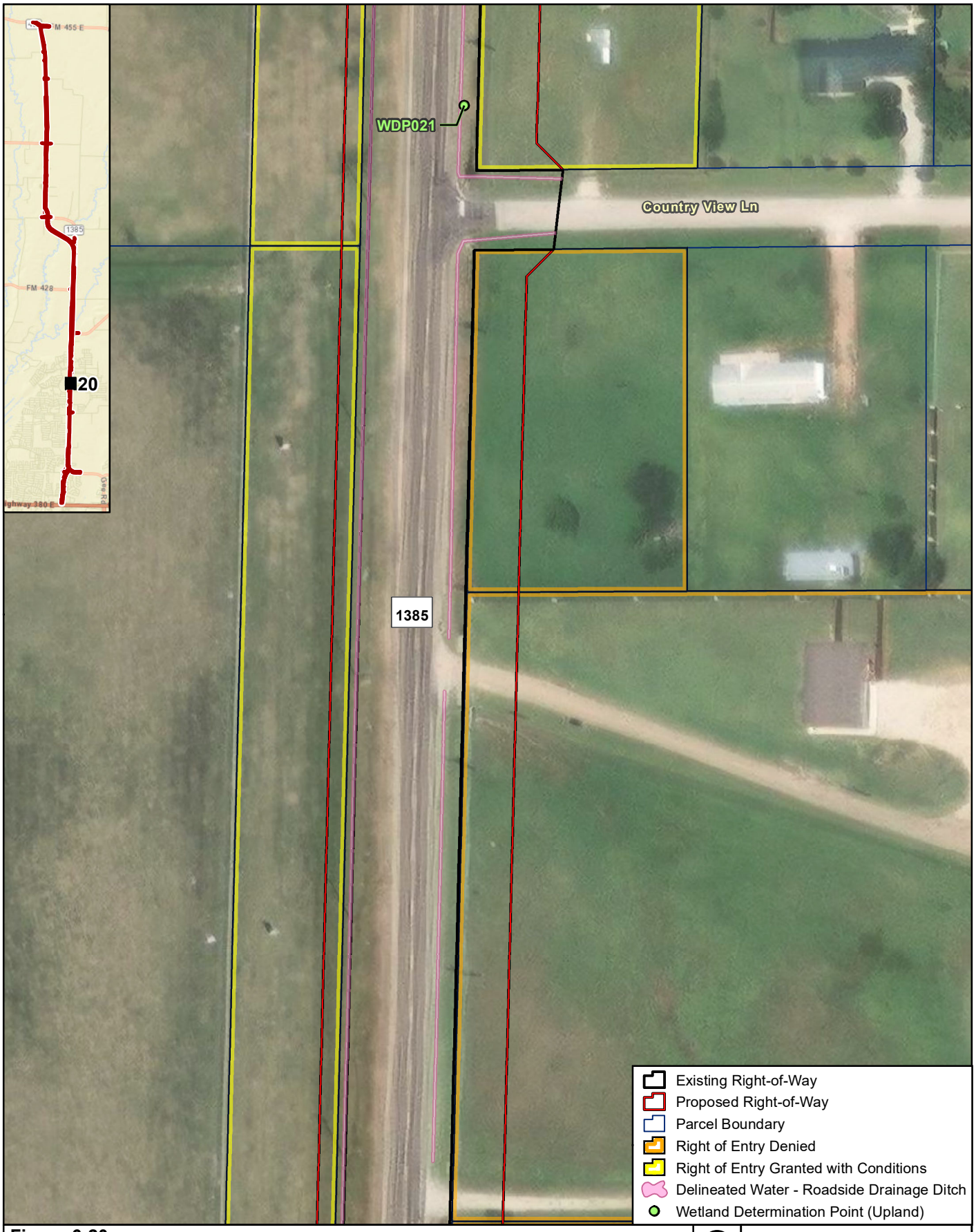

Figure 6-20.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\23530016\4\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

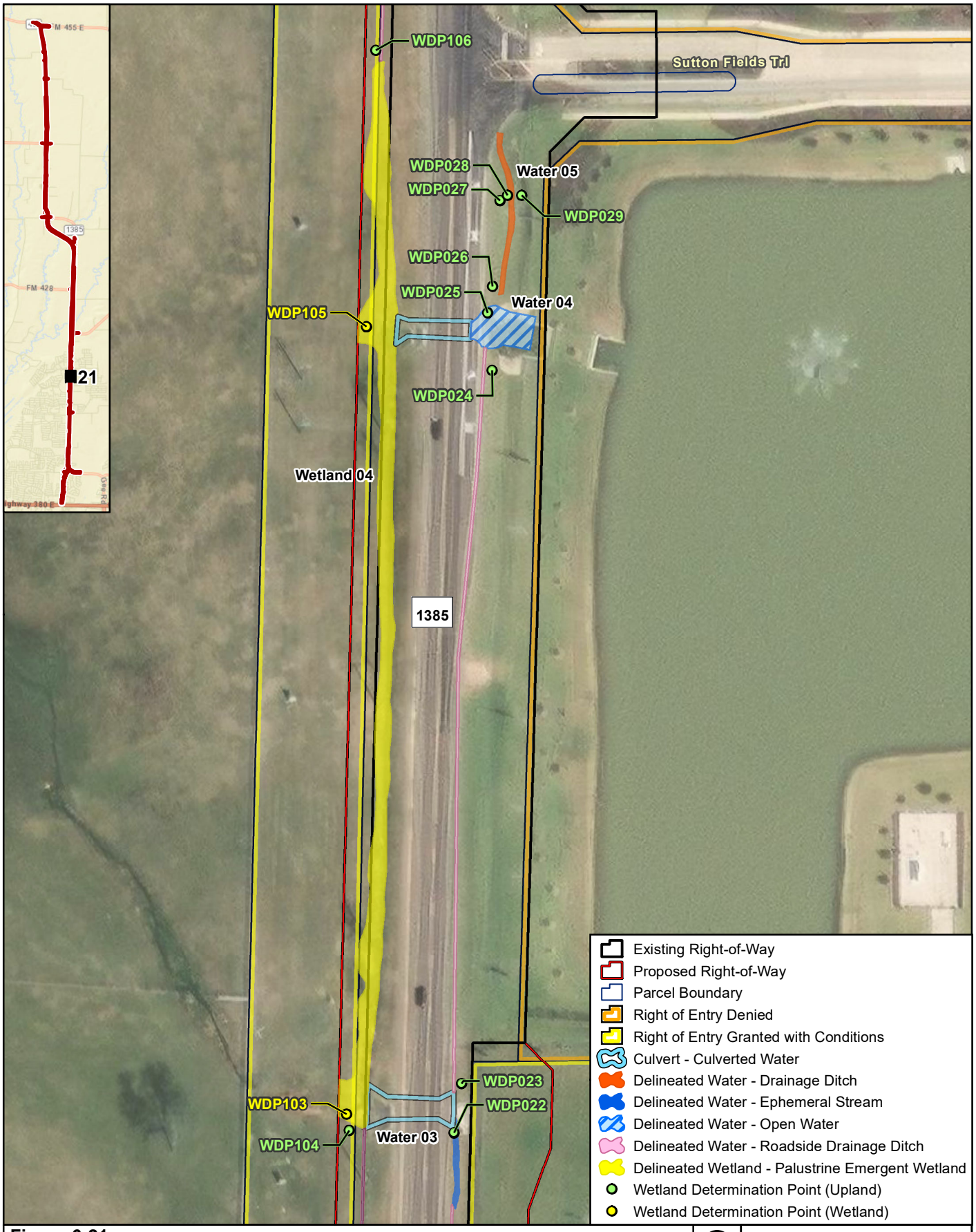

Figure 6-21.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

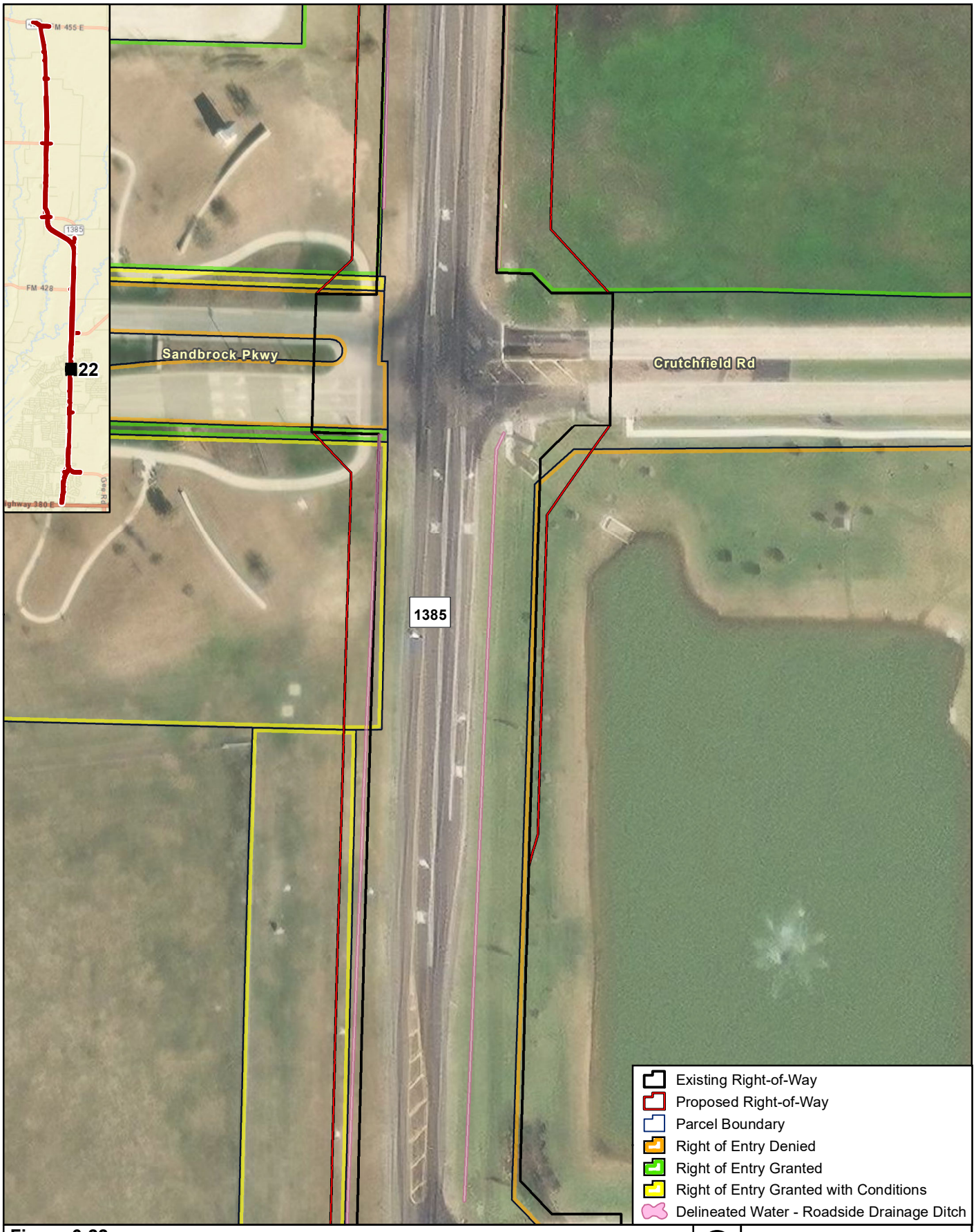

Figure 6-22.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

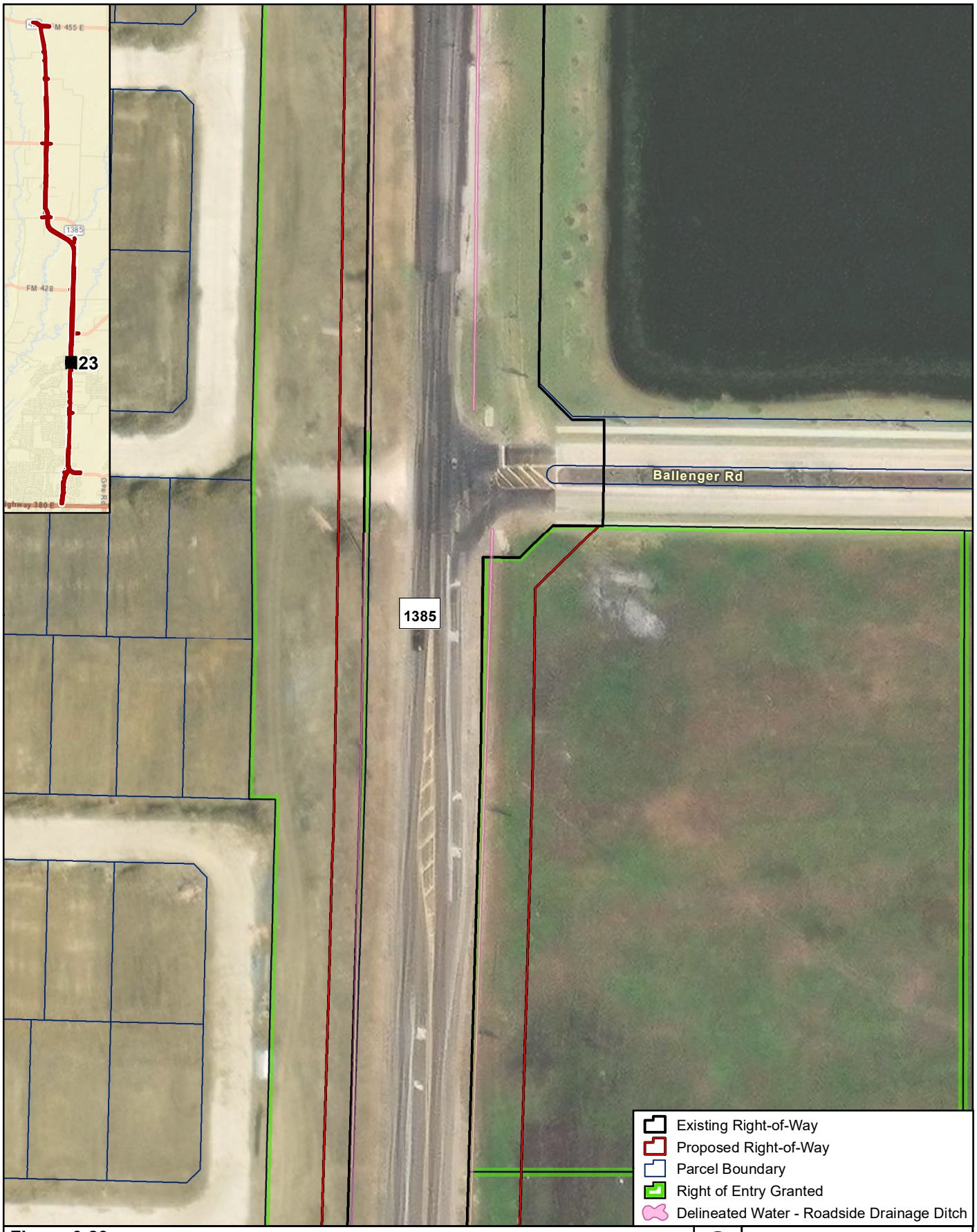

Figure 6-23.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\23530016\4\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

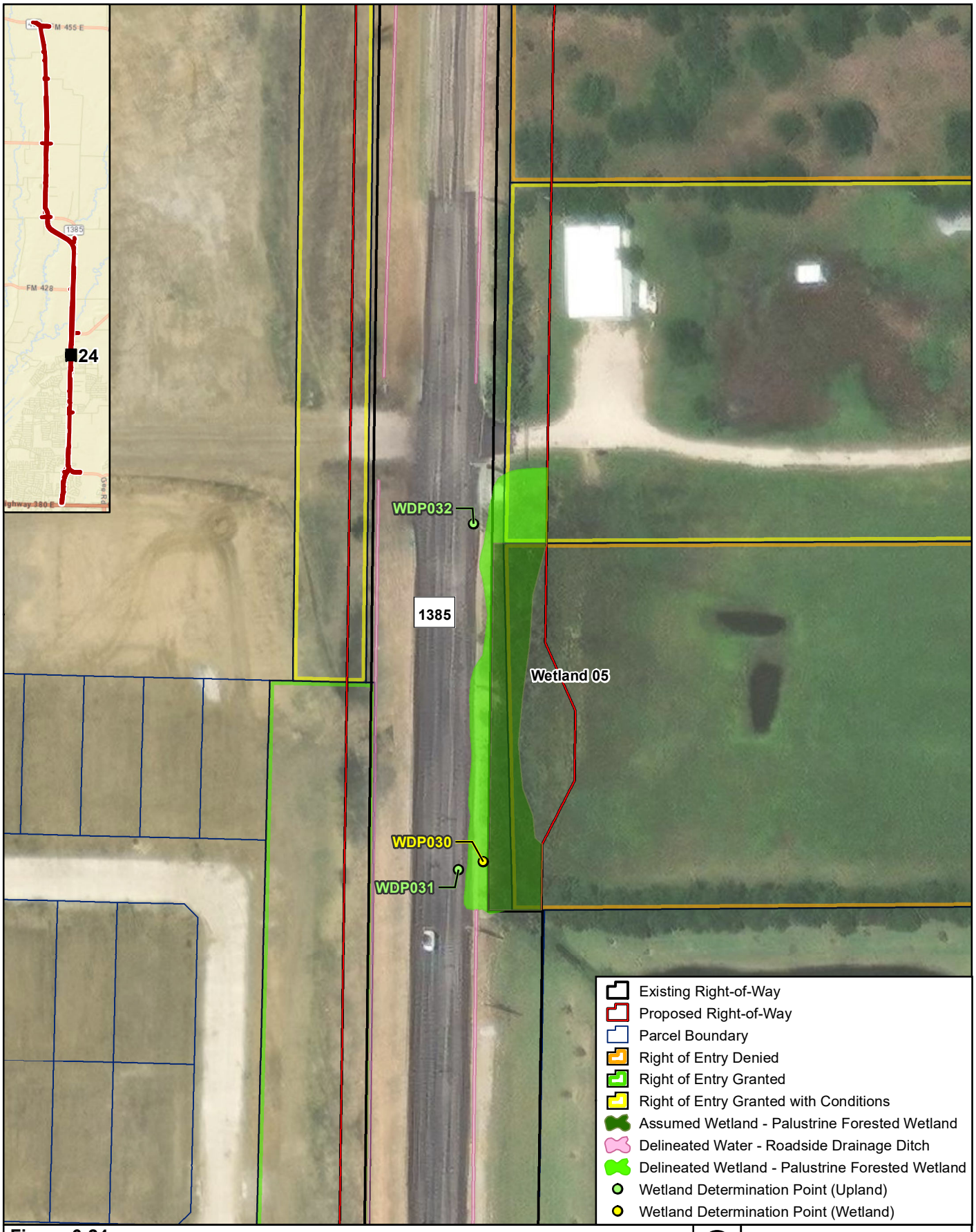

Figure 6-24.
Delineated Water Features

FM 1385 Environmental Assessment

CSJ: 1315-01-030

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\23530164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

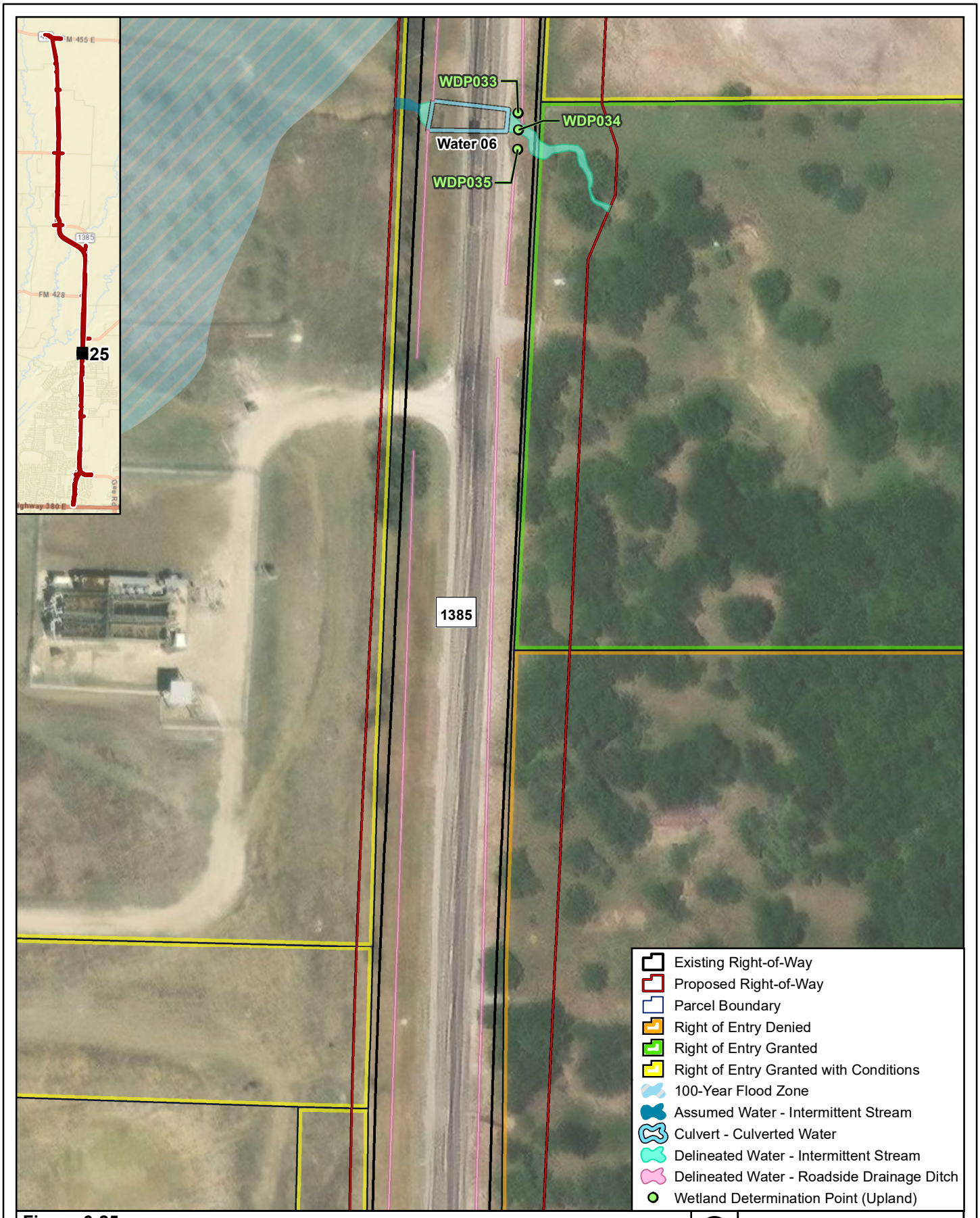

Figure 6-25.
Delineated Water Features

FM 1385 Environmental Assessment

CSJ: 1315-01-030

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

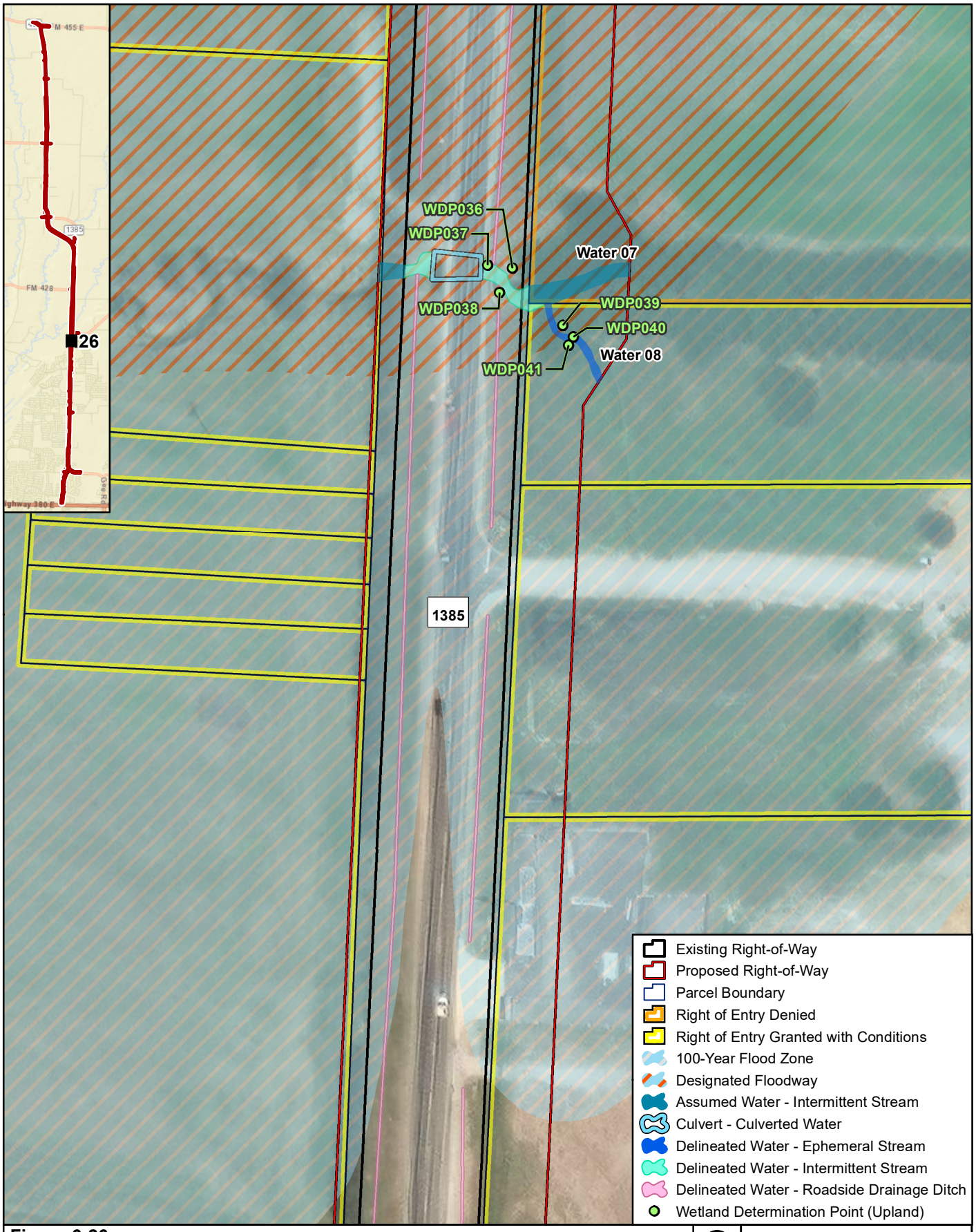

Figure 6-26.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

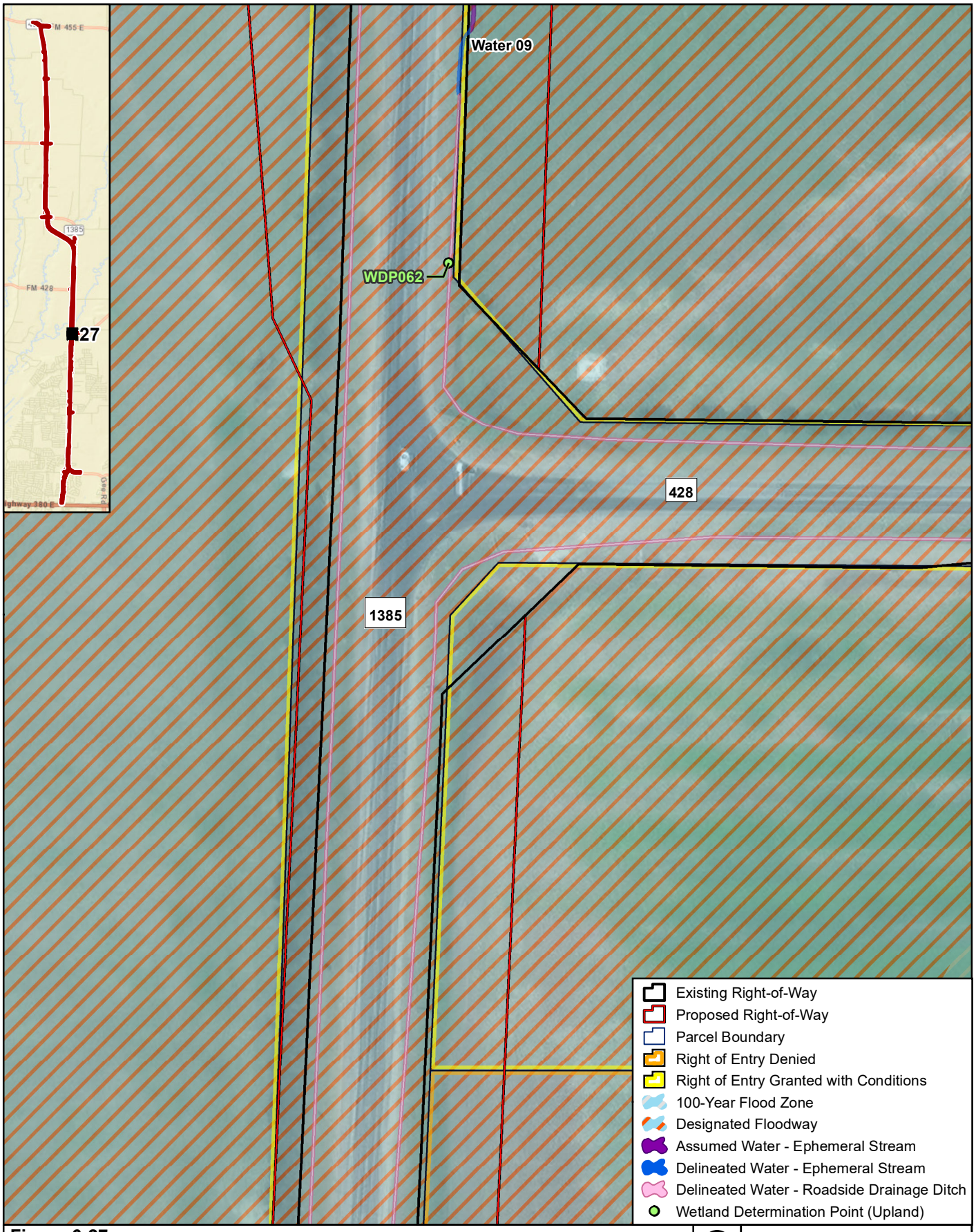

Figure 6-27.
Delineated Water Features

FM 1385 Environmental Assessment

CSJ: 1315-01-030

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

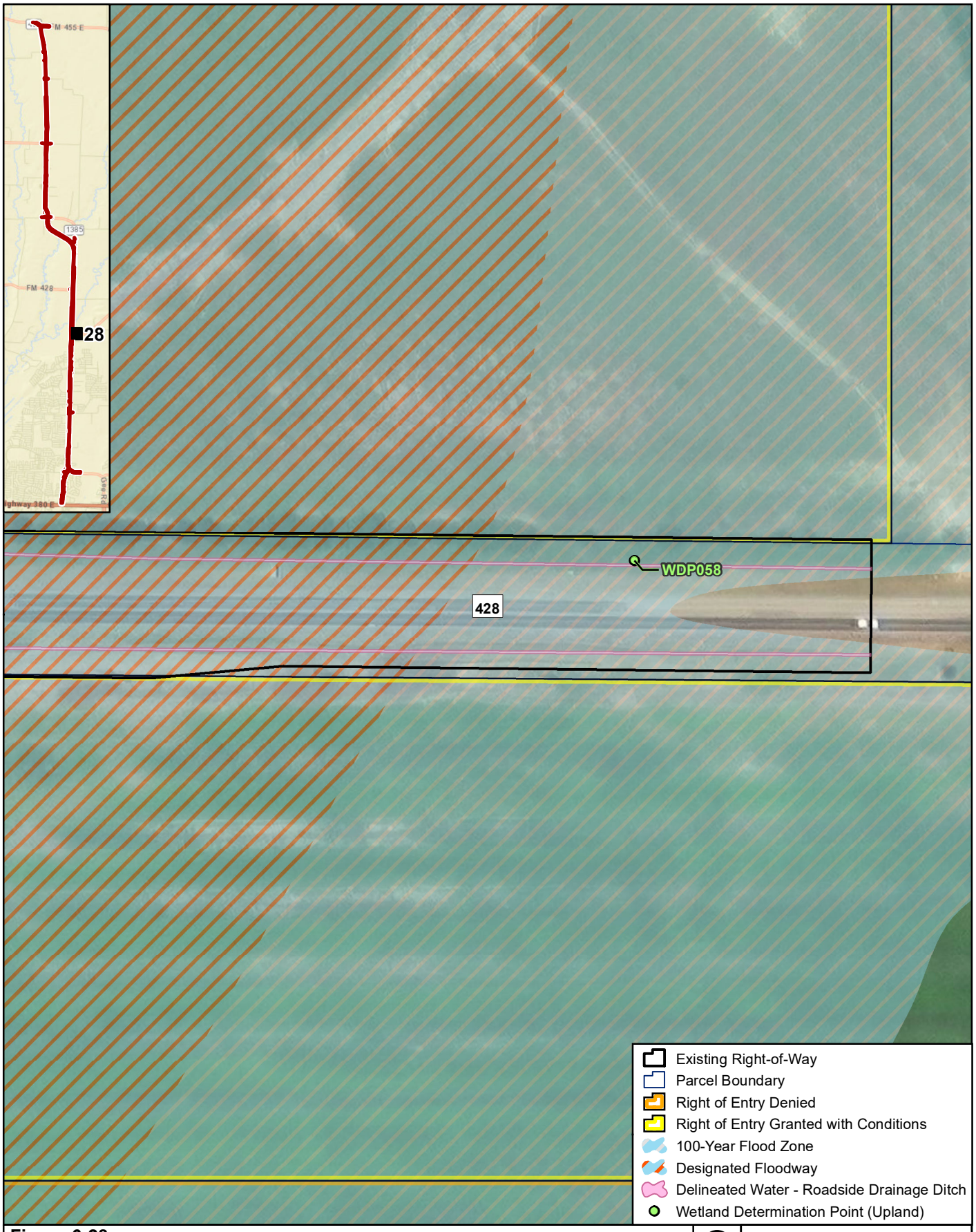

Figure 6-28.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

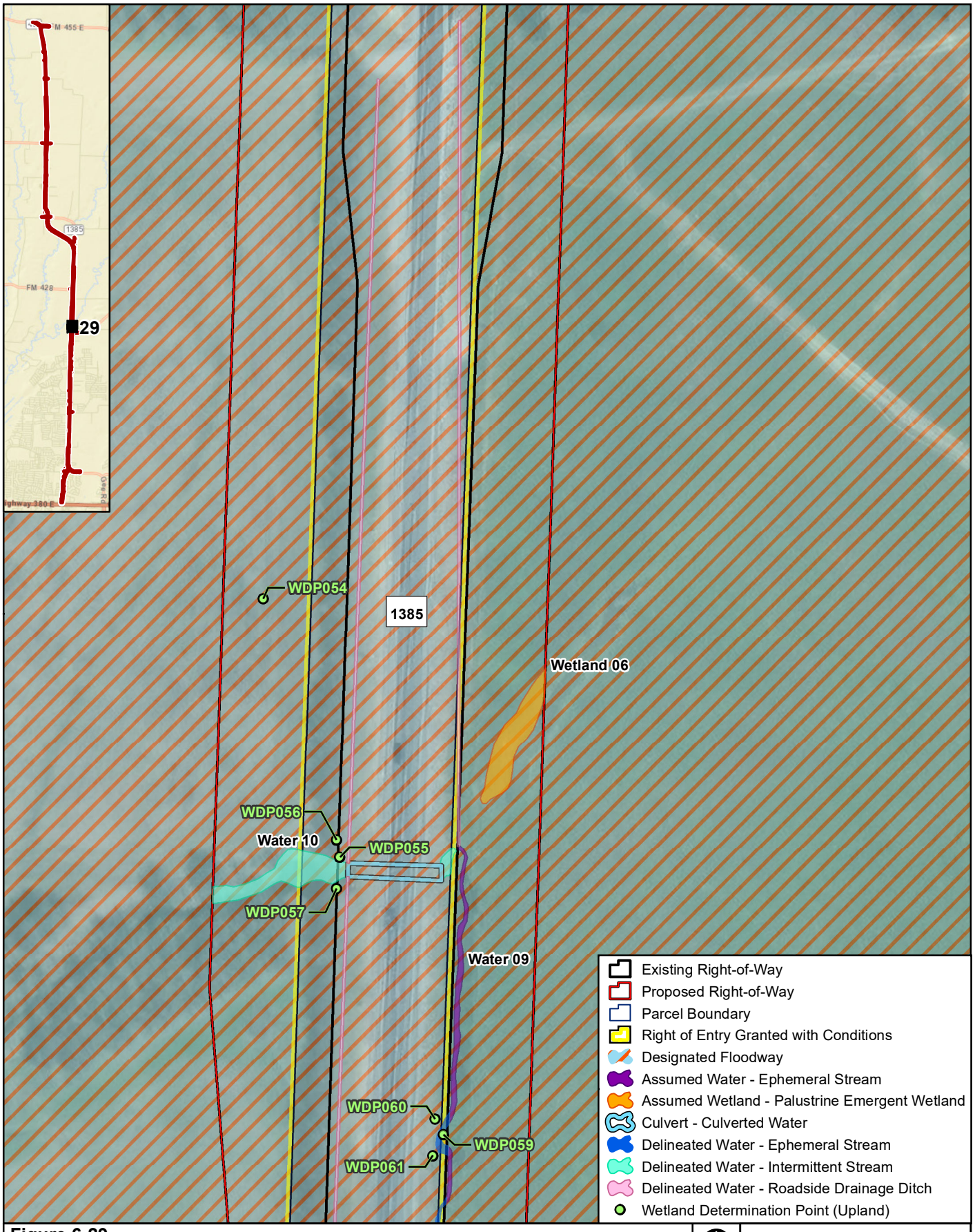

Figure 6-29.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

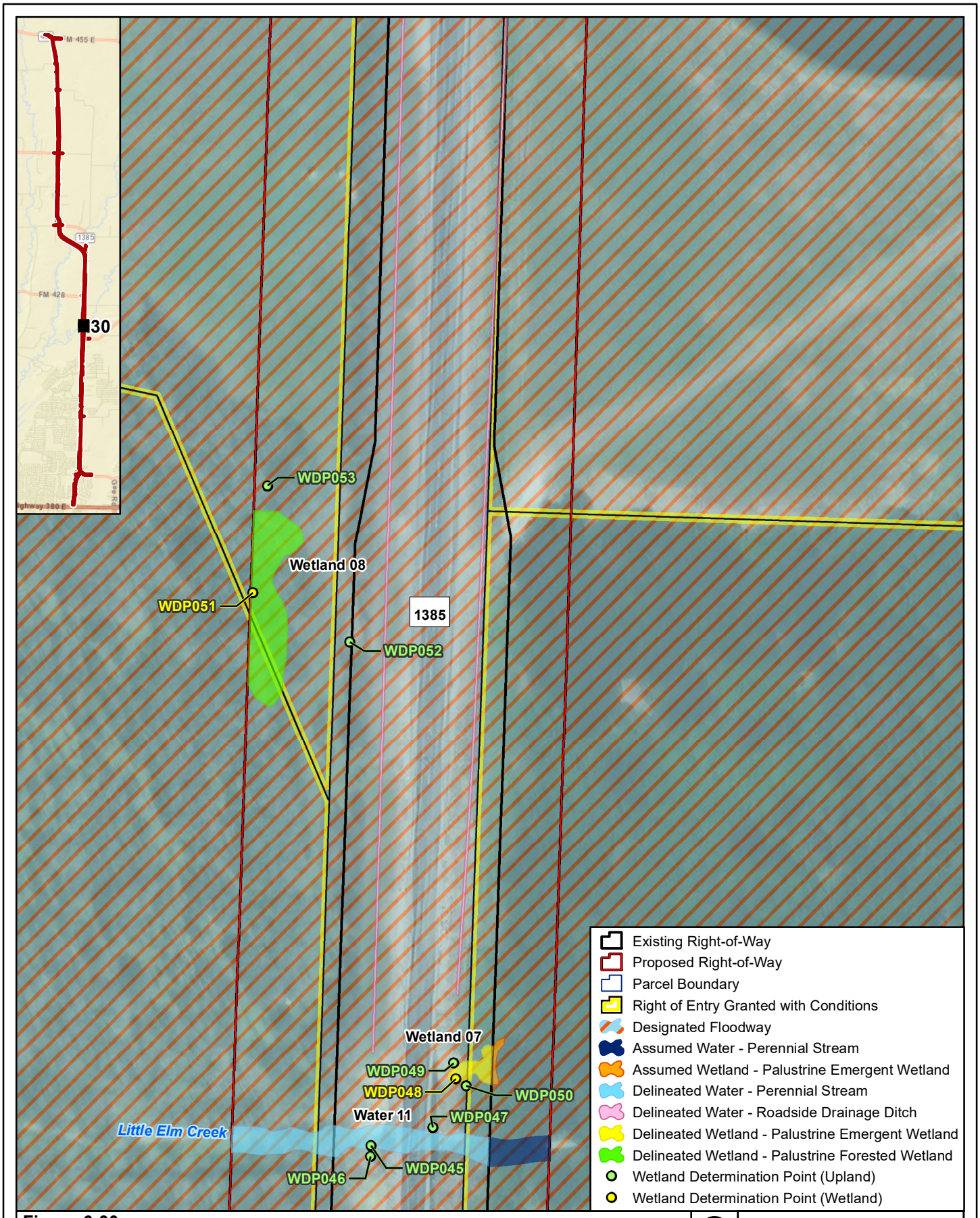

Figure 6-30.
Delineated Water Features

FM 1385 Environmental Assessment

CSJ: 1315-01-030

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

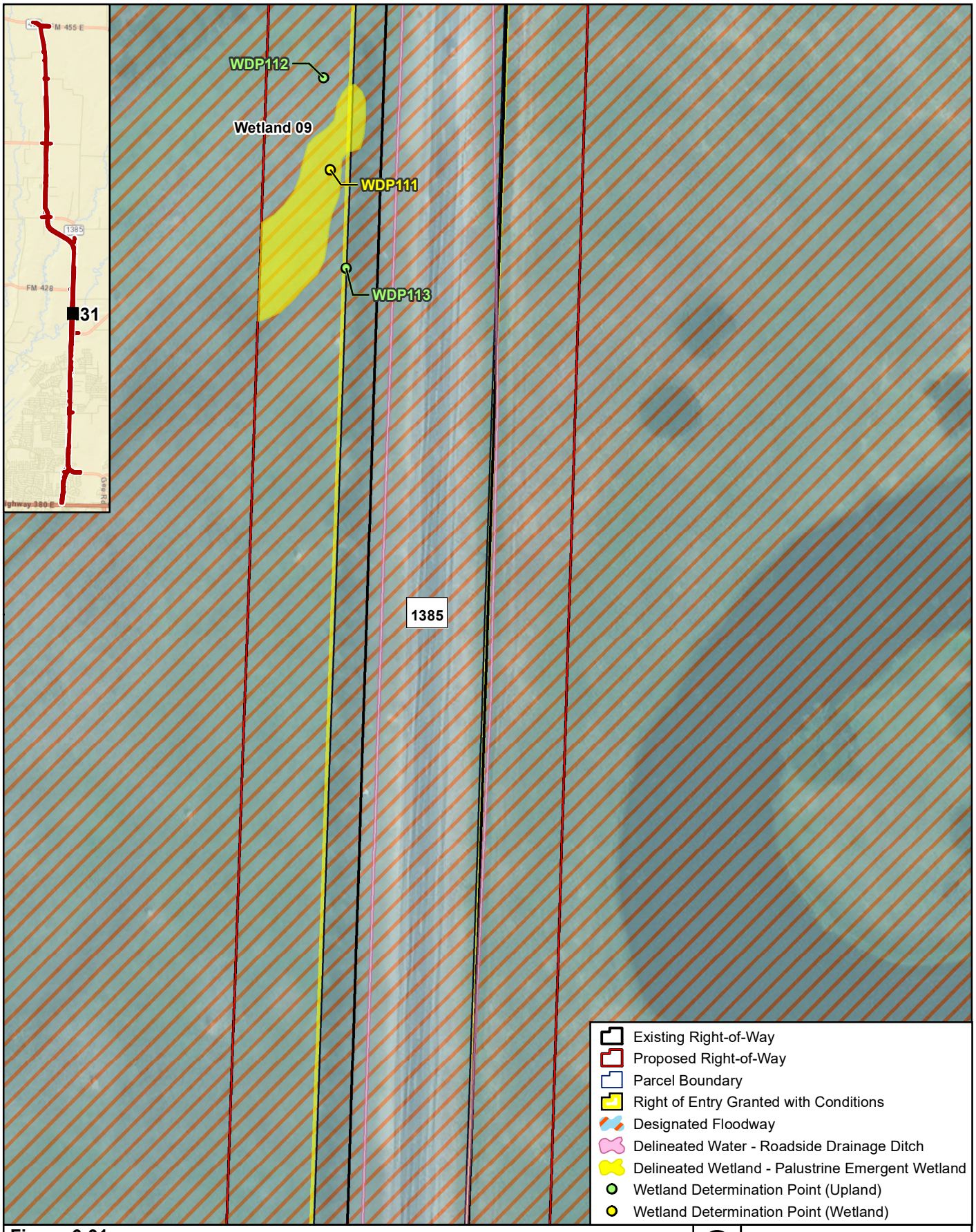

Figure 6-31.
Delineated Water Features

FM 1385 Environmental Assessment

CSJ: 1315-01-030

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

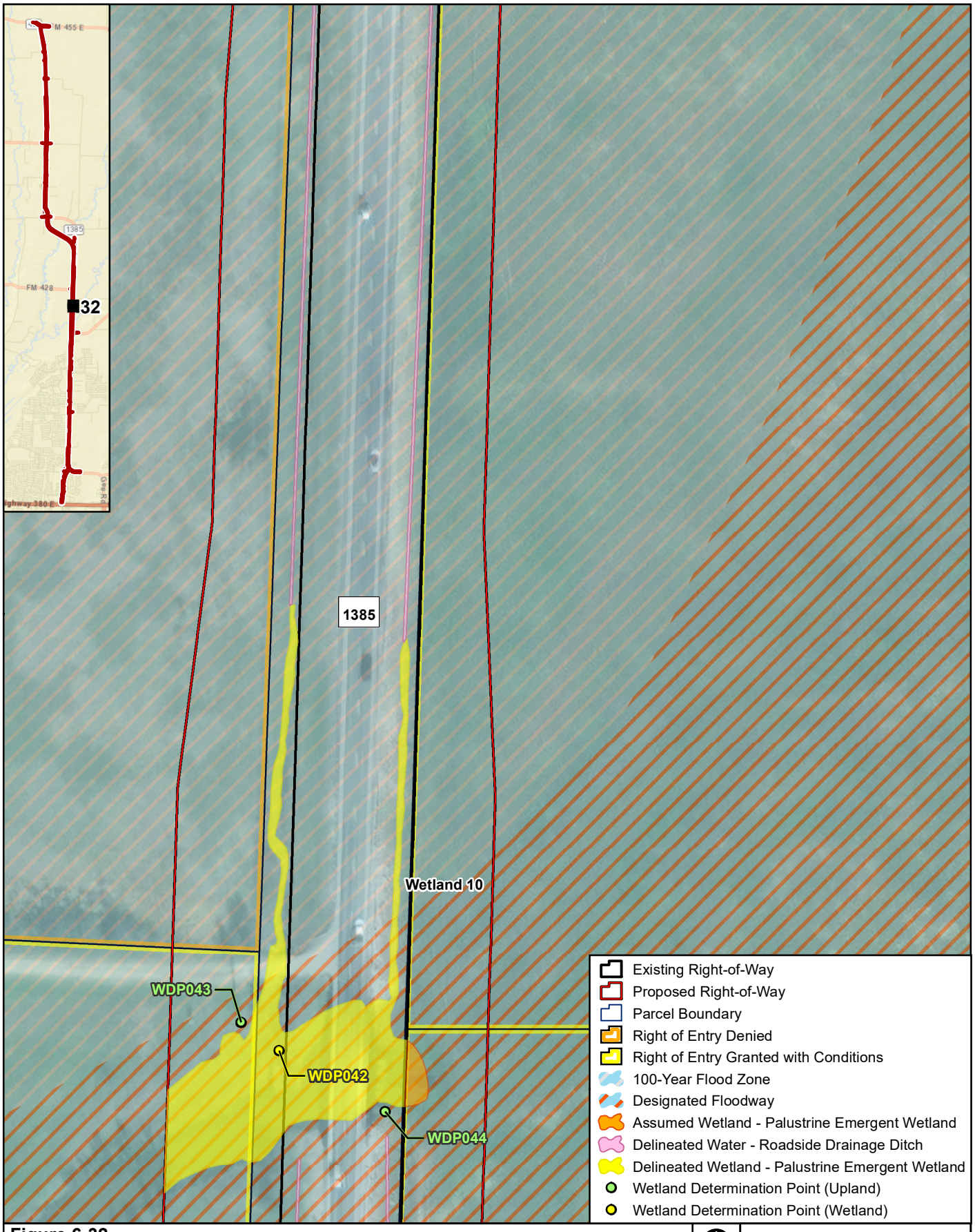

Figure 6-32.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

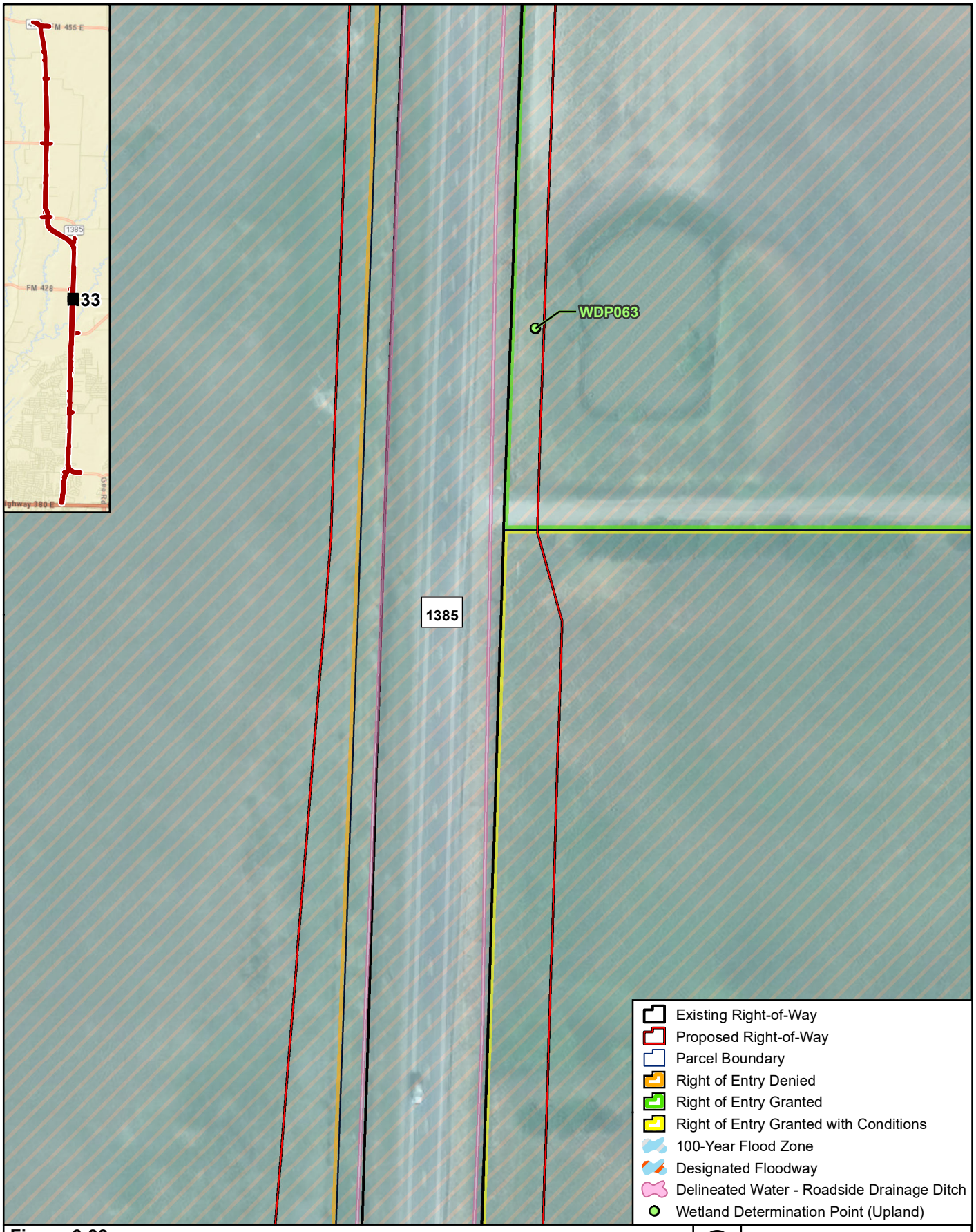

Figure 6-33.
Delineated Water Features

FM 1385 Environmental Assessment

CSJ: 1315-01-030

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

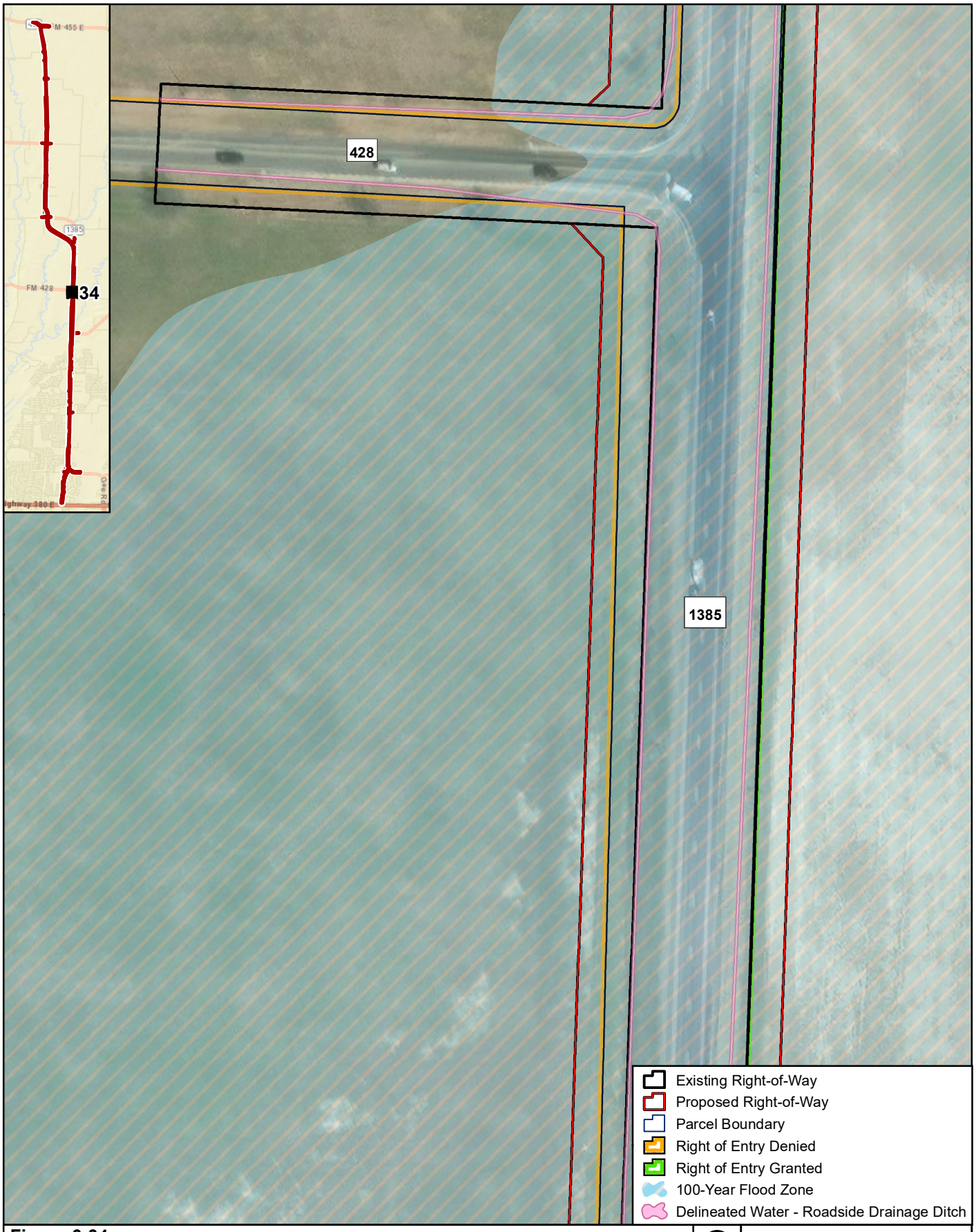

Figure 6-34.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

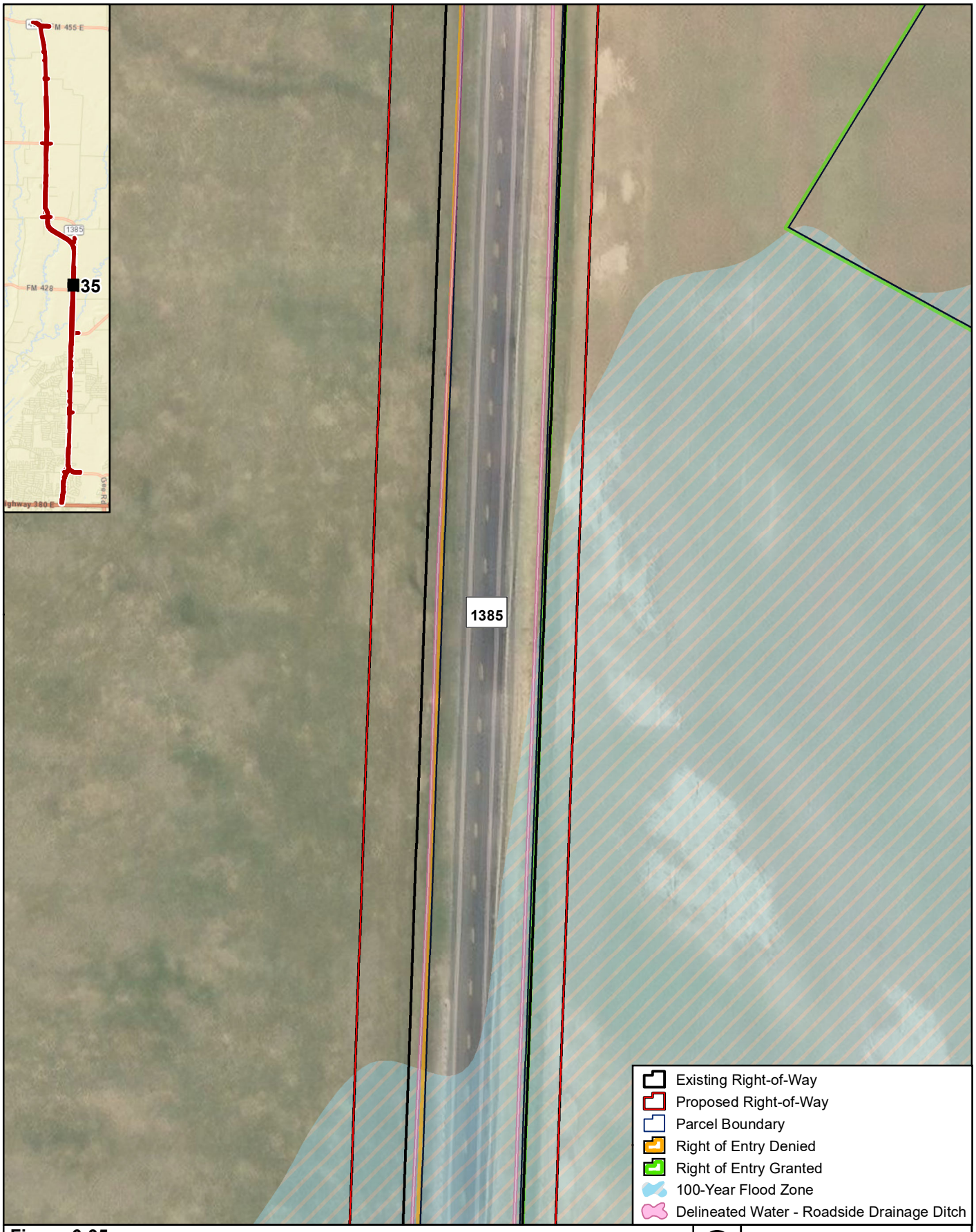

Figure 6-35.
Delineated Water Features

FM 1385 Environmental Assessment

CSJ: 1315-01-030

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

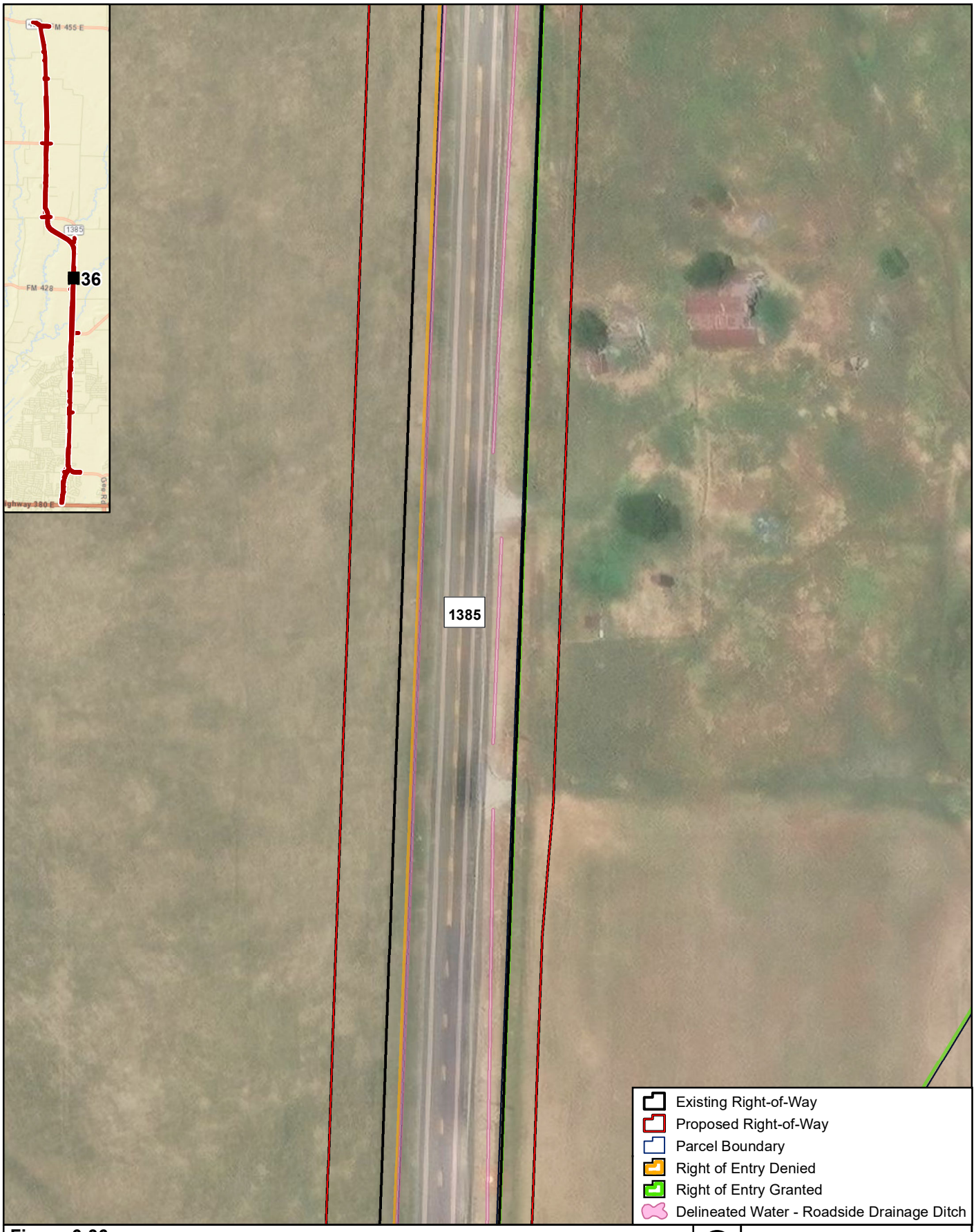

Figure 6-36.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

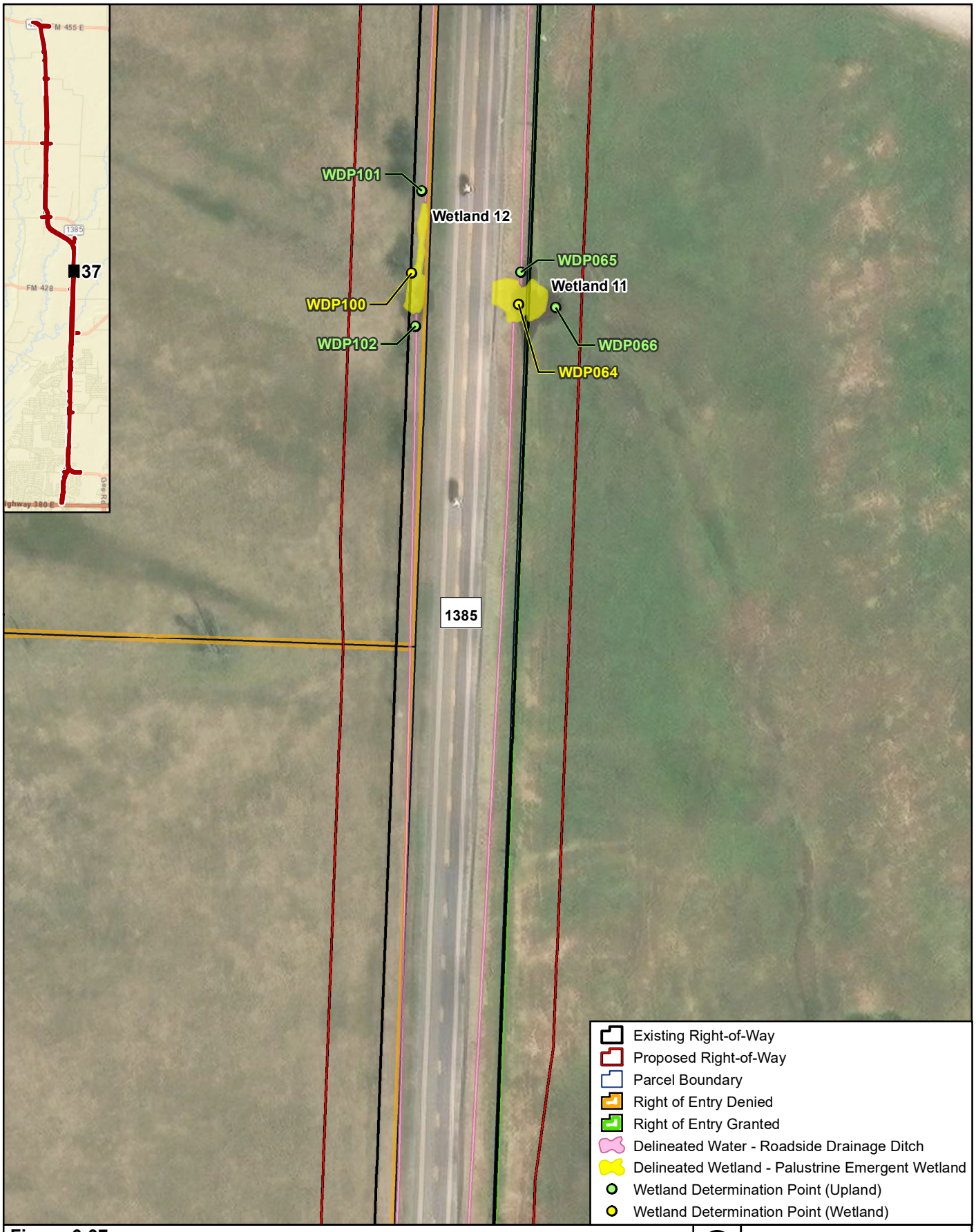

Figure 6-37.
Delineated Water Features

FM 1385 Environmental Assessment

CSJ: 1315-01-030

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

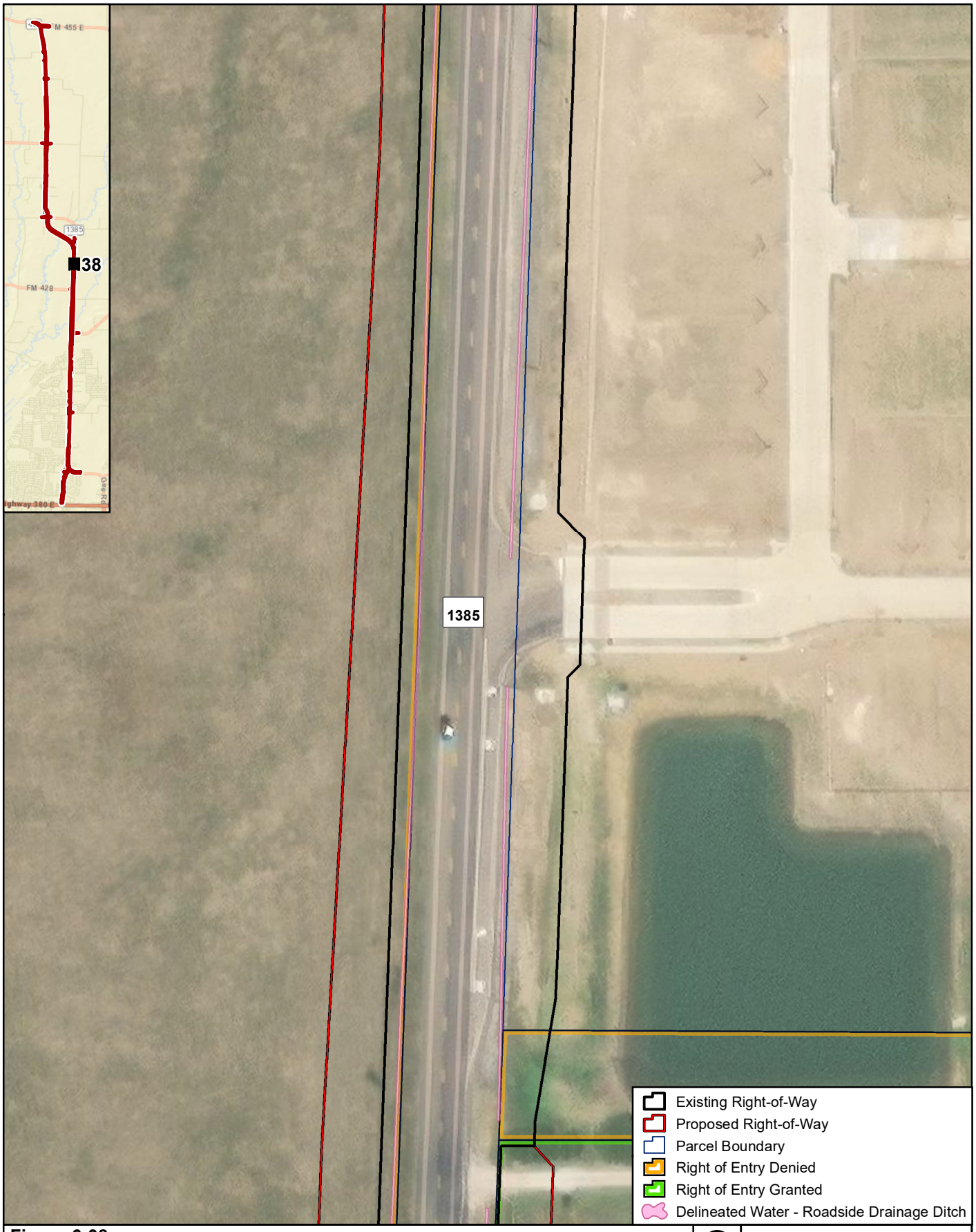

Figure 6-38.
Delineated Water Features

FM 1385 Environmental Assessment

CSJ: 1315-01-030

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

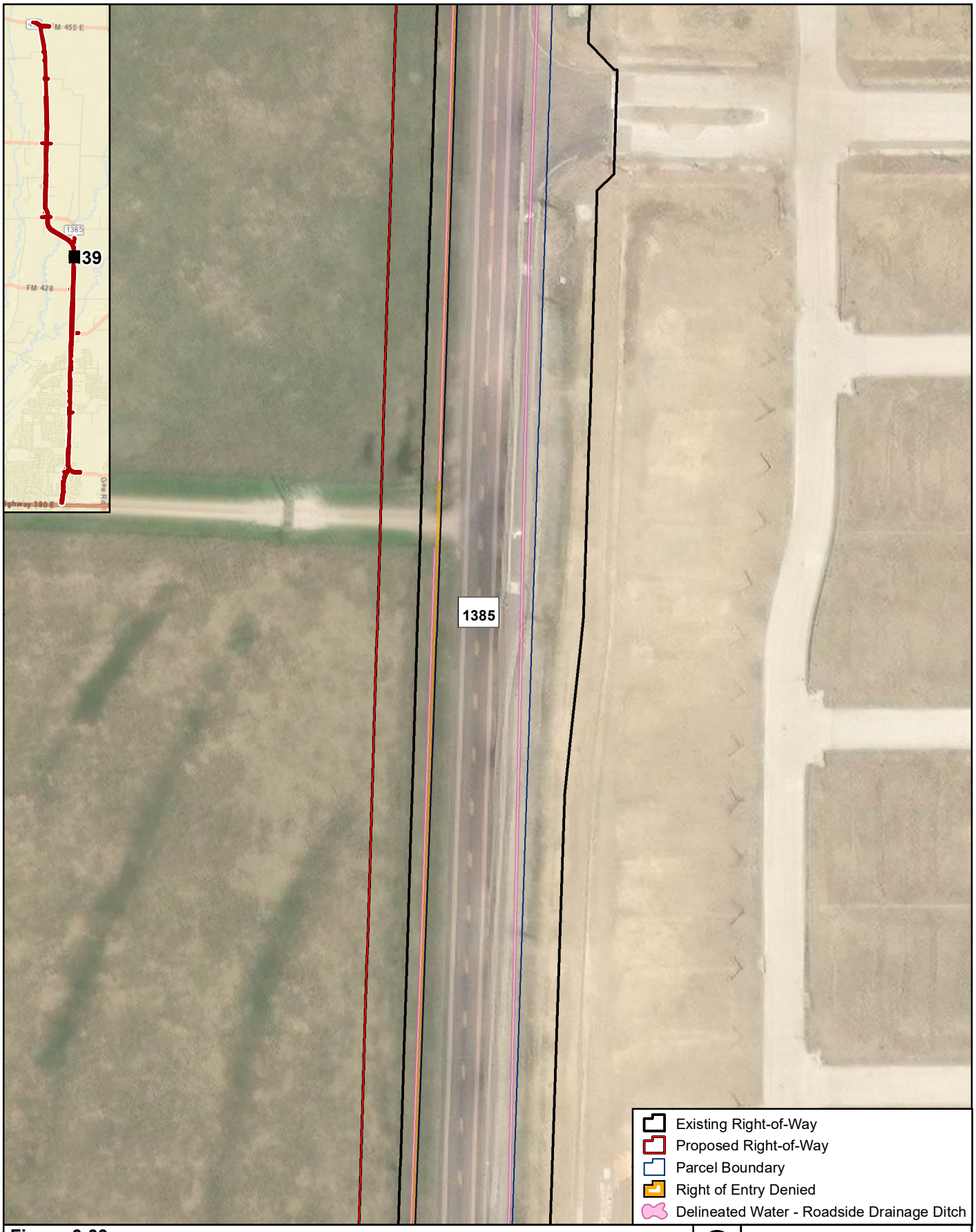

Figure 6-39.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\23530164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

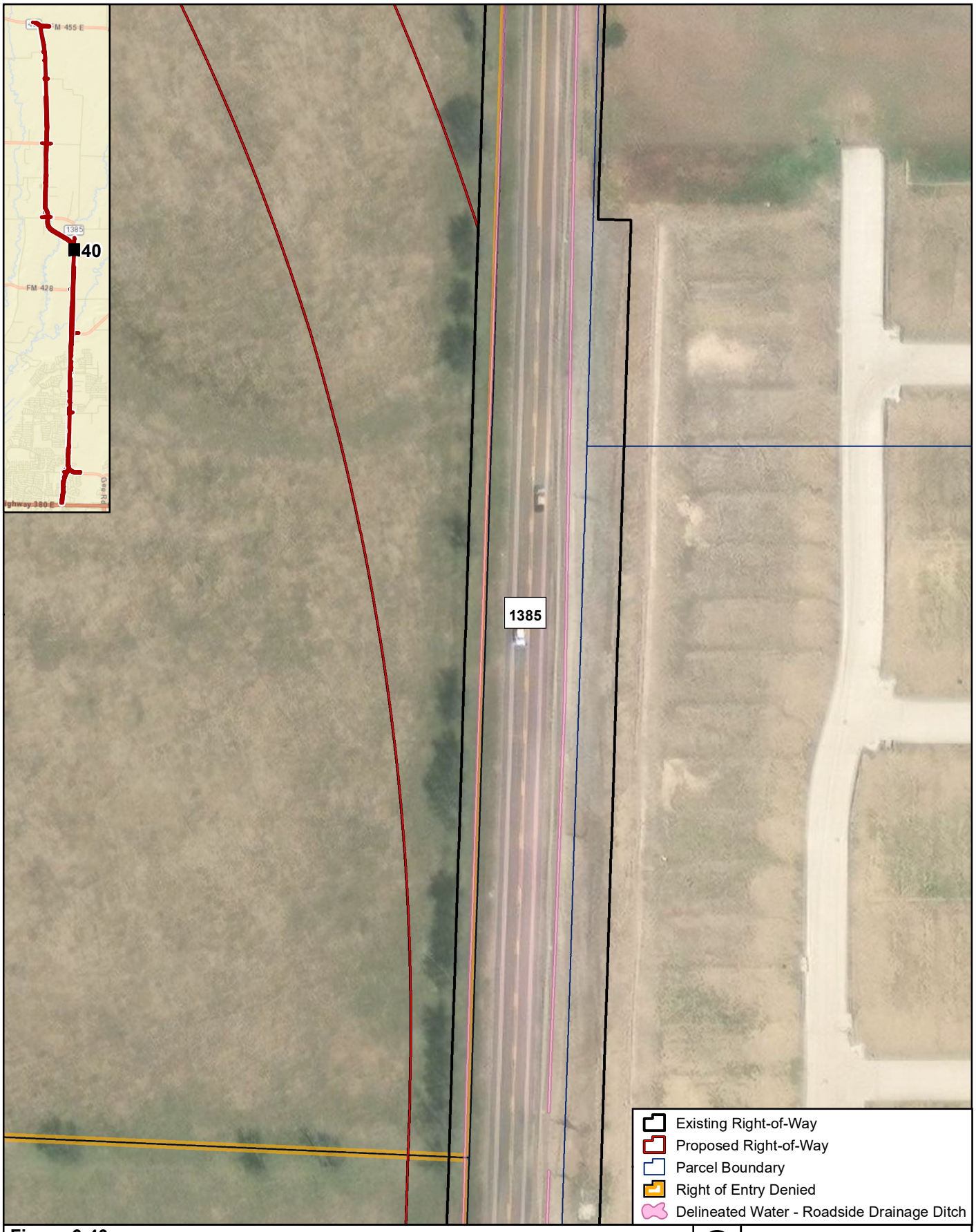

Figure 6-40.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

Figure 6-41.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

Figure 6-42.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

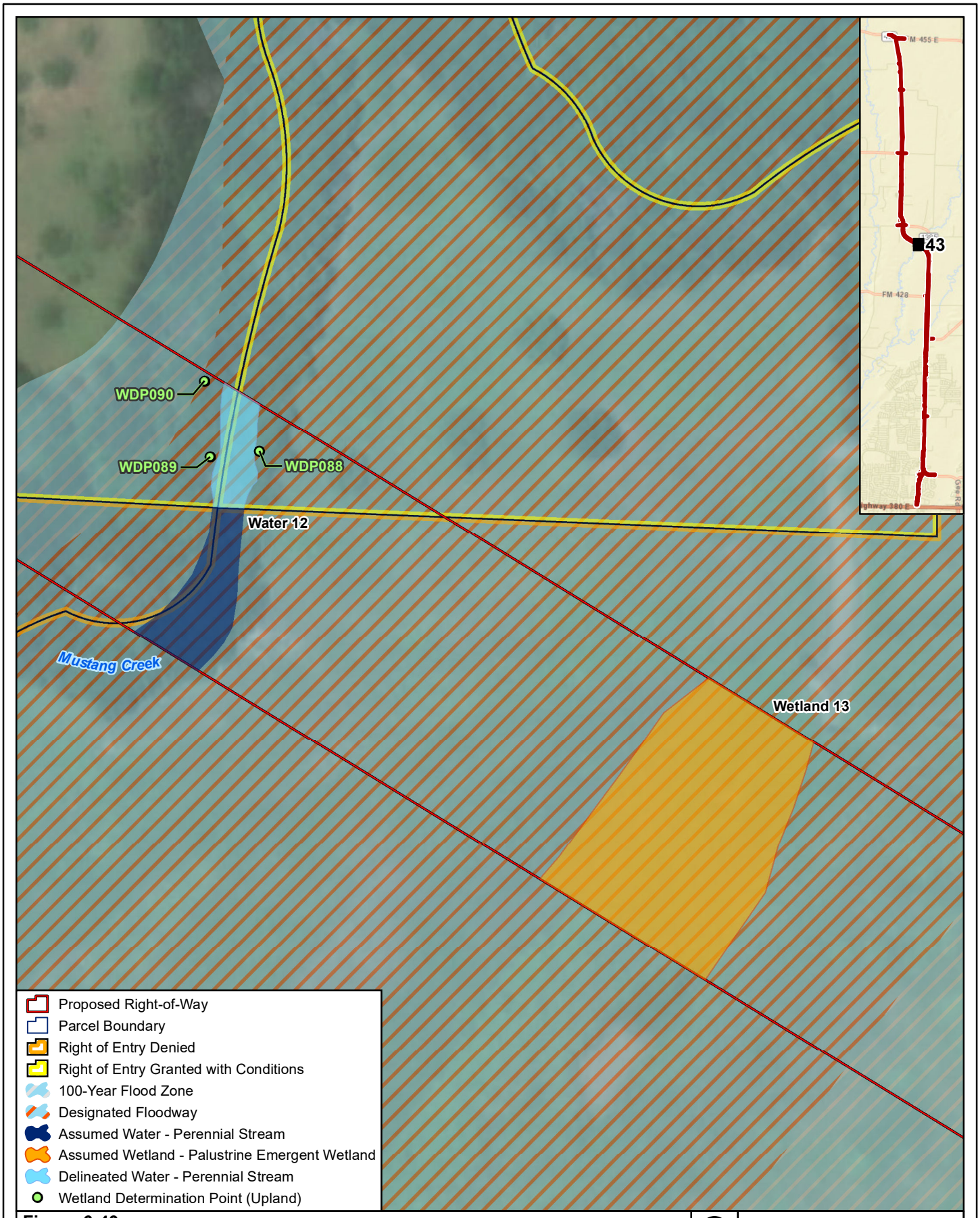

Figure 6-43.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

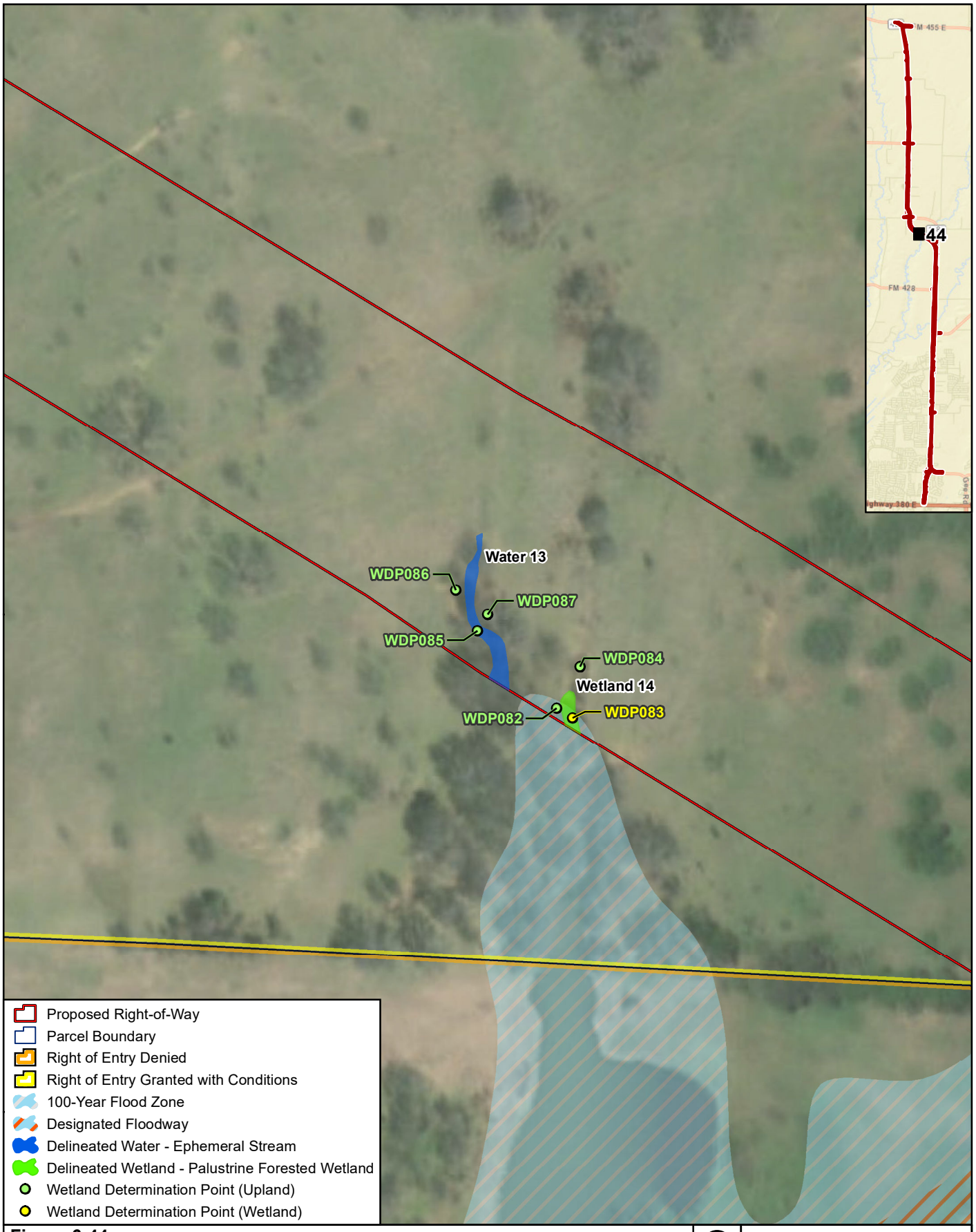

Figure 6-44.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

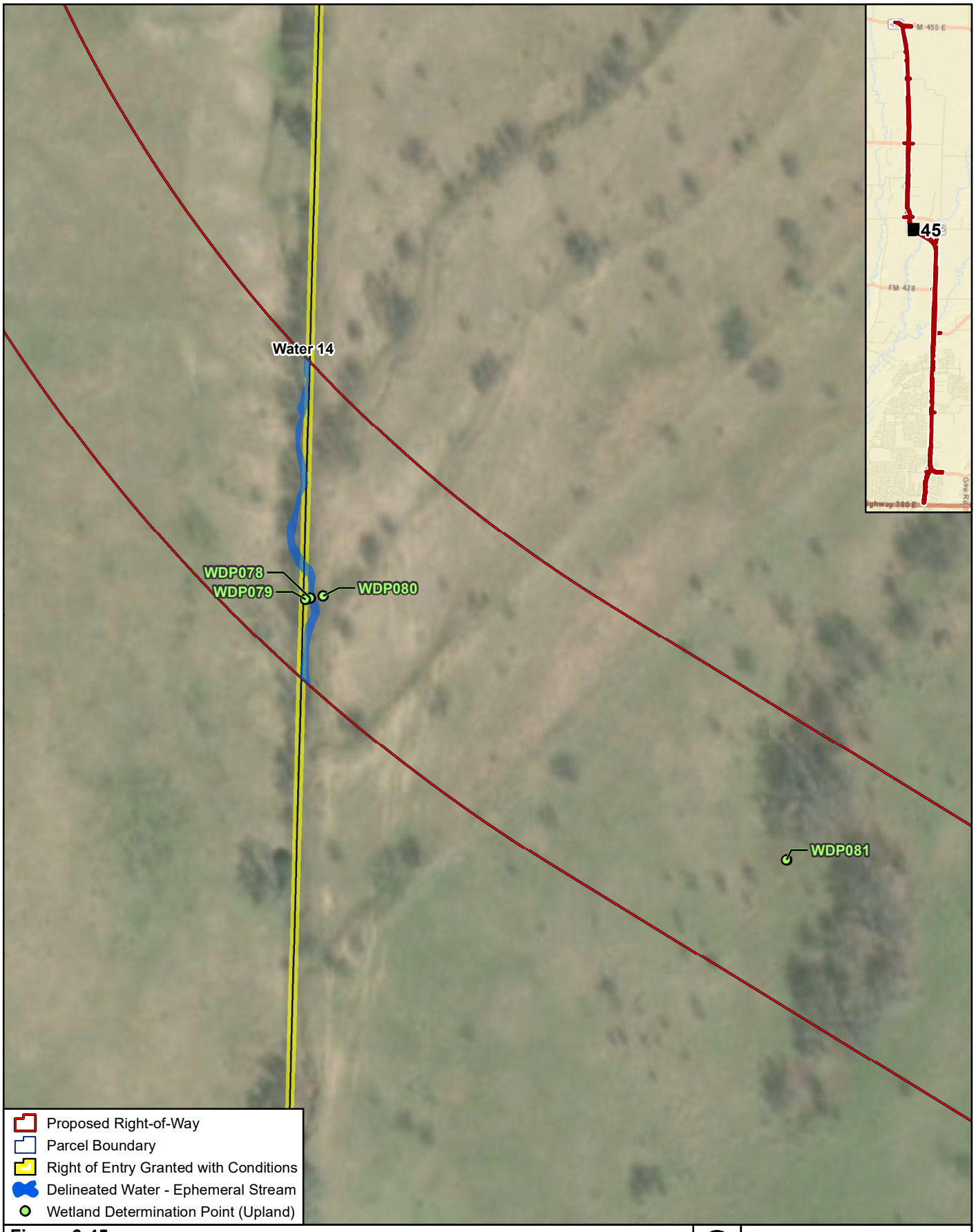

Figure 6-45.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

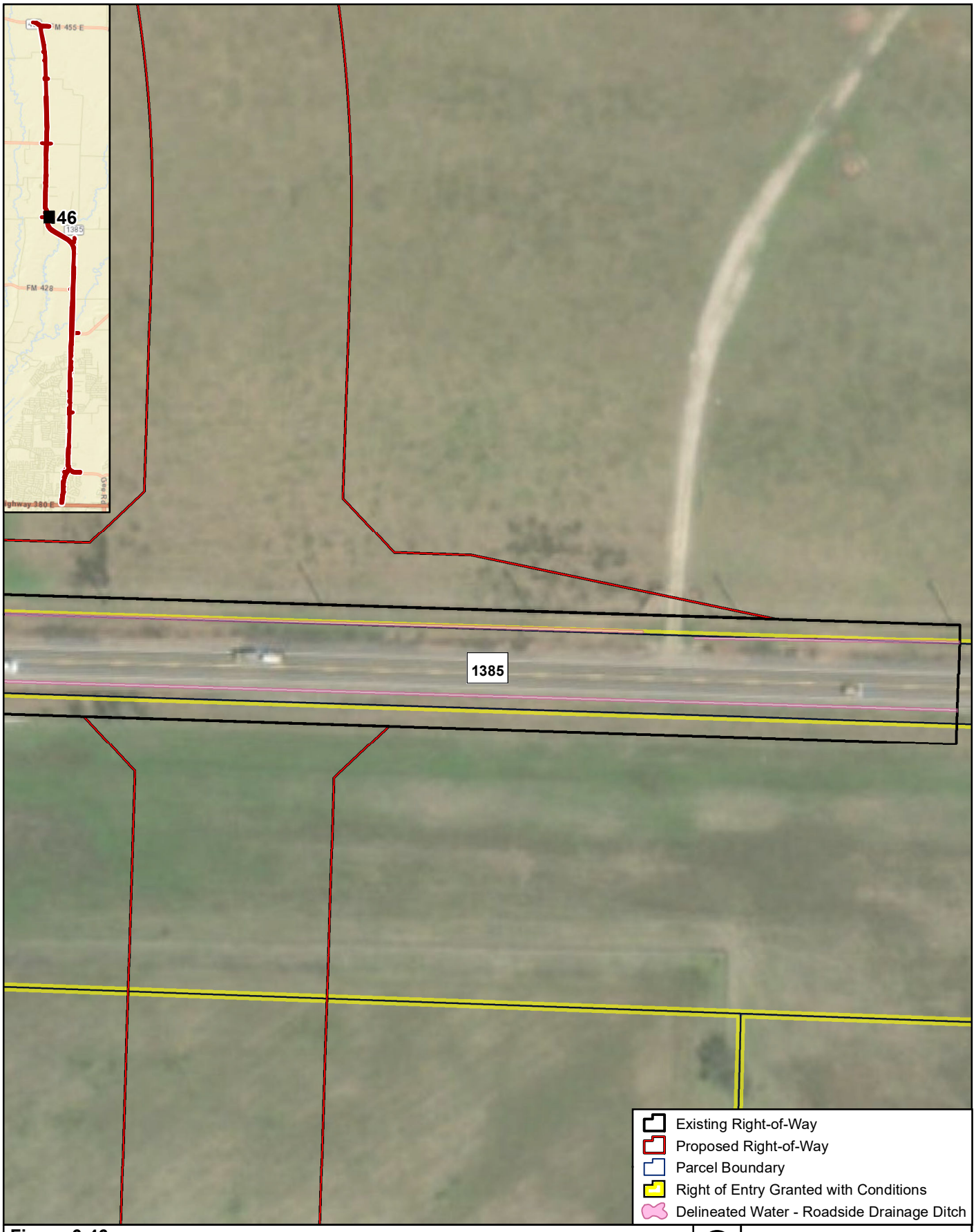

Figure 6-46.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\23530164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

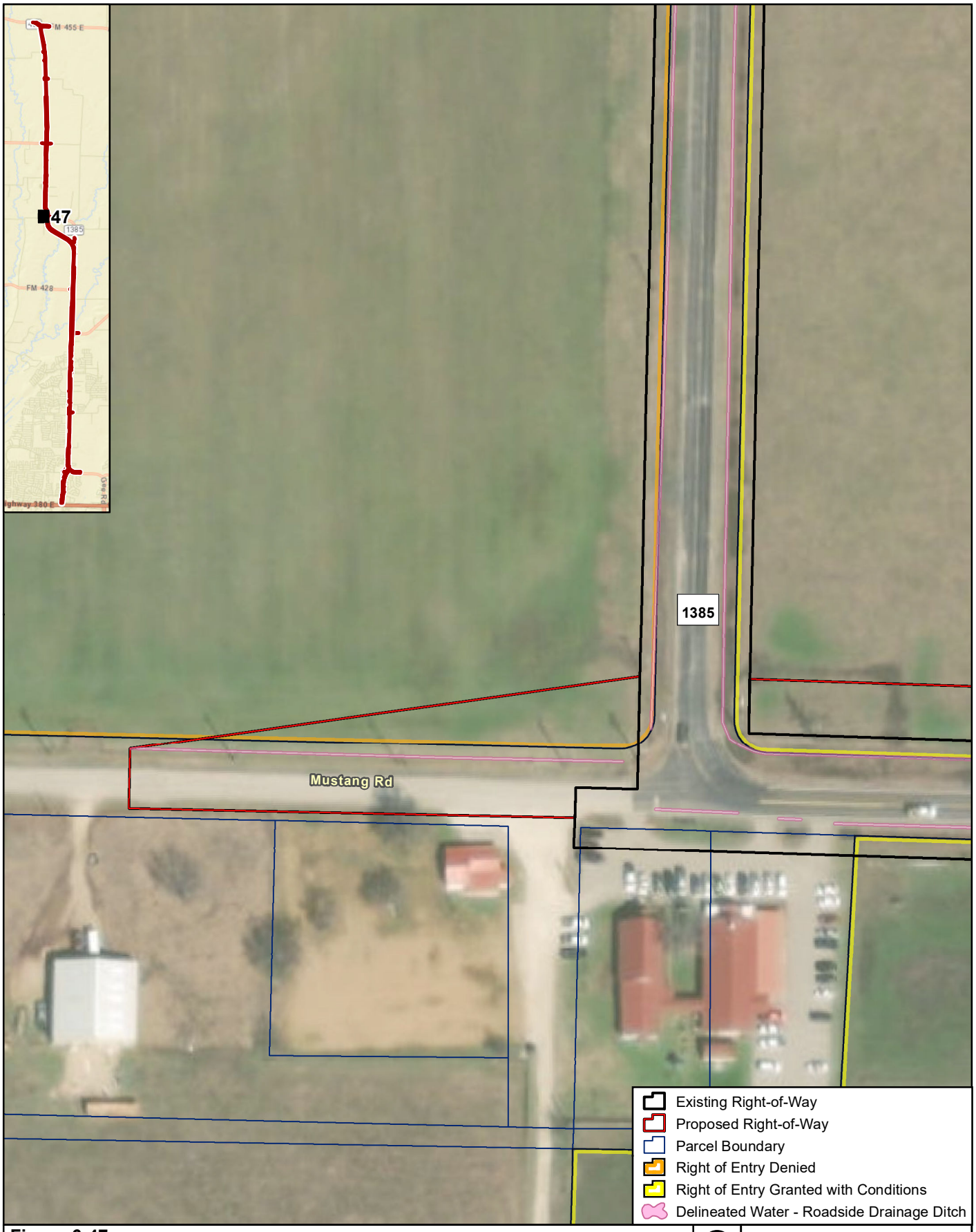

Figure 6-47.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

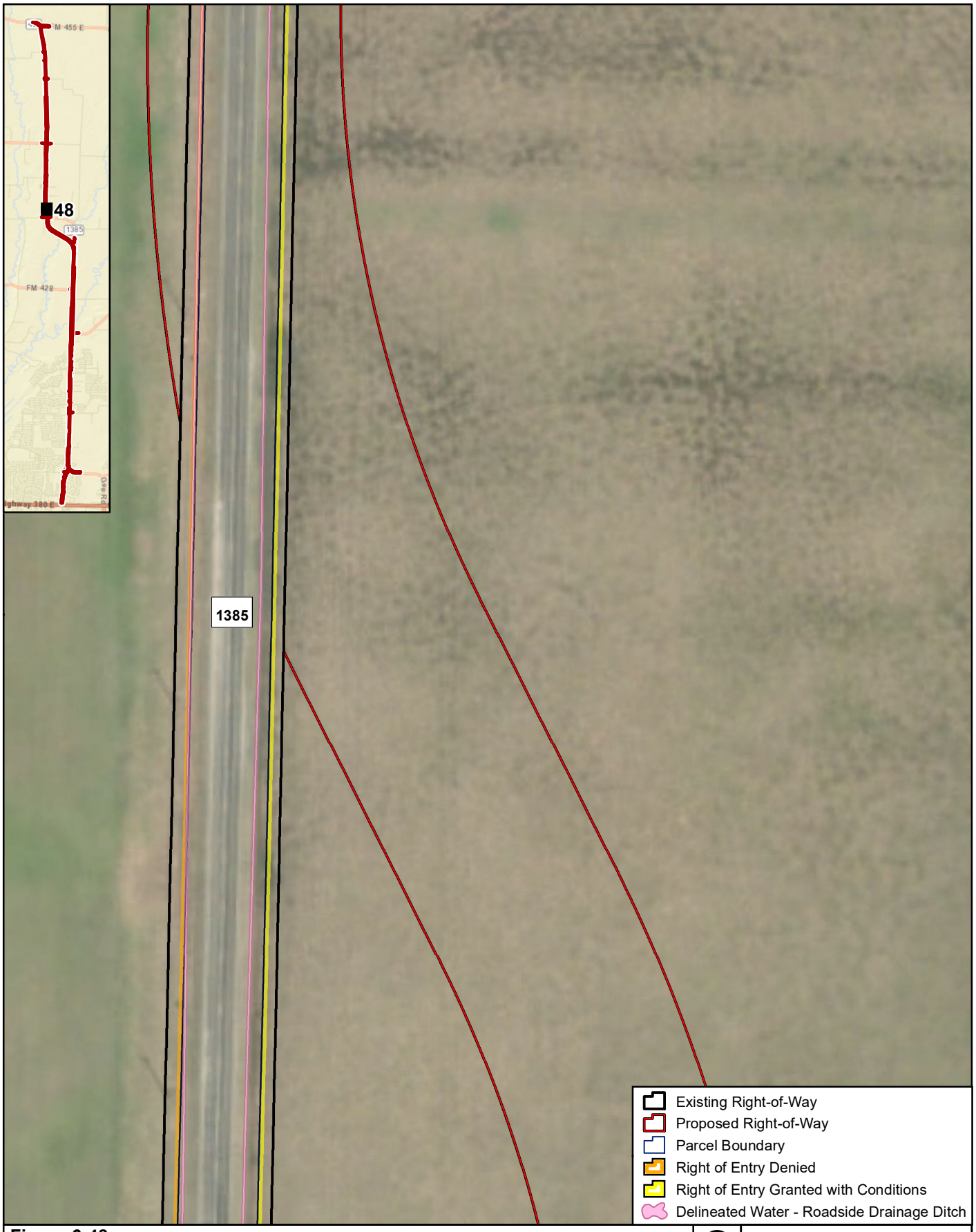

Figure 6-48.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

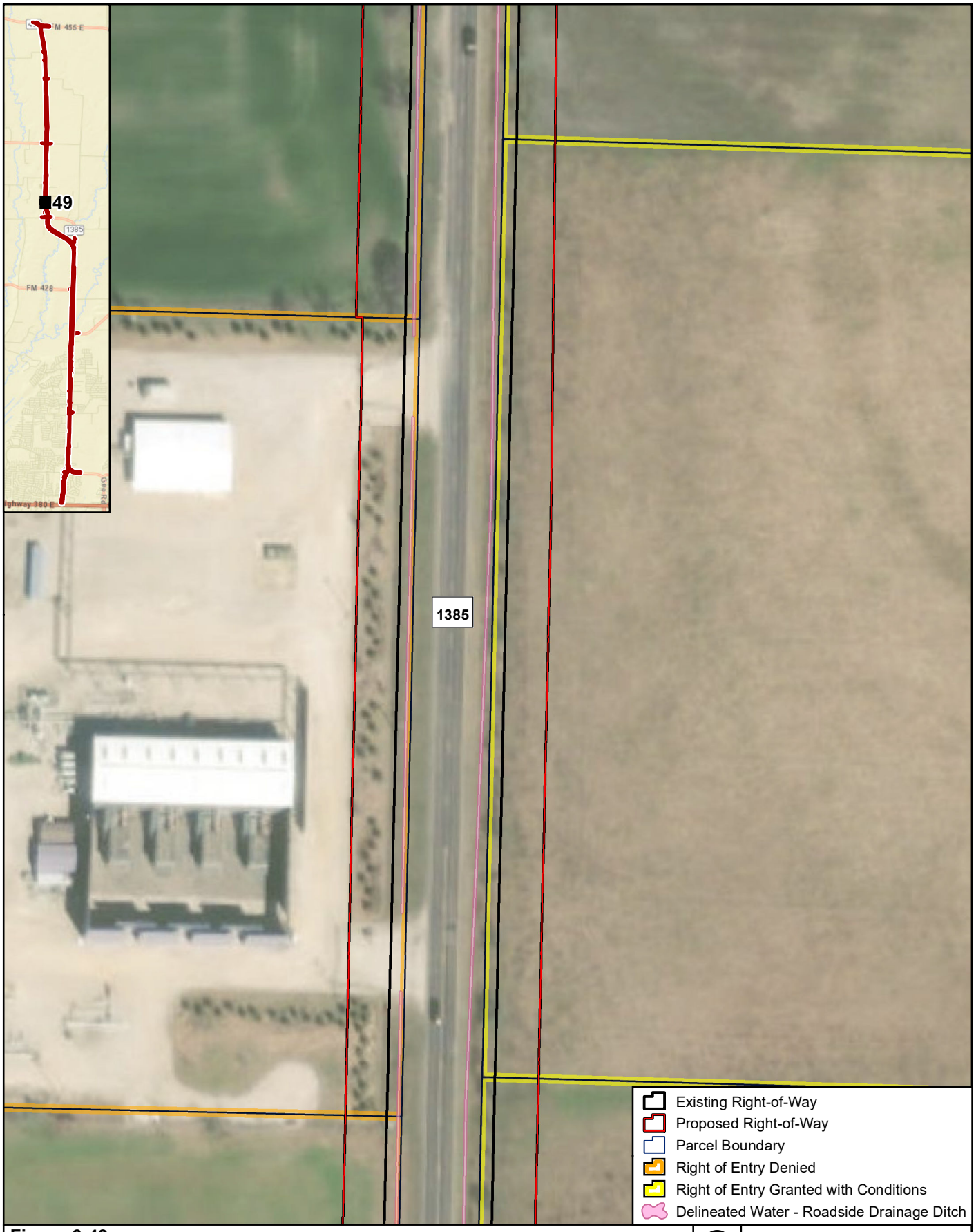

Figure 6-49.
Delineated Water Features

FM 1385 Environmental Assessment

CSJ: 1315-01-030

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\23530164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

Figure 6-50.
Delineated Water Features

FM 1385 Environmental Assessment

CSJ: 1315-01-030

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

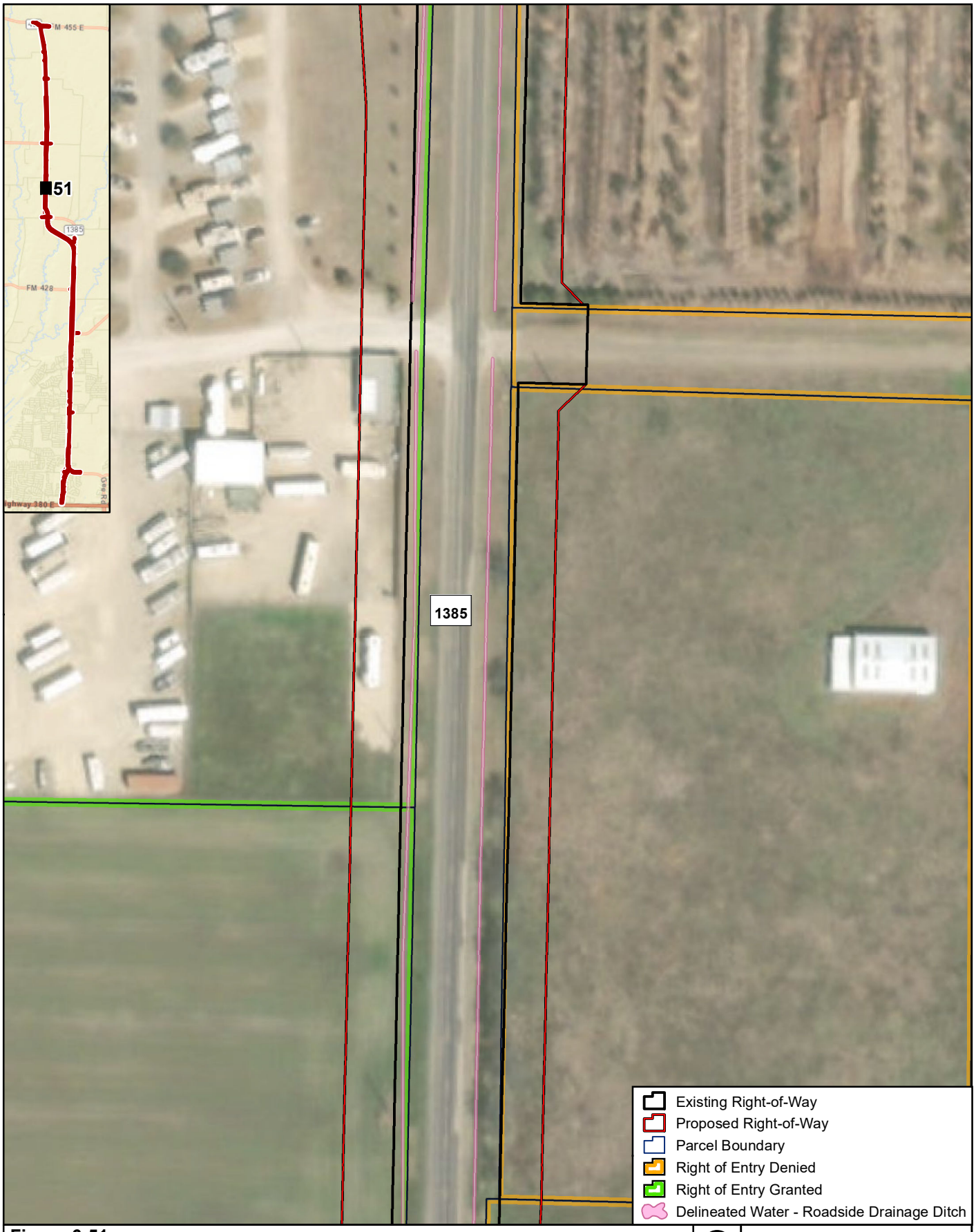

Figure 6-51.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

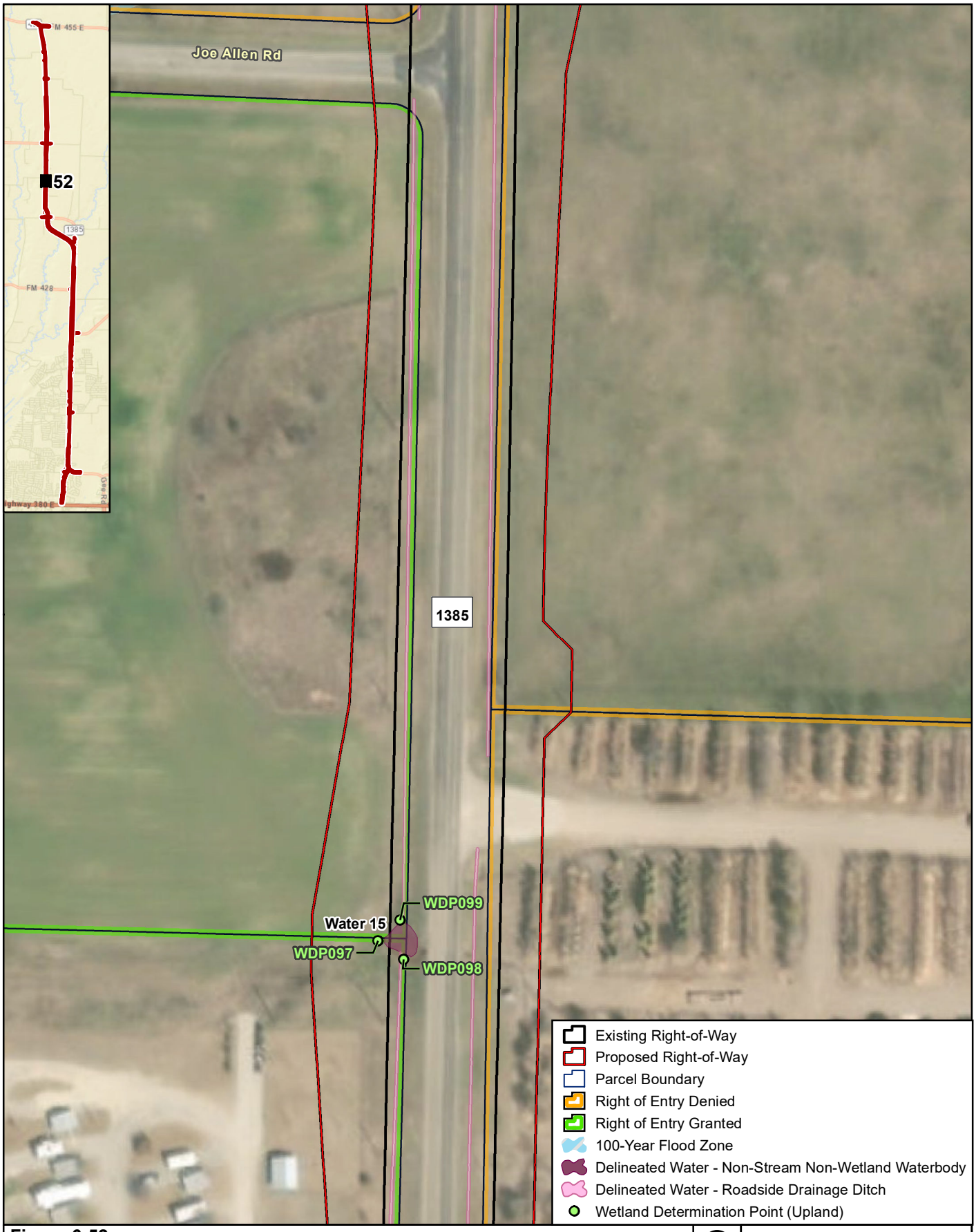

Figure 6-52.
Delineated Water Features

FM 1385 Environmental Assessment

CSJ: 1315-01-030

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

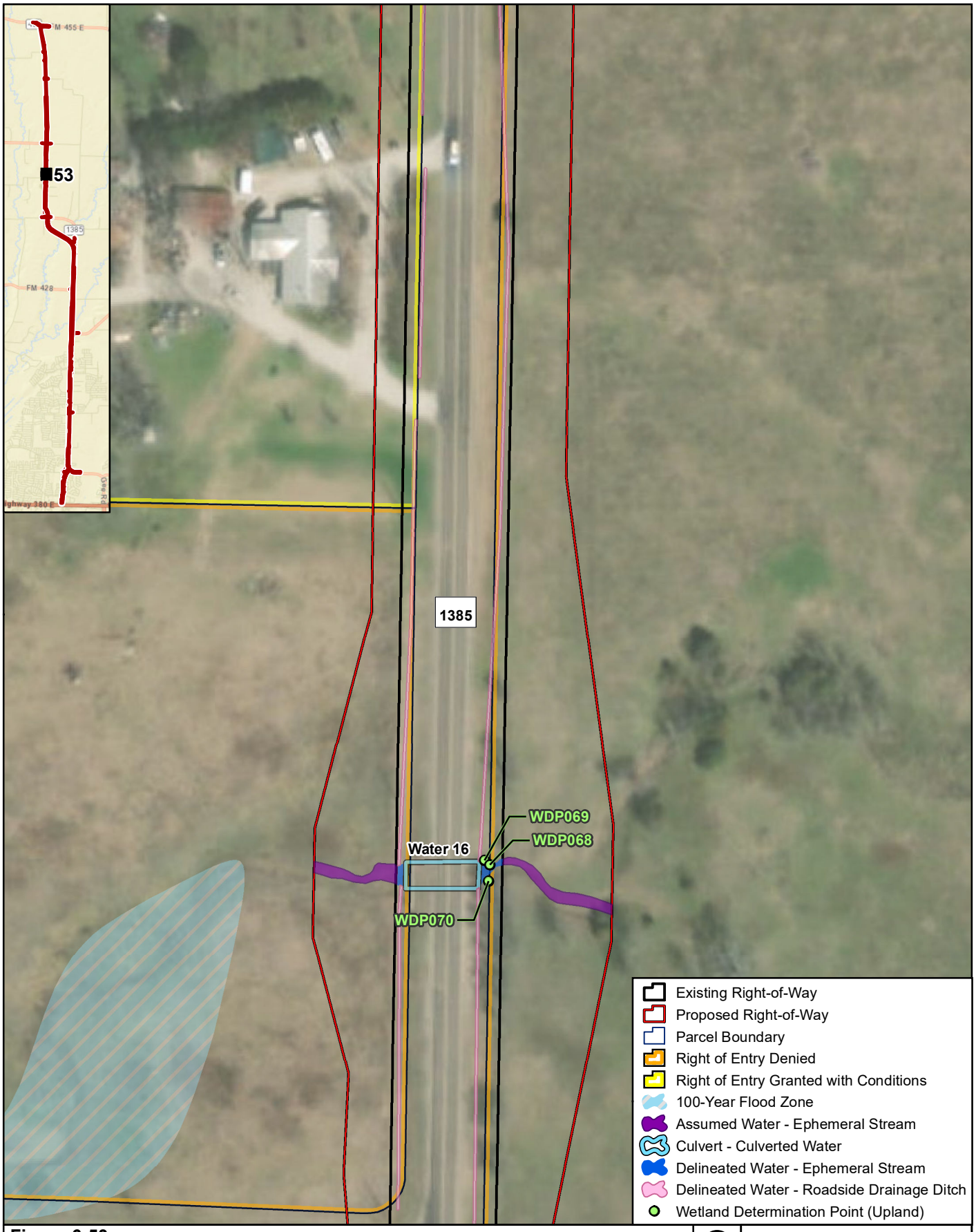

Figure 6-53.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

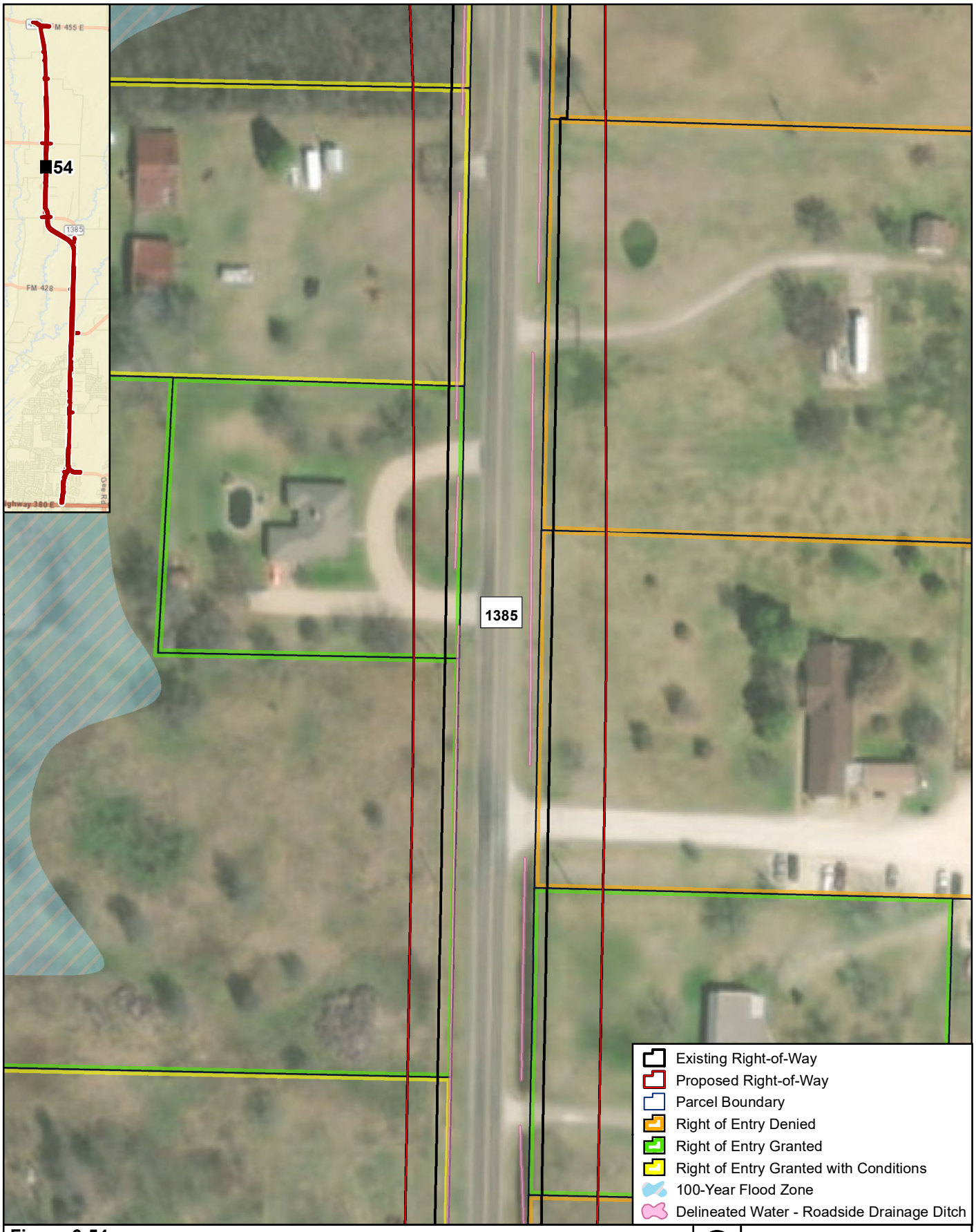

Figure 6-54.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\23530164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

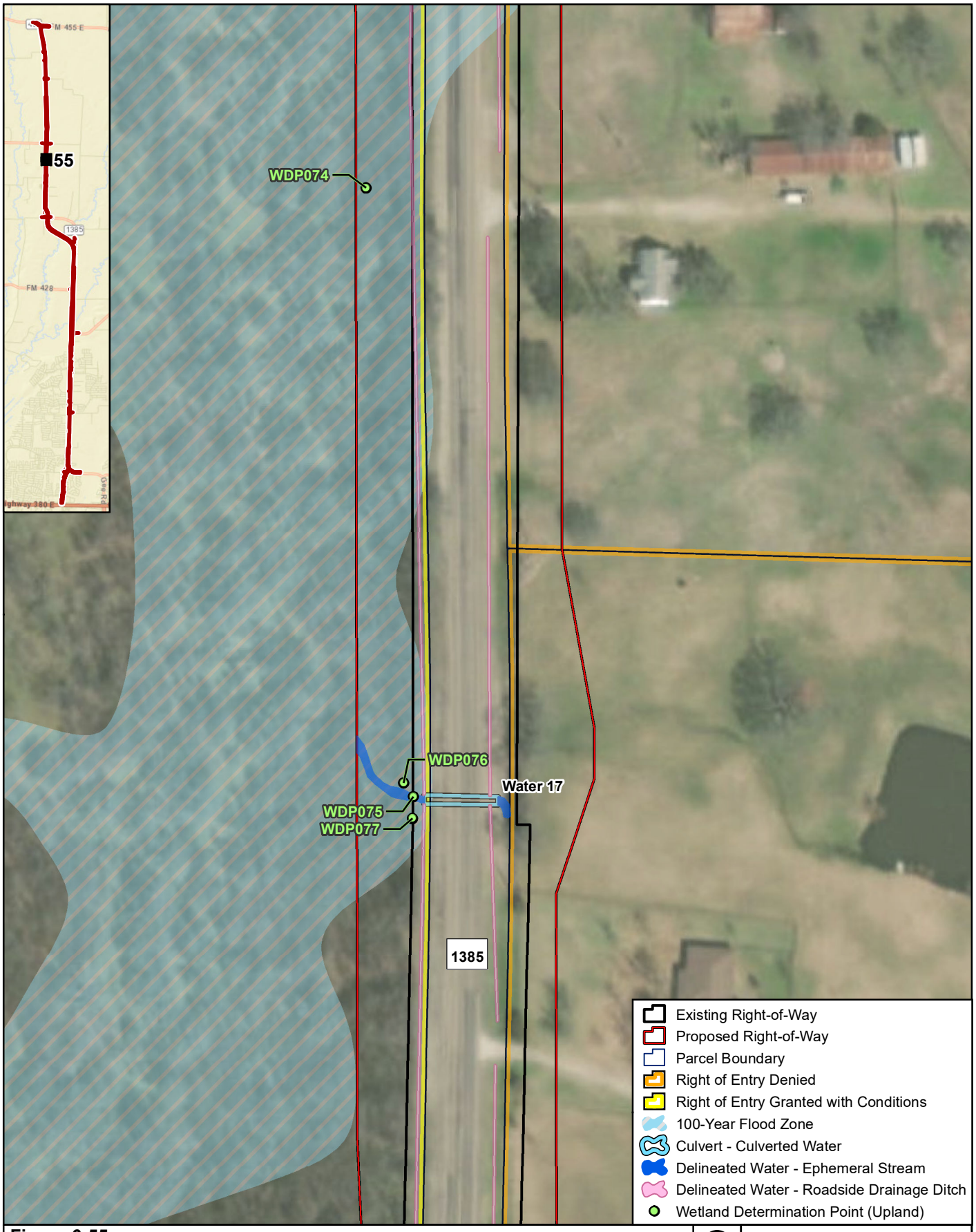

Figure 6-55.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

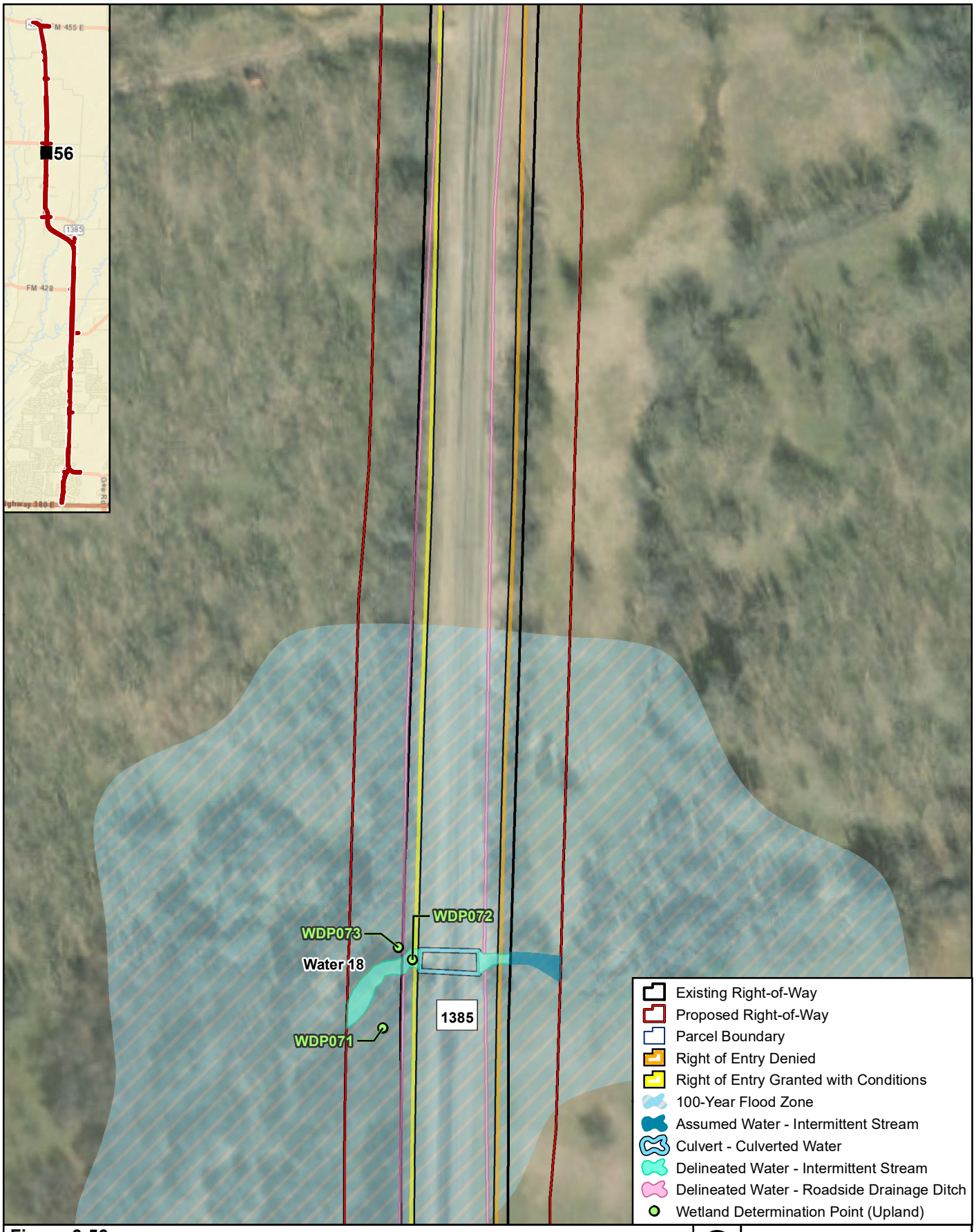

Figure 6-56.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

Figure 6-57.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

Figure 6-58.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

Figure 6-59.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\23530164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

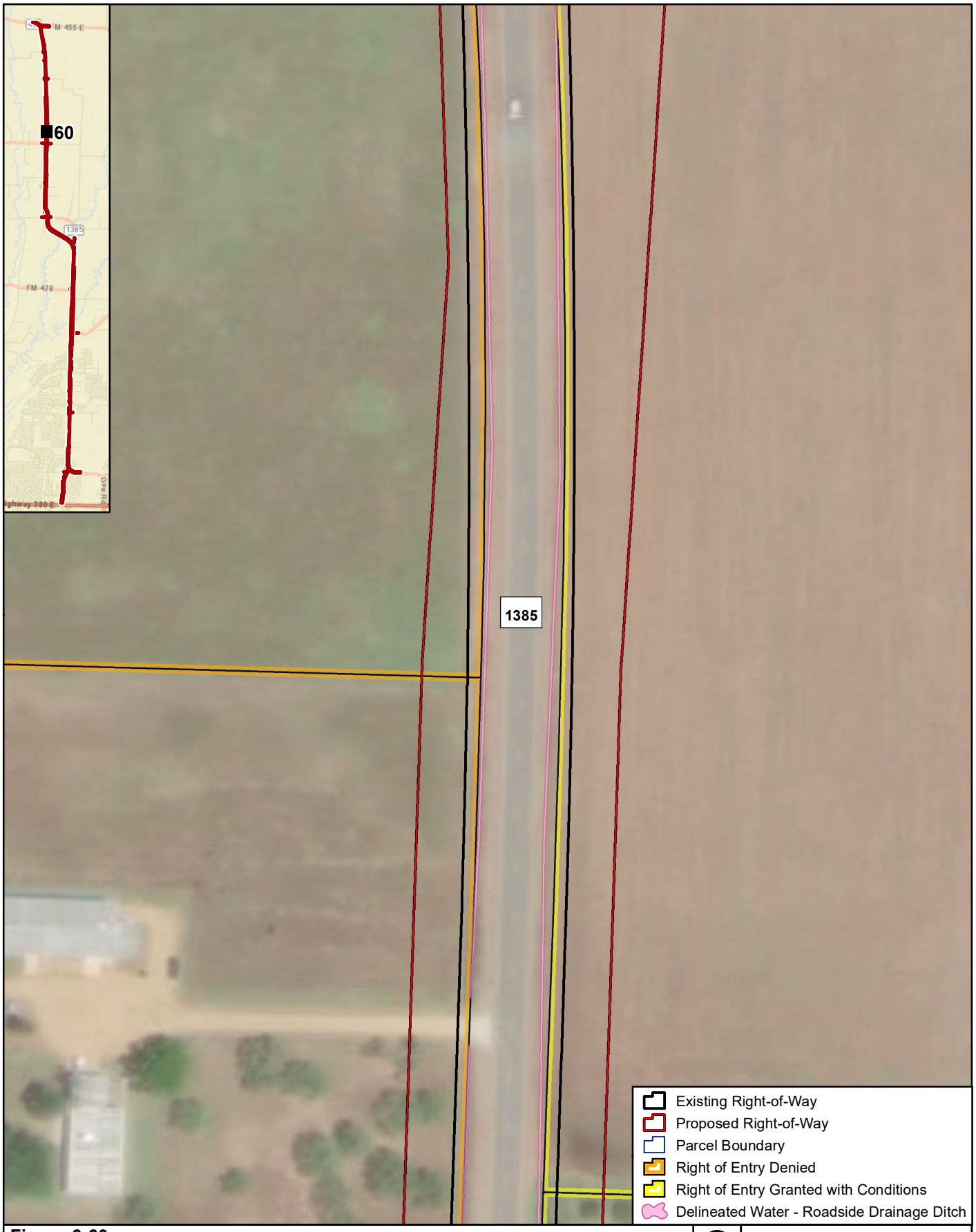

Figure 6-60.
Delineated Water Features

FM 1385 Environmental Assessment

CSJ: 1315-01-030

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

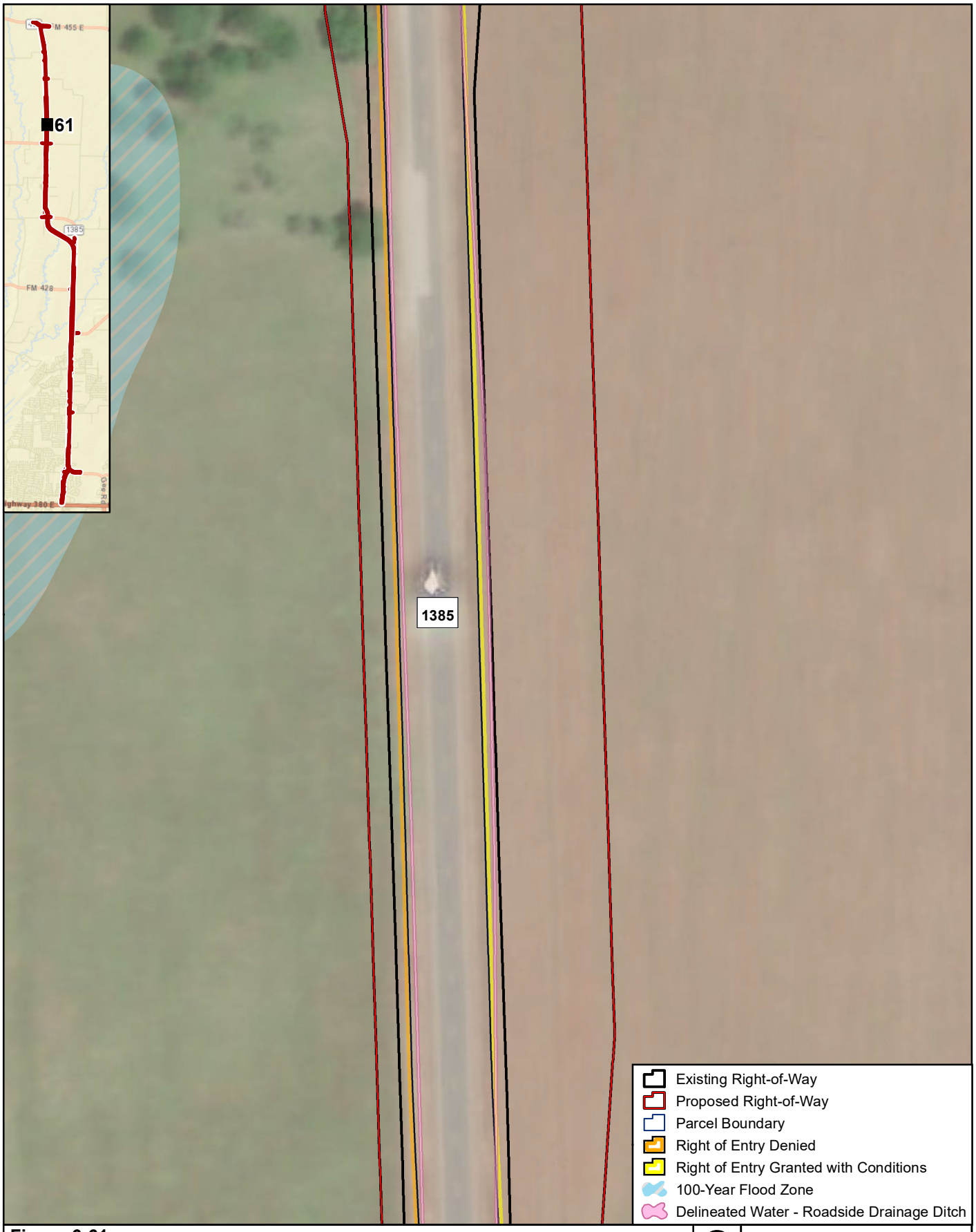

Figure 6-61.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

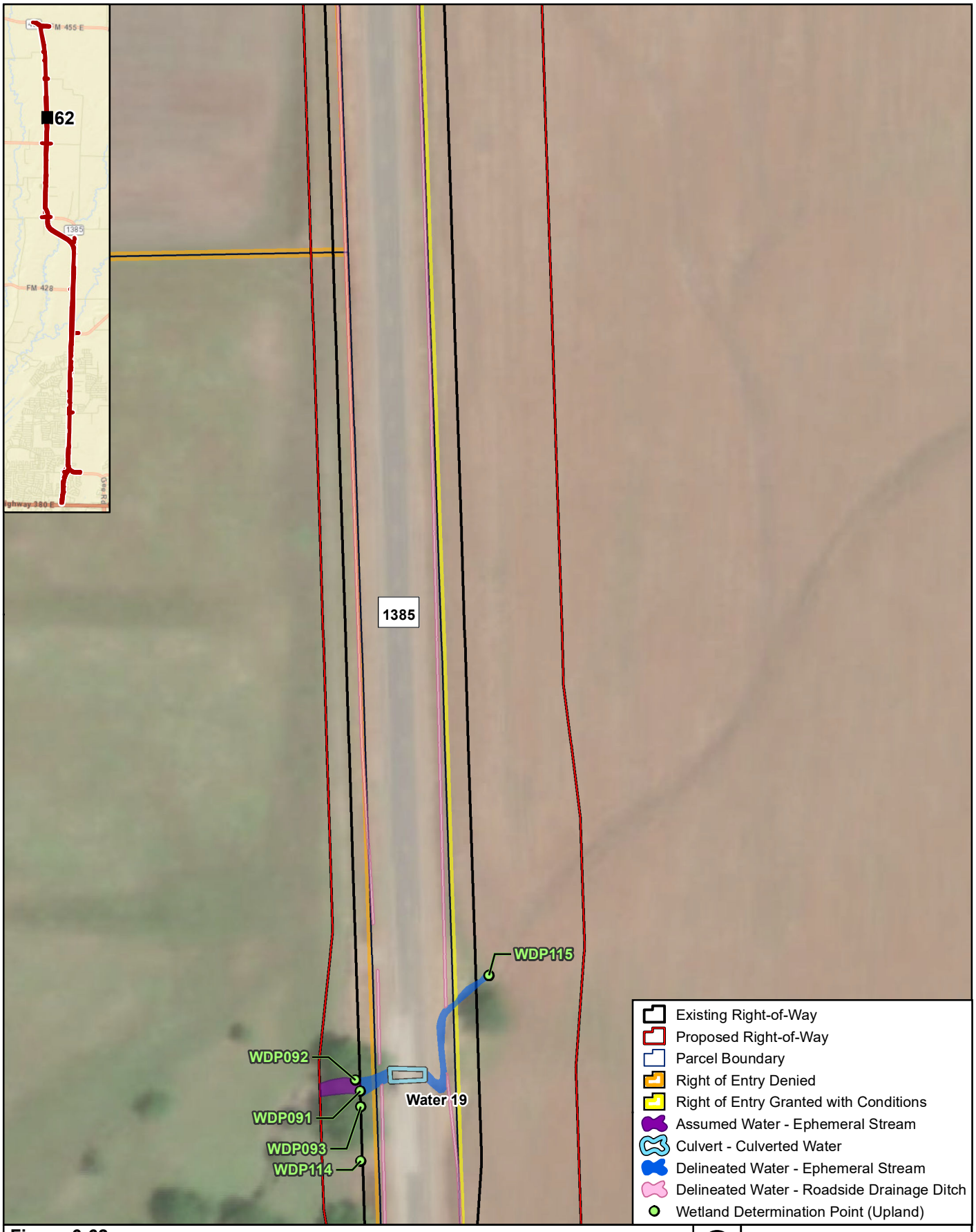

Figure 6-62.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

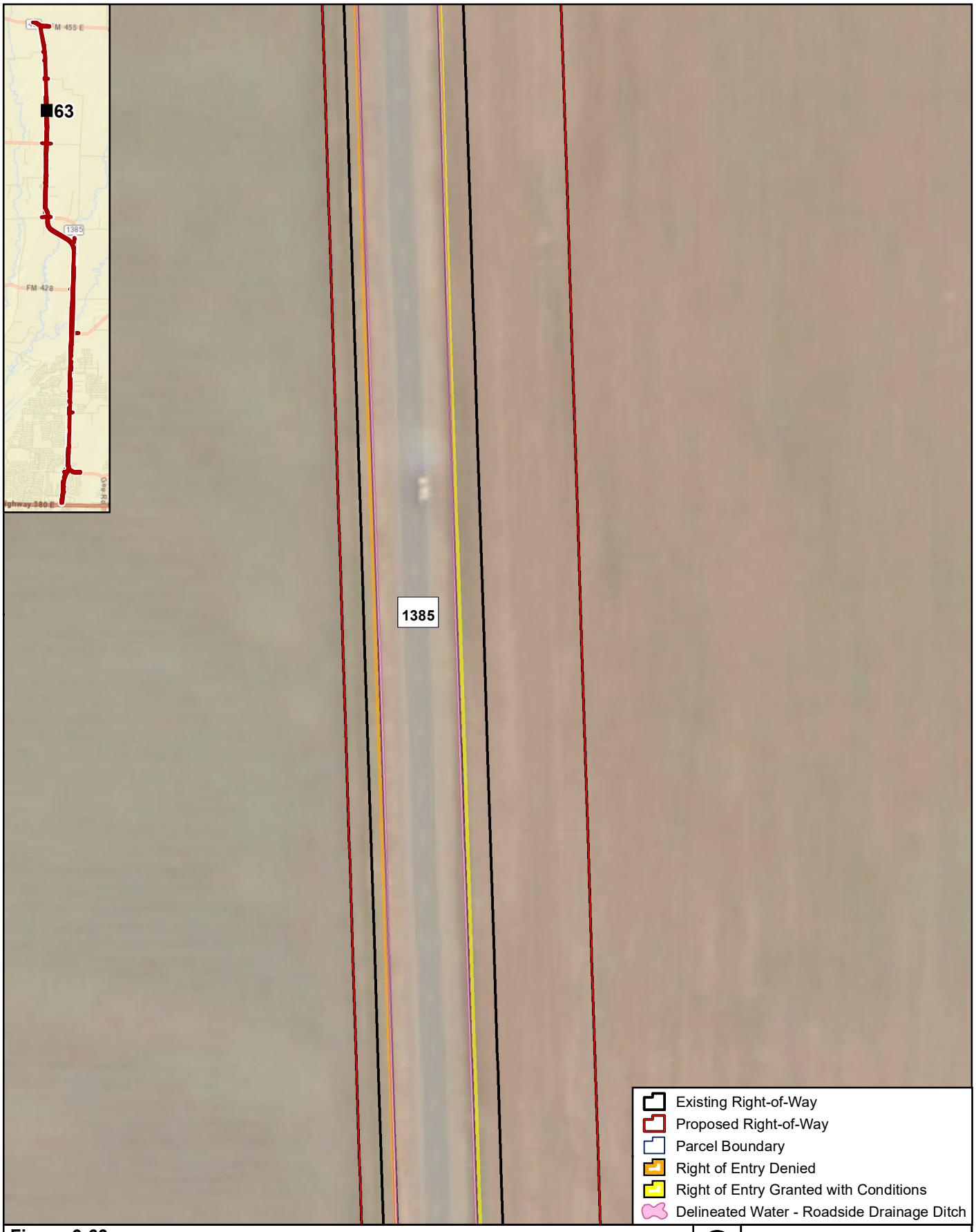

Figure 6-63.
Delineated Water Features

FM 1385 Environmental Assessment

CSJ: 1315-01-030

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

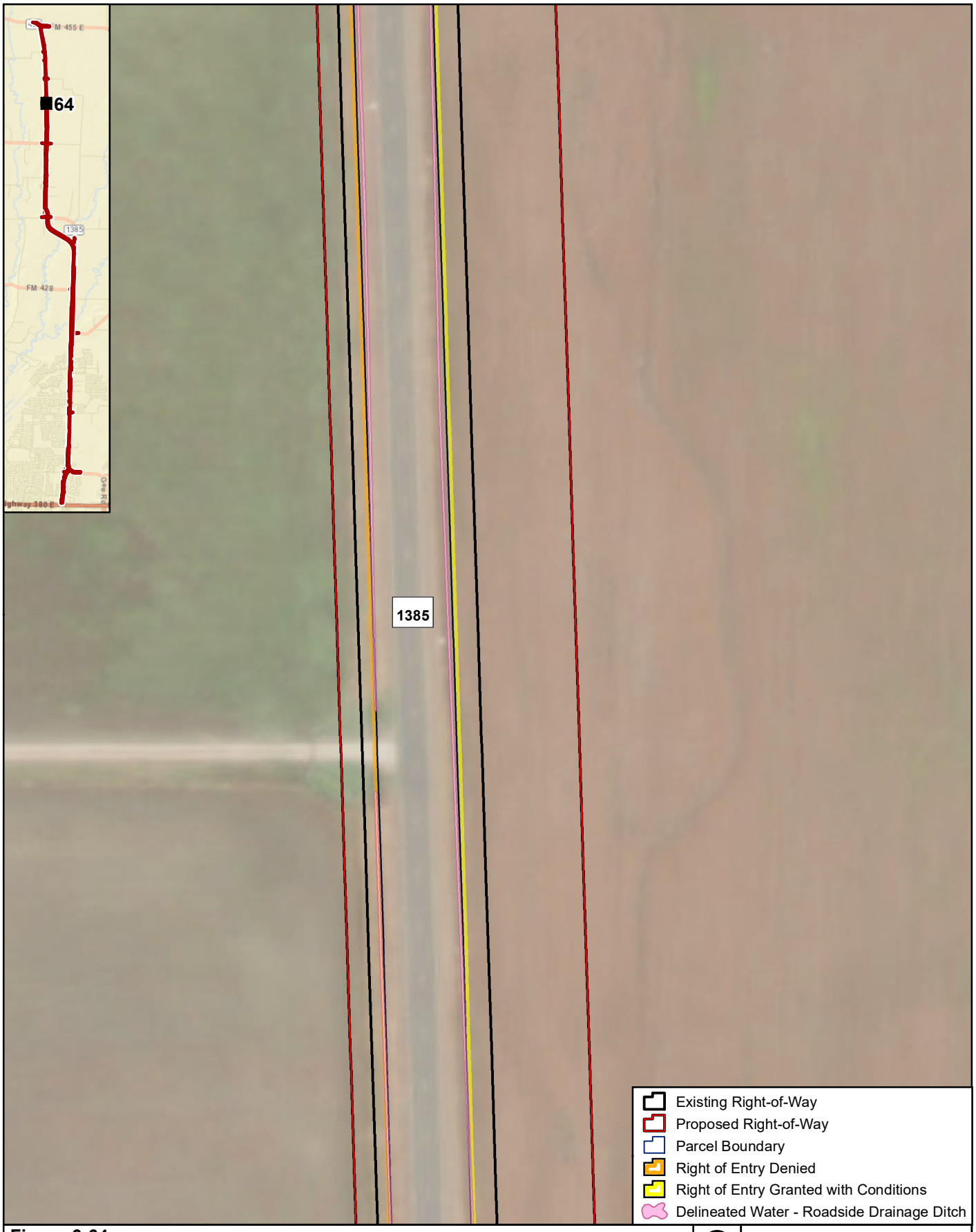

Figure 6-64.
Delineated Water Features

FM 1385 Environmental Assessment

CSJ: 1315-01-030

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

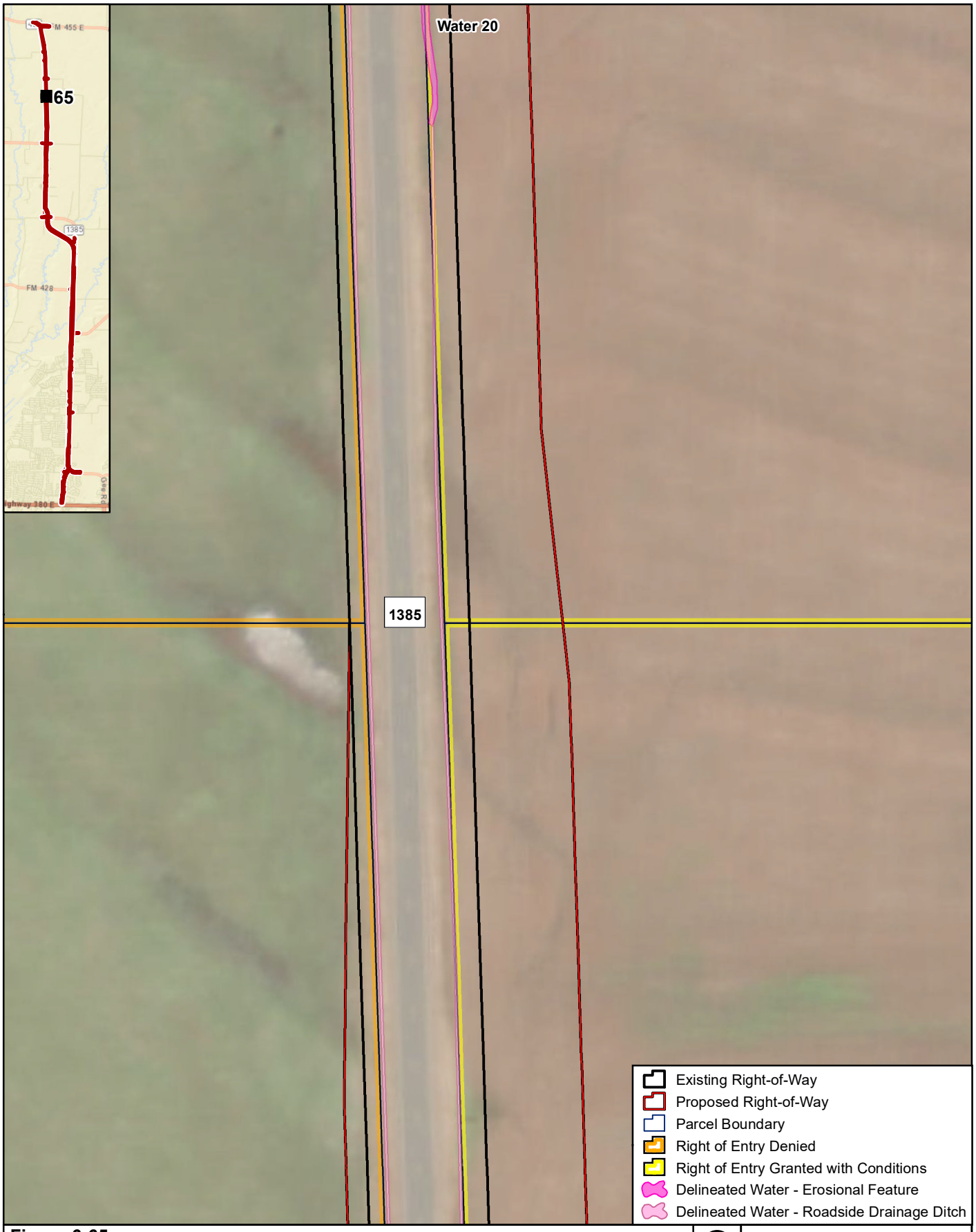

Figure 6-65.
Delineated Water Features

FM 1385 Environmental Assessment

CSJ: 1315-01-030

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

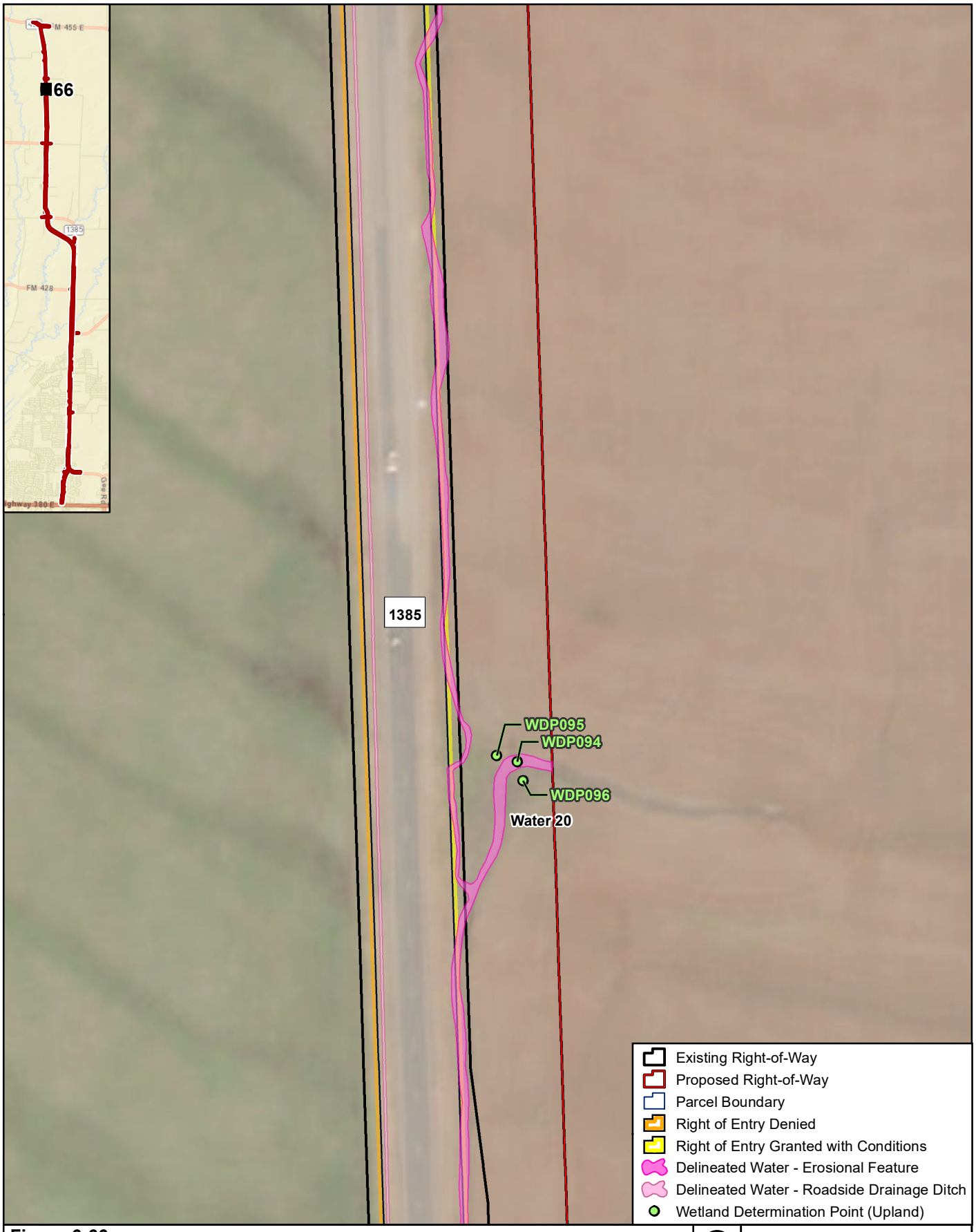

Figure 6-66.
Delineated Water Features

FM 1385 Environmental Assessment

CSJ: 1315-01-030

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

Figure 6-67.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

Figure 6-68.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

Figure 6-69.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

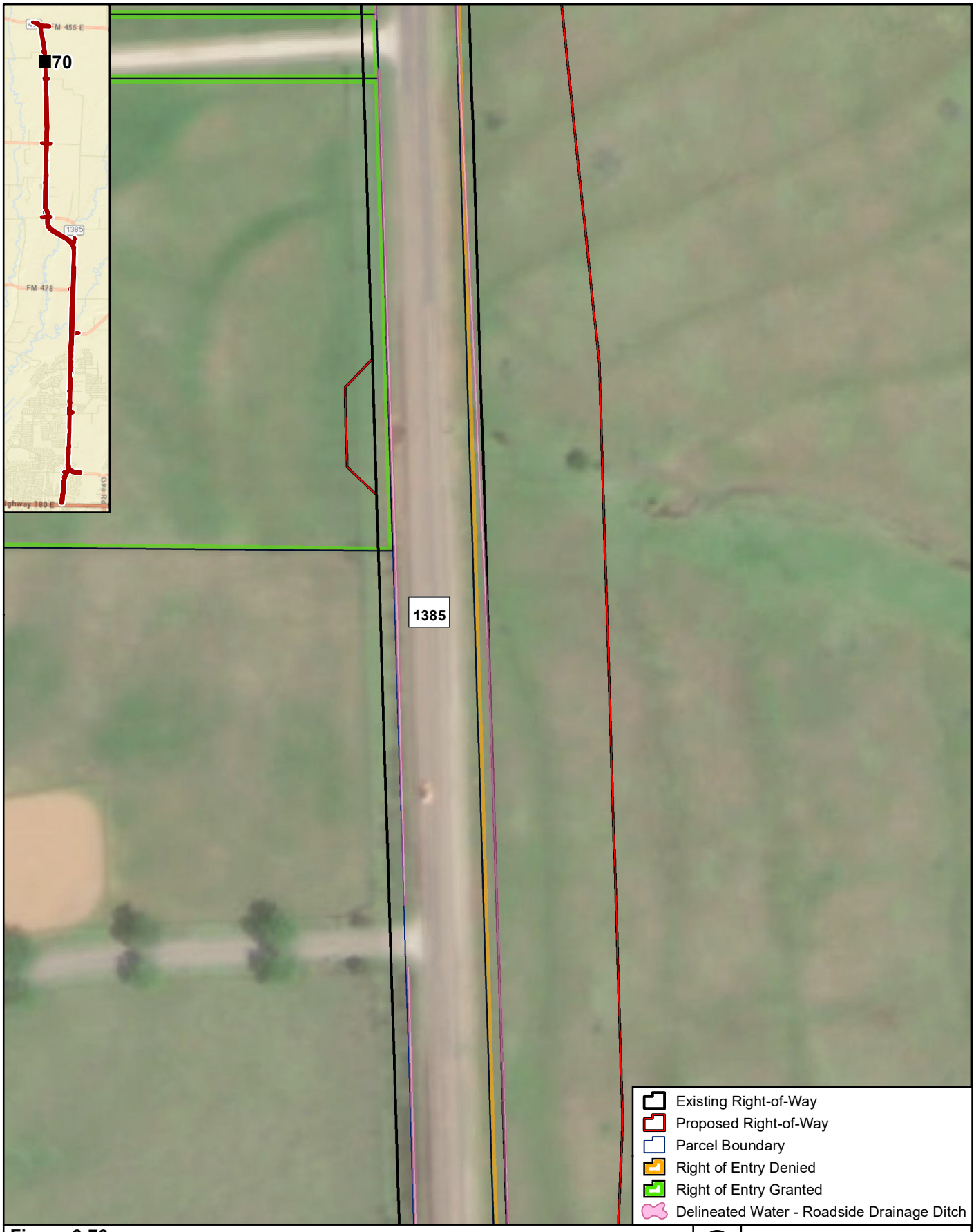

Figure 6-70.
Delineated Water Features

FM 1385 Environmental Assessment

CSJ: 1315-01-030

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

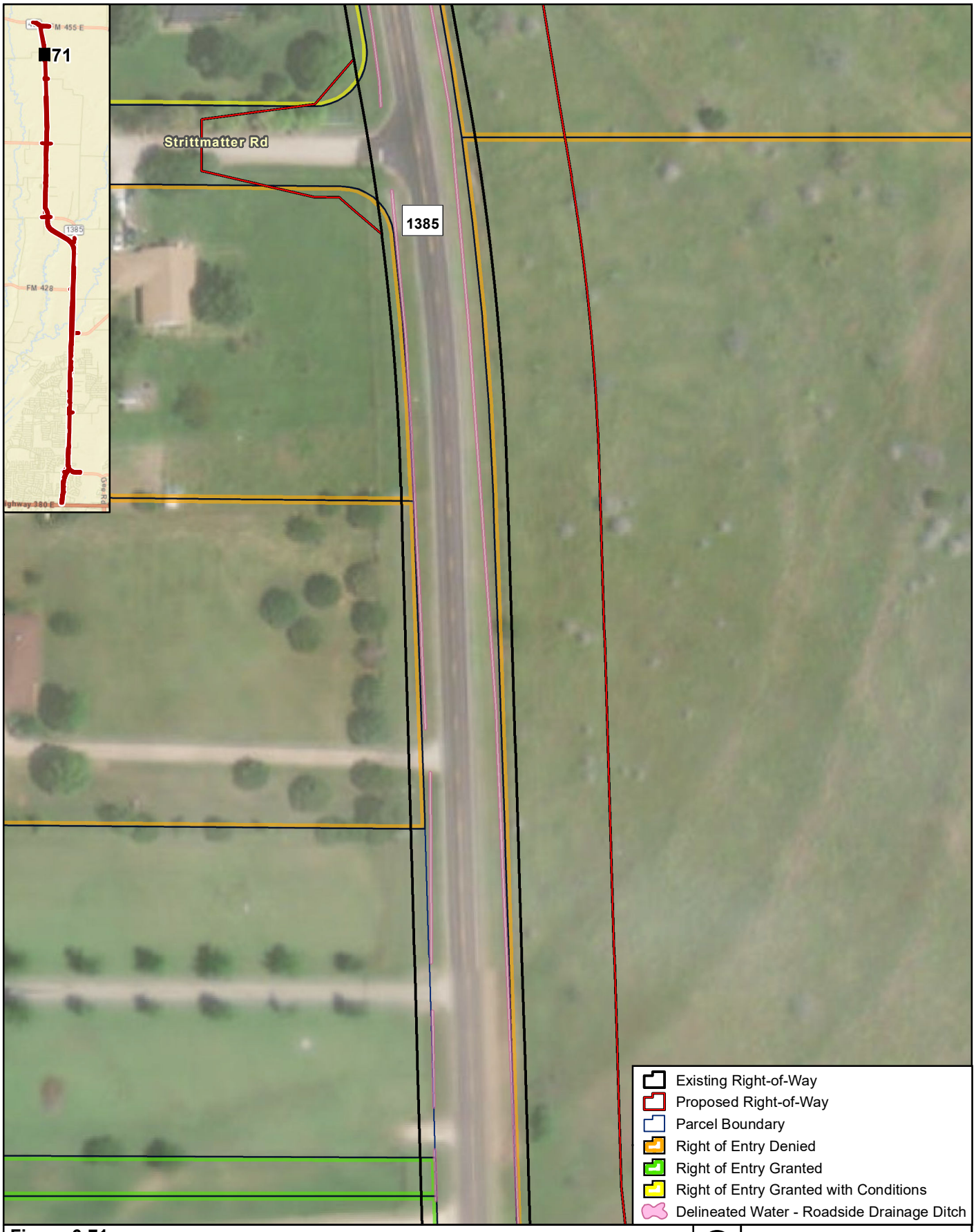

Figure 6-71.
Delineated Water Features

FM 1385 Environmental Assessment

CSJ: 1315-01-030

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

Figure 6-72.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

Figure 6-73.
Delineated Water Features

FM 1385 Environmental Assessment

CSJ: 1315-01-030

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

Figure 6-74.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\23530164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

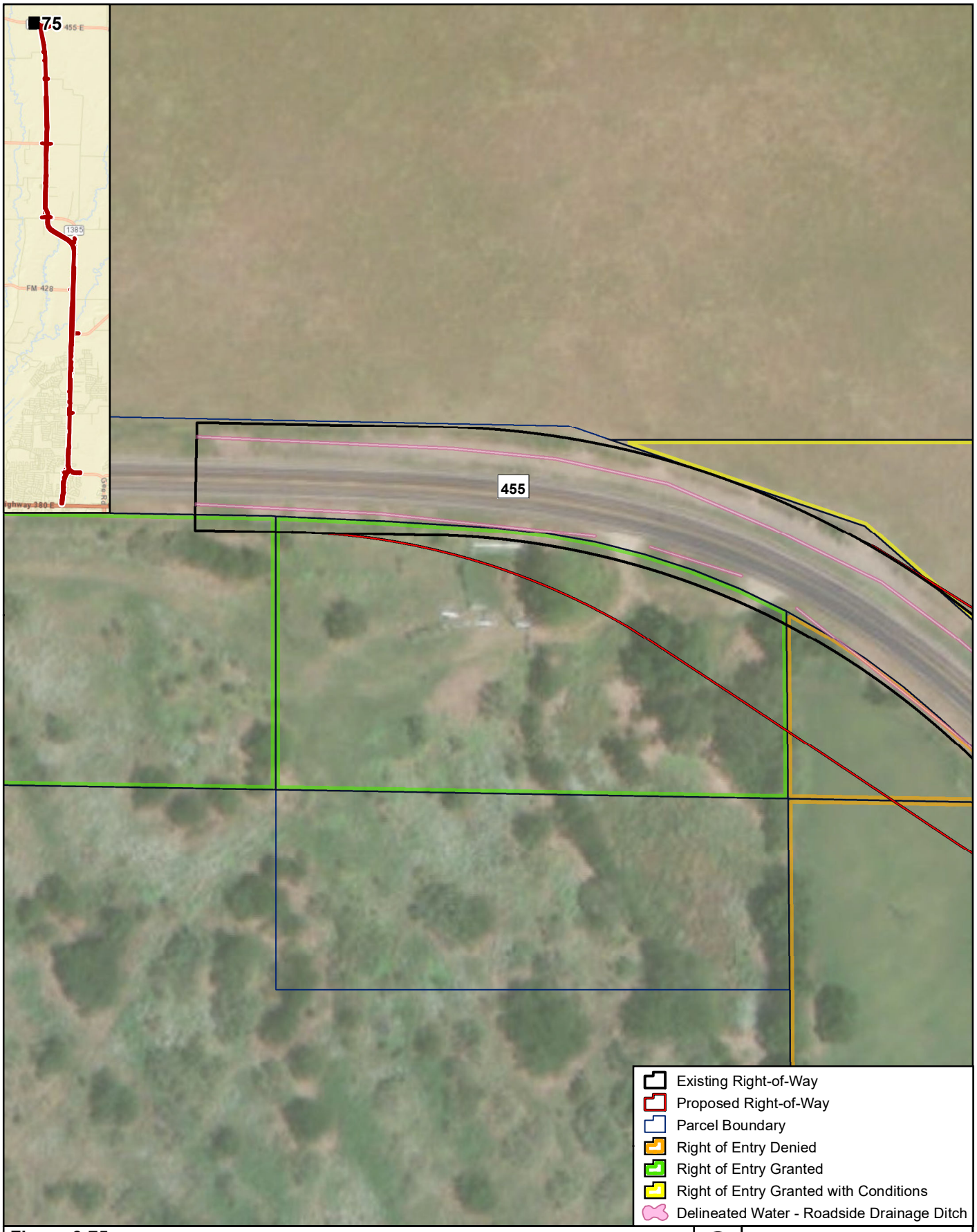

Figure 6-75.
Delineated Water Features

FM 1385 Environmental Assessment

CSJ: 1315-01-030

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

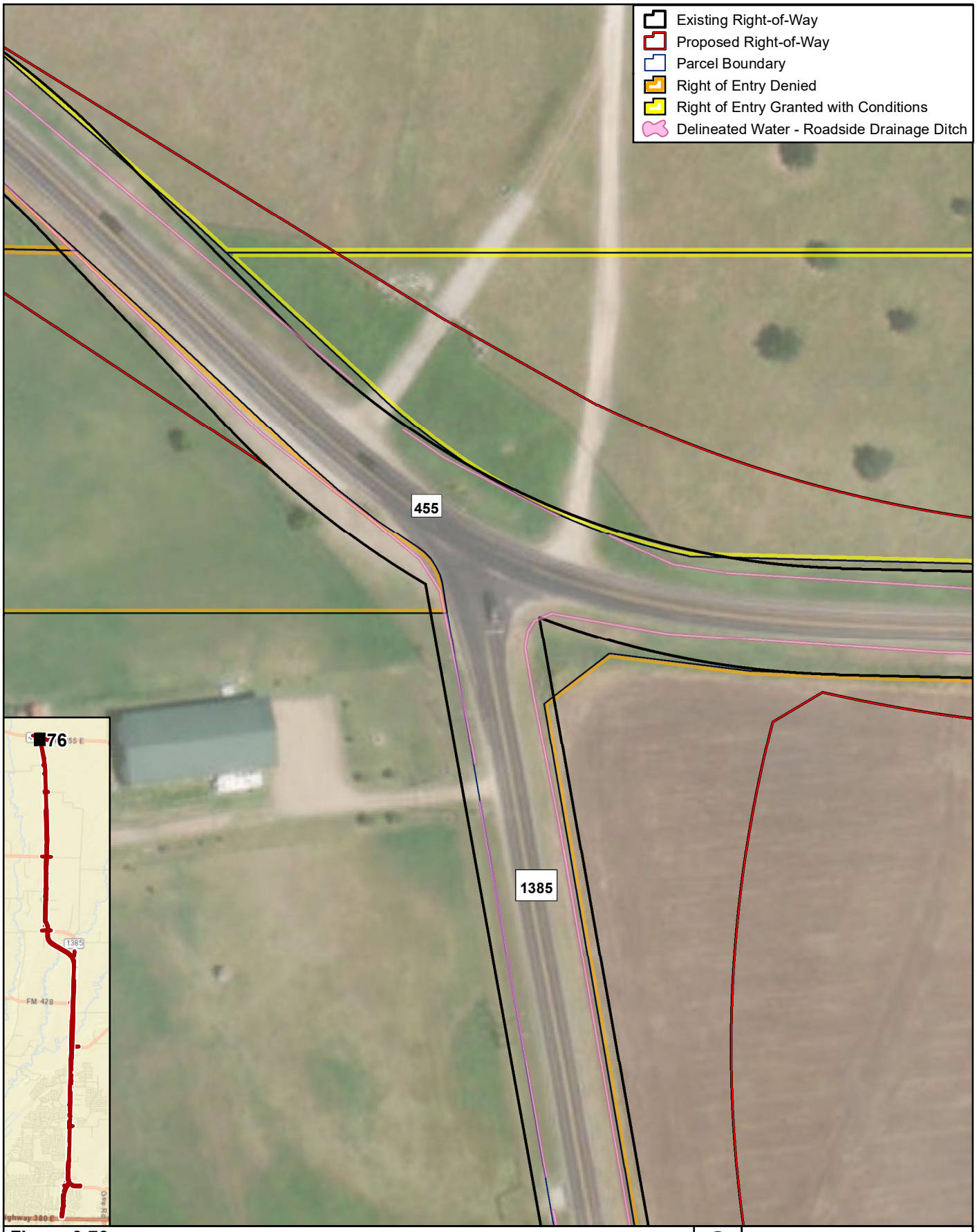

Figure 6-76.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

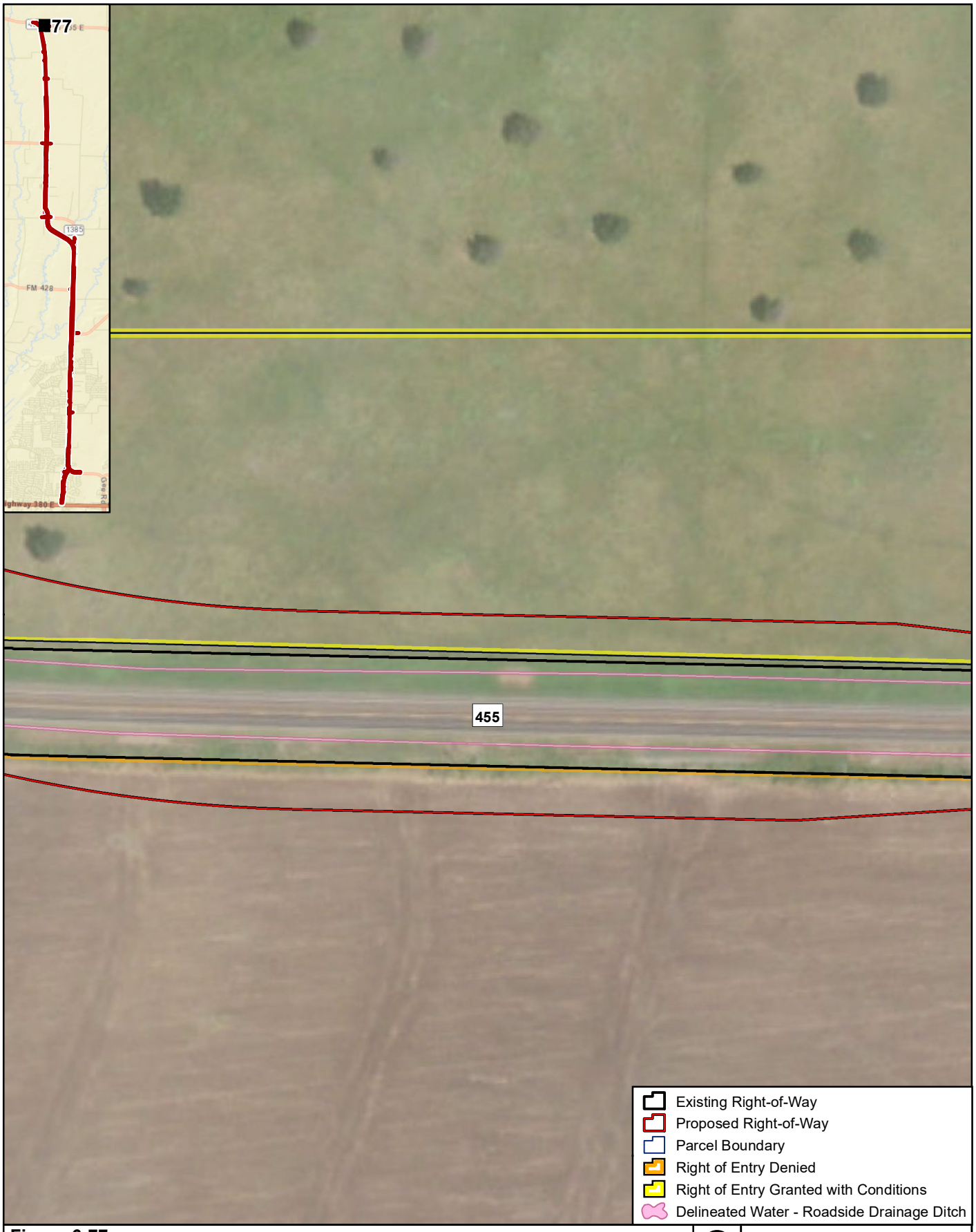

Figure 6-77.
Delineated Water Features

FM 1385 Environmental Assessment

CSJ: 1315-01-030

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

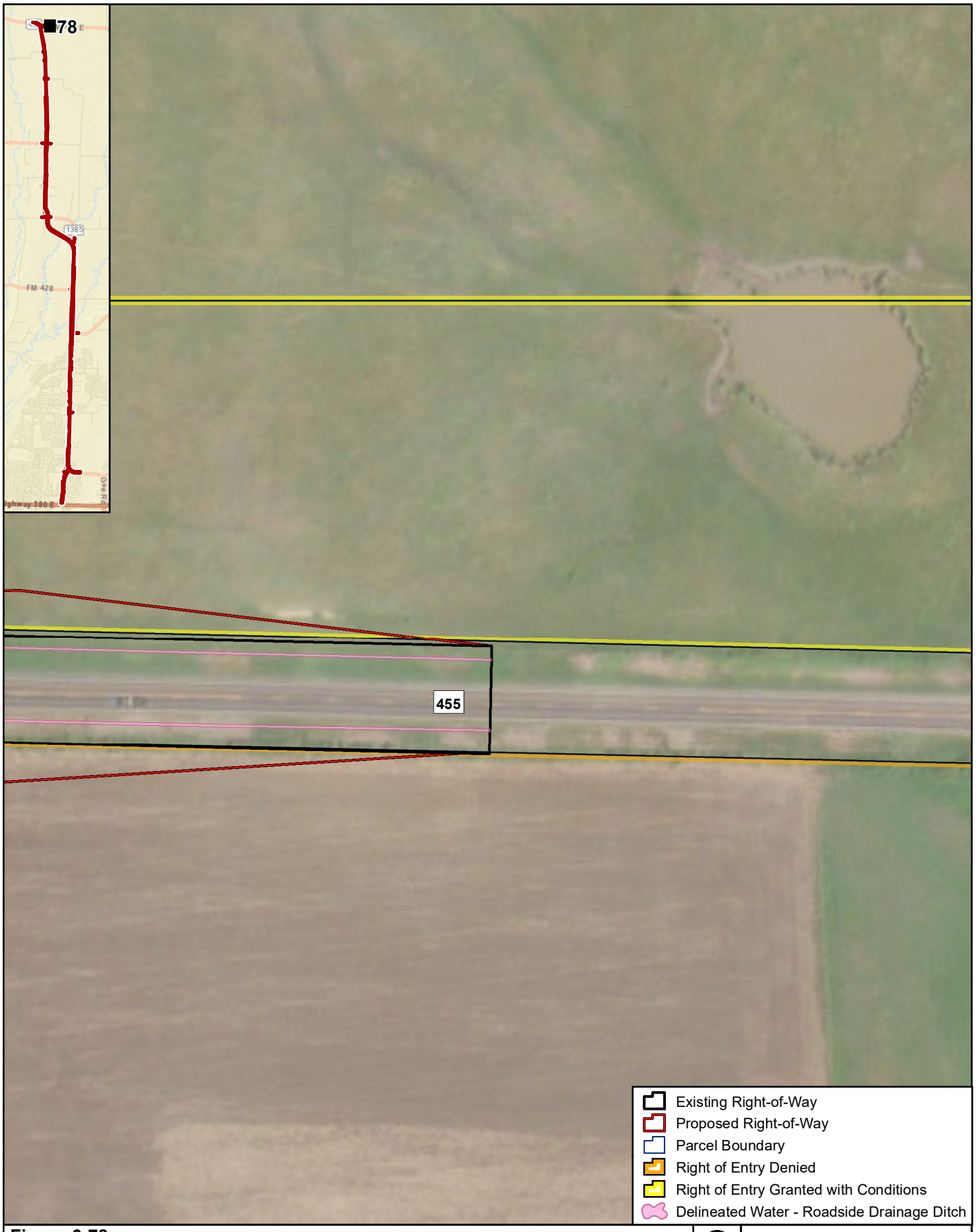

Figure 6-78.
Delineated Water Features

FM 1385 Environmental Assessment

Data Sources: Stantec (2022), FEMA (2022), DCAD (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 6_Water_Features_20230320_TLS.mxd

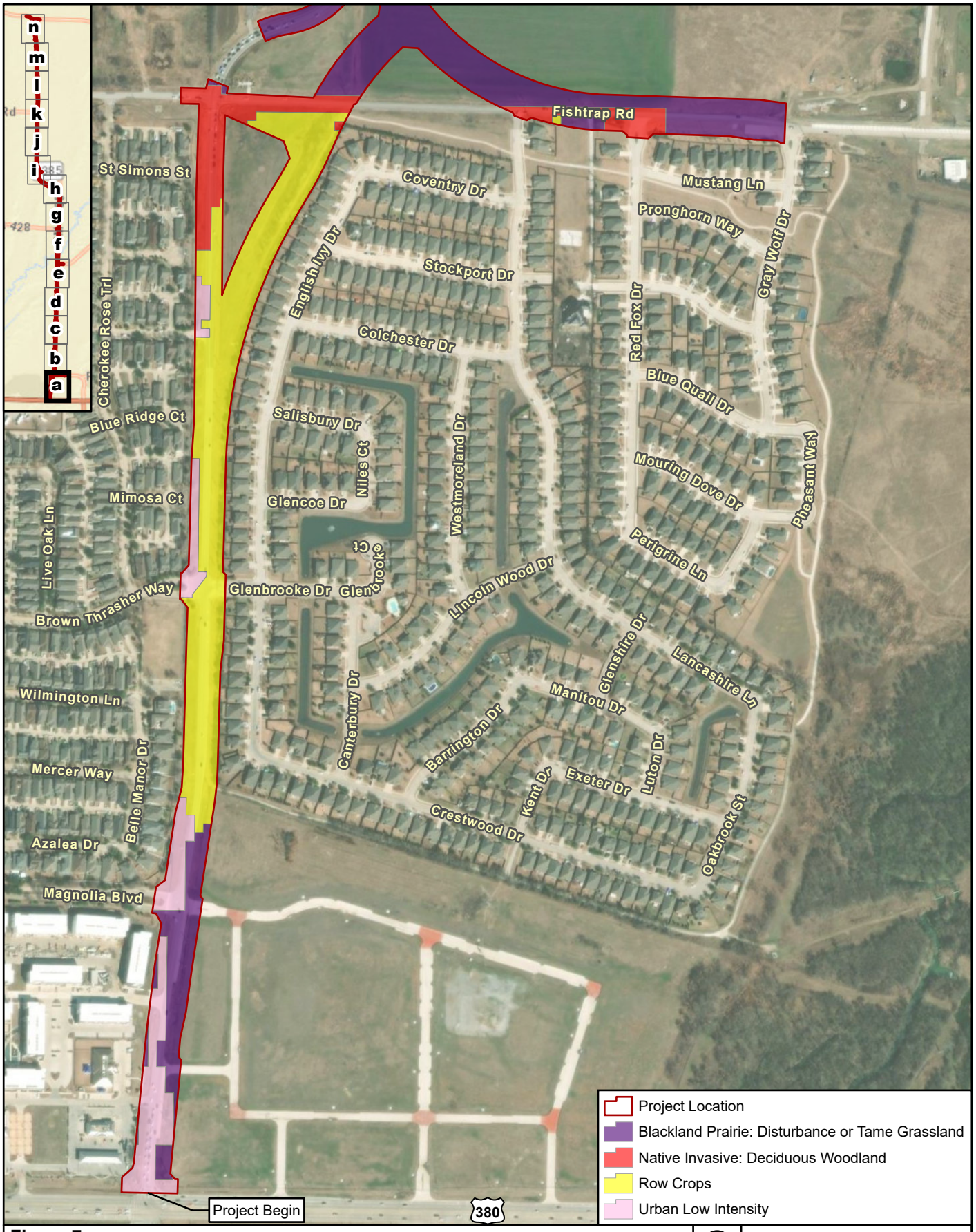

Figure 7a.
EMST Mapped Vegetation Types

FM 1385 Environmental Assessment

Data Source: TxDOT/TPWD EMST/MoRAP (2013)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 500 Feet
0 150 Meters

1 in = 500 feet
Scale: 1:6,000
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_Pro_Working.aprx

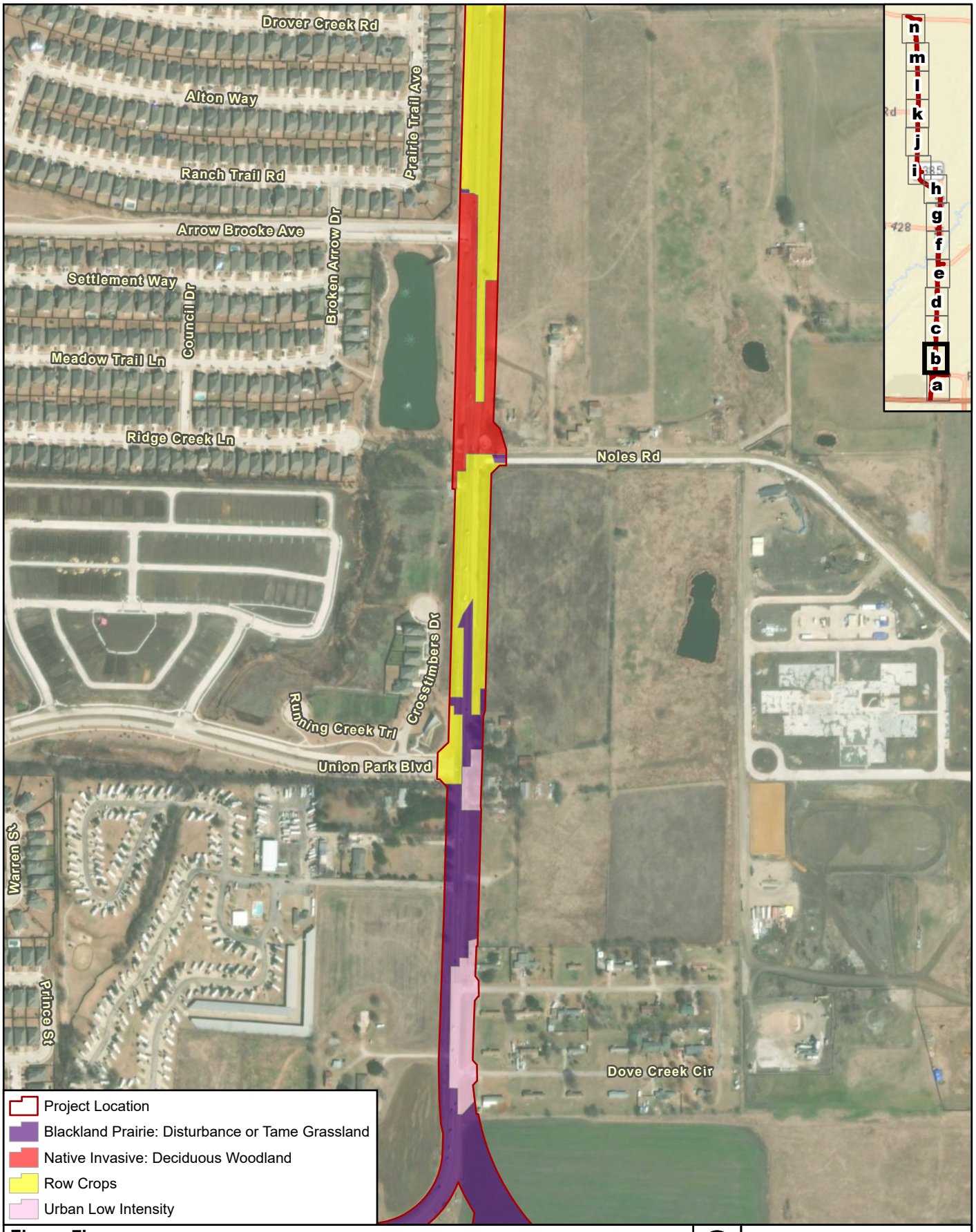

Figure 7b.
EMST Mapped Vegetation Types

FM 1385 Environmental Assessment

Data Source: TxDOT/TPWD EMST/MoRAP (2013)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 500 Feet
0 150 Meters

1 in = 500 feet
Scale: 1:6,000
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_Pro_Working.aprx

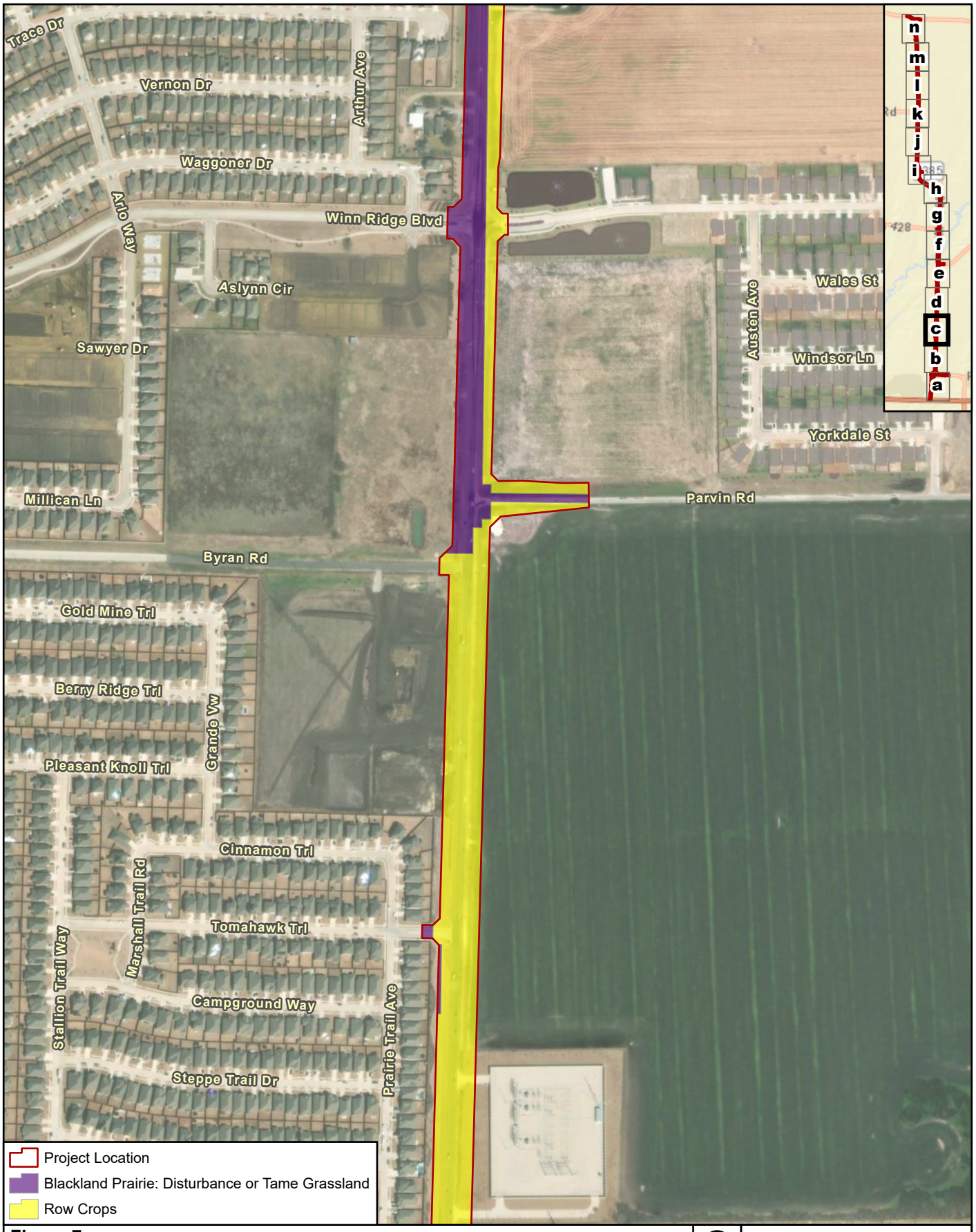

Figure 7c.
EMST Mapped Vegetation Types

FM 1385 Environmental Assessment

Data Source: TxDOT/TPWD EMST/MoRAP (2013)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 500 Feet
0 150 Meters

1 in = 500 feet
Scale: 1:6,000
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_Pro_Working.aprx

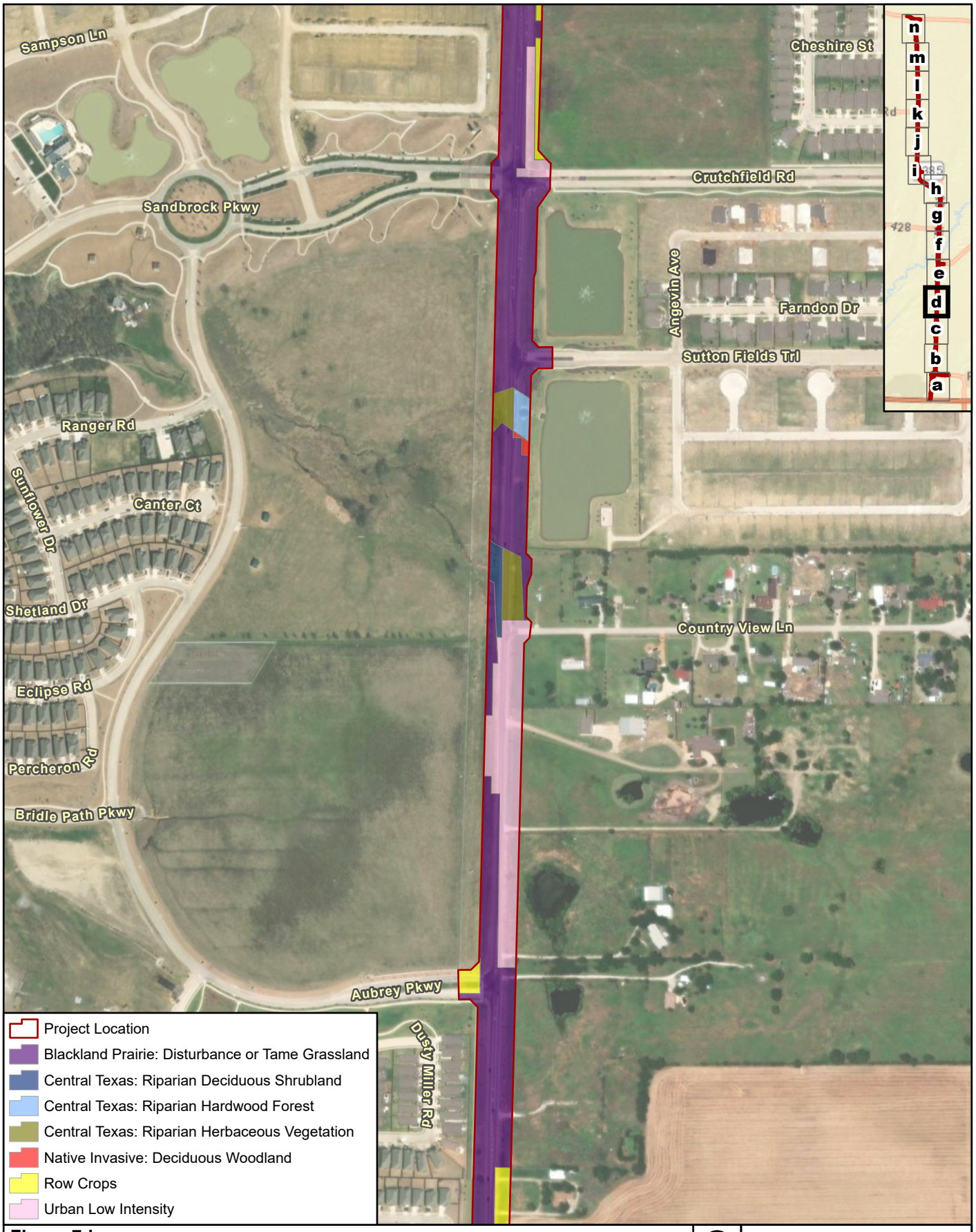

Figure 7d.
EMST Mapped Vegetation Types

FM 1385 Environmental Assessment

Data Source: TxDOT/TPWD EMST/MoRAP (2013)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 500 Feet
0 150 Meters

1 in = 500 feet
Scale: 1:6,000
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_Pro_Working.aprx

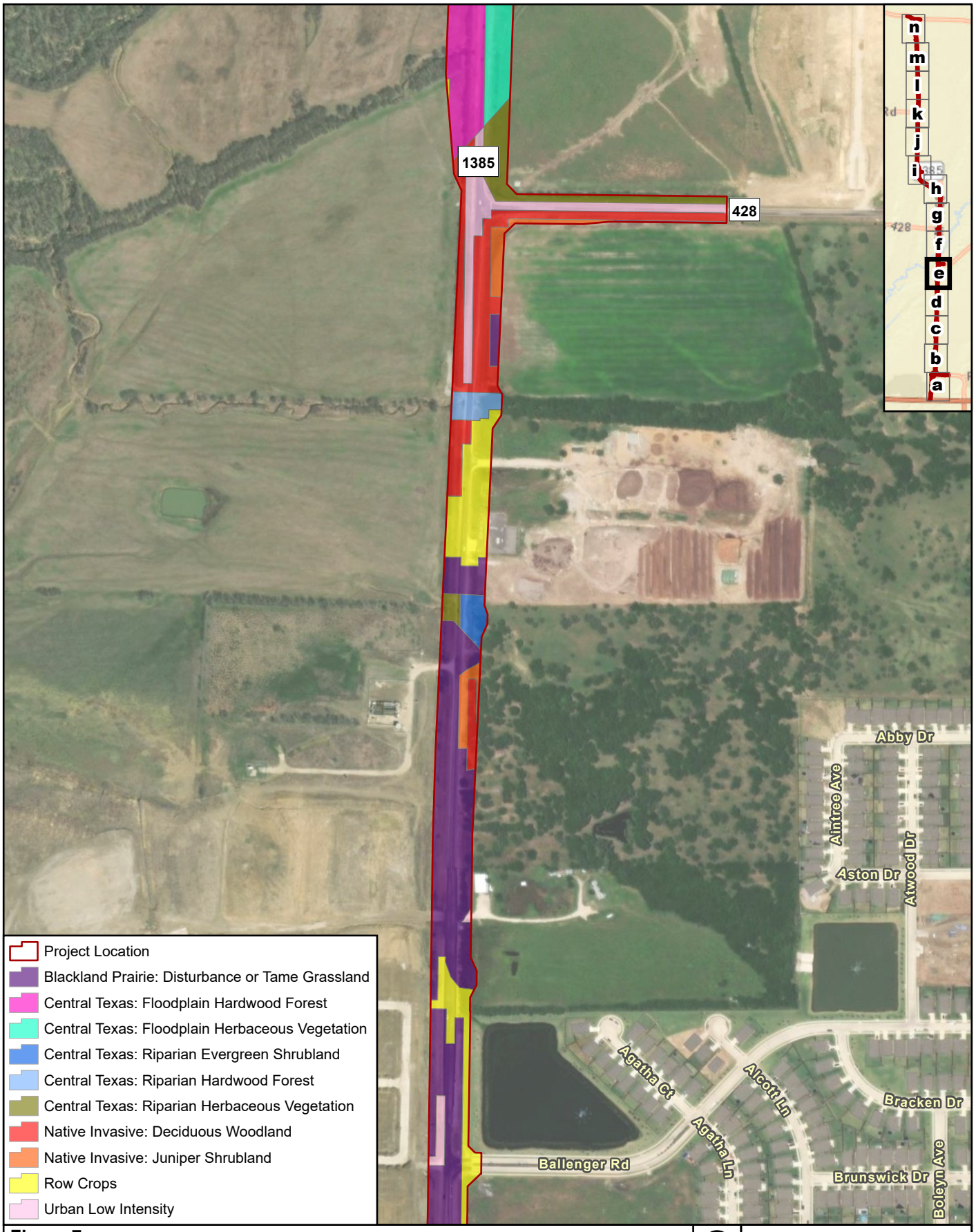

Figure 7e.
EMST Mapped Vegetation Types

FM 1385 Environmental Assessment

Data Source: TxDOT/TPWD EMST/MoRAP (2013)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 500 Feet
0 150 Meters

1 in = 500 feet
Scale: 1:6,000
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_Pro_Working.aprx

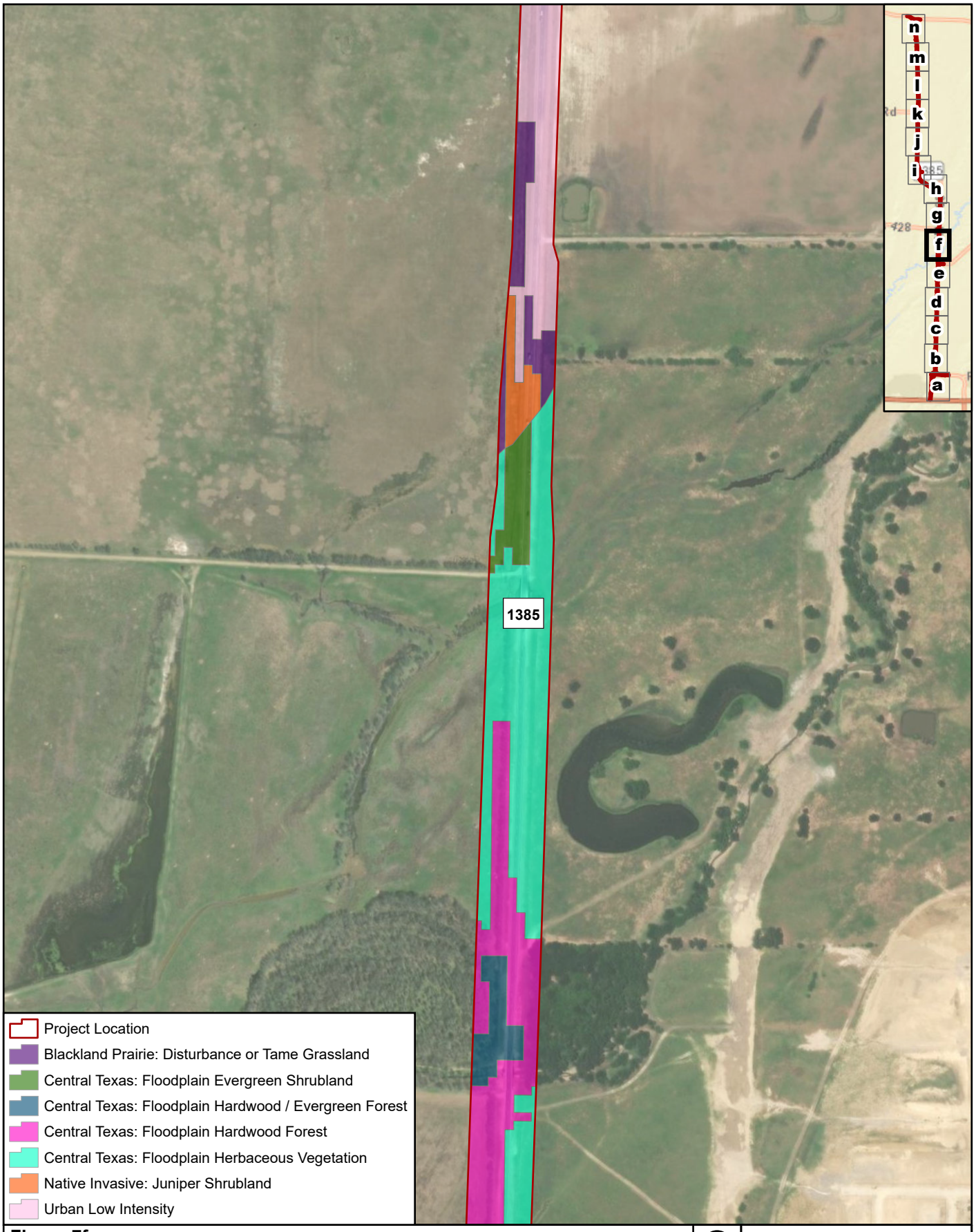

Figure 7f.
EMST Mapped Vegetation Types

FM 1385 Environmental Assessment

Data Source: TxDOT/TPWD EMST/MoRAP (2013)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 500 Feet
0 150 Meters

1 in = 500 feet
Scale: 1:6,000
Date: 3/20/2023

U:\23530016\4\03_data\gis_cad\gis\FM1385_Pro_Working.aprx

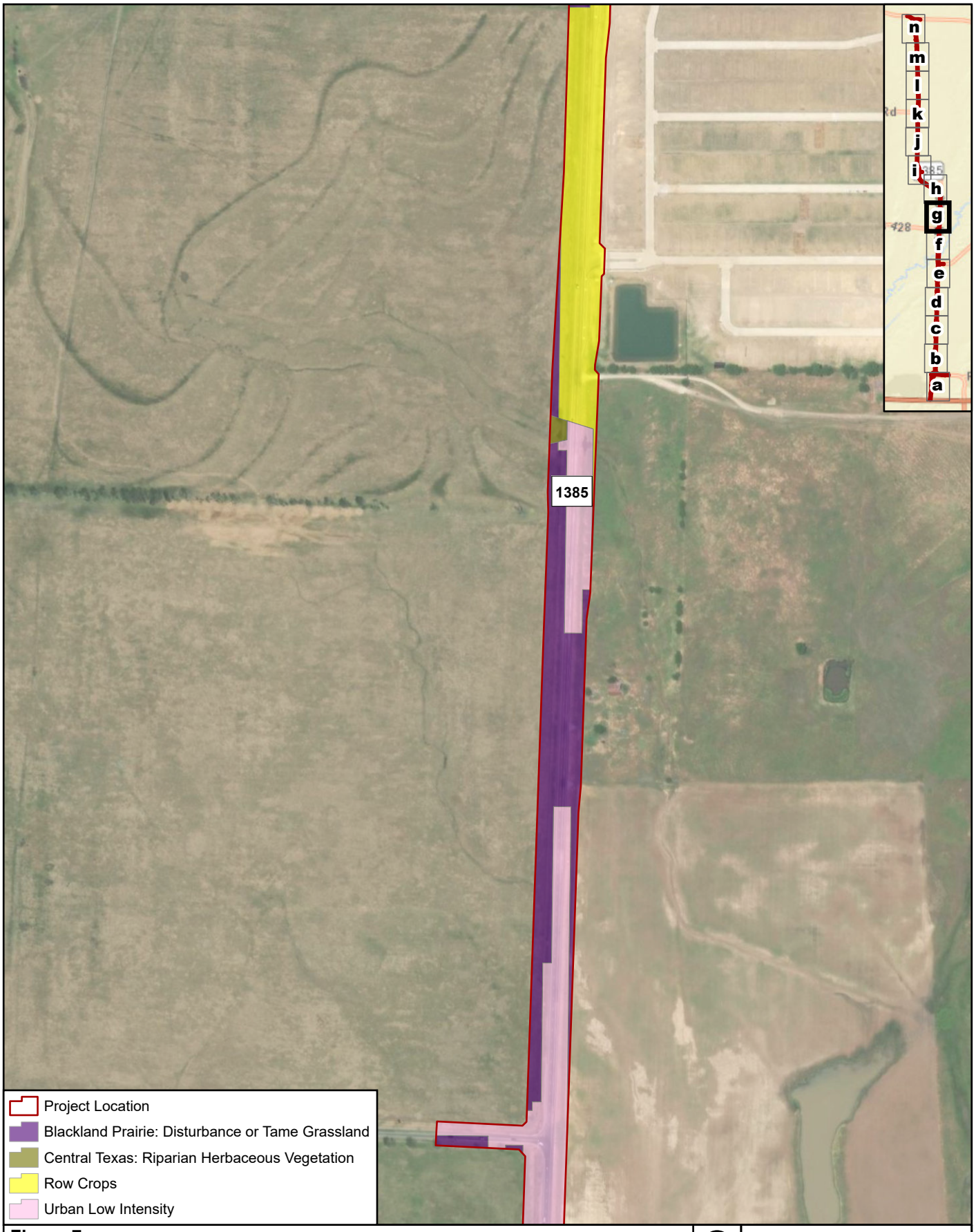

Figure 7g.
EMST Mapped Vegetation Types

FM 1385 Environmental Assessment

Data Source: TxDOT/TPWD EMST/MoRAP (2013)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 500 Feet
0 150 Meters

1 in = 500 feet
Scale: 1:6,000
Date: 3/20/2023

U:\23530016\4\03_data\gis_cad\gis\FM1385_Pro_Working.aprx

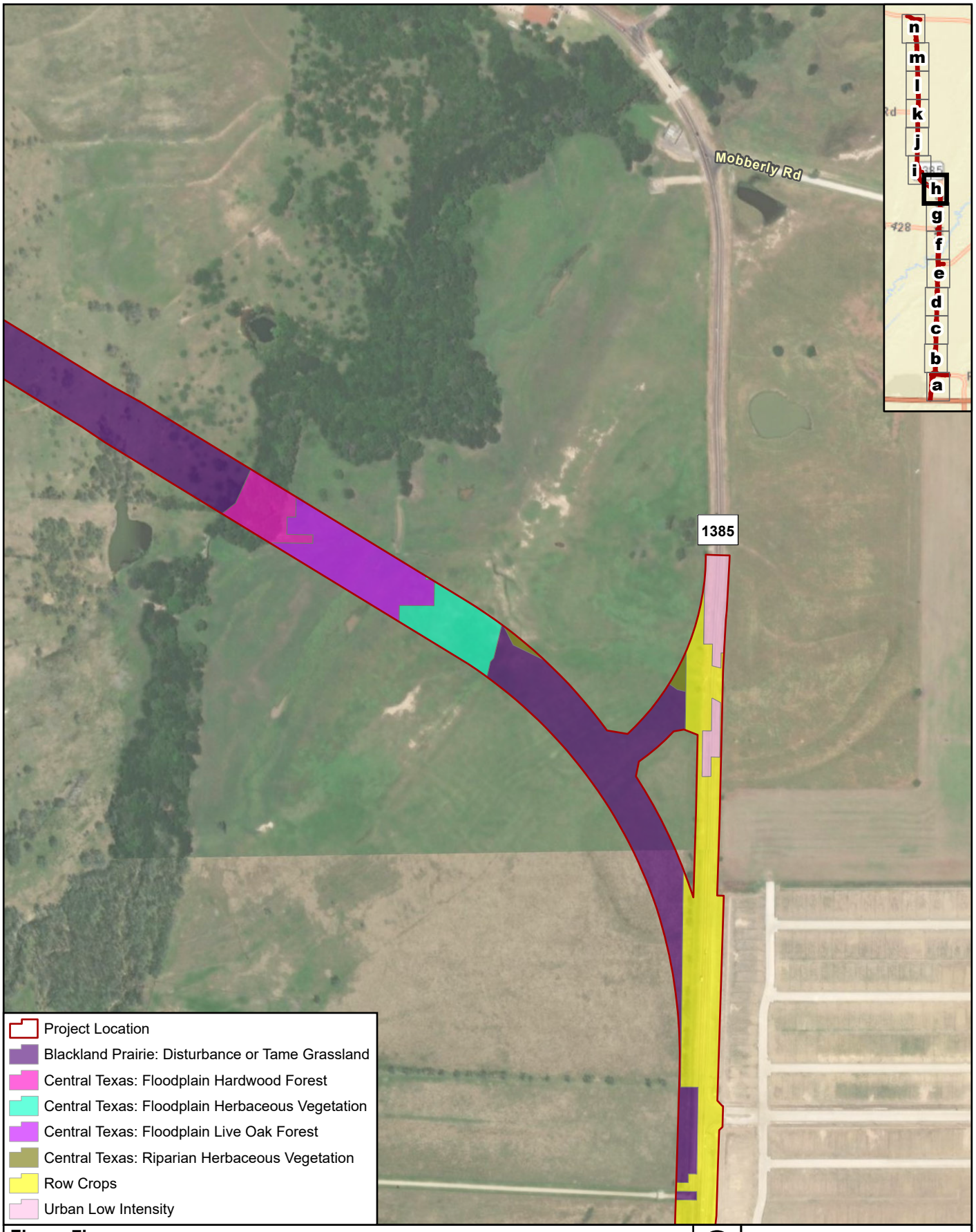

Figure 7h.
EMST Mapped Vegetation Types

FM 1385 Environmental Assessment

Data Source: TxDOT/TPWD EMST/MoRAP (2013)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 500 Feet
0 150 Meters

1 in = 500 feet
Scale: 1:6,000
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_Pro_Working.aprx

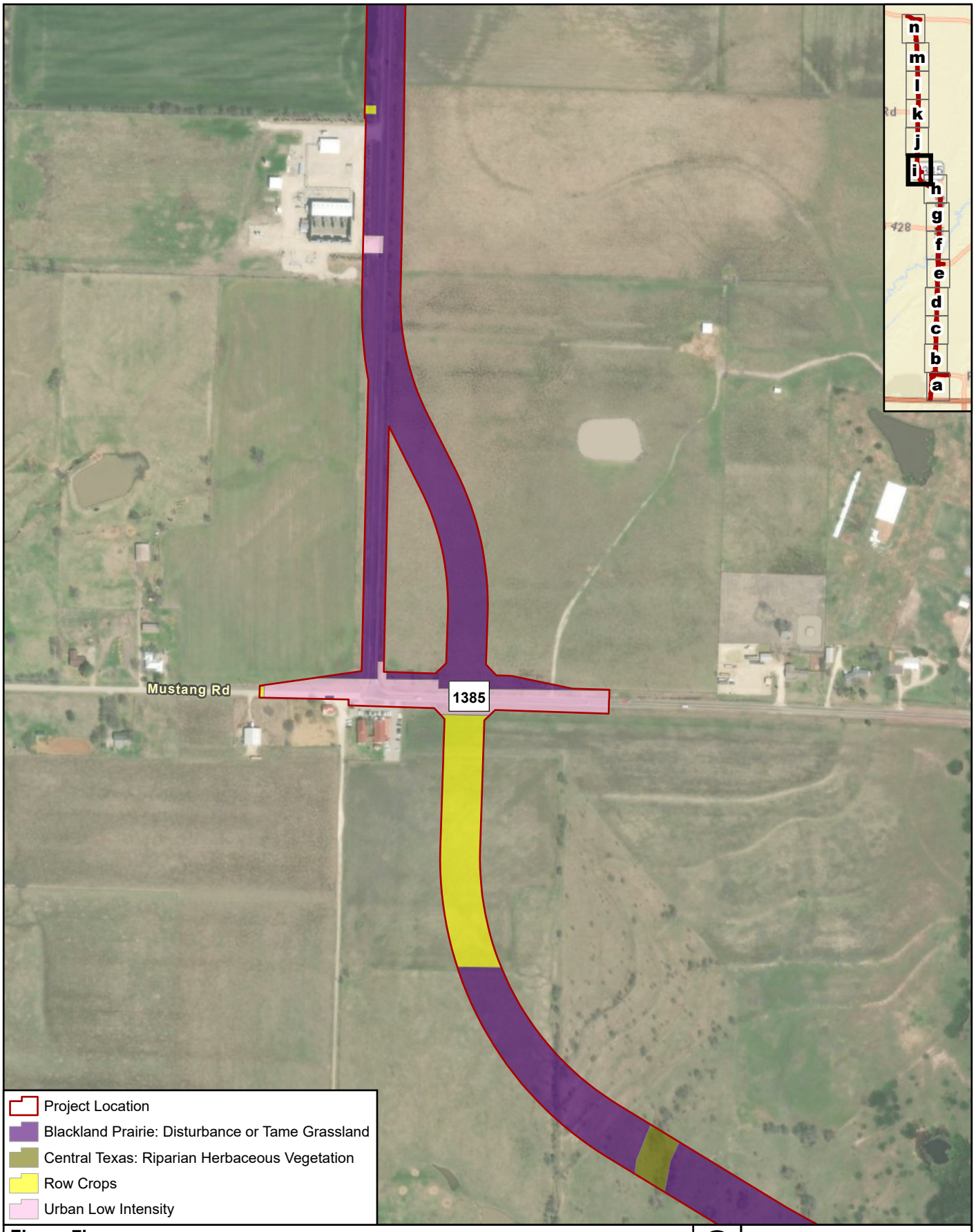

Figure 7i.
EMST Mapped Vegetation Types

FM 1385 Environmental Assessment

Data Source: TxDOT/TPWD EMST/MoRAP (2013)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 500 Feet
0 150 Meters

1 in = 500 feet
Scale: 1:6,000
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_Pro_Working.aprx

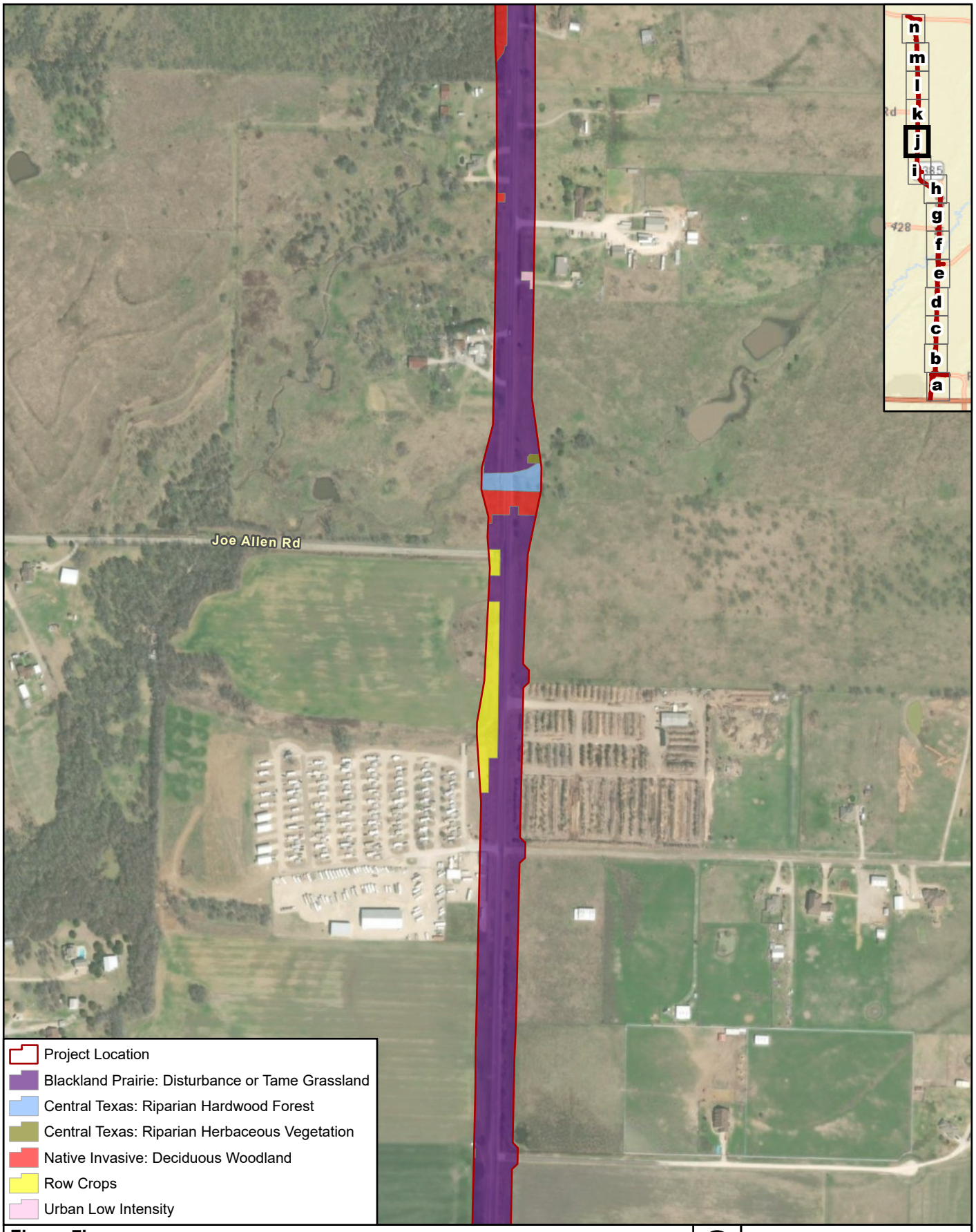

Figure 7j.
EMST Mapped Vegetation Types

FM 1385 Environmental Assessment

Data Source: TxDOT/TPWD EMST/MoRAP (2013)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 500 Feet
0 150 Meters

1 in = 500 feet
Scale: 1:6,000
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_Pro_Working.aprx

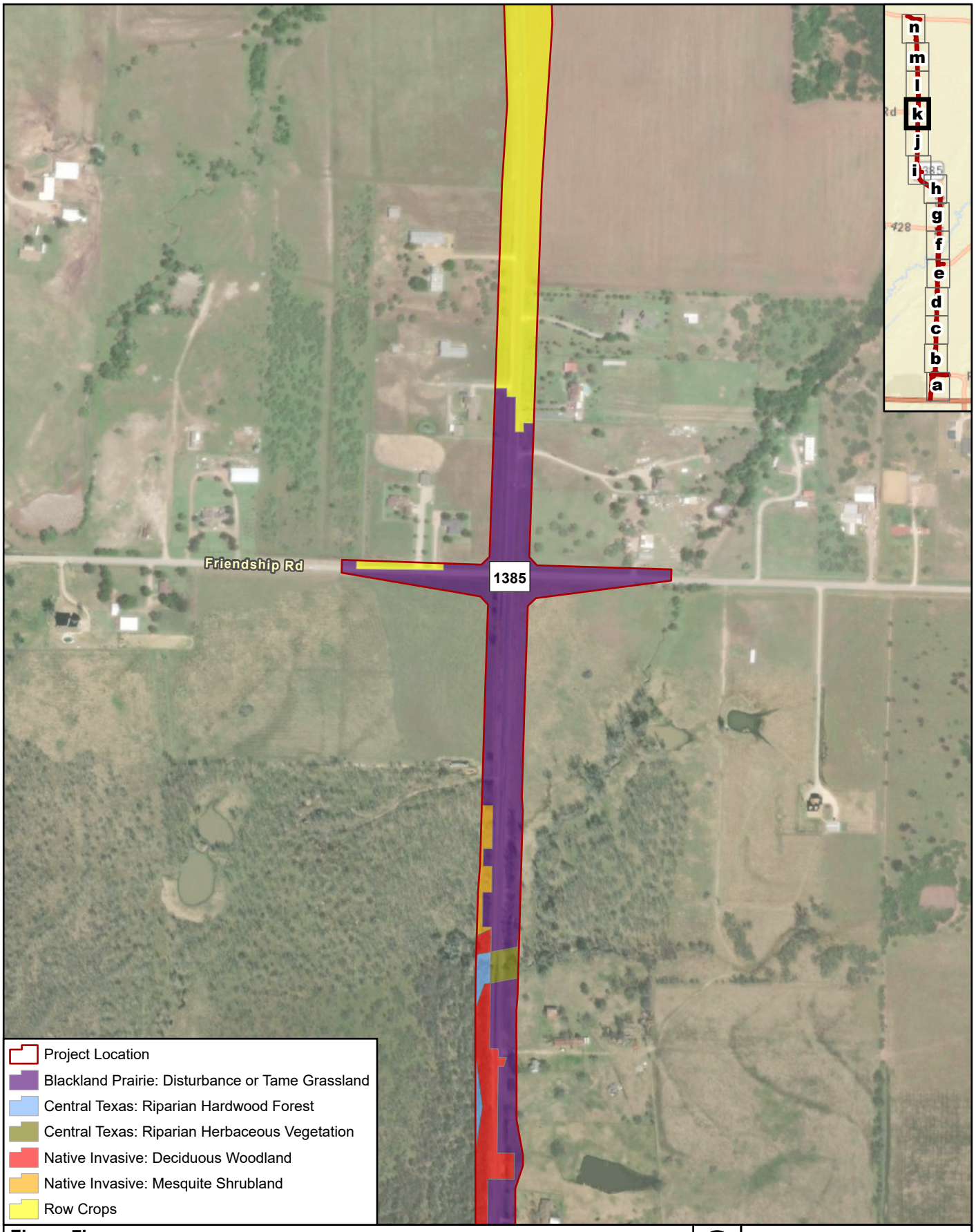

Figure 7k.
EMST Mapped Vegetation Types

FM 1385 Environmental Assessment

Data Source: TxDOT/TPWD EMST/MoRAP (2013)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 500 Feet
0 150 Meters

1 in = 500 feet
Scale: 1:6,000
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_Pro_Working.aprx

Figure 7l.
EMST Mapped Vegetation Types

FM 1385 Environmental Assessment

Data Source: TxDOT/TPWD EMST/MoRAP (2013)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 500 Feet
0 150 Meters

1 in = 500 feet
Scale: 1:6,000
Date: 3/20/2023

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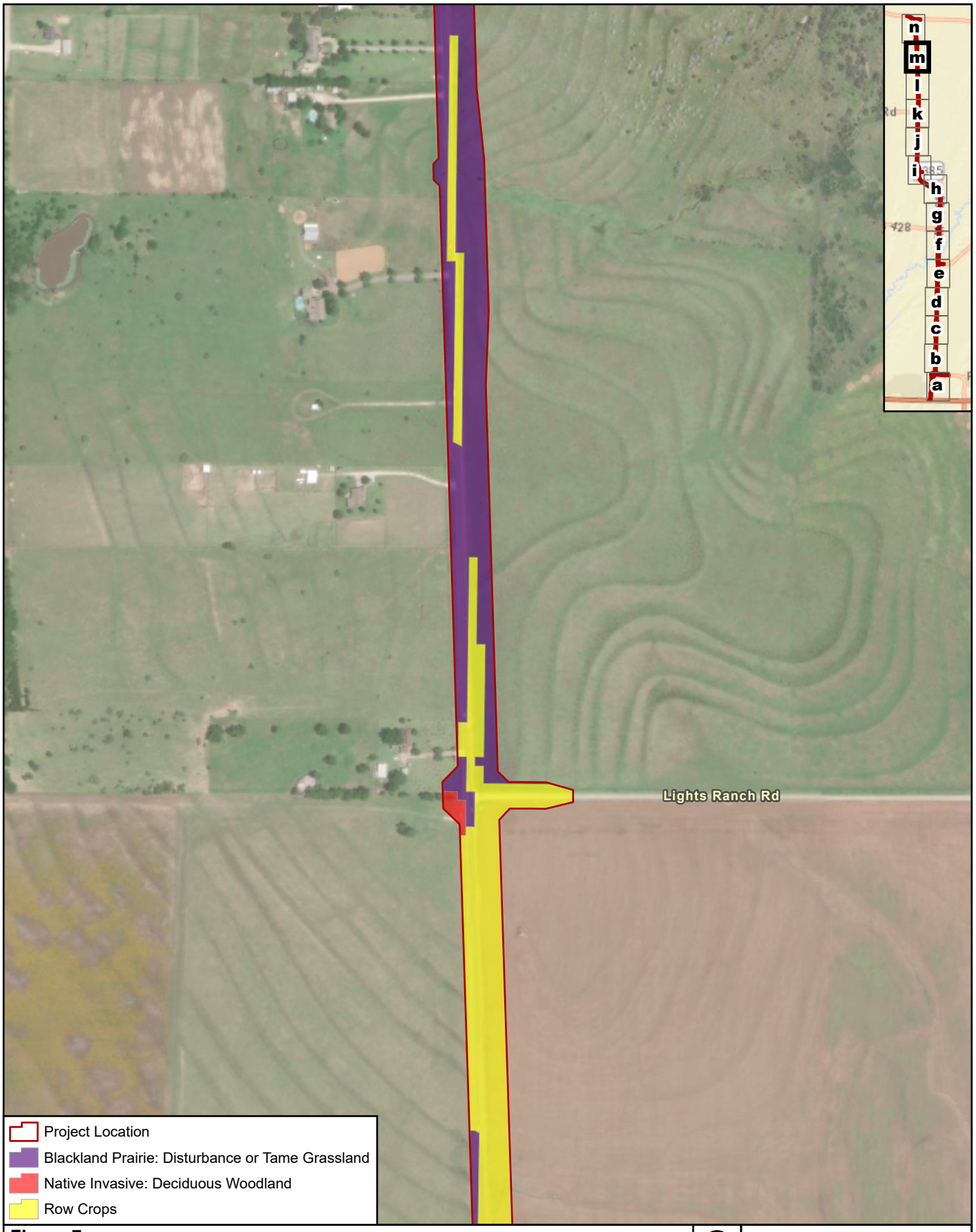

Figure 7m.
EMST Mapped Vegetation Types

FM 1385 Environmental Assessment

Data Source: TxDOT/TPWD EMST/MoRAP (2013)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 500 Feet
0 150 Meters

1 in = 500 feet
Scale: 1:6,000
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_Pro_Working.aprx

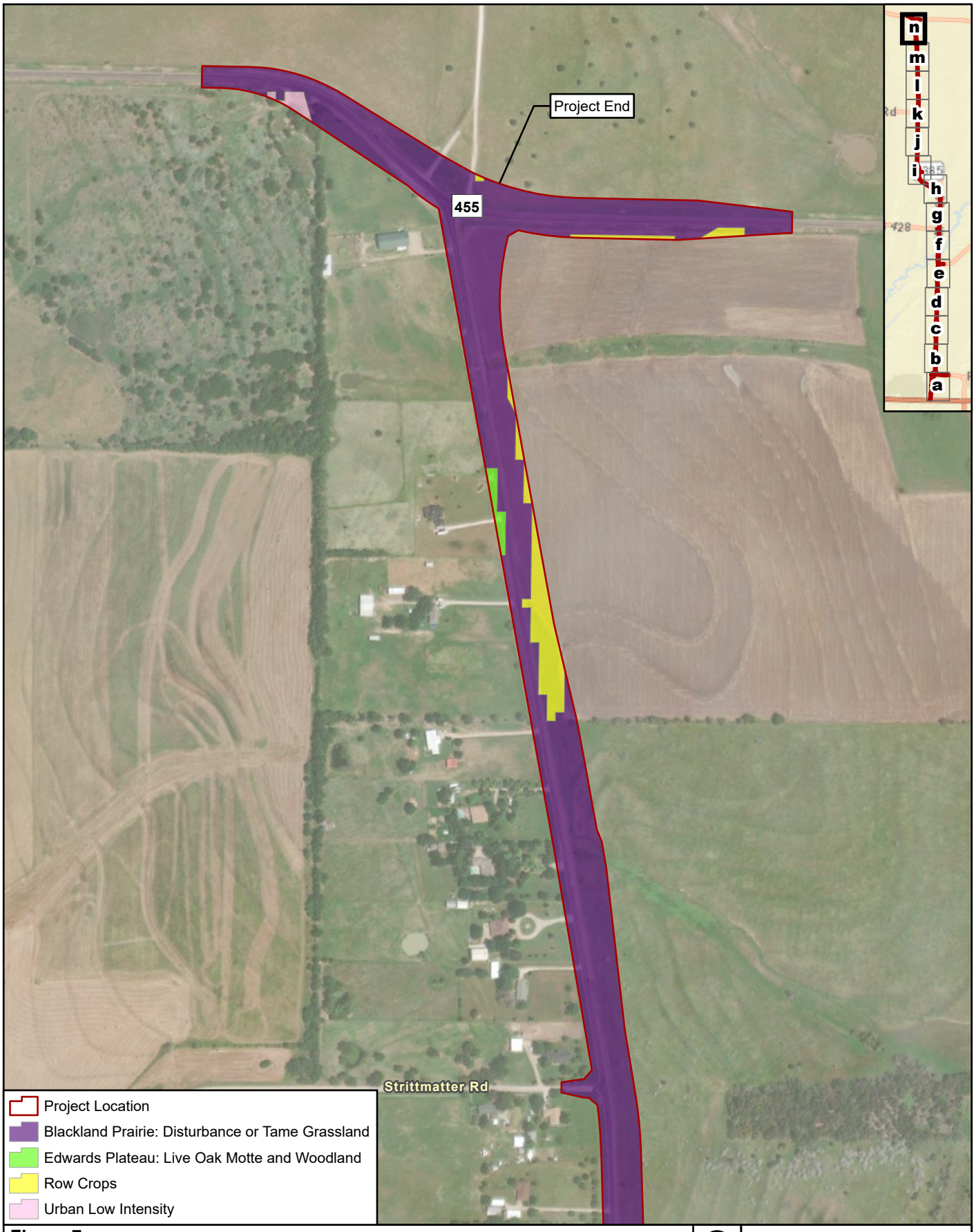

Figure 7n.
EMST Mapped Vegetation Types

FM 1385 Environmental Assessment

Data Source: TxDOT/TPWD EMST/MoRAP (2013)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 500 Feet
0 150 Meters

1 in = 500 feet
Scale: 1:6,000
Date: 3/20/2023

U:\23530016\4\03_data\gis_cad\gis\FM1385_Pro_Working.aprx

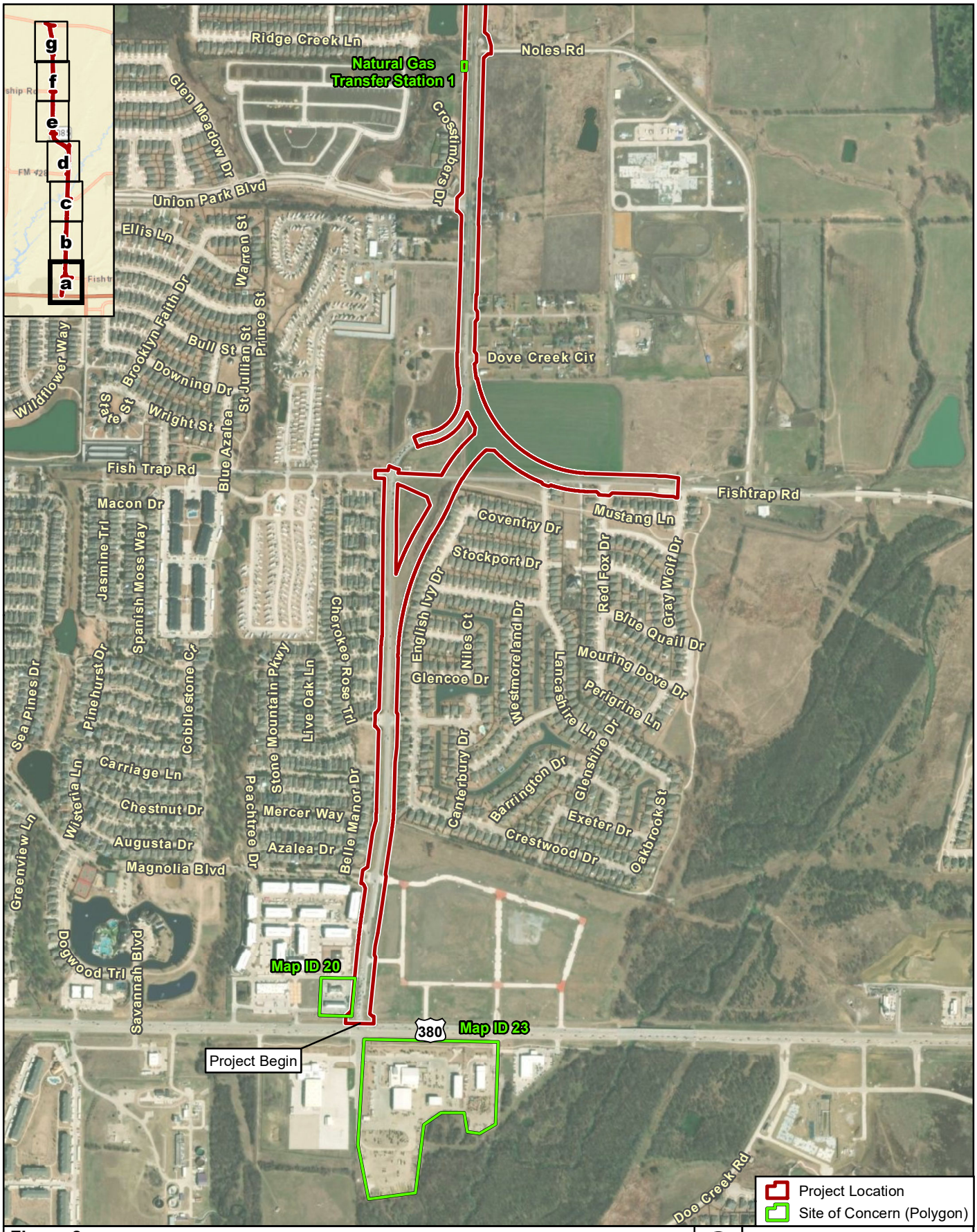

Figure 8a.
Potential Hazardous Materials Sites within the Project Area
FM 1385 Environmental Assessment

Data Sources: CP&Y (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 1,000 Feet
0 300 Meters

1 in = 1,000 feet
Scale: 1:12,000
Date: 3/20/2023

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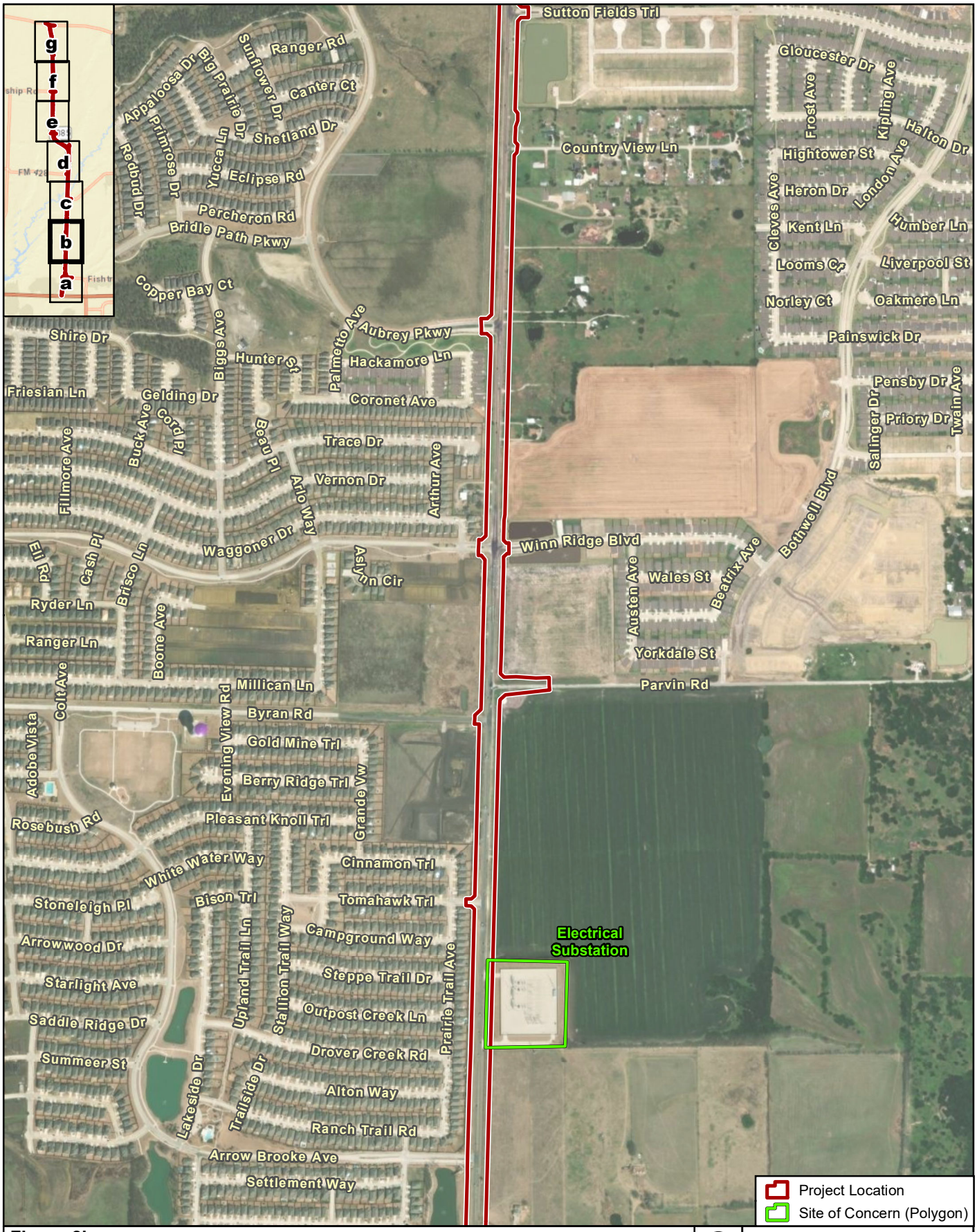

Figure 8b.
Potential Hazardous Materials Sites within the Project Area
FM 1385 Environmental Assessment

Data Sources: CP&Y (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 1,000 Feet
0 300 Meters

1 in = 1,000 feet
Scale: 1:12,000
Date: 3/20/2023

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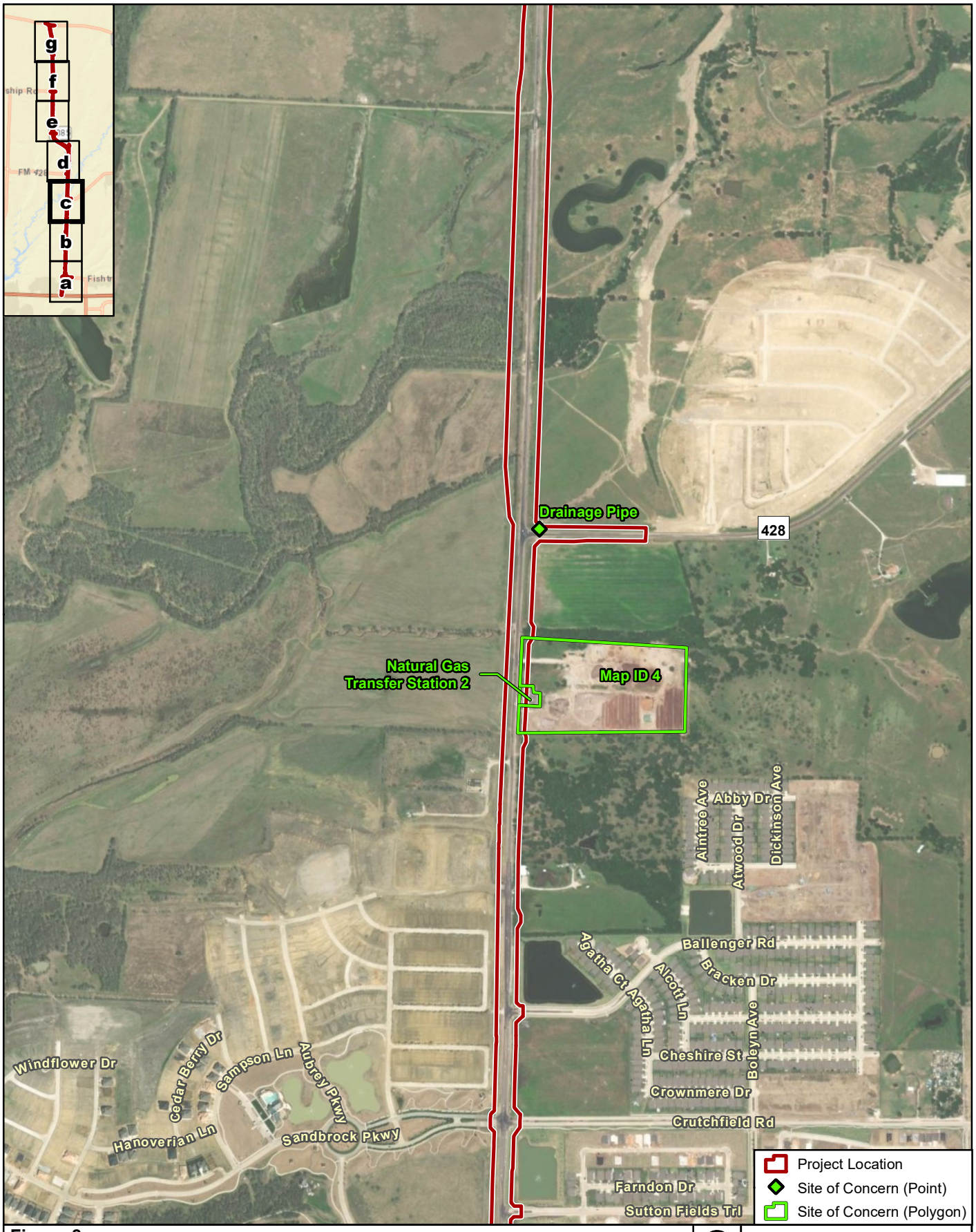

Figure 8c.
Potential Hazardous Materials Sites within the Project Area
FM 1385 Environmental Assessment

Data Sources: CP&Y (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 1,000 Feet
0 300 Meters

1 in = 1,000 feet
Scale: 1:12,000
Date: 3/20/2023

U:\23530164\03_data\gis_cad\gis\FM1385_EA_Figure 8_Hazmat_20230320_TLS.mxd

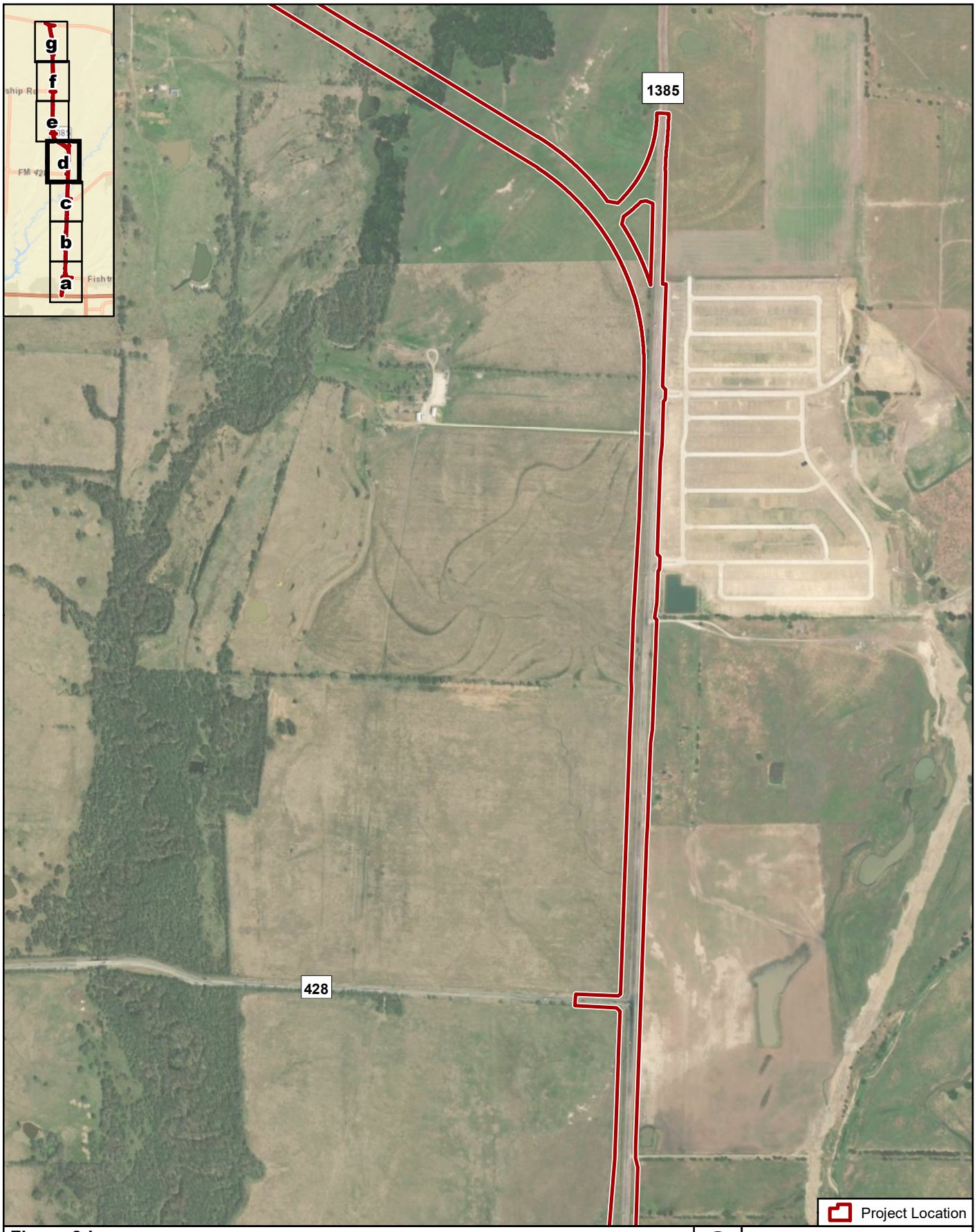

Figure 8d.
Potential Hazardous Materials Sites within the Project Area
FM 1385 Environmental Assessment

Data Sources: CP&Y (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 1,000 Feet
0 300 Meters

1 in = 1,000 feet
Scale: 1:12,000
Date: 3/20/2023

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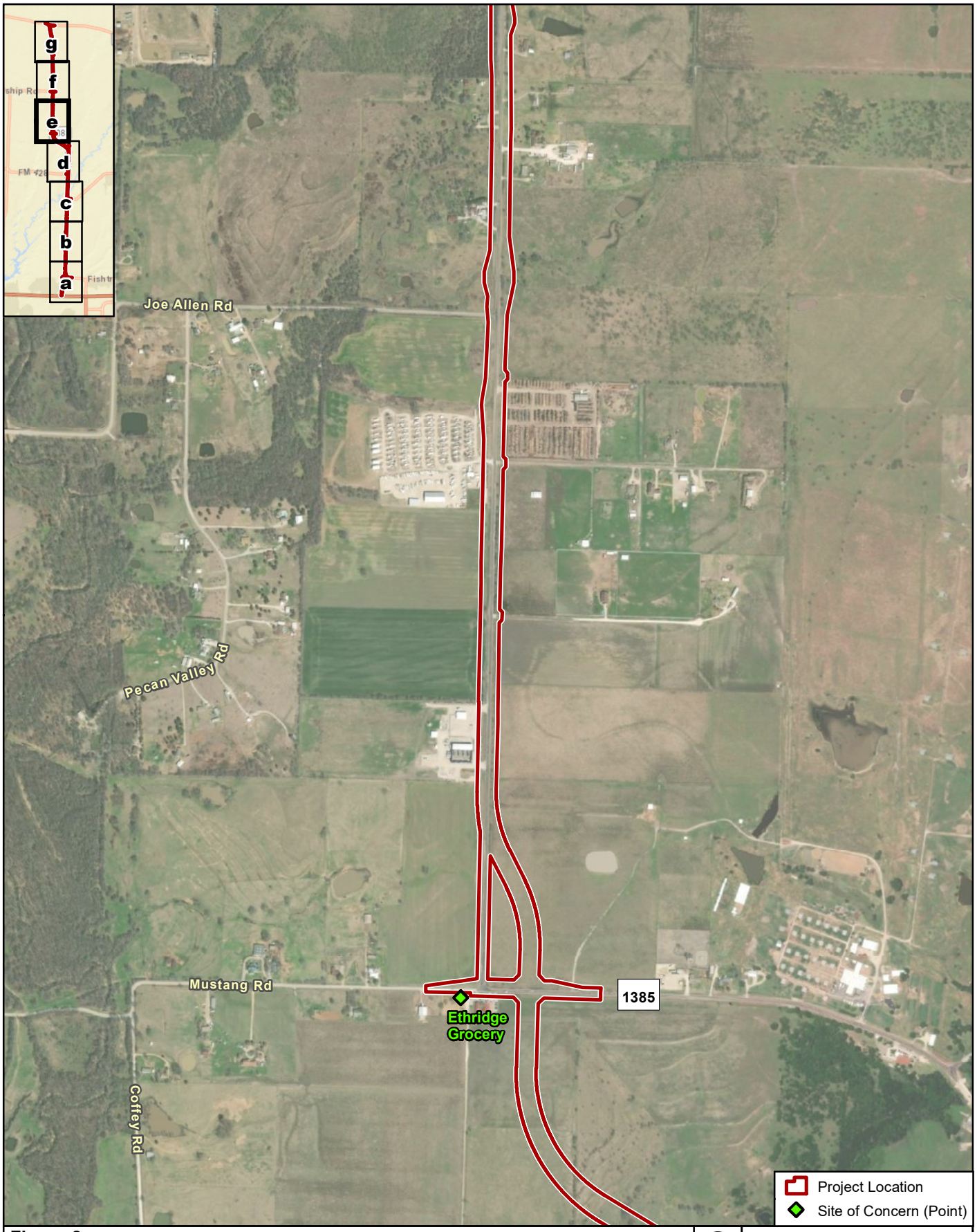

Figure 8e.
Potential Hazardous Materials Sites within the Project Area
FM 1385 Environmental Assessment

Data Sources: CP&Y (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 1,000 Feet
0 300 Meters

1 in = 1,000 feet
Scale: 1:12,000
Date: 3/20/2023

U:\23530164\03_data\gis_cad\gis\FM1385_EA_Figure 8_Hazmat_20230320_TLS.mxd

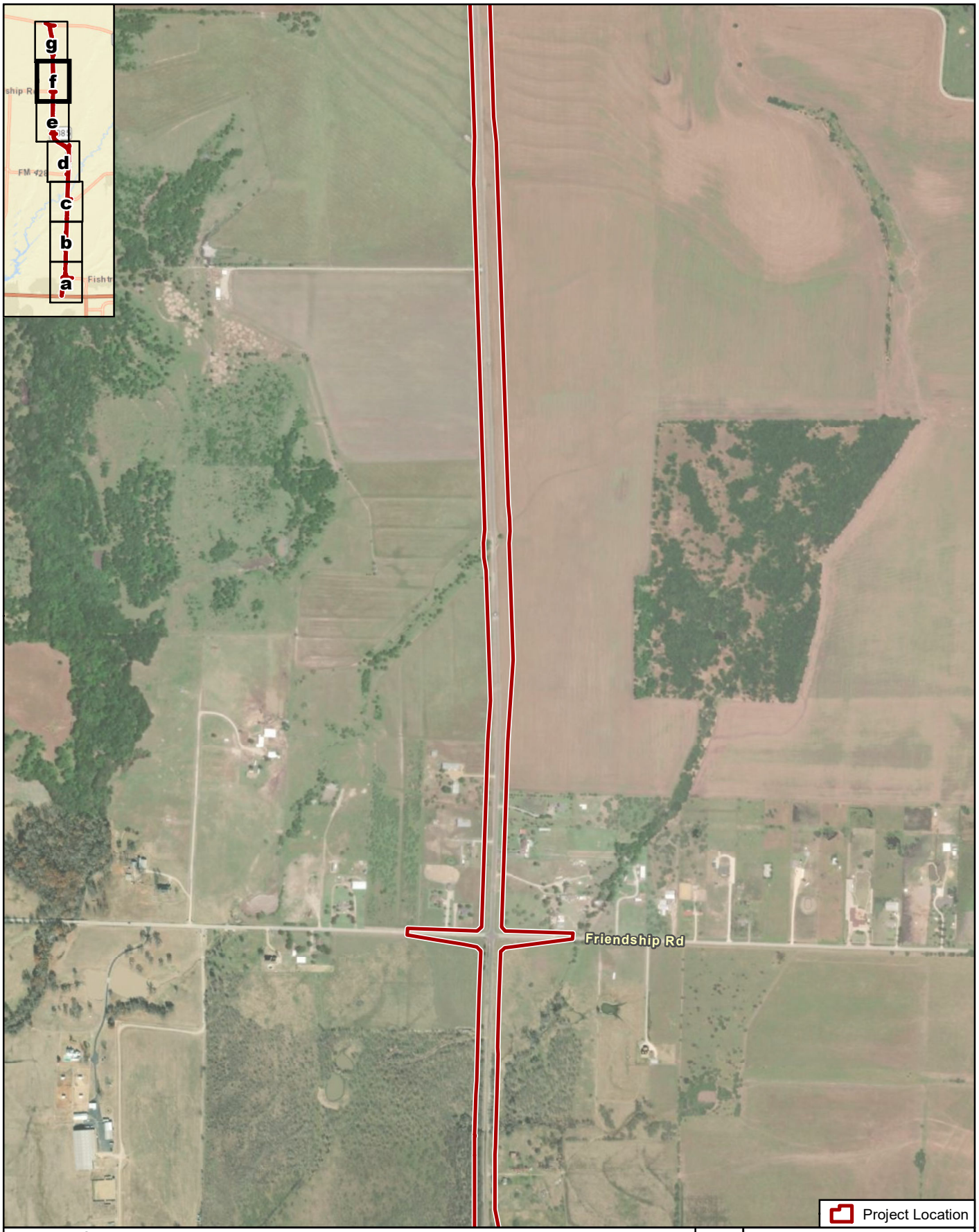

Figure 8f.
Potential Hazardous Materials Sites within the Project Area
FM 1385 Environmental Assessment

Data Sources: CP&Y (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 1,000 Feet
0 300 Meters

1 in = 1,000 feet
Scale: 1:12,000
Date: 3/20/2023

U:\23530016\4\03_data\gis_cad\gis\FM1385_EA_Figure 8_Hazmat_20230320_TLS.mxd

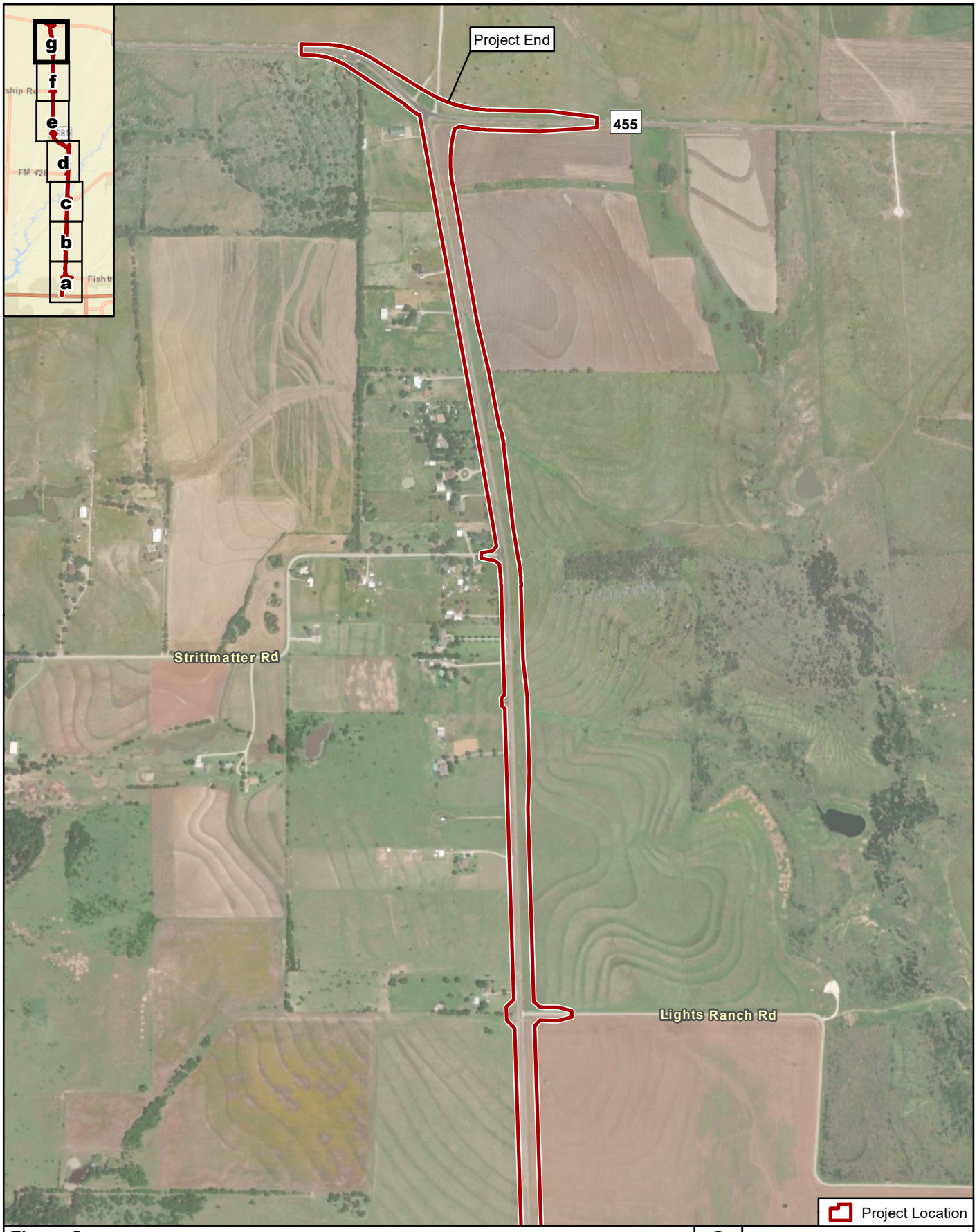

Figure 8g.
Potential Hazardous Materials Sites within the Project Area
FM 1385 Environmental Assessment

Data Sources: CP&Y (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 1,000 Feet
0 300 Meters

1 in = 1,000 feet
Scale: 1:12,000
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 8_Hazmat_20230320_TLS.mxd

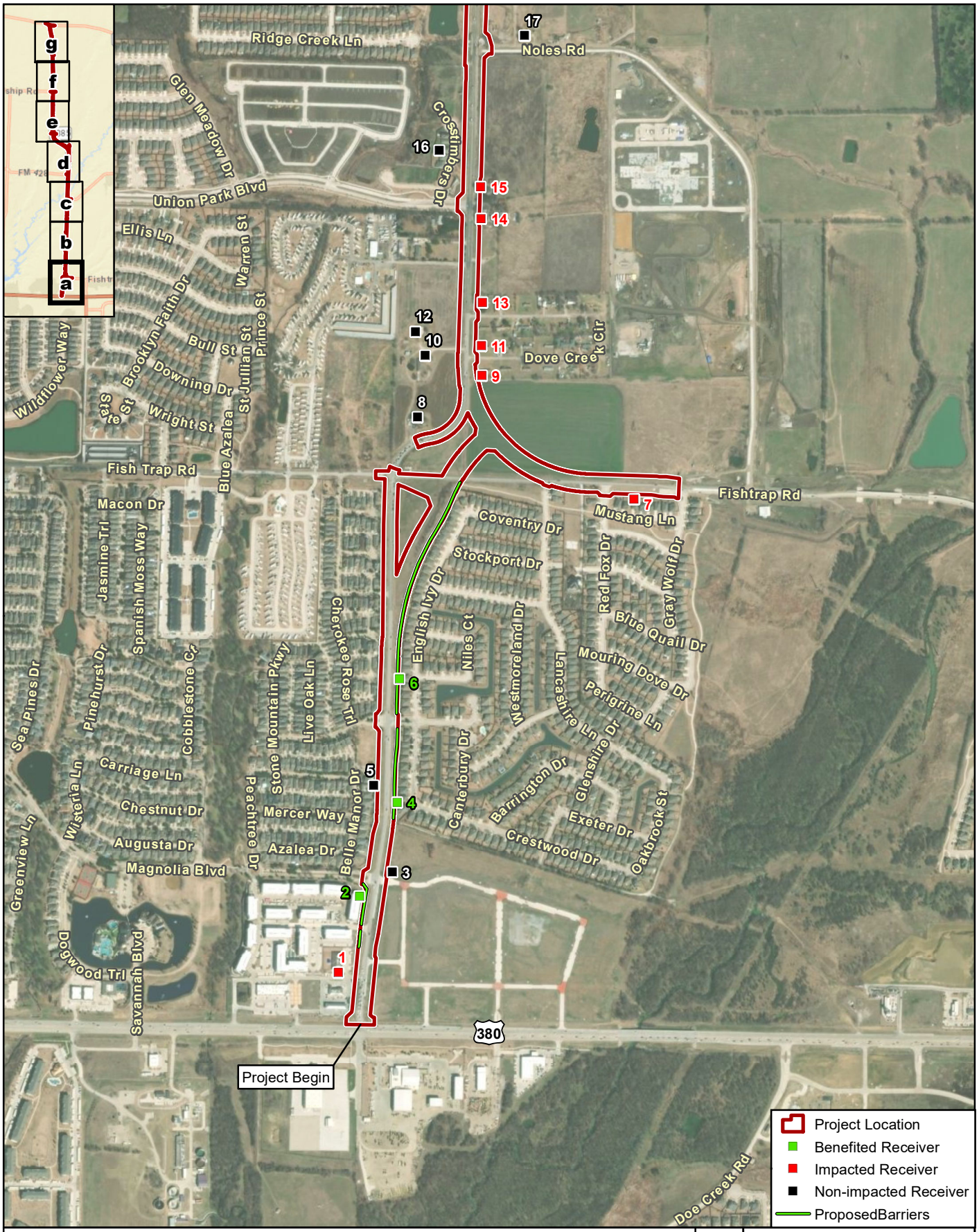

Figure 9a.
Noise Receivers and Proposed Noise Walls within the Project Area
FM 1385 Environmental Assessment

Data Sources: CP&Y (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 1,000 Feet
0 300 Meters

1 in = 1,000 feet
Scale: 1:12,000
Date: 3/20/2023

U:\23530016\4\03_data\gis_cad\gis\FM1385_EA_Figure 9_Noise_20230320_TLS.mxd

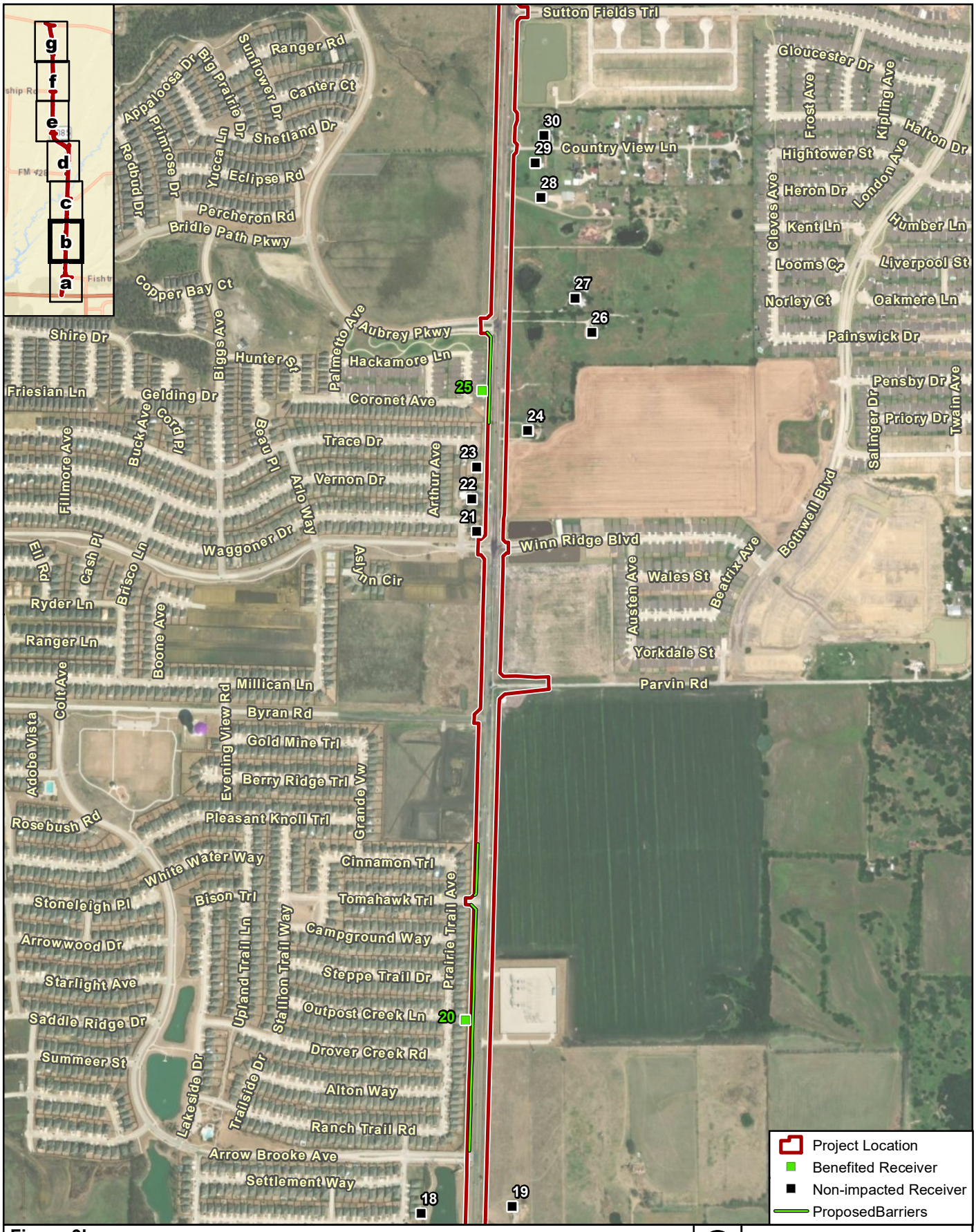

Figure 9b.
Noise Receivers and Proposed Noise Walls within the Project Area
FM 1385 Environmental Assessment

Data Sources: CP&Y (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 1,000 Feet
0 300 Meters

1 in = 1,000 feet
Scale: 1:12,000
Date: 3/20/2023

U:\23530016\4\03_data\gis_cad\gis\FM1385_EA_Figure 9_Noise_20230320_TLS.mxd

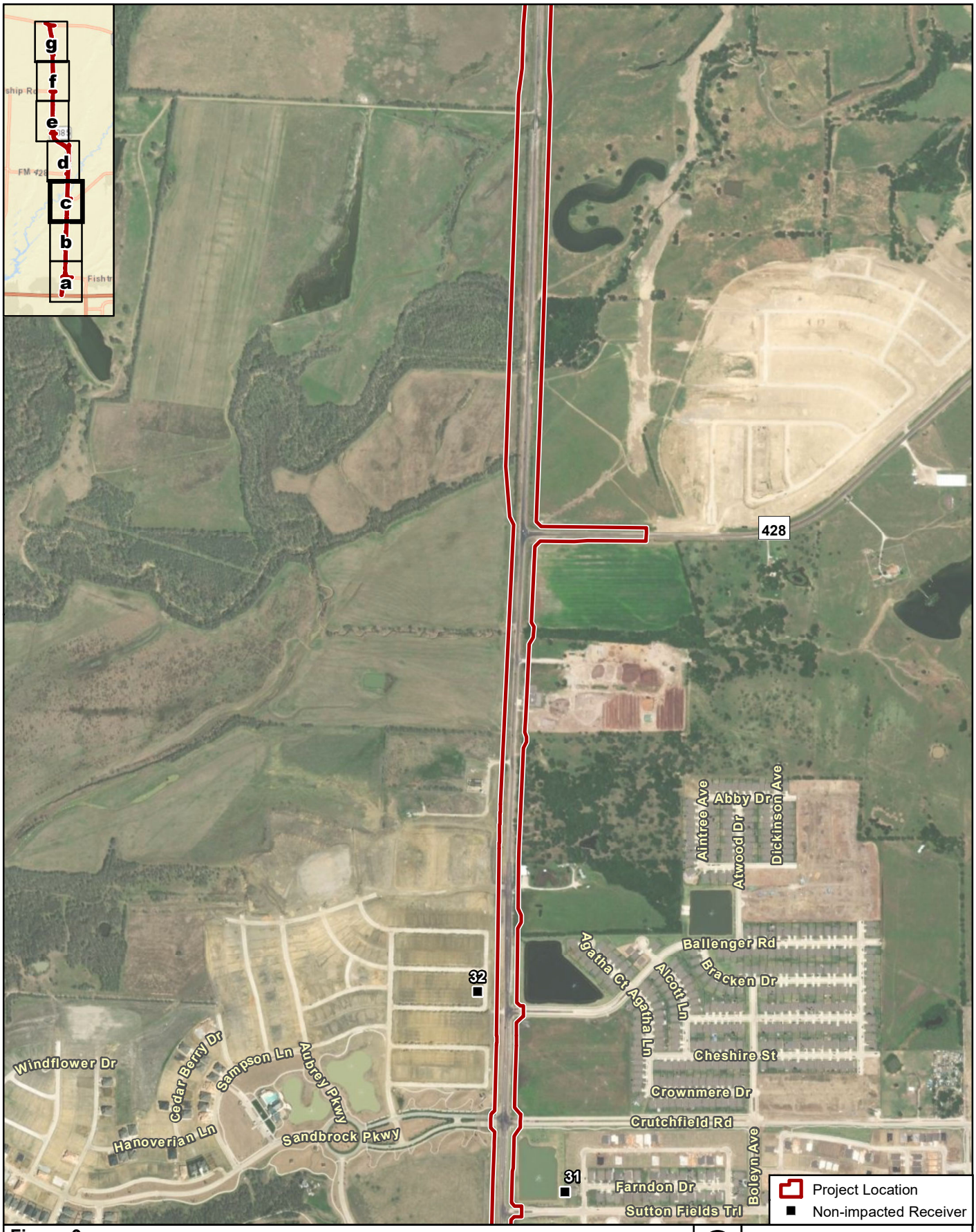

Figure 9c.
Noise Receivers and Proposed Noise Walls within the Project Area
FM 1385 Environmental Assessment

Data Sources: CP&Y (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 1,000 Feet
0 300 Meters

1 in = 1,000 feet
Scale: 1:12,000
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 9_Noise_20230320_TLS.mxd

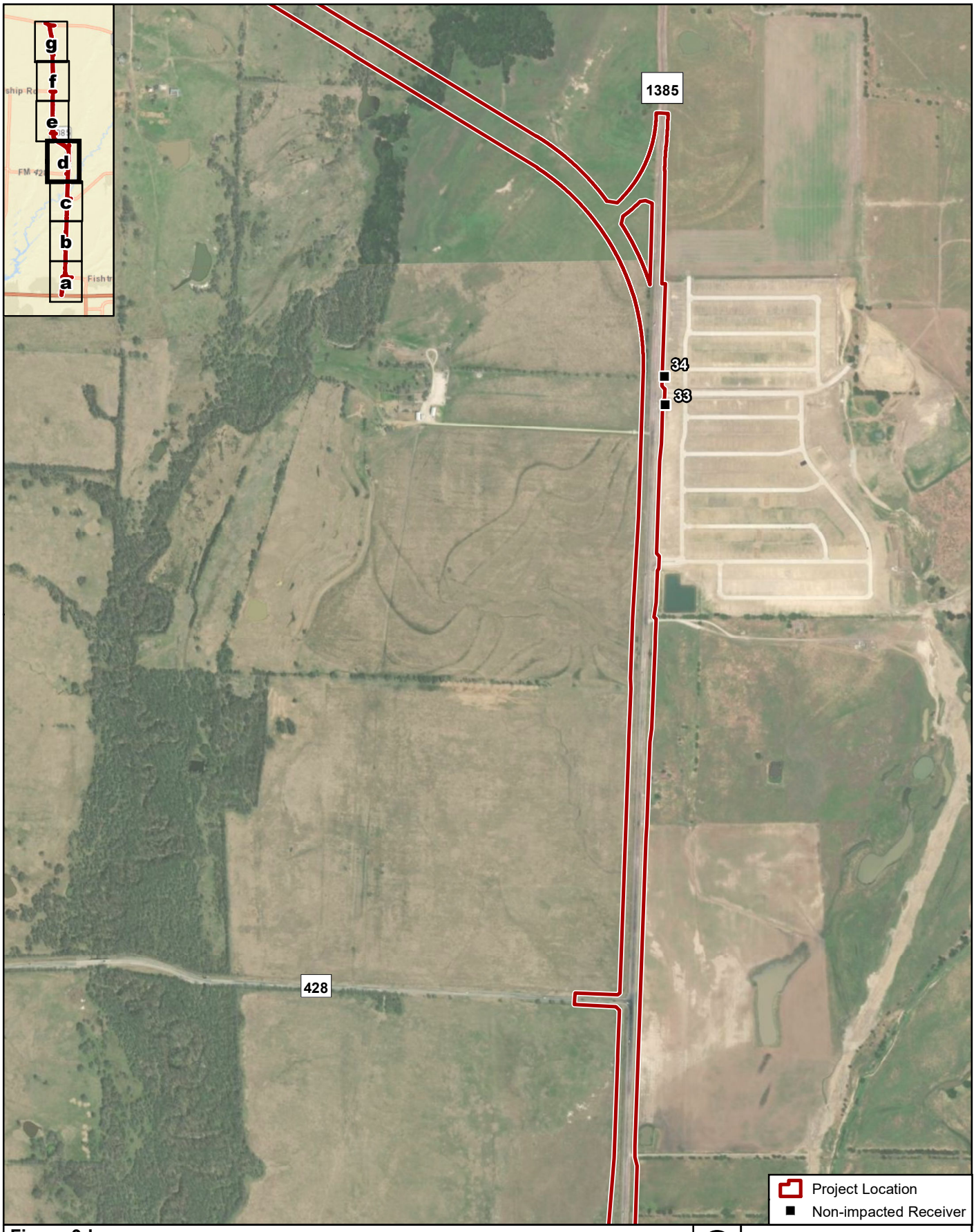

Figure 9d.
Noise Receivers and Proposed Noise Walls within the Project Area
FM 1385 Environmental Assessment

Data Sources: CP&Y (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 1,000 Feet
0 300 Meters

1 in = 1,000 feet
Scale: 1:12,000
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 9_Noise_20230320_TLS.mxd

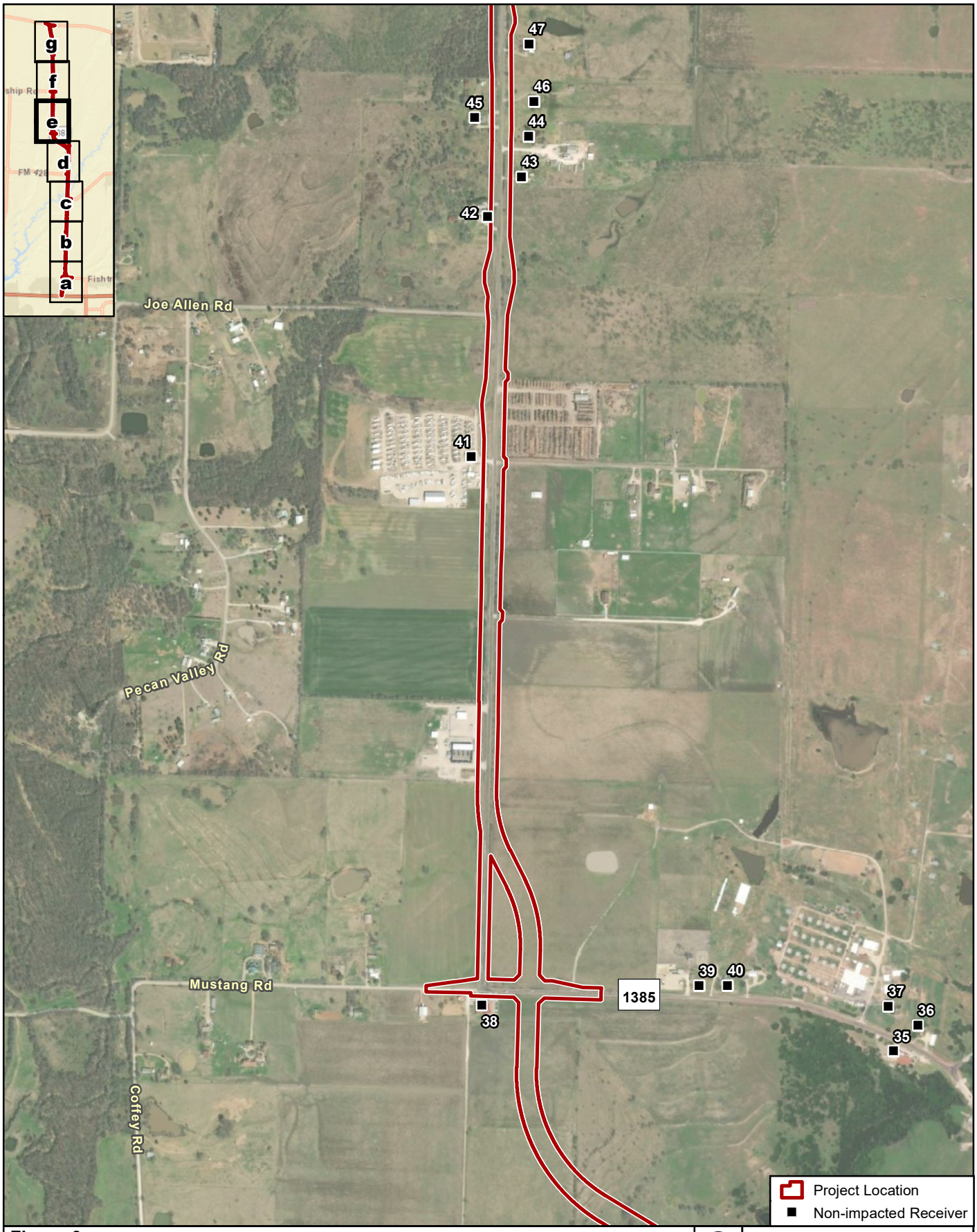

Figure 9e.
Noise Receivers and Proposed Noise Walls within the Project Area
FM 1385 Environmental Assessment

Data Sources: CP&Y (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 1,000 Feet
0 300 Meters

1 in = 1,000 feet
Scale: 1:12,000
Date: 3/20/2023

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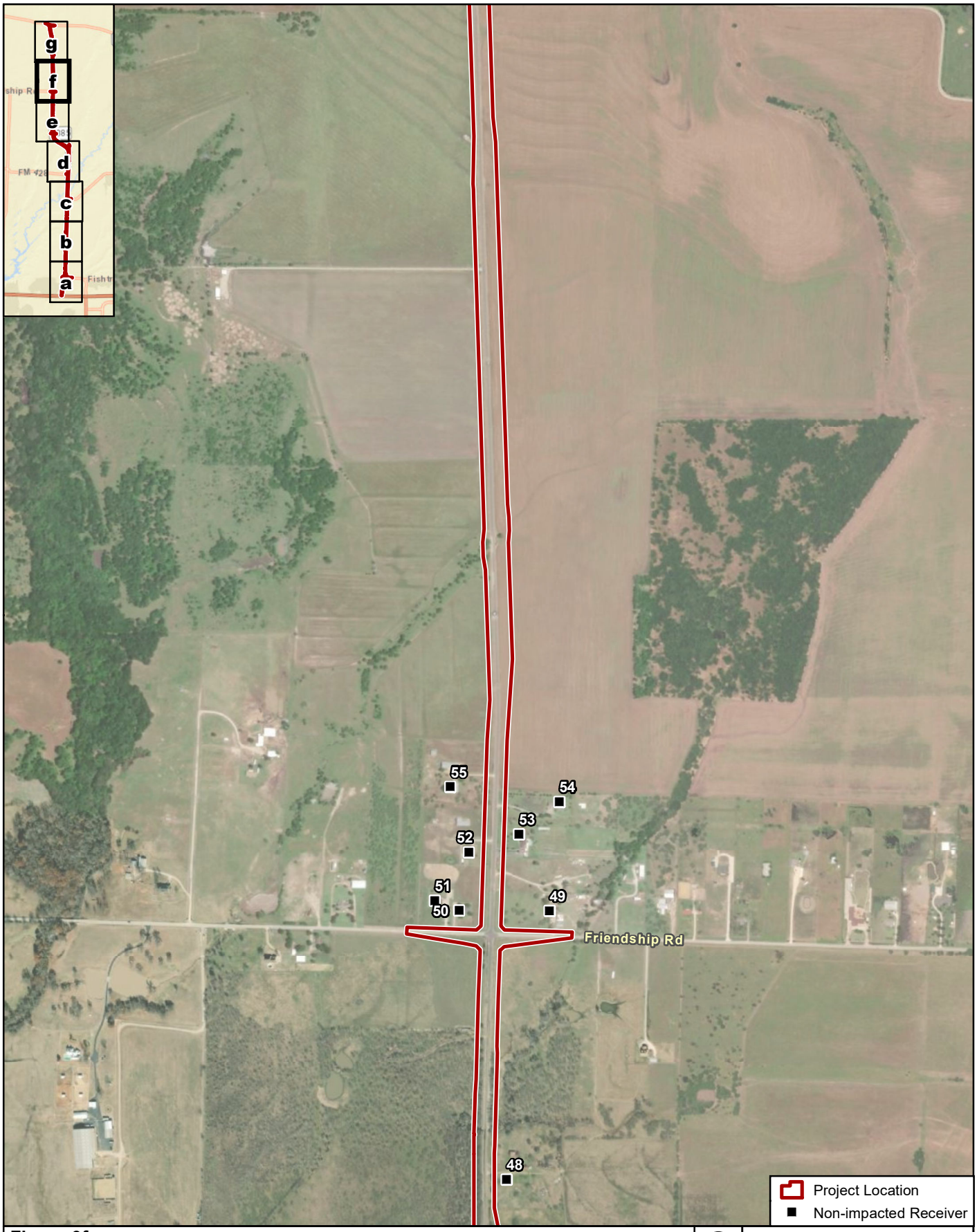

Figure 9f.
Noise Receivers and Proposed Noise Walls within the Project Area
FM 1385 Environmental Assessment

Data Sources: CP&Y (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 1,000 Feet
0 300 Meters

1 in = 1,000 feet
Scale: 1:12,000
Date: 3/20/2023

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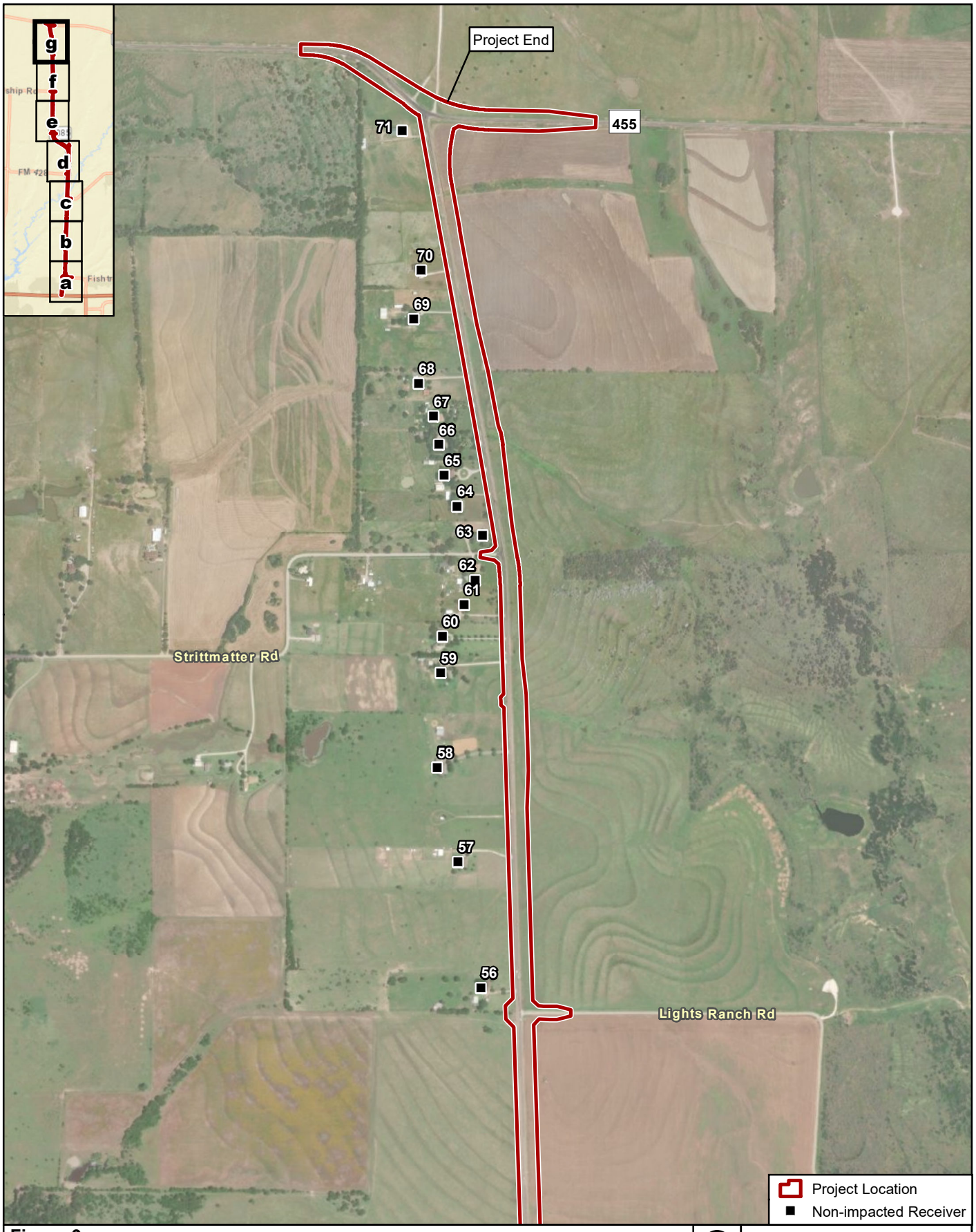


Figure 9g.
Noise Receivers and Proposed Noise Walls within the Project Area
FM 1385 Environmental Assessment

Data Sources: CP&Y (2022)
Aerial Source: Maxar (03/2021)

CSJ: 1315-01-030

0 1,000 Feet
0 300 Meters

1 in = 1,000 feet
Scale: 1:12,000
Date: 3/20/2023

U:\235300164\03_data\gis_cad\gis\FM1385_EA_Figure 9_Noise_20230320_TLS.mxd

Appendix F

Resource Agency Coordination

THC Coordination

MEMO

November 22, 2022

TO: Administrative File
From: Rebekah Dobrasko

District: Dallas
County: Denton
CSJ#: 1315-01-030
Highway: FM 1385
Limits: From US 380 to FM 455
Let Date: November 2025

SUBJECT: Internal review under the Section 106 Programmatic Agreement (Section 106 PA) among the Texas Department of Transportation, Texas State Historic Preservation Officer, Advisory Council on Historic Preservation, and Federal Highway Administration; and the Memorandum of Understanding (MOU) between the Texas Historical Commission and the Texas Department of Transportation

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

Project Description

See the attached project description from TxDOT's Environmental Compliance Oversight System (ECOS) that describes the project, setting, and amount of right-of-way (ROW) and easements necessary for the project.

Determination of Eligibility:

TxDOT historians reviewed the National Register of Historic Places (NRHP), the list of State Antiquities Landmarks (SAL), the list of Recorded Texas Historic Landmarks (RTHL), and TxDOT files and found no historically significant resources previously documented within the area of potential effects (APE). TxDOT defined the APE for this project as 150 feet from any existing and proposed new ROW and easements along existing road alignments and 300 feet from new location alignment necessary for this project.

TxDOT historians performed a reconnaissance survey and identified 24 historic-age (built prior to 1980) properties within the project APE. TxDOT recommends none of the properties as eligible for the NRHP due to lack of historic significance or lack of historic integrity.

Determination of Effects:
Based on the results of the historic resources reconnaissance survey, there are no historic properties in the project APE. Therefore, pursuant to Stipulation IX, Appendix 6 "Undertakings with the Potential to Cause Effects per 36 CFR 800.16(i)" of the Section 106 PA and the MOU, TxDOT historians determined there are no historic properties affected by this project. In compliance with the Antiquities Code of Texas and the MOU, TxDOT historians determined project activities have no potential for adverse effects. Individual project coordination with SHPO is not required.

Section Director DocuSigned by: Rebekah Dobrasko 0F414A49C0E44B3... for TxDOT 11/22/2022

Rebekah Dobrasko Date

Back To List

- WPD Section I - Project Definition
- WPD Section II - Tool
- WPD Section III - Project Work Plan
- WPD Section IV - Findings

Print this Page

Project Definition

Project Name: 1315-01-030 FM 1385 Reconstruction and Widen

CSJ: 1315 - 01 - 030

Anticipated Environmental Classification: EA

No — Is this an FHWA project that normally requires an EIS per 23 CFR 771.115(a)?

Project Association(s)

DCIS Project Funding and Location

DCIS & P6 Letting Dates

DCIS Project Description

Jurisdiction

No — Does the project cross a state boundary, or require a new Presidential Permit or modification of an existing Presidential Permit?

Who is the lead agency responsible for the approval of the entire project?

☑ FHWA - Assigned to TxDOT ☐ TxDOT - No Federal Funding ☐ FHWA - Not Assigned to TxDOT

TXDOT — Who is the project sponsor as defined by 43 TAC 2.7?

No — Is a local government's or a private developer's own staff or consultant preparing the CE documentation, EA or EIS?

Yes — Does the project require any federal permit, license, or approval?

☑ USACE ☐ IBWC ☐ USCG ☐ NPS ☐ IAJR ☐ Other

No — Does the project occur, in part or in total, on federal or tribal lands?

Environmental Clearance Project Description

Project Area

Typical Depth of Impacts: 5 (Feet) Maximum Depth of Impacts: 55 (Feet)

New ROW Required: 130 (Acres)

New Perm. Easement Required: 0 (Acres) New Temp. Easement Required: 0 (Acres)

Project Description

Describe Limits of All Activities:

The Texas Department of Transportation (TxDOT) is proposing to reconstruct and widen FM 1385 from US 380 to FM 455 in Denton County. The project would include construction of a 6-lane divided urban roadway from US 380 to FM 428 West and a 4-lane interim (6-lane ultimate) divided urban roadway from FM 428 West to FM 455. A new location realignment of the central portion of FM 1385 at Mustang Road is proposed to directly connect FM 1385 to the north and south without requiring vehicles to travel along the Mustang Road portion of the existing FM 1385. Additionally, a new-location realignment of the southern portion of FM 1385 at Gee Road is also proposed. This would flatten out the existing "S" curve at Gee Road and improve mobility along FM 423 at the intersection with FM 1385.

The existing typical right-of-way width varies between 80 to 120 feet. The proposed typical right-of-way width is 140ft and varies between 130 to 245 feet. The project is located on 160 acres of existing right-of-way and proposes to acquire 130 acres of new right-of-way for a total project acreage of 290 acres.

The proposed improvements would require additional ROW along the project area (totaling no more than 130 acres) Temporary and/or permanent easements is not anticipated. A minimum of two potential displacements are anticipated. The proposed improvements are shown in the attached plans.

Describe Project Setting:

The proposed project is located within the suburban and rural communities associated with the Cities of Little Elm, Aubrey, Pilot Point, Celina, Paloma Point, and the Town of Prosper. The southern portion of the project area is characterized by the presence of several densely constructed single-family residential subdivisions. Whereas, north of Bonar Road, the project area transitions to low density single-family residences, agricultural land, and undeveloped parcels. Other than the FM 1385 intersections with FM 455 and US 380 (University Drive), there are no other major traffic generators adjacent to the project area.

The project area is primarily a mixture of agricultural land (row crop and hay production). The northern extent is characterized by undeveloped tracts of disturbance grasslands and the southern extent is mostly low and high intensity urban vegetation communities. Several stands of riparian vegetation are present along FM 1385 where creeks and tributaries cross the roadway. Mustang Creek and Little Elm Creek are the largest water bodies crossing FM 1385; however, numerous unnamed tributaries to both creeks are mapped within the project area. Several stock tanks and stormwater detention ponds are located immediately adjacent to the proposed project area.

No archeological or historical sites have been identified within the APE or within 150 feet of the area of potential effects (APE). No known cemetery sites occur within the APE or within 150 feet of the APE There are no identified historic districts, historic properties (including SALs), or Historic Bridges of Texas located within the project area.

Traffic generators are located within the project limits at the intersections of US 380, FM 455, Mustang Road, and Gee Road. No negative impacts to access and travel patterns are anticipated because of the proposed project. Overall, the proposed project is anticipated to result in beneficial impacts to access and travel patterns for the immediate communities.

Describe Existing Facility:

Within the project limits, the current FM 1385 facility varies between a two-lane rural undivided roadway and a two-lane divided roadway with a center turn lane. The existing roadway has 12-foot-wide lanes. The existing right-of-way varies from 80 to 120 feet wide and the central portion of the existing FM 1385 roadway within the project area ties into Mustang Road. This Mustang Road portion of the existing roadway consists of a sharp curve in the roadway as well as a three-way-intersection. FM 1385 at Gee Road includes an existing S-curve roadway alignment.

Roadside drainage is conveyed through grass-lined ditches along FM 1385. Three bridges (Mustang Creek, Little Elm Creek Relief, and Little Elm Creek) and one bridge class culvert (Long Branch) are located along FM 1385 within the project area. The existing typical right-of-way width varies between 80 to 120 feet.

Describe Proposed Facility:

The proposed FM 1385 would be reconstructed and widened from an existing two-lane rural highway to ultimately a six-lane divided urban roadway. FM 1385 from US 380 to FM 428 West is proposed to be constructed as a 6-lane facility while the roadway from Fm 428 West to FM 455 is proposed to be constructed as a 4-lane interim facility.

Most of the project area follows the existing FM 1385 roadway alignment; however, two areas are being proposed for new location roadway realignments to address mobility and safety concerns:

- The 0.9-mile-long realignment is located south of Mustang Road and would directly connect FM 1385 to the north and to the south without requiring vehicles to travel along the Mustang Road portion of the existing FM 1385.

- The 0.45-mile realignment is located southeast of the current alignment. This proposed improvement would flatten out the existing “S” curve at Gee Road and improve mobility at this intersection with FM 1385.

The bridges and culverts (Mustang Creek bridge, Little Elm Creek Relief bridge, Little Elm Creek bridge, and Long Branch bridge class culvert) would be reconstructed and widened to accommodate the additional roadway width.

Yes Would the project add capacity?

Transportation Planning

Environmental Clearance Information

Project Contacts

Last Updated By: System Admin

Last Updated Date: 10/19/2021 07:13:09

From: noreply@thc.state.tx.us
To: Scott Pletka; reviews@thc.state.tx.us
Subject: Section 106 Submission
Date: Monday, August 15, 2022 3:32:38 PM

Re: Project Review under Section 106 of the National Historic Preservation Act and/or the Antiquities Code of Texas
THC Tracking #202213017
Date: 08/15/2022
131501030 FM 1385 (Permit 30600)
FM 1385 at FM 455
Pilot Point,TX 76258

Description: TxDOT proposes improvements to FM 1385. The submitted report is the draft archeological survey report for the accessible portions of the APE.

Dear TxDOT Staff:
Thank you for your submittal regarding the above-referenced project. This response represents the comments of the State Historic Preservation Officer, the Executive Director of the Texas Historical Commission (THC), pursuant to review under Section 106 of the National Historic Preservation Act and the Antiquities Code of Texas.

The review staff, led by Bill Martin, has completed its review and has made the following determinations based on the information submitted for review:

Archeology Comments

- No historic properties affected. However, if cultural materials are encountered during construction or disturbance activities, work should cease in the immediate area; work can continue where no cultural materials are present. Please contact the THC's Archeology Division at 512-463-6096 to consult on further actions that may be necessary to protect the cultural remains.
- THC/SHPO concurs with information provided.
- This draft report is acceptable. To facilitate review and make project information and final reports available through the Texas Archeological Sites Atlas, we appreciate submission of tagged pdf copies of the final report including one restricted version with all site location information (if applicable), and one public version with all site location information redacted; an online abstract form submitted via the abstract tab on eTRAC; and survey area shapefiles submitted via the shapefile tab on eTRAC. For questions on how to submit these please visit our video training series at: https://www.youtube.com/playlist?list=PLONbbv2pt4cog5t6mCqZVaEAx3d0MkgQC

Please note that these steps are required for projects conducted under a Texas Antiquities Permit.

We look forward to further consultation with your office and hope to maintain a partnership that will foster effective historic preservation. Thank you for your cooperation in this review process, and for your efforts to preserve the irreplaceable heritage of Texas. If the project changes, or if new historic properties are found, please contact the review staff. If you have any questions concerning our review or if we can be of further assistance, please email the following reviewers: bill.martin@thc.texas.gov.

This response has been sent through the electronic THC review and compliance system (eTRAC). Submitting your project via eTRAC eliminates mailing delays and allows you to check the status of the review, receive an electronic response, and generate reports on your submissions. For more information, visit http://thc.texas.gov/etrac-system.

Sincerely,

for Mark Wolfe, State Historic Preservation Officer
Executive Director, Texas Historical Commission

Please do not respond to this email.

State of Texas

TEXAS ANTIQUITIES COMMITTEE

Archeology Permit # 30600

This permit is issued by the Texas Historical Commission, hereafter referred to as the Commission, represented herein by and through its duly authorized and empowered representatives.The Commission, under authority of the Texas Natural Resources Code, Title 9, Chapter 191, and subject to the conditions hereinafter set forth, grants this permit for:

Intensive Survey

To be performed on a potential or designated landmark or other public land known as:
Title: FM 1385 (CSJ 1315-01-030)
County: Denton
Location: Denton County

Owned or Controlled by: (hereafter known as the Permittee):
TxDOT
125 E. 11th Street
Austin

Sponsored by (hereafter known as the Sponsor):
TxDOT
125 E. 11th Street
Austin

The Principal Investigator/Investigation Firm representing the Owner or Sponsor is:
Melissa M. Green
Cox McLain Environmental Consulting, Inc
600 E. John Carpenter FRwy, #380
Irving, TX 75062

This permit is to be in effect for a period of:
3 Years and 0 Months

And will expire on:
4/8/2025

During the preservation, analysis, and preparation of a final report or until further notice by the Commission, artifacts, field notes, and other data gathered during the investigation will be kept temporarily at:
Cox|McLain Environmental Consulting

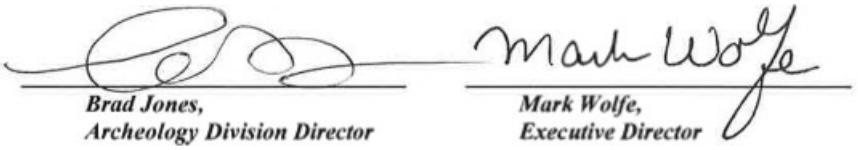
Upon completion of the final permit report, the same artifacts, field notes, and other data will be placed in a permanent curatorial repository at:
Center for Archaeological Studies

Scope of Work under this permit shall consist of:
An intensive pedestrian archaeological survey that meets or exceeds the State Archeological Survey Standards for Texas. This includes subsurface shovel testing of pedestrian survey transects and mechanical testing in appropriate alluvial areas. For details, see scope of work submitted with permit application.

This permit is granted on the following terms and conditions:

1. This project must be carried out in such a manner that the maximum amount of historic, scientific, archeological, and educational information will be recovered and preserved and must include the scientific, techniques for recovery, recording, preservation and analysis commonly used in archeological investigations.All survey level investigations must follow the state survey standards and the THC survey requirements established with the projects sponsor(s).
2. The Principal Investigator / Investigation Firm, serving for the Owner/ Permittee and / or the Project Sponsor, is responsible for insuring that specimens, samples, artifacts, materials and records that are collected as a result of this permit are appropriately cleaned, and cataloged for curation.These tasks will be accomplished at no charge to the Commission, and all specimens, artifacts, materials, samples, and original field notes, maps, drawings, and photographs resulting from the investigations remain the property of the State of Texas, or its political subdivision, and must be curated at a certified repository.Verification of curation by the repository is also required, and duplicate copies of any requested records shall be furnished to the Commission before any permit will be considered complete.
3. The Principal Investigator / Investigation Firm serving for the Owner/ Permittee, and / or the Project Sponsor is responsible for the publication of results of the investigations in a thorough technical report containing relevant descriptions, maps, documents, drawings, and photographs.A draft copy of the report must be submitted to the Commission for review and approval. Any changes to the draft report requested by the Commission must be made or addressed in the report, or under separate written response to the Commission. Once a draft has been approved by the Commission, one(1) printed, unbound copy and one bound copy of the final report containing at least one map with the plotted location of any and all sites recorded and two copies of the report in tagged PDF format shall be furnished to the commission. One PDF copy must include the plotted location of any and all sites recorded and the other should not include the site location data.An electronic copy of the completed Abstracts in Texas Contract Archeology Summary Form must also be submitted with the final report to the Commission.
4. If the Owner / Permittee, Project Sponsor or Principal Investigator / Investigation Firm fails to comply with any of the Commission's Rules of Practice and Procedure or with any of the specific terms of this permit, or fails to properly conduct or complete this project within the allotted time, the permit will fall into default status.A notification of Default status shall be sent to the Principal Investigator/ Investigation Firm and the Principal Investigator will not be eligible to be issued any new permits until such time that the conditions of this permit are complete or, if applicable, extended.
5. The Owner/ Permittee, Project Sponsor, and Principal Investigator/ Investigation Firm, in the conduct of the activities hereby authorizes, must comply with all laws, ordinances and regulations of the State of Texas and of its political subdivisions including, but not limited to, the Antiquities Code of Texas; they must conduct the investigation in such a manner as to afford protection to the rights of any and all lessees or easement holders or other persons having an interest in the property and they must return the property to its original condition insofar as possible, to leave it in a state which will not create hazard to life nor contribute to the deterioration of the site or adjacent lands by natural forces.
6. Any duly authorized and empowered representative of the Commission may, at any time, visit the site to inspect the fieldwork as well as the field records, materials, and specimens being recovered.
7. For reasons of site security associated with historical resources, the Project Sponsor(if not the Owner/ Permittee), Principal Investigator, Owner, and Investigation Firm shall not issue any press releases, or divulge to the news media, either directly or indirectly, information regarding the specific location of, or other information that might endanger those resources, or their associated artifacts without first consulting with the Commission and the State agency or political subdivision of the State that owns or controls the land where the resource has been discovered.
8. This permit may not be assigned by the Principal Investigator/ Investigation Firm, Owner / Permittee, or Project Sponsor in whole, or in part to any other individual, organization, or corporation not specifically mentioned in this permit without the written consent of the Commission.
9. Hold Harmless: The Owner/ Permittee hereby expressly releases the State and agrees that Owner / Permittee will hold harmless, indemnify, and defend(including reasonable attorney's fees and cost of litigation) the State, its officers, agents, and employees in their official and/or individual capacities from every liability, loss, or claim for damages to persons or property, direct or indirect of whatsoever nature arising out of, or in any way connected with, any of the activities covered under this permit.The provisions of this paragraph are solely for the benefit of the State and the Texas Historical Commission and are not intended to create or grant any rights, contractual or otherwise, to any other person or entity.
10. Addendum: The Owner/Permittee, Project Sponsor and Principal Investigator/Investigation Firm must abide by any addenda hereto attached.

Upon a finding that it is in the best interest of the State, this permit is issued on 4/8/2022



Brad Jones,
Archeology Division Director

Mark Wolfe,
Executive Director

TEXAS HISTORICAL COMMISSION

ANTIQUITIES PERMIT APPLICATION FORM ARCHEOLOGY

GENERAL INFORMATION

I. PROPERTY TYPE AND LOCATION

Project Name (and/or Site Trinomial) FM 1385 (CJS 1315-01-030) Intensive Survey
County (ies) Denton
USGS Quadrangle Name and Number Irving
UTM Coordinates Zone 14 S E 695885 to 694648 and 695325 N 3677628 to 3696457 and 3696290

Location Project is east of Aubrey in northeast Denton County and begins at US Highway 380 and extends north to end at FM 455

Federal Involvement ■ Yes ❑ No
Name of Federal Agency Federal Highway Administration
Agency Representative

II. OWNER (OR CONTROLLING AGENCY)

Owner Texas Department of Transportation
Representative Scott Pletka, PhD
Address 125 E. 11th Street
City/State/Zip Austin, Texas 78701
Telephone (include area code) 512-416-1631 Email Address spletka@txdot.gov

III. PROJECT SPONSOR (IF DIFFERENT FROM OWNER)

Sponsor
Representative
Address
City/State/Zip
Telephone (include area code) Email Address

PROJECT INFORMATION

I. PRINCIPAL INVESTIGATOR (ARCHEOLOGIST)

Name Melissa Green
Affiliation Cox|McLain Environmental Consulting, Inc. now Stantec
Address 600 E. John Carpenter Freeway, #186
City/State/Zip Irving, Texas 75062
Telephone (include area code) 469-6476-4866 Email Address missi.green@stantec.com

(OVER)

ANTIQUITIES PERMIT APPLICATION FORM (CONTINUED)

II. PROJECT DESCRIPTION

Proposed Starting Date of Fieldwork 11 April 2022
Requested Permit Duration 3 Years _____ Months (1 year minimum)
Scope of Work (Provided an Outline of Proposed Work) _____

III. CURATION & REPORT

Temporary Curatorial or Laboratory Facility Cox|McLain Environmental Consulting, Inc. now Stantec
Permanent Curatorial Facility Center for Archaeological Studies at Texas State University at San Marcos

IV. LAND OWNER'S CERTIFICATION

I, Scott Pletka, as legal representative of the Land Owner, TxDOT, do certify that I have reviewed the plans and research design, and that no investigations will be performed prior to the issuance of a permit by the Texas Historical Commission. Furthermore, I understand that the Owner, Sponsor, and Principal Investigator are responsible for completing the terms of the permit.
Signature _____ Date 07-April-2022

V. SPONSOR'S CERTIFICATION

I, _____, as legal representative of the Sponsor, _____, do certify that I have review the plans and research design, and that no investigations will be performed prior to the issuance of a permit by the Texas Historical Commission. Furthermore, I understand that the Sponsor, Owner, and Principal Investigator are responsible for completing the terms of this permit.
Signature _____ Date _____

VI. INVESTIGATOR'S CERTIFICATION

I, Melissa Green, as Principal Investigator employed by Cox|McLain Environmental Consulting, Inc. now Stantec (Investigative Firm), do certify that I will execute this project according to the submitted plans and research design, and will not conduct any work prior to the issuance of a permit by the Texas Historical Commission. Furthermore, I understand that the Principal Investigator (and the Investigative Firm), as well as the Owner and Sponsor, are responsible for completing the terms of this permit.

Signature Melissa M. Green Date 22 March 2022

Principal Investigator must attach a research design, a copy of the USGS quadrangle showing project boundaries, and any additional pertinent information. Curriculum vita must be on file with the Archeology Division.

FOR OFFICIAL USE ONLY

Reviewer _____ Date Permit Issues _____
Permit Number _____ Permit Expiration Date _____
Type of Permit _____ Date Received for Data Entry _____

Texas Historical Commission
Archeology Division
P.O. Box 12276, Austin, TX 78711-2276
Phone 512-463-6096
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TEXAS HISTORICAL COMMISSION
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ARCHEOLOGICAL INTENSIVE SURVEY SCOPE

FM 1385 from US 380 to FM 455
Denton County, Texas

Project Description

The Texas Department of Transportation (TxDOT) is proposing to reconstruct and widen FM 1385 from US 380 to FM 455 in Denton County. The project would include construction of a 6-lane divided urban roadway from US 380 to FM 428 West and a 4-lane interim (6-lane ultimate) divided urban roadway from FM 428 West to FM 455. A new location realignment of the central portion of FM 1385 at Mustang Road is proposed to directly connect FM 1385 to the north and south without requiring vehicles to travel along the Mustang Road portion of the existing FM 1385. Additionally, a new-location realignment of the southern portion of FM 1385 at Gee Road is also proposed. This would flatten out the existing "S" curve at Gee Road and improve mobility along FM 423 at the intersection with FM 1385.

The existing typical right-of-way width varies between 80 to 120 feet. The proposed typical right-of-way width is 140 feet and varies between 130 to 245 feet. The project is located on 145.36 acres of existing right-of-way and proposes to acquire 124.18 acres of new right-of-way for a total project acreage of 269.54 acres.

The proposed improvements would require additional ROW along the project area (totaling no more than 130 acres) Temporary and/or permanent easements is not anticipated. A minimum of two potential displacements are anticipated. The proposed improvements are shown in the attached plans.

Project Setting

The proposed project is located within the suburban and rural communities associated with the Cities of Little Elm, Aubrey, Pilot Point, Celina, Paloma Point, and the Town of Prosper. The southern portion of the project area is characterized by the presence of several densely constructed single-family residential subdivisions. Whereas, north of Bonar Road, the project area transitions to low density single-family residences, agricultural land, and undeveloped parcels. Other than the FM 1385 intersections with FM 455 and US 380 (University Drive), there are no other major traffic generators adjacent to the project area.

The project area is primarily a mixture of agricultural land (row crop and hay production). The northern extent is characterized by undeveloped tracts of disturbance grasslands and the southern extent is mostly low and high intensity urban vegetation communities. Several stands of riparian vegetation are present along FM 1385 where creeks and tributaries cross the roadway. Mustang Creek and Little Elm Creek are the largest water bodies crossing FM 1385; however, numerous unnamed tributaries to both creeks are mapped within the project area. Several stock tanks and stormwater detention ponds are located immediately adjacent to the proposed project area.

No archeological or historical sites have been identified within the APE or within 150 feet of the area of potential effects (APE). No known cemetery sites occur within the APE or within 150 feet of the APE. There are no identified historic districts, historic properties (including SALs), or Historic Bridges of Texas located within the project area.

Traffic generators are located within the project limits at the intersections of US 380, FM 455, Mustang Road, and Gee Road. No negative impacts to access and travel patterns are anticipated because of the proposed project. Overall, the proposed project is anticipated to result in beneficial impacts to access and travel patterns for the immediate communities.

Existing Facility

Within the project limits, the current FM 1385 facility varies between a two-lane rural undivided roadway and a two-lane divided roadway with a center turn lane. The existing roadway has 12-foot-wide lanes. The existing right-of-way varies from 80 to 120 feet wide and the central portion of the existing FM 1385 roadway within the project area ties into Mustang

Road. This Mustang Road portion of the existing roadway consists of a sharp curve in the roadway as well as a three-way-intersection. FM 1385 at Gee Road includes an existing S-curve roadway alignment.

Roadside drainage is conveyed through grass-lined ditches along FM 1385. Three bridges (Mustang Creek, Little Elm Creek Relief, and Little Elm Creek) and one bridge class culvert (Long Branch) are located along FM 1385 within the project area. The existing typical right-of-way width varies between 80 to 120 feet.

Proposed Facility

The proposed FM 1385 would be reconstructed and widened from an existing two-lane rural highway to ultimately a six-lane divided urban roadway. FM 1385 from US 380 to FM 428 West is proposed to be constructed as a 6-lane facility while the roadway from Fm 428 West to FM 455 is proposed to be constructed as a 4-lane interim facility.

Most of the project area follows the existing FM 1385 roadway alignment; however, two areas are being proposed for new location roadway realignments to address mobility and safety concerns:

- The 0.9-mile-long realignment is located south of Mustang Road and would directly connect FM 1385 to the north and to the south without requiring vehicles to travel along the Mustang Road portion of the existing FM 1385.
- The 0.45-mile realignment is located southeast of the current alignment. This proposed improvement would flatten out the existing "S" curve at Gee Road and improve mobility at this intersection with FM 1385.

The bridges and culverts (Mustang Creek bridge, Little Elm Creek Relief bridge, Little Elm Creek bridge, and Long Branch bridge class culvert) would be reconstructed and widened to accommodate the additional roadway width.

The proposed typical right-of-way width varies between 140 to 150 feet.

To summarize, the proposed project improvements would include:

- From US 380 to FM 428 West: 6-lane divided urban roadway.
- From FM 428 West to FM 455: 4-lane interim (6-lane ultimate) divided urban roadway.
- A 0.9-mile new-location realignment of the central portion of FM 1385 south of Mustang Rd.
- A 0.45-mile new-location realignment of the southern portion of FM 1385 at Gee Road.

Cox|McLain Environmental Consulting (CMEC) now Stantec, understands that this project is owned and funded by TxDOT, which triggers compliance with the Antiquities Code of Texas and an Antiquities Code permit is required for all archeological fieldwork. Federal Highway Administration (FHWA) funds and guidance will be utilized for this project (with TxDOT acting on behalf of FHWA), so it is also subject to Section 106 of the National Historic Preservation Act (NHPA), as amended.

Background Information

The 269.54-acre (109.07-hectare) APE is situated at elevations ranging from approximately 166.1 to 212.1 meters (545 to 696 feet) above mean sea level. The project lies within the Eastern Cross Timbers subregion of the Cross Timbers ecoregion (Griffith et al. 2010). This subregion subregion occurs on sandy substrates with soils that are mainly red and yellow sands that have been leached of nutrients. Post oaks and blackjack oaks have adapted to life in these sandy soils and dominate the overstory. The understory consists of scattered honey locust and grasses including little bluestem and threeawn (Omernik and Griffith 2013).

Mustang Creek and Little Elm Creek flow through the APE; both creeks are classified as perennial. In addition, there are seven unnamed tributaries to Little Elm Creek, one tributary to Mustang Creek, three unnamed tributaries to Pecan Creek, and one unnamed tributary to Doe Branch that also flow through the APE. These twelve streams are classified as intermittent (USGS 2020a).

The project area is underlain by two Cretaceous-age geological units, Eagle Ford Formation and Woodbine Formation, and two Holocene-age geological units, Alluvium and Fluviatile terrace deposits; the Holocene units are located along both Mustang and Little Elm Creeks and have potential for deeply buried archeological deposits (United States Geological Survey [USGS] 2020). Three soil associations are mapped in the APE: Wilson-Crockett, Tinn-Frio, and Houston Black-Heiden-Altoga. All of these soil series are deep to very deep and were formed in calcareous residuum or alluvium with the potential to contain both prehistoric and historic buried archeological deposits both at the surface and subsurface (Soil Survey Staff 2020). The proposed project footprint and the surrounding areas are largely undeveloped, with some suburban development occurring along the proposed project north of US 380. Each of the soil series mapped within the APE has potential to contain archeological remains deeper than 1 meter.

Hybrid Potential Archeological Liability Map (HPALM) data (Abbott and Pletka 2014) indicates that the current APE falls within five map units: Map Unit 1, which indicates low potential for cultural resources; Map Unit 4 has a moderate potential for archeological deposits at shallow depths with a low potential at deep depths; Map Unit 5 indicates moderate potential; Map Unit 8 indicates a high shallow potential and a moderate potential for deposits at deep depths; and Map Unit 9, which indicates high potential for buried cultural resources. All map units except Map Unit 1 are well represented near and around Little Elm and Mustang Creeks. Approximately 73.37 percent of the APE falls in low or negligible probability Map Units 0 and 1) at any depth with the remaining 15.37 percent containing moderate to high potential for archeological deposits at shallow depths and 11.27 percent of those areas containing moderate or high potential at deeper depths.

A search of the *Texas Archeological Sites Atlas* (Atlas) maintained by the Texas Historical Commission (THC) and the Texas Archeological Research Laboratory (TARL) was conducted in order to identify archeological sites, historical markers (Recorded Texas Historic Landmarks), properties or districts listed on the National Register of Historic Places (NRHP), State Antiquities Landmarks (SAL), cemeteries, or other cultural resources that may have been previously recorded in or near the APE, as well as previous surveys undertaken in the area. A larger 1-kilometer (0.62-mile) study area around the APE was also examined.

According to the Atlas, the APE as a whole has not been surveyed for cultural resources. Three small segments of the proposed combined APE alternatives have been previously surveyed: an undated survey along US 380; a 2017 ACI survey for the Mustang Special Utility District; and two small segments associated with the Windsong Ranch Residential Development near Fish Trap Road in 2017 (THC 2020; see **Attachment 3**). Twelve additional previous surveys have occurred within the 1-kilometer (0.62-mile) study area around the APE and include the following:

- A 1983 areal survey for the US Army Corps of Engineers, Fort Worth District (USACE-FW) located east of the southern terminus of the APE;
- A 1992 linear survey along US 380 presumably for the Federal Highway Administration at the southern terminus of the APE;
- A 1999 linear survey for the City of Irving located between FM 1385 and Doe Creek Road south of the APE;
- A 2002 linear survey along Friendship Road located west of the APE for the US Department of Agriculture-Rural Development (USDA-RD) by AR Consultants, Inc.;
- A 2002 linear survey along Friendship Road located west of the APE for Federal Housing Administration by Geo-Marine, Inc. (now Versar, Inc.);
- A 2002 areal survey conducted for the Upper Trinity Regional Water District by AR Consultants, Inc., located southwest of the APE;
- A 2002 linear survey along Joe Allen Road west of the APE by AR Consultants, Inc. for the USDA-RD;
- Two TxDOT surveys for the bridge replacement at Mustang Creek in 2005 and 2015 (this only applies to the current alignment);
- A 2016 linear survey for the Brazos Electric Power Cooperative by Hicks and Company located southeast and east of the southern terminus of the APE;

- A 2017 areal/linear survey for the Mustang Special Utility District by ACI consulting located abutting and west of the APE just south of FM 428;
- A 2017 large areal and linear survey for the Windsong Ranch Residential Development and the USACE-FW by Integrated Environmental Solutions, Inc. located east of and along the APE;
- A 2017 linear survey along FM 428 west of the APE for the USDA-RD by AR Consultants, Inc. (THC 2020).

No resources are recorded or mapped within the APE, and there are only three recorded cultural resources mapped within the 1-kilometer (0.62-mile) surrounding study area. Archeological site 41DN601, which consists of a barn and other outbuildings from the historic-age Jamison farmstead and an associated former two-grave cemetery (Jamieson children) that were removed in 2016, is located roughly 820 meters northeast of the terminus along Fishtrap Road. Site 41DN601 has an Undetermined eligibility status as of March 2017. The Crutchfield Cemetery is located approximately 962 meters east of FM 1385 and approximately 800 meters south of FM 428 (THC 2020).

Historic topographic maps reviewed included those from 1954, 1958, 1960, 1961, 1962, 1963, 1969, 1974, 1982, 1985, 2013, and 2016. The 1954 and 1958 Sherman maps (scale 1: 125,000) illustrate FM 1385 as extant in its current alignment and the area surrounding it as undeveloped. Although the scale is too coarse to illustrate individual residential structures, a church is illustrated just north of the east to south curve of FM 1385 at Mustang Creek and is the only structure illustrated adjacent to the roadway. The 1960 Aubrey and Little Elm maps and the 1961 Pilot Point map (scale 1:24,000) illustrate that the area is still primarily rural and undeveloped, with nine houses, one barn, and two churches mapped near enough to the roadway to possibly be within the APE. No significant changes are noted on subsequent maps until 2013 when the first major development along FM 1385 and US 280 is shown (NETR 2020; USGS 2020c).

Available historic and modern aerial photographs (1958, 1981, 1995, 2001, 2004–2005, and 2007–2019) were also examined. Only the very southern portion of the APE from Parvin Road to US 380 is shown on the 1968 aerial photograph, the earliest aerial imagery available. It shows that FM 1385 and several smaller side streets are surrounded by undeveloped, terraced and cultivated, and pastureland. Some of the same structures noted on the 1960 and 1961 topographic maps are noted on this imagery. Little change is noted on subsequent imagery until 1981 when a small residential development first appears on the east side of FM 1385 just north of Fishtrap Road. No imagery is available for the areas north of Parvin Road until 2004. Additional and larger developments area shown on 2005 imagery, all still south of Fishtrap Road. Also observed on this imagery is a large horse farm established just west of Mustang Creek on the north side of the curve from east to south along FM 1385 and additional rural residential utilization sporadically along FM 1385 north of the curve at Mustang Creek, in particular on the west side of FM 1385 between FM 455 and Lights Ranch Road. By 2008, development has begun along FM 1385 north of Fishtrap Road. Minor changes continue along the northern portion (north of Mustang Creek) of the APE with the development of an RV park across from Private Road 5805 and the construction of a large light industrial building between the RV park and Mustang Road by 2011. No significant changes are noted again until 2016 and again in 2018 when intensive development occurs north of Fishtrap Road and continues northward to just south of FM 428 today (Google Earth™ Pro 2020; NETR 2020).

Research Design

Cox|McLain Environmental Consulting, Inc., now Stantec Consulting Services Inc. (Stantec), will conduct intensive survey per Category 7 of 13 TAC 26.15 and using the definitions in 13 TAC 26.3. Field methods and strategies will comply with the requirements of 13 TAC 26.15, as established by the Council of Texas Archeologists (CTA) and approved by the THC in April 2020.

Field investigations will be conducted at the intensive survey level, consisting of pedestrian walk-over augmented by shovel testing. Stantec proposes to utilize transects at 30-meter intervals within the current and proposed rights-of-way along the roadway with shovel tests spaced no more than 100 meters apart, though a lesser interval could be utilized if warranted. All shovel tests will be excavated in natural levels or in 20-centimeter-thick (7.9-inch-thick) arbitrary levels (whichever is smaller) to subsoil or 100 centimeters (39.37 inches), whichever is encountered first. Excavated matrix will be screened

through 0.635-centimeter (0.25-inch) hardware cloth as allowed by moisture and clay content, which may require that the removed sediment be crumbled/sorted by hand, trowel, and/or shovel point. Deposits will be described using conventional texture classifications and Munsell color designations. Radial shovel tests will be placed at 5-meter (16-foot) intervals around each shovel test containing cultural material until two negative units have been established in each cardinal direction, within the project limits. All components of the CTA standards approved in April 2020 will be rigorously followed with any deviations explicitly justified in the report.

Holocene sediments occur at both Mustang and Little Elm Creeks and have potential for deeply buried archeological deposits. Therefore, deep trenching is proposed within the floodplains of these two creeks where deep impacts are scheduled. Each trench will be excavated at least 30 feet (9 meters) long and to a minimum length of 8 feet (2.4 meters) and a depth at least 15 feet (4.5 meters), slightly deeper than cultural depths known in the floodplain, using a backhoe with a flat-bladed bucket at least 24 inches (61 centimeters) wide. Trenches will be excavated in 5-centimeter (1.97-inch) increments; sediment will then be placed in piles to be observed and documented by professional archeologists. At least one five-gallon-bucket's worth of matrix from every third excavated bucket load will be screened through 0.635-centimeter (0.25-inch) hardware cloth as allowed by moisture and clay content, which may require that the removed sediment be crumbled/sorted by hand, trowel, and/or shovel point. Trench side walls will be scraped and analyzed by professional archeologists; profiles will be photographed and described using conventional texture, consistency, and color designations. Following the completion of analysis, trenches will be backfilled and compacted. Should a trench yield cultural deposits or materials, but there is no space for additional trenching due to right-of-way restraints, a 50-x-50-centimeter or 1-x-1-meter unit would be excavated off a trench wall to ascertain additional materials or deposits.

The APE is located on publicly-owned land containing the proposed project alignment; therefore, artifacts identified in the shovel tests and surface contexts will be noted, described, photographed, and returned to their original contexts by archeologists who meet or exceed the Secretary of Interior's qualifications for professional archeologists. Descriptions will include, at minimum: artifact dimensions, artifact material type(s), artifact functional class (if apparent), Munsell colors, and provenience. All descriptions will be approved in field by the Project Archeologist/Principal Investigator. Following their description, all artifacts will be photographed from the maximum number of sides available prior to being returned to their original contexts. Additional in-field analysis will depend on particular artifact classes: for example, a historic-age bottle with embossed markings that are not easily photographable may be sketched or drawn.

Any site recorded during the investigation will be evaluated for their eligibility for inclusion in the NRHP (36 CFR 800) and for consideration as a SAL using the criteria and guidelines as developed by the National Parks Service Bulletin 15 and the Texas Antiquities Code (9 TNRC 191), respectively. Each site will be identified by a temporary marker placed on the site. The marker will have an identifying number in the form of a field site (or FS) designation, followed by a consecutively assigned number that will indicate the order in which the sites were discovered (e.g., FS-01, FS-02, etc.). This number is a temporary field number to be superseded by a formal site trinomial obtained following the completion of fieldwork (see below). Stantec defines an archeological site based on content and extent. When a shovel test yields cultural material, additional shovel tests are excavated in a cruciform pattern at 5-meter (16-foot) intervals around the initial test, until two sterile shovel tests are encountered. A prehistoric site is defined as five or more cultural items (e.g., prehistoric stone tool manufacturing debris of different raw materials, or manufacturing debris in combination with stone tools) or one or more stationary and immovable objects – such as firepits or posthole molds – within a 20-meter (65.6-foot) square; for historic sites, a site is defined as five or more cultural items from at least two material types or artifact classes, or one or more stationary and immovable objects and at least one cultural item within a 20-meter (65.6-foot) square. A site's boundaries are then defined within the extent of positive shovel tests and/or surface remnants.

Conversely, isolated finds of individual artifacts or small groups of similar non-diagnostic artifacts (for example, fewer than five flakes composed of the same material) that do not meet the above site definition criteria will be recorded as an "Isolated Find" and given an Isolated Find number but not assigned a locus or site number or considered for listing in the NRHP. Likewise, a stationary and unmovable object – such as brick piers, etc. – with no associated cultural materials and not meeting the above definition criteria will be designated a "Locality," and as with Isolates, given a Locality number but not

considered for eligibility in the NRHP. The locations of both Isolates and Localities will be recorded. All encountered cultural resources will be treated as potential sites until proven otherwise.

CMEC personnel will keep a complete record of field notes with observations including (but not limited to) identified sites, cultural materials, location markers, contextual integrity, estimated time periods of occupations, vegetation, topography, hydrology, land use, soil exposures, general conditions at the time of the survey, and field techniques employed. The field notes will be supplemented by digital photographs.

Although the project has a low probability of encountering human burials, if human remains or other evidence of burials are identified within the project area, TxDOT and THC personnel will be notified, and all requirements of 8 THSC 711 and 13 TAC 2 will be followed.

Reporting and Curation

Relevant field observations for any new sites discovered during these investigations will be transferred to TexSite forms and submitted to TARL for official recording and integration into the trinomial system. An analysis of recorded materials and site characteristics will be performed, and the results will be presented in a clear and concise manner. These data will be used to formulate a preliminary evaluation of the NRHP and/or SAL eligibility of each site, as well as a recommendation for further work or no further work, supported by explicit justifications (13 TAC 26.3; 13 TAC 26.10; 13 TAC 26.16). Data, sites recorded, and NRHP/SAL eligibility assessments will be presented in a standard draft survey report to be submitted along with project shapefiles to TxDOT and THC for review and comment. Comments on the draft report will be incorporated into a final version to be submitted in hard copy and on CD (with the number and format of copies to be determined based on client preferences) to TxDOT and THC. Per 13 TAC 26.16, the final permit closure submittal will include a transmittal letter, abstract form, project area shapefile, tagged PDF files of the report in both restricted (with site locations) and public (without site locations) versions, as applicable.

Upon completion of the fieldwork and reporting, Stantec will make all materials and forms generated by this project available to future researchers through curation at the Center for Archaeological Studies (CAS) at Texas State University in San Marcos, Texas per 13 TAC 26.16 and 26.17. A curation form filed at both CAS and THC will accompany the collections.

References

Abbott, J. T., and S. Pletka

2014 *The Dallas District HPALM Model.* Texas Department of Transportation, Environmental Affairs Division, Archeological Studies Program. Austin.

Google Earth™ Pro

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2020 *Soil Survey Geographic (SSURGO) Database*. Available at http://casoilresource.lawr.ucdavis.edu/soilweb/. Accessed 22 March 2022.

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U.S. Fish and Wildlife Service

2020 *National Wetlands Inventory Surface Waters and Wetlands*. Available at https://www.fws.gov/wetlands/data/mapper.html. Accessed 22 March 2022.

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2020a *National Hydrography Database Viewer*. United States Geological Survey. Available at https://viewer.nationalmap.gov/basic/?basemap=b1&category=nhd&title=NHD%20View. Accessed 22 March 2022.

2020b *Texas Geology Map Viewer*. United States Geological Survey. Available at http://txpub.usgs.gov/dss/texasgeology/. Accessed 22 March 2022.

2020c *USGS Historical Topographic Map Explorer.* United States Geological Survey. Available at http://historicalmaps.arcgis.com/usgs/index.html. Accessed 22 March 2022.

Attachments

Figure 1 – Project Location
Figures 2a–d – Location of Archeological APE (topographic base)
Figures 3a–g – HPALM and Project APE Detail (aerial base)

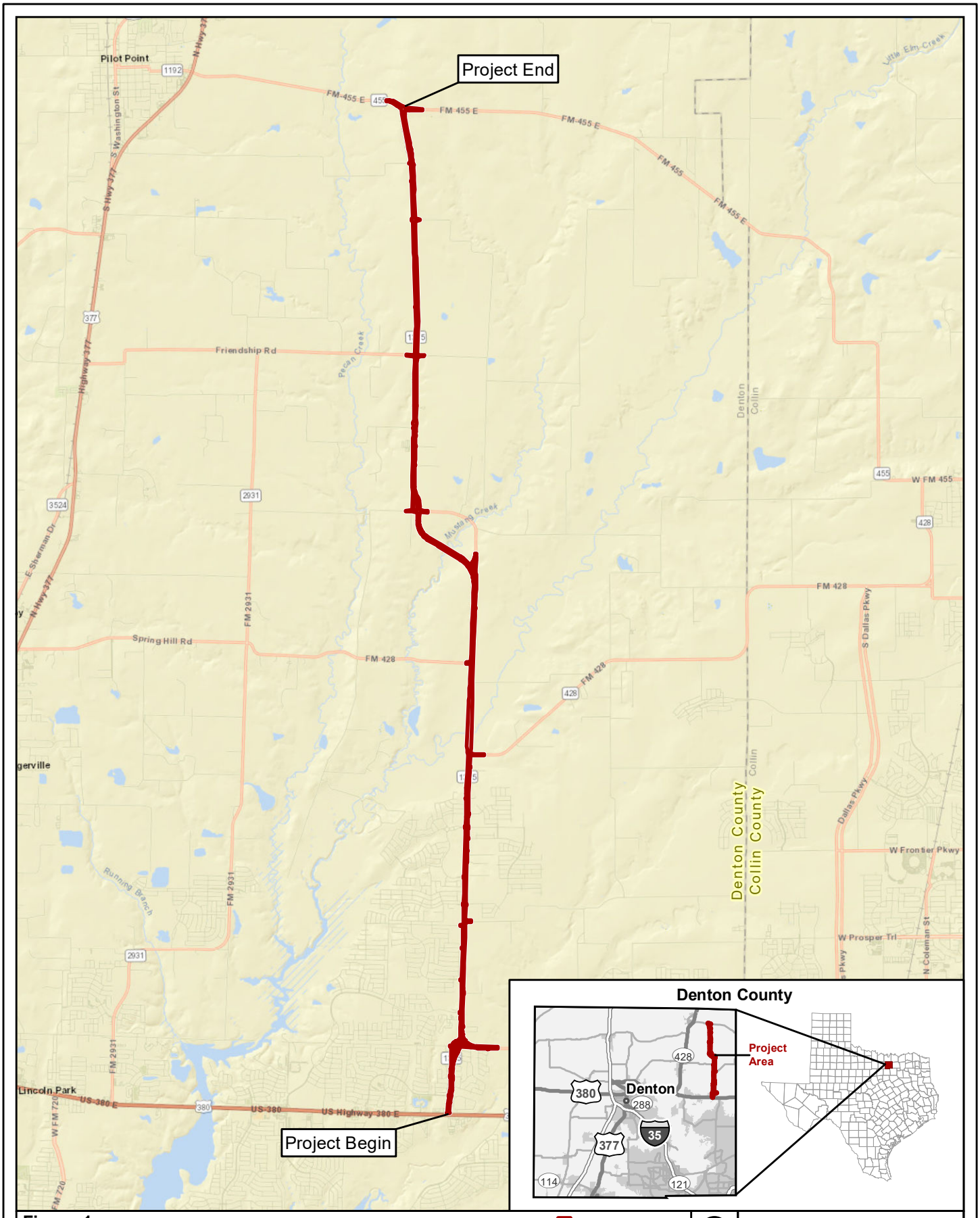

Figure 1.
Project Location (Road Base)

Project Location

CSJ: 1315-01-030

0 1.5 Miles
0 2 Kilometers

1 in = 1.5 miles
Scale: 1:95,040
Date: 3/17/2022

FM 1385 Environmental Assessment

Basemap Source: Esri (2022)

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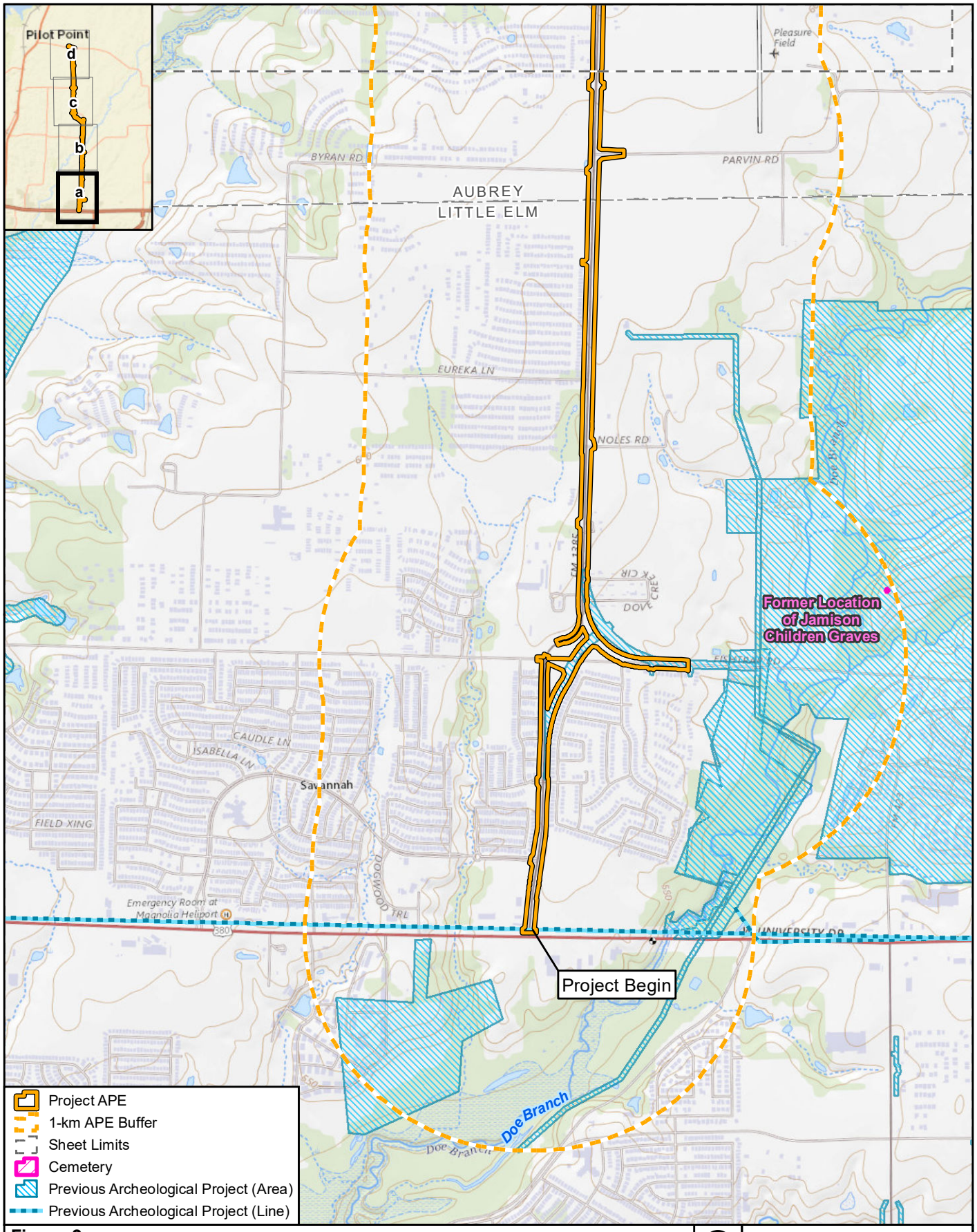

Figure 2a.
Location of Archeological APE

FM 1385 Environmental Assessment

Data Sources: THC (2021), TARL (2021), NHD (2020)
Topographic Source: USGS (2022)
USGS 7.5' Quadrangles: Pilot Point, Aubrey, Little Elm

CSJ: 1315-01-030

0 2,000 Feet
0 500 Meters

1 in = 2,000 feet
Scale: 1:24,000
Date: 9/6/2022

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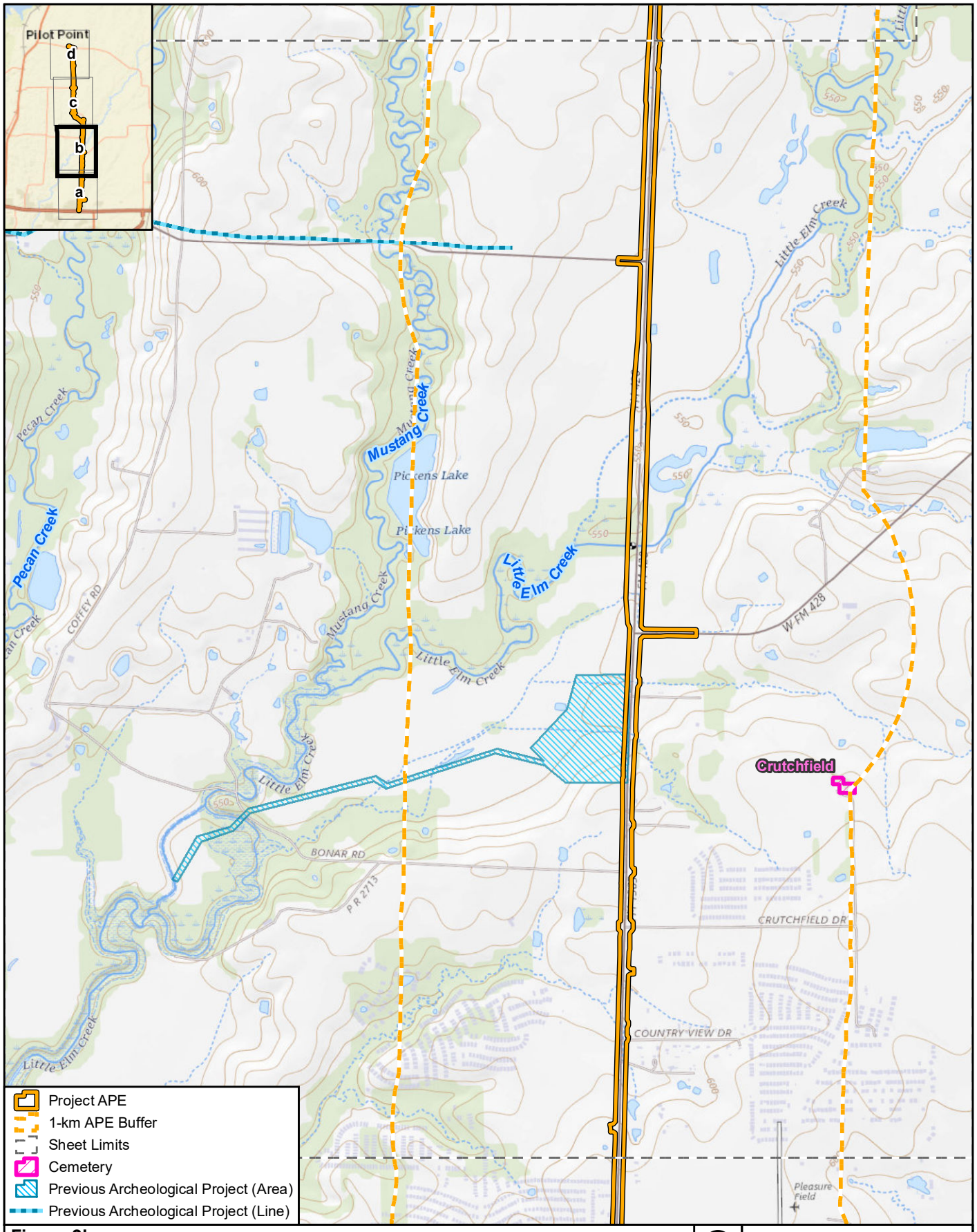

Figure 2b.
Location of Archeological APE

FM 1385 Environmental Assessment

Data Sources: THC (2021), TARL (2021), NHD (2020)
Topographic Source: USGS (2022)
USGS 7.5' Quadrangles: Pilot Point, Aubrey, Little Elm

CSJ: 1315-01-030

0 2,000 Feet
0 500 Meters

1 in = 2,000 feet
Scale: 1:24,000
Date: 9/6/2022

U:\235300164\03_data\gis_cad\gis\FM1385_Arch_Figure 2_NOSITES_20220907_slh.mxd

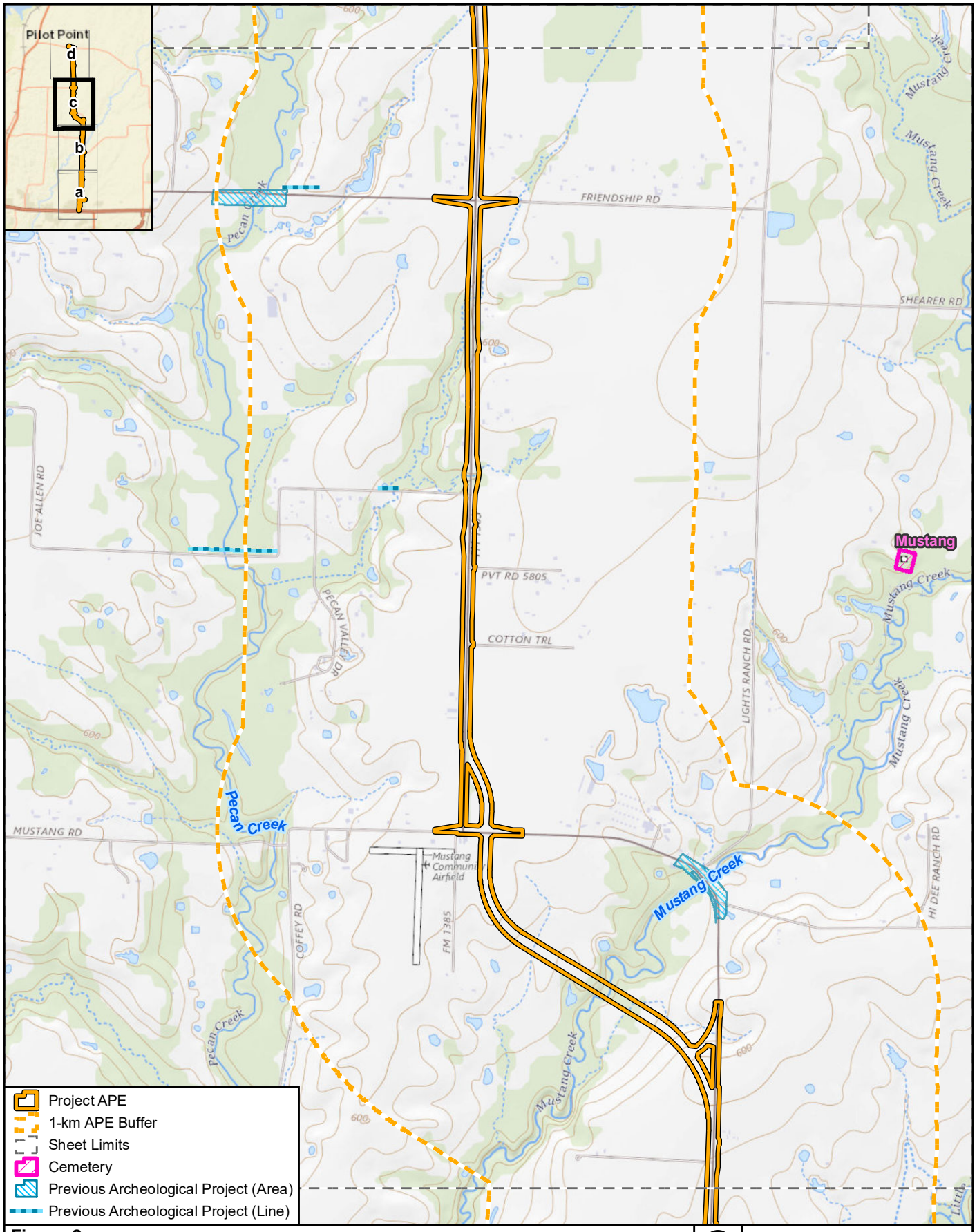

Figure 2c.
Location of Archeological APE

FM 1385 Environmental Assessment

Data Sources: THC (2021), TARL (2021), NHD (2020)
Topographic Source: USGS (2022)
USGS 7.5' Quadrangles: Pilot Point, Aubrey, Little Elm

CSJ: 1315-01-030

0 2,000 Feet
0 500 Meters

1 in = 2,000 feet
Scale: 1:24,000
Date: 9/6/2022

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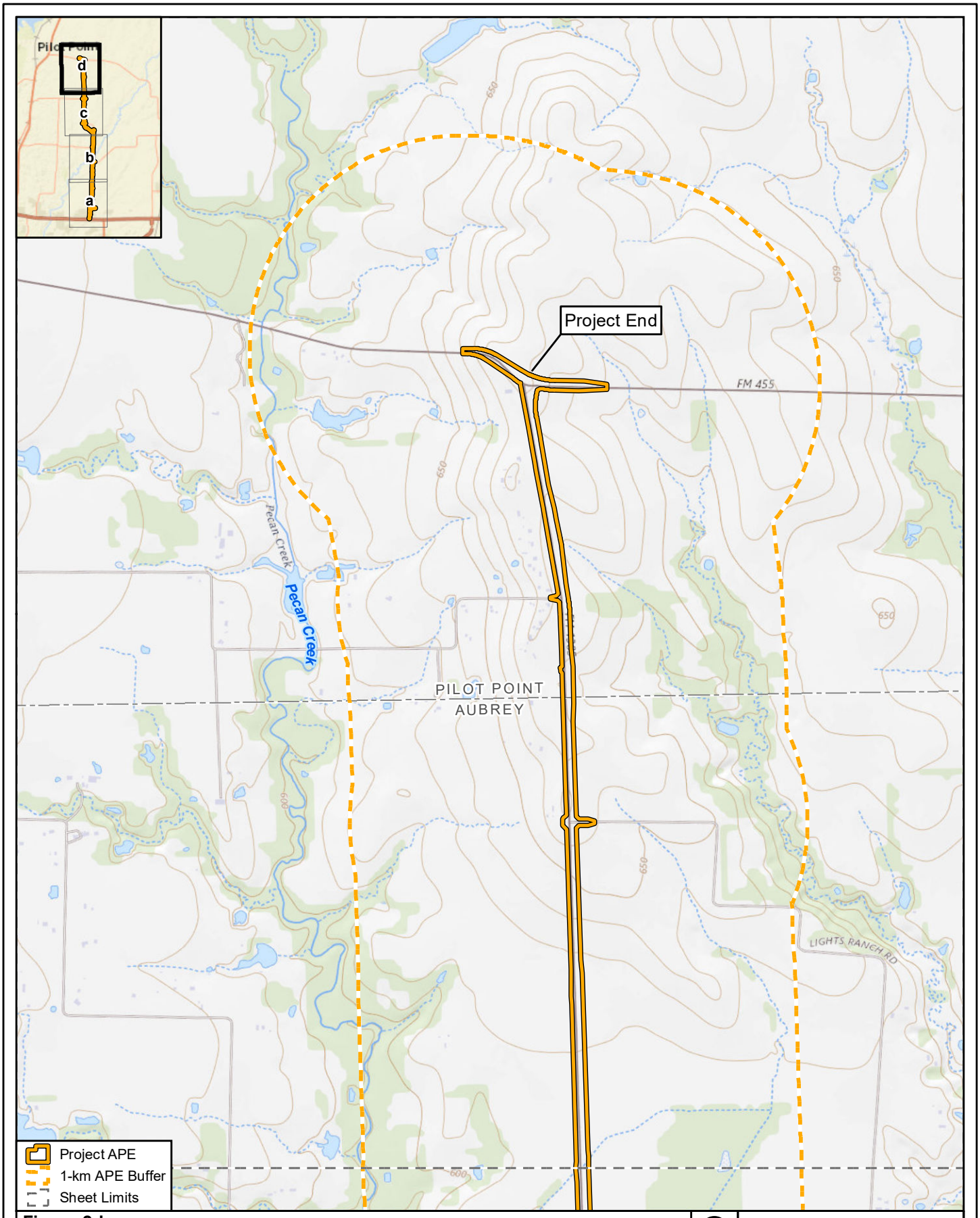

Figure 2d.
Location of Archeological APE

FM 1385 Environmental Assessment

Data Sources: THC (2021), TARL (2021), NHD (2020)
Topographic Source: USGS (2022)
USGS 7.5' Quadrangles: Pilot Point, Aubrey, Little Elm

CSJ: 1315-01-030

0 2,000 Feet
0 500 Meters

1 in = 2,000 feet
Scale: 1:24,000
Date: 9/6/2022

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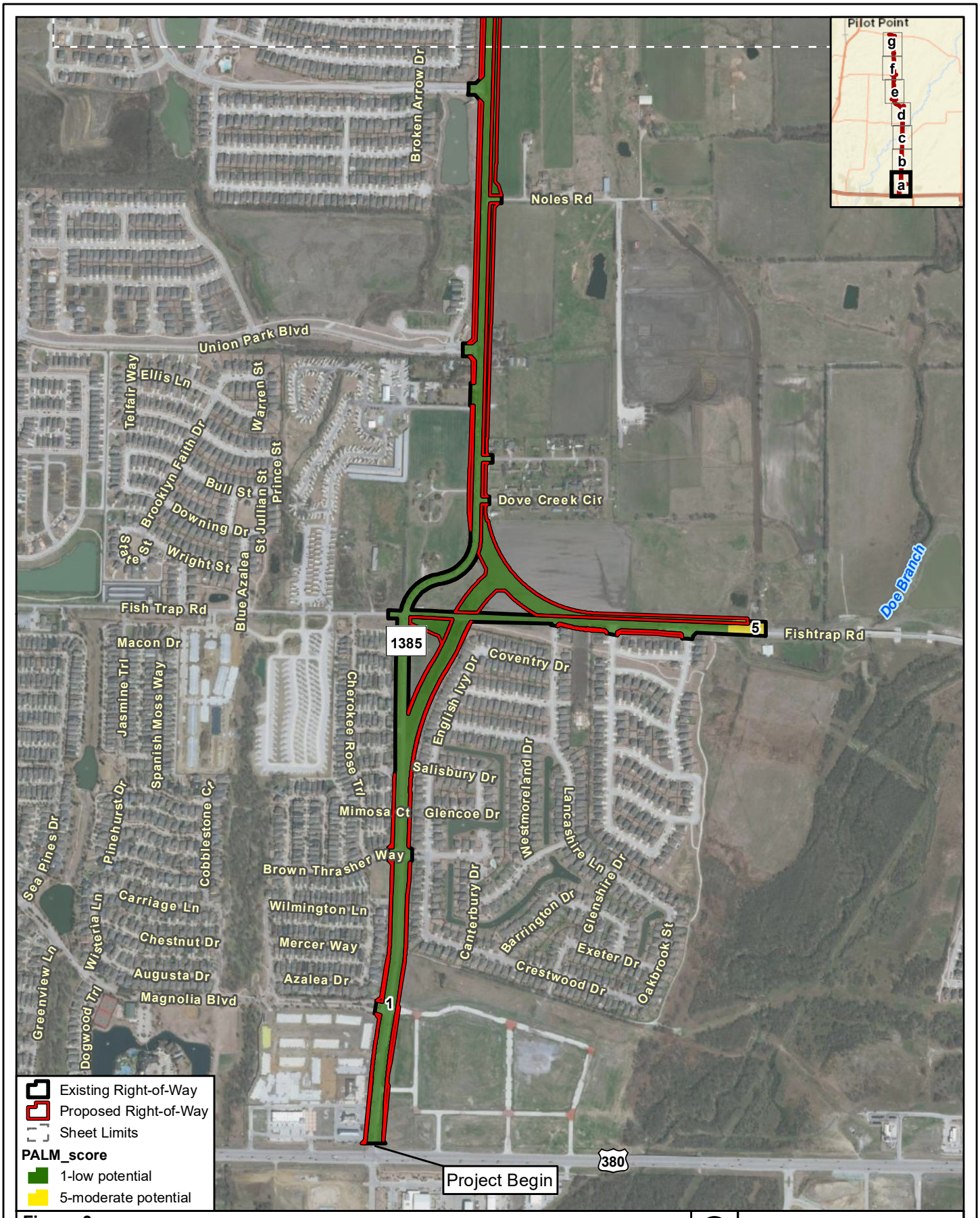

Figure 3a.
HPALM Map

FM 1385 Environmental Assessment

Data Source: TxDOT (2014)
Aerial Source: Maxar (2020)

CSJ: 1315-01-030

0 1,000 Feet
0 300 Meters

1 in = 1,000 feet
Scale: 1:12,000
Date: 3/17/2022

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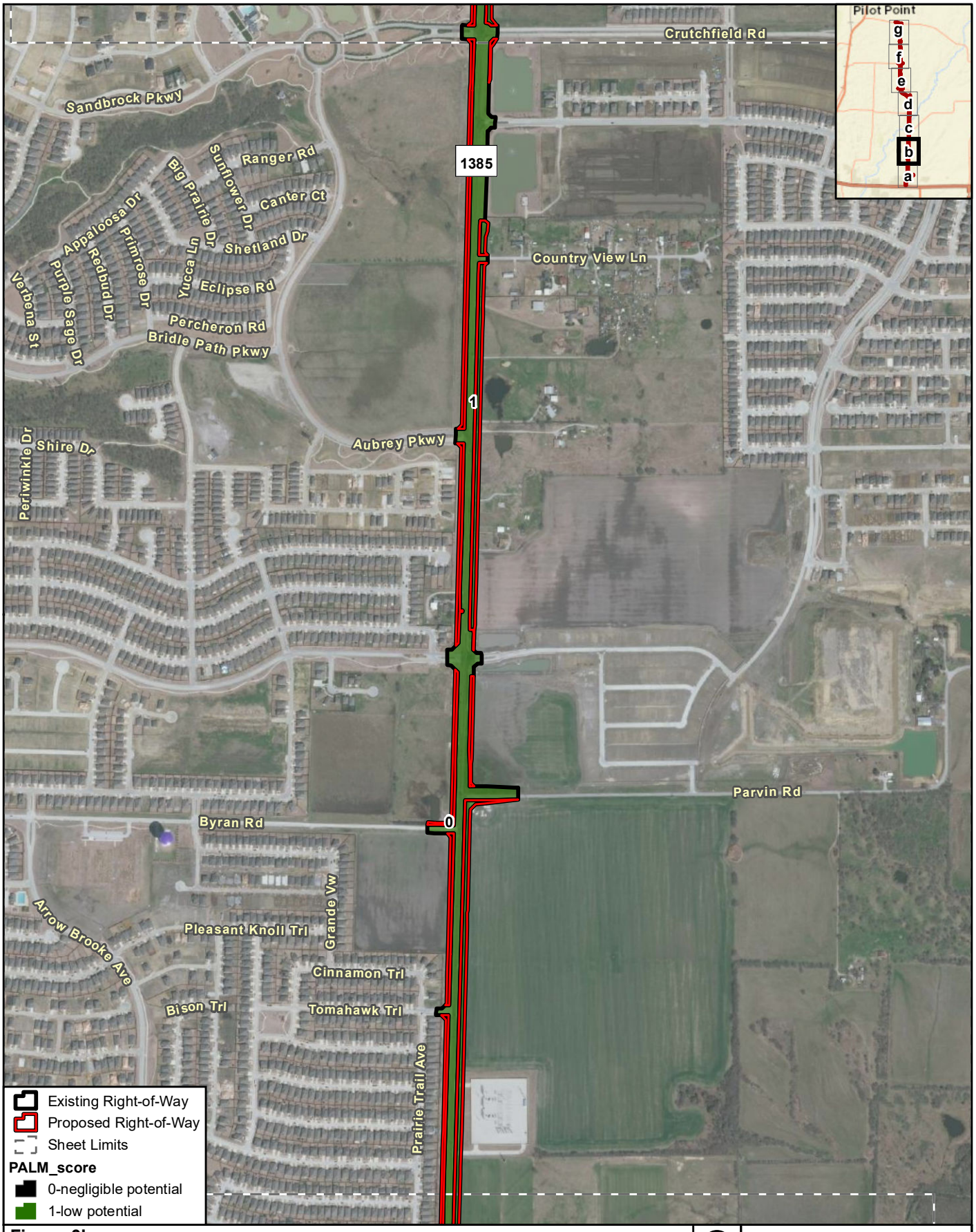

Figure 3b.
HPALM Map

FM 1385 Environmental Assessment

Data Source: TxDOT (2014)
Aerial Source: Maxar (2020)

CSJ: 1315-01-030

0 1,000 Feet
0 300 Meters

1 in = 1,000 feet
Scale: 1:12,000
Date: 3/17/2022

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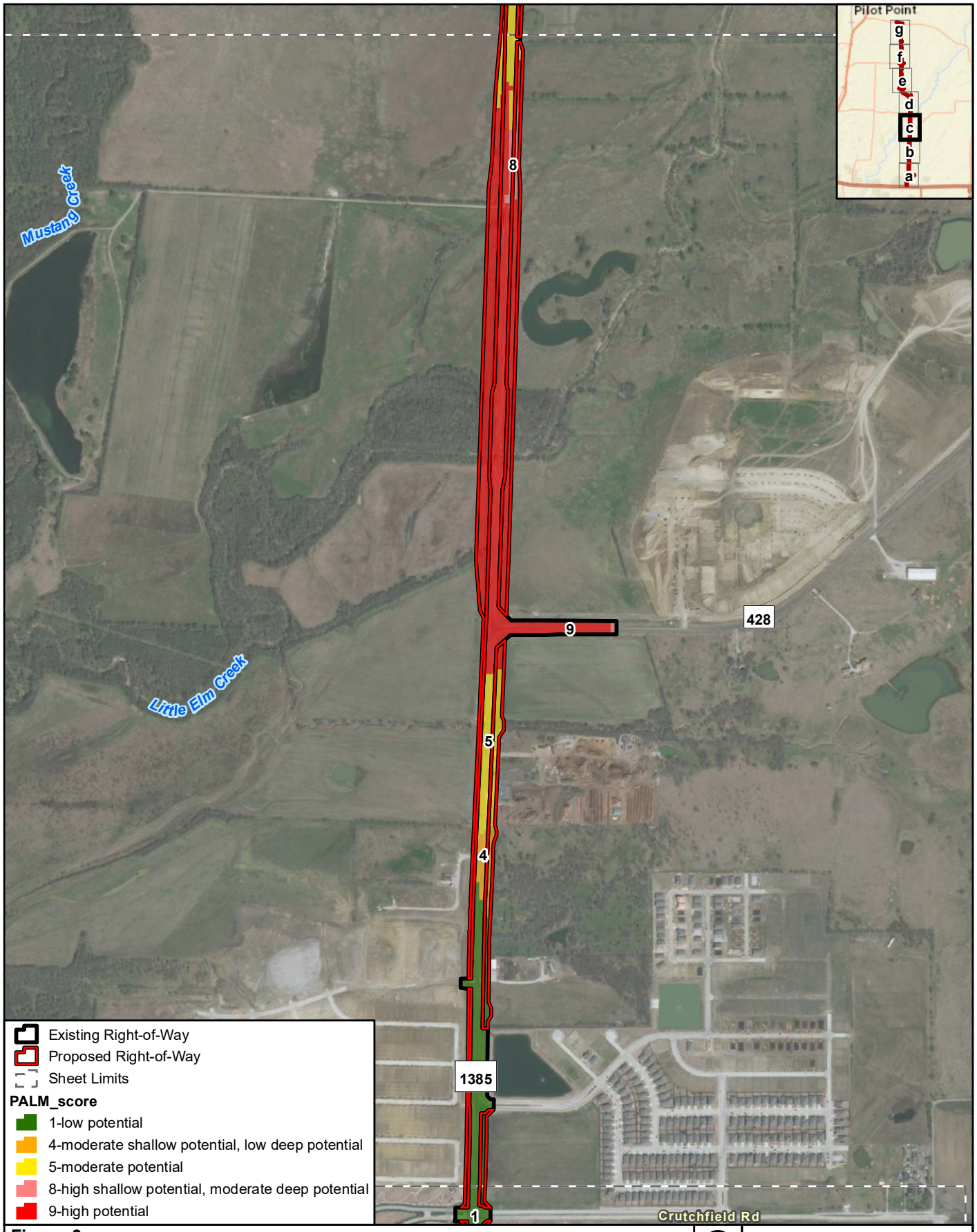

Figure 3c.
HPALM Map

FM 1385 Environmental Assessment

Data Source: TxDOT (2014)
Aerial Source: Maxar (2020)

CSJ: 1315-01-030

0 1,000 Feet
0 300 Meters

1 in = 1,000 feet
Scale: 1:12,000
Date: 3/17/2022

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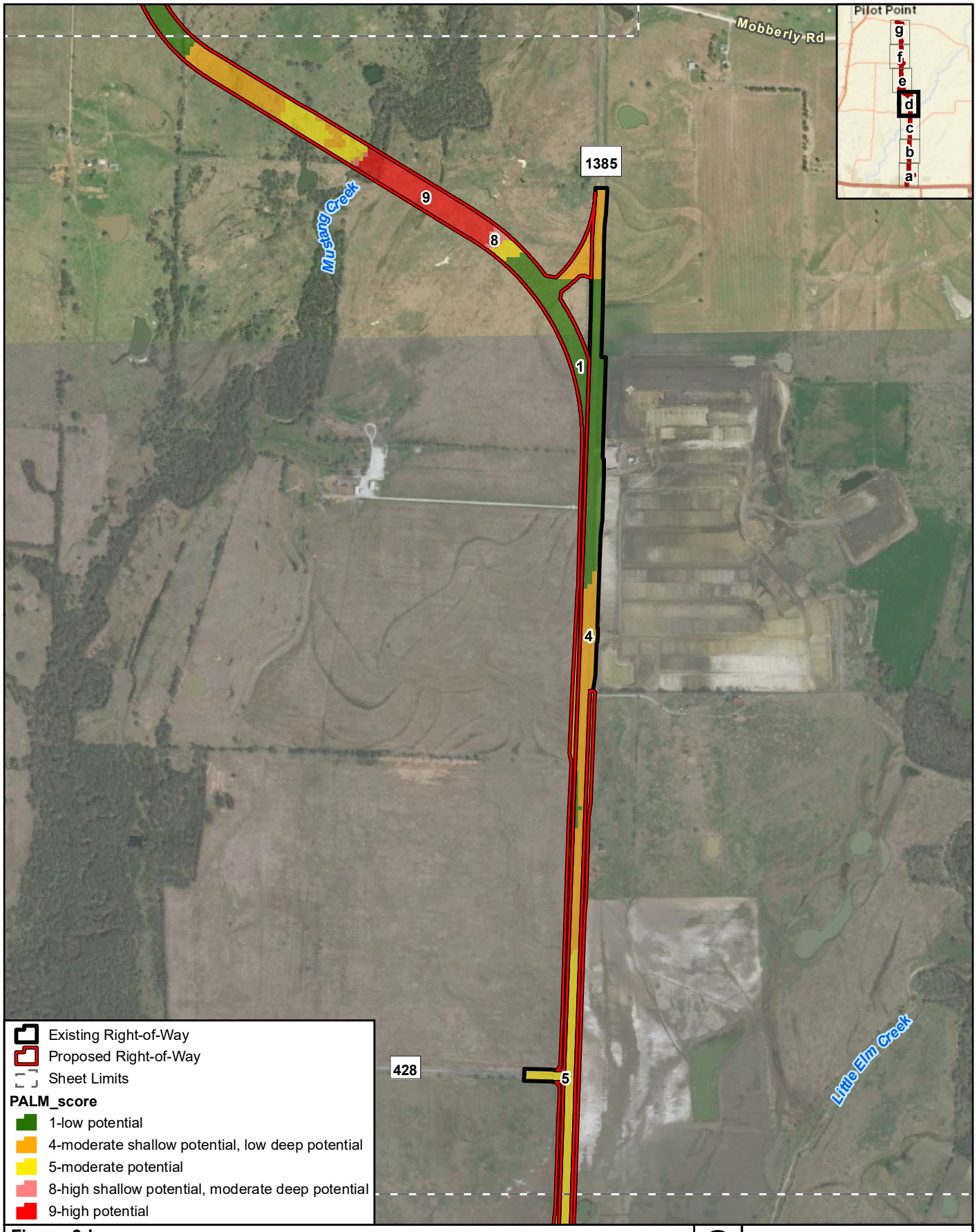

Figure 3d.
HPALM Map

FM 1385 Environmental Assessment

Data Source: TxDOT (2014)
Aerial Source: Maxar (2020)

CSJ: 1315-01-030

0 1,000 Feet
0 300 Meters

1 in = 1,000 feet
Scale: 1:12,000
Date: 3/17/2022

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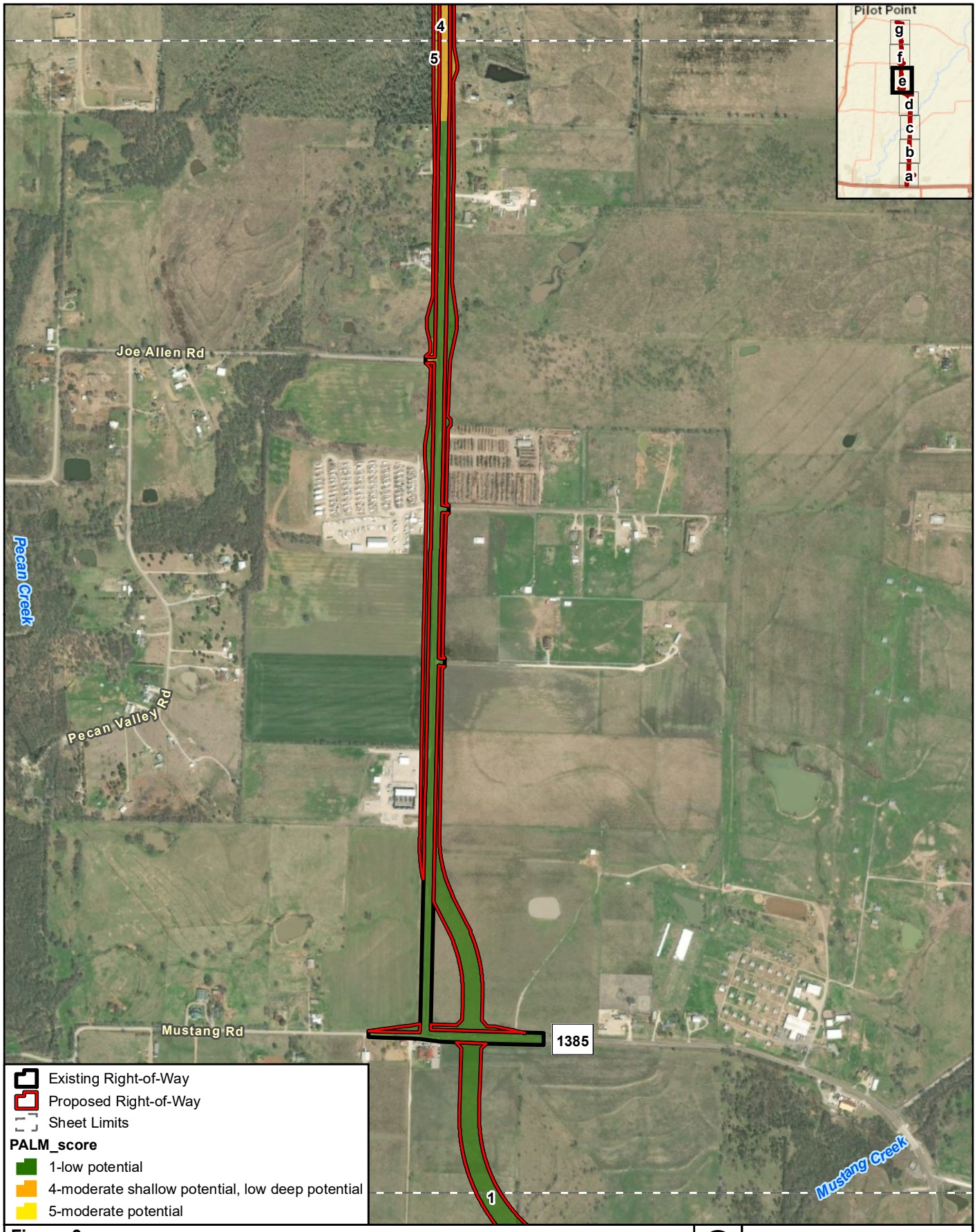

Figure 3e.
HPALM Map

FM 1385 Environmental Assessment

Data Source: TxDOT (2014)
Aerial Source: Maxar (2020)

CSJ: 1315-01-030

0 1,000 Feet
0 300 Meters

1 in = 1,000 feet
Scale: 1:12,000
Date: 3/17/2022

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Figure 3f.
HPALM Map

FM 1385 Environmental Assessment

Data Source: TxDOT (2014)
Aerial Source: Maxar (2020)

CSJ: 1315-01-030

0 1,000 Feet
0 300 Meters

1 in = 1,000 feet
Scale: 1:12,000
Date: 3/17/2022

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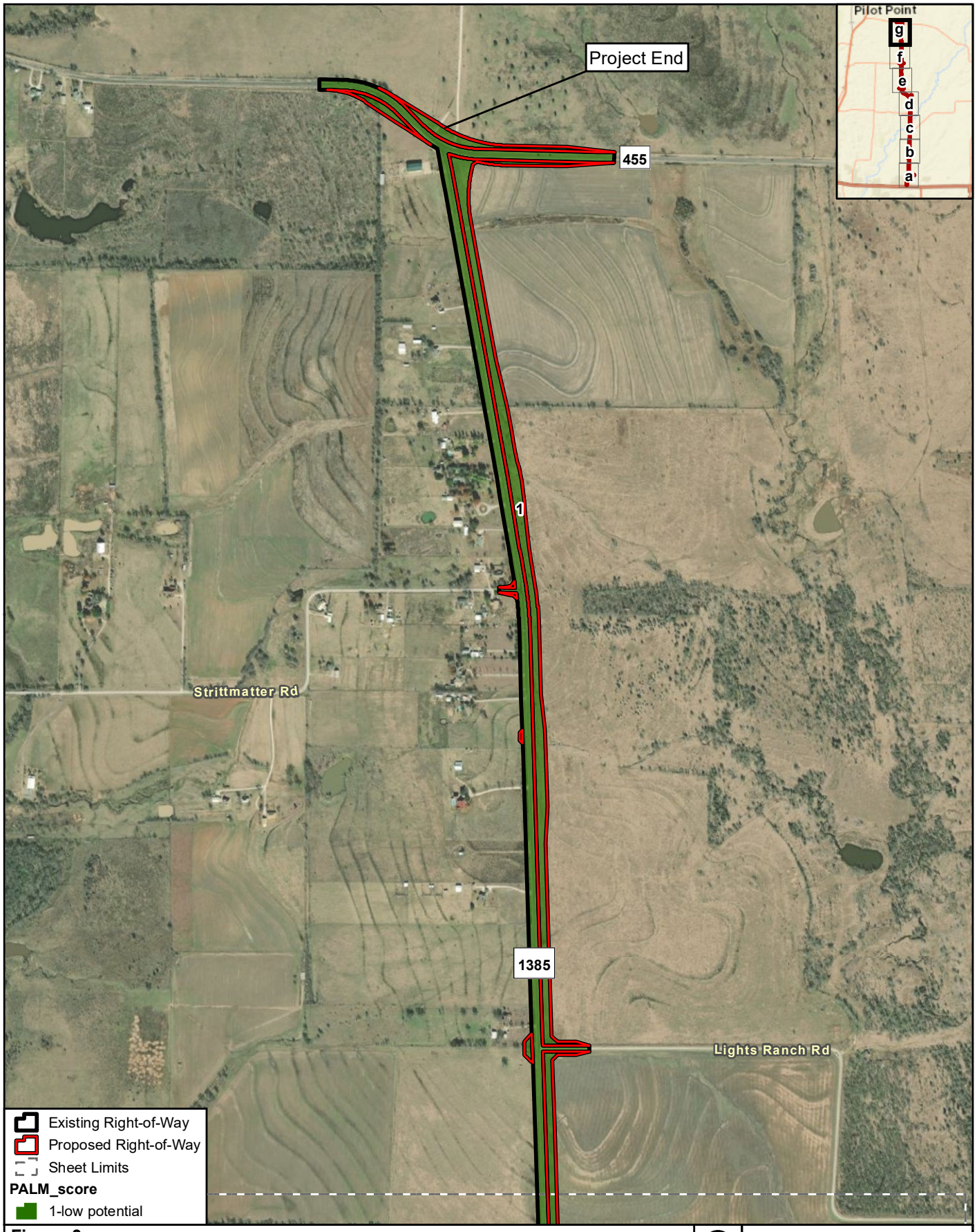

Figure 3g.
HPALM Map

FM 1385 Environmental Assessment

Data Source: TxDOT (2014)
Aerial Source: Maxar (2020)

CSJ: 1315-01-030

0 1,000 Feet
0 300 Meters

1 in = 1,000 feet
Scale: 1:12,000
Date: 3/17/2022

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TPWD Coordination

From: Leslie Mirise
To: WHAB_TxDOT
Cc: Michael McIntire; Christine Polito; Dan Perge; Mohammed Shaikh
Subject: CSJ 1315-01-030 FM 1385 Reconstruction and Widen Project - Request for Collaborative Review
Date: Friday, February 3, 2023 11:18:20 AM

Hello,

TxDOT requests initial collaborative review for the FM 1385 Reconstruction and Widen project in Denton County, Texas. Please see ECOS WPD I screen for the project description. The project includes widening of the existing FM 1385 and a new-location realignment in proximity of the cities of Little Elm, Aubrey, Pilot Point, Celina, and Paloma Point, and the town of Prosper. The following file names for relevant documents are available in ECOS:

1. CSJ 1315-01-030_FM 1385_USFWS Species List_ 202301026.pdf
2. CSJ 1315-01-030_FM 1385_TPWD RTEST Species List_20230123.pdf
3. APPROVED 01 1315-01-030 FM 1385 SAS 20230203.pdf
4. APPROVED 02 1315-01-030 FM 1385 SAF 20230203.pdf
5. APPROVED 03 1315-01-030 FM 1385 BMP Form 20230203.pdf
6. APPROVED 04 1315-01-030 FM 1385 TxNDD 20220801.pdf
7. APPROVED 05 1315-01-030 FM 1385 EMST Maps 20230203.pdf
8. APPROVED 06 1315-01-030 FM 1385 EMST Spreadsheet 20230203.xlsx
9. APPROVED 07 1315-01-030 FM 1385 Bio Photos 20230203.xlsx
10. APPROVED 08 1315-01-030 FM 1385 General Photos 20230203.pdf
11. APPROVED 09 1315-01-030 FM 1385 Species Habitat Figure 20230203.pdf
12. APPROVED CSJ 1315-01-030_404_ FINAL Impacts_Figure_1-13-2022.pdf
13. APPROVED CSJ 1315-01-030_404_Final Impacts_Table_1-13-2023.pdf
14. APPROVED CSJ 1315-01-030_FM 1385_ Delineation Report Final_1-12-2023.pdf

As general timeline information, the Draft EA is expected to be released in spring 2023 and environmental clearance in early summer 2023. Please contact me with any questions or if additional information is needed.

Thank you,

Leslie Mirise
Environmental Specialist
Dallas District – DAL-ENV
Texas Department of Transportation
4777 East Highway 80
Mesquite, Texas 75150
(214) 320-6162 office
(214) 320-4470 FAX

Project Name: **FM 1385 Reconstruction and Widen**

CSJ(s): **1315-01-030**

County(ies): **Denton County**

Date Form Completed: **February 3, 2023**

Prepared by: **Ellen Hall, Cox|McLain Environmental Consulting, Inc., now Stantec**

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

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

   ☒ No

   ☐ Yes

   <if yes, describe>

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

   ☒ No / N/A / Not yet determined

   ☐ Yes

   <if yes, describe>

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

   N/A

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

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

BMP to be Implemented:

Amphibians and Reptiles

The project is within the range and suitable habitat for one federally proposed threatened/state-threatened reptile species (alligator snapping turtle) and the following 11 SGCN amphibian and reptile species: Strecker's chorus frog, Woodhouse's toad, eastern/western box turtle, prairie skink, slender glass lizard, smooth softshell, Texas garter snake, timber (canebrake) rattlesnake, western chicken turtle, and western rattlesnake. Due to the complex life cycle of these species, the below identified will be utilized to minimize impacts to these species.

- Minimize impacts to wetland and riverine habitat.

Aquatic Amphibian and Reptile BMP

- For projects within existing right-of-way (ROW) when work is in water or will permanently impact a water feature and potential habitat exists for the target species complete the following:
  - Minimize impacts to wetlands, temporary and permanent open water features, including depressions, and riverine habitats.
  - Maintain the existing hydrologic regime and any connections between wetlands and other aquatic features.
  - Use barrier fencing to direct animal movements away from construction activities and areas of potential wildlife-vehicle collisions in construction areas directly adjacent, or that may directly impact, potential habitat for the target species.
  - Apply hydromulching and/or hydroseeding in areas for soil stabilization and/or revegetation of disturbed areas around wetlands and in riparian areas. If erosion control blankets or mats will be used, the product should not contain netting, but should only contain loosely woven natural fiber netting in which the mesh design allows the threads to move, therefore allowing expansion of the mesh openings. Plastic netting should be avoided.
  - Project specific locations (PSLs) proposed within state-owned ROW should be located in uplands away from aquatic features.
  - When work is directly adjacent to the water, minimize impacts to shoreline basking sites (e.g., downed trees, sand bars, exposed bedrock) and refugia/overwinter sites (e.g., brush and debris piles, crayfish burrows, aquatic logjams, and leaf packs).
  - If gutters and curbs are part of the roadway design, install gutters that do not include the side box inlet and include sloped (i.e., mountable) curbs to allow small animals to leave roadway. If this modification to the entire curb system is not possible, install sections of sloped curb on either side of the storm water drain for several feet to allow small animals to leave the roadway. Priority areas for these design recommendations are those with nearby wetlands or

other aquatic features.

- For projects that require acquisition of additional ROW and work within that new ROW is in water or will permanently impact a water feature, implement BMP for projects within existing ROW above plus those below:
    - For sections of roadway adjacent to wetlands or other aquatic features, install wildlife barriers that prevent climbing. Barriers should terminate at culvert openings in order to funnel animals under the road. The barriers should be of the same length as the adjacent feature or 80 feet long in each direction, or whichever is the lesser of the two.
    - For culvert extensions and culvert replacement/installation, incorporate measures to funnel animals toward culverts such as concrete wingwalls and barrier walls with overhangs.

Terrestrial Amphibian and Reptile BMP

- For open trenches and excavated pits, install escape ramps at an angle of less than 45 degrees (1:1) in areas left uncovered. Visually inspect excavation areas for trapped wildlife prior to backfilling
- Avoid or minimize disturbing or removing cover objects, such as downed trees, rotting stumps, brush piles, and leaf litter. If avoidance or minimization is not practicable, consider removing cover objects prior to the start of the project and replace them at project completion.
- Examine heavy equipment stored on site before use, particularly after rain events when reptile and amphibian movements occur more often, to ensure use will not harm individuals that might be seeking temporary refuge.
- Due to increased activity (mating) of reptiles and amphibian during the spring, construction activities like clearing or grading should attempt to be scheduled outside of the spring (March-May) season. Also, timing ground disturbing activities before October when reptiles and amphibians become less active and may be using burrows in the project area is also encouraged.
- When designing roads with curbs, consider using Type I or Type III curbs to provide a gentle slope to enable turtles and small animals to get out of roadways.
- If Texas tortoises (*Gopherus berlandieri*) or box turtles (*Terrepene* spp.) are present in a project area, they should be removed from the area and relocated between 100 and 200 meters from the project area. After removal of the individuals, the area that will be disturbed during active construction and project specific locations should be fenced off to exclude reentry by turtles, tortoises, and other reptiles. The exclusion fence should be constructed and maintained as follows:
    - The exclusion fence should be constructed with metal flashing or drift fence material.
    - Rolled erosion control mesh material should not be used.
    - The exclusion fence should be buried at least 6 inches deep and be at least 24 inches high.
    - The exclusion fence should be maintained for the life of the project and only removed after the construction is completed and the disturbed site has been

revegetated.

Vegetation BMP

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

Water Quality BMP

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

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

Mammals

The project is within the range and suitable habitat for eight SGCN mammal species, including big brown bat, big free-tailed bat, eastern red bat, eastern spotted skunk, hoary bat, long-tailed weasel, muskrat, and western hog-nosed skunk. Eastern spotted skunk, long-tailed weasel, muskrat, and western hog-nosed skunk are anticipated to actively avoid construction activities associated with the project and the General Design and Construction BMP would be applicable. The Bat BMPs outlined below will be utilized to mitigate impacts to the four bat species listed above.

General Design and Construction BMP

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

Bat BMP

The following survey and exclusion protocols should be followed prior to commencement of construction activities. For the purposes of this document, structures are defined as bridges, culverts (concrete or metal), wells, and buildings.

- For activities that have the potential to impact structures, cliffs or caves, or trees; a qualified biologist will perform a habitat assessment and occupancy survey of the feature(s) with roost potential as early in the planning process as possible or within one year before project letting.

- For roosts where occupancy is strongly suspected but unconfirmed during the initial survey, revisit feature(s) at most four weeks prior to scheduled disturbance to confirm absence of bats.

- If bats are present or recent signs of occupation (i.e., piles of guano, distinct musky odor, or staining and rub marks at potential entry points) are observed, take appropriate measures to ensure that bats are not harmed, such as implementing non-lethal exclusion activities or timing or phasing of construction.

- Exclusion devices can be installed by a qualified individual between September 1 and March 31. Exclusion devices should be used for a minimum of seven days when minimum nighttime temperatures are above 50°F AND minimum daytime temperatures are above 70°F. Prior to exclusion, ensure that alternate roosting habitat is available in the immediate area. If no suitable roosting habitat is available, installation of alternate roosts is recommended to replace the loss of an occupied roost. If alternate roost sites are not provided, bats may seek shelter in other inappropriate sites, such as buildings, in the surrounding area.

- If feature(s) used by bats are removed as a result of construction, replacement structures should incorporate bat-friendly design or artificial roosts should be constructed to replace these features.

- Large hollow trees, snags (dead standing trees), and trees with shaggy bark should be surveyed for colonies and, if found, should not be disturbed until the bats are no longer occupying these features. Post-occupancy surveys should be conducted by a qualified biologist prior to tree removal from the landscape.

- Retain mature, large diameter hardwood forest species and native/ornamental palm trees.

- In all instances, avoid harm or death to bats. Bats should only be handled as a last resort and after communication with TPWD.

- Bat surveys of structures should include visual inspections of structural fissures (cracked or spalled concrete, damaged or split beams, split or damaged timber railings), crevices (expansion joints, space between parallel beams, spaces above supports piers), and alternative structures (drainage pipes, bolt cavities, open sections between support beams, swallow nests) for the presence of bats.

- Before excluding bats from any occupied structure, bat species, weather, temperature, season, and geographic location must be incorporated into any exclusion plans to avoid unnecessary harm or death to bats. Winter exclusion must entail a survey to confirm either, 1) bats are absent or 2) present but active (i.e., continuously active – not intermittently active due to arousals from hibernation).

    - Avoid using materials that degrade quickly, like paper, steel wool or rags, to close holes.

    - Avoid using products or making structural modifications that may block natural ventilation, like hanging plastic sheeting over an active roost entrance, thereby altering roost microclimate.

    - Avoid using chemical and ultrasonic repellents.

    - Avoid use of silicone, polyurethane or similar non-water-based caulk products.

    - Avoid use of expandable foam products at occupied sites.

    - Avoid the use of flexible netting attached with duct tape.

- In order to avoid entombing bats, exclusion activities should be only implemented by a qualified individual. A qualified individual or company should possess at least the following minimum qualifications:

    - Experience in bat exclusion (the individual, not just the company).

- Proof of rabies pre-exposure vaccinations.
- Demonstrated knowledge of the relevant bat species, including maternity season date range and habitat requirements.
- Demonstrated knowledge of rabies and histoplasmosis in relation to bat roosts.

Birds

The project is within the range and suitable habitat for one state-listed threatened species, White-faced Ibis, and five SGCN bird species, Bald Eagle, Chestnut-collared Longspur, Franklin's Gull, Mountain Plover, and Western Burrowing Owl. The Bird BMPs listed below can be utilized to minimize impacts to these bird species.

Bird BMP

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

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

Prior to construction, perform daytime surveys for nests including under bridges and in culverts to determine if they are active before removal. Nests that are active should not be disturbed. If active nests are observed during surveys, TPWD recommends a 150-foot buffer of vegetation remain around the nests until the young have fledged or the nest is abandoned.

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

Insects

The project is in the range and suitable habitat for one SGCN insect species, American bumblebee.

Insect Pollinator BMP

- Mowing should only be applied to 30% or less of a site in a given year when practical. In general, mowing is inadequate for management of native insect pollinator habitat in the long term, except to remove annual non-native plants during establishment (i.e., high-mowing before they flower) or to facilitate a light disking. When conducted it should be done post bloom or when host plants have gone dormant for the growing season. This can also be done by leaving strips of habitat farthest from road or highway corridors un-mowed when practical.

- If mowing is required during period of active bloom or high pollinator activity it should be implemented during the heat of the day and with a high mower deck to allow for pollinators to escape and to give late season blooming species a chance to recover and bloom.
- Deep soil disturbances, such as, tilling or deep disking in areas that host aggregations of ground-nesting bees should be avoided. Tilling and disking also may promote the invasion or germination of non-native plants. Different species of native ground-nesting bees prefer different soil conditions, although research suggests that many ground nesting bees prefer sandy, loamy sand or sandy loam soils. In areas with these soil types consider leaving open patches of soil.
- Allow dead trees to stand (so long as they do not pose a risk to property or people) and protect shrubs and herbaceous plants with pithy or hollow stems (e.g., cane fruits, sumac, elderberry), as these provide nesting habitat for tunnel-nesting native bees.
- Retain dead or dying branches whenever it is safe and practical at the edges of the ROW. Wood-boring beetle larvae often fill dead trees and branches with narrow tunnels into which tunnel-nesting bees will establish nests. Additionally, bumble bees may choose to nest in wood piles.
- Retain rotting logs at edges of the ROW where some bee species may burrow tunnels in which to nest.
- Protect sloped or well-drained ground sites where plants are sparse and direct access to soil is available. These are the areas where ground-nesting bees may dig nests. Turning the soil destroys all ground nests that are present at that depth and hinders the emergence of bees that are nesting deeper in the ground.
- Protect grassy thickets, or other areas of dense, low cover from mowing or other disturbance. These are the sites where bumble bees might find the nest cavities they need, as well as annual and perennial wildflowers that can provide important food resources.
- Where available and economical, native plants and seed should be procured from local eco-type providers. Seed mixes should be diverse and include as many ecoregion natives as possible ensuring full season floral resources. Species by Texas ecoregion can be found in the Texas Management Recommendations for Native Insect Pollinators in Texas document: https://tpwd.texas.gov/publications/pwdpubs/media/pwd_bk_w7000_1813.pdf.
- Planting at least three different native flowering plants within each of three blooming periods are recommended (spring, summer, early fall) in high rainfall regions of Texas. In drier regions of the state, a target of three native flowering plants within each of two blooming periods can be used. In areas along the I-35 corridor of central Texas consider increasing fall blooming nectar resources as this is a critical time period of monarch butterflies (*Danaus plexippus*) and nesting bees and has been identified as a critical need for these species in Texas. Habitat enhancements for native pollinators should include at least one native bunchgrass adapted to the site.
- Utilize an Integrated Pest Management Strategy (IPM) strategy for controlling weedy or invasive plants by minimizing broad use of certain herbicides and surfactants in close proximity to intact habitats utilized by native pollinators. Reduce application timing to periods of low pollinator activity and not during peak bloom season.

Plants

The project is within the range and suitable habitat for one SGCN plant species, Sutherland hawthorn.

Rare Plant BMP

The following plant BMP apply to projects within range of and in suitable habitat for all plant

SGCN that are listed on TPWD's RTEST online application.

- Survey project area during appropriate seasons to allow for correct species identification. Habitat and survey seasons are usually during the flowering and/or fruiting period listed on the RTEST website, if available. Surveys should be performed within suitable habitat for the species. Survey effort is project-, species- and habitat-dependent. Botanical field surveys should be conducted by qualified individual(s) with botanical experience and according to commonly accepted survey protocols. Ensure that any equipment, tools, footwear and clothing are clean prior to entering the project site area to avoid introducing invasive species. Prior to surveying, TPWD Staff is available to provide assistance with species identification and appropriate survey effort.

- If SGCN plants are located, the surveyor should attempt to determine the complete extent of the occurrence and the approximate number of individuals within the occurrence. Suitable GPS equipment should be used to map the boundaries of the population. Photographs should be taken and/or voucher specimens should be collected (if sufficient plants are present, i.e., more than 10 reproductive plants). Please note that a state collection permit is required from TPWD to collect voucher specimens of state-listed species and a federal collection permit is required from U.S. Fish and Wildlife Service (USFWS) to collect federally listed species. Photographs should capture diagnostic characters of the species for verification and should be discussed with TPWD Staff prior to surveys if surveyor is unfamiliar with the species. Vouchers should be deposited with TPWD Staff or in one of Texas' major herbaria (e.g., University of Texas at Austin, Botanical Research Institute of Texas, Texas A&M University, Sul Ross State University, etc.).

- If there is a known TXNDD SGCN plant population within the project area and project timing or other constraints do not allow for surveys, contact TPWD Transportation Staff as soon as possible to discuss other options.

- If an SGCN plant species is located during surveys of the project area, then complete the following during the construction phase:

  Avoid impacts and minimize unavoidable impacts. Plant locations should be protected with temporary barrier fencing and contractors should be instructed to avoid protected areas. Conducting construction outside of the growing season or after a plant has produced mature fruit is the preferred way to avoid/minimize impacts to SGCN plant populations areas, stockpiles, and other project related sites on TxDOT ROW should not impact SGCN plant populations. After construction begins, minimize herbicide use near SGCN plant populations (if possible, use hand-held spot sprayers, several meters from rare plants, on still or days with little wind).

  a. If there are unintended impacts to SGCN populations, these impacts should be reported to TPWD Transportation Staff.

  b. If the project footprint is finalized or is subject to change AND impacts to SGCN plants cannot be avoided, notify TPWD Transportation Staff as soon as possible. Early notification will allow adequate time and opportunity to seed bank or otherwise conserve populations prior to construction.

- Submit observation(s) of SGCN plant populations and associated data to the TXNDD and WHAB_TxDOT@tpwd.texas.gov. A TXNDD Reporting Form with shapefiles delineating the outer boundary of the population are preferable. Include detailed information on who identified and how a species was identified (resources/references used; diagnostic characters observed). If an SGCN plant population is located near non-native invasive plants, this should be recorded and reported in TXNDD Reporting

Form.

- Although these BMP do not apply to federally listed species, the observation of federally listed species should also be submitted to TPWD.
- During project period, conduct work during times of the year when plants are dormant and/or conditions minimize disturbance of the habitat.
- Develop a plan based on growing season, mower height/season, etc. for protecting sites into future. Maps should also be developed for rare plant area, which includes no mow areas. Known rare plant sites on ROWs and/or new sites found in future projects can be added to this map/plan.
- Conducting maintenance outside of the growing season or after a plant has produced mature fruit is the preferred way to avoid/minimize impacts to habitat.

Mollusks

The project is within the range and suitable habitat for three state-listed threatened mussel species, Louisiana pigtoe, sandbank pocketbook, and Texas heelsplitter. The Freshwater Mussel BMP, Water Quality BMP, and Stream Crossings BMP could be utilized to minimize impacts to these species.

Freshwater Mussel BMP

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

Water Quality BMP

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

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

Stream Crossings BMP

- Use spanning bridges rather than culverts.
- If using a culvert, staggered culverts that concentrate low flows but provide conveyance of higher flows through staggered culverts placed at higher elevations is recommended.

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

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

Species protection specifications to be Implemented:

Please see above for list of proposed species protection specifications.