



Final Environmental Assessment

US 377 Relief Route

CSJs: 0080-11-001 and 0080-12-001

City of Cresson, Hood and Johnson Counties, Texas

Fort Worth District

Date: August 2017

THIS PAGE INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS

I.	INTRODUCTION	1
A.	Need and Purpose for the Proposed Project.....	2
1.	Need.....	2
2.	Purpose.....	4
II.	DESCRIPTION OF THE EXISTING FACILITY.....	5
A.	Existing Facility Design / Conditions.....	5
B.	Land Use.....	5
III.	DESCRIPTION OF THE PROPOSED FACILITY	5
A.	No-Build Alternative	6
B.	Conceptual Alternatives.....	6
C.	Preferred (Build) Alternative	7
IV.	ENVIRONMENTAL ISSUES	8
A.	Community Impacts Assessment.....	8
1.	Regional and Community Growth	8
2.	Right of Way Requirements, Relocations, and Displacements.....	10
3.	Community Cohesion.....	11
4.	Environmental Justice.....	12
5.	Public Facilities and Services.....	16
6.	Detours	17
7.	Utility Relocations / Adjustments.....	17
B.	Natural Resources	18
1.	Description of Natural Regions and Vegetation Type	18
2.	Vegetation Description and Impacts.....	19
3.	Threatened and Endangered Species	23
4.	Migratory Birds	30
5.	Farmland Issues.....	30
6.	Water Resources.....	31
7.	Texas Parks and Wildlife Coordination	35
C.	Hazardous Materials.....	35
D.	Air Quality.....	38
E.	Noise	47
F.	Cultural Resources.....	51
1.	Archeology	52
2.	Standing Structures	53
G.	Section 4(f) Properties.....	54
H.	Items of Special Nature	54
I.	Indirect Effects	55
J.	Cumulative Impacts	69
V.	PUBLIC INVOLVEMENT	81
VI.	ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS	82
VII.	RECOMMENDATION FOR ALTERNATIVE SELECTION AND A FONSI.....	87

LIST OF TABLES

Table 1: Accidents Reported on US 377 and SH 171	3
Table 2: Population Data	4
Table 3: Population and Employment Trends and Forecasts	9
Table 4: Project Area Population That Speaks English “Less Than Very Well”	12
Table 5: Demographic Data for Proposed Project Area	14
Table 6: Income Data for the Proposed Project Area	15
Table 7: Vegetation Impacts.....	20
Table 8: Federal and State Listed Threatened/Endangered/Species of Concern in Hood and Johnson Counties.....	24
Table 9: Waters of the U.S.....	33
Table 10: Natural Gas Wells in Proposed Project Area	35
Table 11: Federal and State Environmental Database Search	37
Table 12: Congestion Management Process Strategies	39
Table 13: Noise Abatement Criteria.....	48
Table 14: Traffic Noise Levels dB(A) Leq.....	50
Table 15: Level of Effort Required for Indirect Impacts Analysis.....	55
Table 16: Population Growth Rate and Forecast.....	58
Table 17: Existing Land Uses within the AOI	59
Table 18: 2007 US 377 Weekday Average Traffic Counts.....	66
Table 19: Resources Considered for the Cumulative Impacts Analysis	70
Table 20: Resource Study Area for Affected Resources.....	72

LIST OF FIGURES

Figure 1: Project Location Map
Figure 2: USGS Topographic Map
Figure 3: Aerial Map
Figure 4: Plan View
Figure 5: Typical Sections
Figure 6: Hazardous Materials Map
Figure 7: Indirect Effects Area of Influence Map
Figure 8: Cumulative Impacts Natural Resources Resource Study Area Map
Figure 9: Cumulative Impacts Air Quality Resource Study Area Map

LIST OF APPENDICES

Appendix A: EA Classification Memo
Appendix B: Project Area Photographs
Appendix C: Coordination Letters
Appendix D: Wetland Data Forms
Appendix E: TIP/MTP Pages

I. INTRODUCTION

This Environmental Assessment (EA) evaluates the social, economic, and environmental impacts resulting from the proposed improvements to United States Highway (US) 377 around the intersection with State Highway (SH) 171 in City of Cresson, Hood and Johnson Counties, Texas (**Figure 1**).

The Texas Department of Transportation (TxDOT) is proposing to construct an approximate three-mile long relief route west of the City of Cresson. The relief route would be a new location, four-lane divided highway that would begin approximately one mile south of the intersection of US 377 and SH 171 and end approximately one mile north of the same intersection.

The Federal Highway Administration (FHWA) has developed federal regulations for highway projects. These regulations, Title 23 of the Code of Federal Regulations (CFR) Part 771, provide instructions for assessing environmental impacts specific to federally funded transportation projects. An Environmental Impact Statement (EIS) is required for projects or actions that may significantly affect the quality of the human environment. Examples of projects or actions that typically require an EIS include (1) any new controlled access freeway; (2) any highway project of four or more lanes on a new location; (3) new construction or extension of fixed guideway systems; or (4) new construction or extension of a separate roadway for buses or high occupancy vehicles (HOVs) not located within an existing highway facility. An EA Classification Memo was prepared and reviewed by FHWA. Because preliminary evaluations indicated the proposed four-lane new location roadway would not likely result in significant impacts, it was determined that the project should be classified and evaluated as an EA in accordance with 43 Texas Administrative Code (TAC) 2.11 and 23 CFR 771.119. The EA Classification Memo was approved by FHWA on March 3, 2012 and a copy of the memo is provided in **Appendix A**.

Because the proposed project is a relief route, the limits of the proposed project begin and end with existing US 377. The initial study area for the alternatives analysis extended approximately one mile north, south, east and west from the US 377/SH 171 intersection. After the alternatives analysis and various public involvement efforts, the preferred alternative was identified and the limits of the project along US 377 were placed within this two-mile section of US 377. As the design progressed, recommended design geometry, local topography, and the existing right-of-way (ROW) width all factored into identifying the exact location of the project limits. US 377 provides logical termini for

the proposed project. Additionally, the project functions on its own, indicating it has independent utility.

Figure 1 shows the location of the proposed project. A U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle map which shows the proposed project is provided in **Figure 2**. An aerial photograph of the proposed project is provided in **Figure 3**. A proposed project layout is provided in **Figure 4** and typical sections are provided in **Figure 5**.

A. Need and Purpose for the Proposed Project

Need

The proposed project is needed because proximity of the at-grade railroad crossing on US 377 to the SH 171 intersection impedes traffic flow; accidents occur along US 377 near SH 171; a high level of truck traffic leads to congestion along US 377; short-term solutions currently in place will not provide extended relief for motorists using US 377 and SH 171; and, US 377 belongs to the Texas Highway Trunk System (the Trunk System) but does not meet TxDOT design criteria for the Trunk System.

At-Grade Railroad Crossing

The Fort Worth and Western Railroad (FWWR) crosses US 377 approximately 200 feet north of the SH 171 intersection. West of this crossing is a railroad switchyard. Traffic along US 377 is stopped numerous times per day because of trains traveling through Cresson or trains switching tracks. A study by the Texas Transportation Institute (TTI) in May 2008 reported four through moves and nine switching moves were typical for that crossing each day. Some of these movements occur during peak traffic periods and cause extended travel delays. In addition to causing travel time delays, the crossing also poses a safety risk to motorists. According to FHWA's January 1st, 2008 *Accidents Prediction Report*, this particular crossing is the second most likely railroad crossing to have an accident in the state of Texas. This report is based on accident data from the previous five years, the number of trains each day, and average daily traffic (ADT) on US 377.

Accident Data

TxDOT accident data for US 377 and SH 171 within the study area is provided in **Table 1**.

County	Roadway	Number of Accidents by Year and Injury							
		2009		2010		2011		2012	
		Injury	Non-Injury	Injury	Non-Injury	Injury	Non-Injury	Injury	Non-Injury
Hood County	US 377	4	19	6	18	8	19	5	19
	SH 171	1	5	3	2	0	2	2	5
Johnson County	US 377	2	2	1	3	1	6	0	5
	SH 171	0	1	2	1	0	0	0	1
Total Per Year		34		36		36		37	

Source: TxDOT, April 2013.

Of the 35 injury accidents reported over four years, two resulted in incapacitating injuries and the remaining were either potential injuries or not considered incapacitating injuries. No fatalities were reported. One reported accident was the result of a vehicle not stopping for the train. Six accidents could be considered the result of impatient movements because of a lengthy queue time at the train crossing (disregarding a traffic light or following too closely), and 34 accidents were the result of speeding, which could also be attributable to a lengthy wait. Finally, 51 reported accidents (11 of which included injuries) occurred during the peak travel periods. For purposes of this analysis, peak travel periods were considered to be from 5:00 am to 8:30 am and 4:00 pm to 7:30 pm. An additional hour (5:00 am to 6:00 am and 6:30 pm to 7:30 pm) was included in the peak travel periods because Cresson is located on the commuter route from Granbury to Fort Worth and motorists would likely leave earlier and arrive later than the typical peak travel periods.

Traffic Data

According to TxDOT Transportation, Planning and Programming Division (TP&P), the 2015 ADT on US 377 within the City of Cresson is estimated to be 24,400 vehicles per day (vpd). The 2035 ADT is estimated to be 33,900 vpd; an increase of 39 percent over 20 years. Approximately seven percent of the vehicles on US 377 in this area are heavy-duty trucks.

The 2015 ADT on SH 171 within the City of Cresson is estimated to be 10,400 vpd. The 2035 ADT is estimated to be 16,600 vpd; an increase of 60 percent over 20 years.

Consistency with Previous Studies

In 2008, the North Central Texas Council of Governments (NCTCOG) and the TTI studied the US 377/SH 171/FWWR intersection in the City of Cresson and provided short-term recommendations to the existing traffic problems. Proposed recommendations included expanding the US 377/SH 171 intersection; modifying SH 171 and Broadway Street to a couplet system; and relocating SH 171 to Broadway Street. These recommendations were presented to the City of Cresson as potential short-

term solutions that could be implemented quickly. However, as noted by NCTCOG and TTI, the best long-term solution is to provide a grade-separated railroad crossing. The proposed project is consistent with the results of these studies.

Regional Transportation Needs

The City of Cresson is located on US 377 approximately halfway between the cities of Fort Worth and Granbury. As shown in **Table 2**, the 2010 population of Cresson is relatively small indicating that it is not the final destination for the majority of vehicles using US 377. Instead, US 377 provides regional access for those commuting to Fort Worth or commercial vehicles providing goods and services to the Hood, Johnson, and Parker County areas. Since 1990, the City of Granbury and Hood and Parker Counties have almost doubled in size. Johnson County grew 55 percent during the same time period (1990 – 2010). An improved regional roadway is needed to better serve the transportation needs outside of the City of Cresson. The following table provides data on the population growth in the region supported by US 377.

Table 2: Population Data			
City/County	1990	2000	2010
City of Benbrook	19,564	20,208	21,234
City of Cresson	N/A	623*	741*
City of Fort Worth	447,619	534,694	741,206
City of Granbury	4,045	5,718	7,978
Hood County	28,981	41,400	51,182
Johnson County	97,165	126,811	150,934
Parker County	64,785	88,495	116,927

Source: U.S. Census 2010 PL94-171, NCTCOG, February 2011.
 * - U.S. Census Bureau, 2000 Census and 2010 Census
 N/A - Not available

Texas Highway Trunk System

The Trunk System was developed by TxDOT to connect large population centers, major ports, and other points of entry in Texas. The design criteria developed by TxDOT state that the Trunk System highways should be at least four-lane divided highways with grade-separated railroad crossings. Additionally, relief routes built as part of the Trunk System should be controlled-access facilities.

Purpose

The purpose of the proposed project is to provide a long-term solution to identified traffic issues at the US 377 and SH 171 intersection.

II. DESCRIPTION OF THE EXISTING FACILITY

A. Existing Facility Design / Conditions

US 377 is a four-lane divided highway that extends south from IH 20 in the City of Fort Worth to just north of the City of Cresson. The highway transitions to a four-lane undivided highway as it passes through Cresson and widens back to a four-lane divided highway south of Cresson. From Cresson, US 377 continues through Hood County toward cities in southwest Texas, including the City of Granbury which is approximately 10 miles to the south.

Within the City of Cresson, US 377 intersects both SH 171 and the FWR at-grade. The SH 171 intersection is signalized, and the FWR crossing is regulated by warning lights and gates.

The existing ROW width ranges from 80 feet within the City of Cresson to 300 feet at the southern project limit and is typically 120 feet. The posted speed limit is 45 miles per hour (mph) on the undivided highway and 55 mph on the divided highway.

There is no existing transportation facility west of US 377 and the City of Cresson where the proposed relief route would be located.

B. Land Use

The land use along the project corridor consists of ranchland with some fallow pasture. Additionally, portions of Cresson Crossroads, a “Master-Planned New Town”, are being constructed in the project area. Within the City of Cresson, the proposed project ROW is currently zoned as agriculture and planned development.

As listed in the U.S. Department of Agriculture’s (USDA) *Soil Survey of Hood and Somervell Counties*, and *Soil Survey of Johnson County*, there are six general soil types within the proposed project study area. Soil types existing along the proposed project corridor are Aledo-Bolar association – undulating, Sunev clay loam, Bolar clay, Lindale clay loam, Aledo-Bolar complex, and Bolar clay loam.

III. DESCRIPTION OF THE PROPOSED FACILITY

In 2008, NCTCOG and the TTI studied the US 377/SH 171/FWR intersection in the City of Cresson and provided short-term solutions to the existing traffic problems; however, it was noted by NCTCOG and TTI that the best long-term solution would be to provide a US 377 grade-separated railroad crossing. In 2010, the TxDOT Fort Worth District began the process of developing conceptual

alternatives for a proposed relief route. Studies were performed by TxDOT to develop cross section alternatives, construction costs, ROW requirements, and potential environmental concerns for five conceptual alternatives. These conceptual alternatives included a bridge over the railroad along the existing corridor, a tunnel under the railroad along the existing corridor, two relief routes along the western side of the City of Cresson, and one relief route along the east side of the City of Cresson. Work Group meetings were conducted in order to review and discuss the data TxDOT developed. The data were presented to the public in May 2010. After analyzing the comments presented during and after the Public Meeting, the preferred alternative was identified and presented to the Work Group. **Section V.** provides more detail related to the Work Group and Public Meetings.

A. No-Build Alternative

The No-Build Alternative assumes no major investments in transportation improvements in the corridor beyond those already programmed and funded by the City of Cresson, Hood and Johnson Counties, FWWR, TxDOT, or Federal entities by the Year 2040. These programmed and funded improvements are included in the approved Metropolitan Transportation Plan (MTP) *Mobility 2040: The Metropolitan Transportation Plan for North Central Texas*, Capital Improvement Programs for Hood and Johnson Counties, and the *2017-2020 Transportation Improvement Program (TIP)*. The No-Build Alternative includes a range of strategies such as the Congestion Management System, Employer Trip Reduction programs, intersection and signal improvements, Advanced Transportation Management, bicycle and pedestrian improvements, transit rail improvements, and numerous roadway improvements. The No-Build Alternative is carried forward through this EA as a baseline of comparison against the Build Alternative.

Although the No-Build Alternative avoids construction impacts, the problems associated with a deficient roadway would remain. The projected growth in traffic demand would exceed the capacity of US 377 thereby increasing the length of peak traffic periods, leading to longer periods of congestion. The No-Build Alternative would not improve regional mobility and would not meet the proposed project need and purpose.

B. Conceptual Alternatives

An Alternatives Analysis Evaluation Methodology Technical Memorandum was completed in March 2010, and an Alternatives Analysis Technical Memorandum was completed in September 2010. Both are on file at the TxDOT Stephenville Area Office and Fort Worth District Office. These

documents explain the criteria used to analyze each alternative, provide descriptions of each alternative, and describe how the preferred alternative was determined.

Five conceptual alternatives were considered during the project planning stage. These included two relief route options to the west (Alternatives B1 and B2), one relief route option to the east (Alternative C), and two through-town options – a bridge option (Alternative A) and a “tunnel” option (Alternative D). No support was provided by local officials or the public for Alternative C and very little support was provided for Alternative D. After analyzing public input, it was determined that Alternative B2 was the alternative preferred by the public followed by Alternative A and Alternative B1. TxDOT compared and analyzed the design elements and identified impacts of the three alternatives and determined that Alternative B1 was the technically preferred alternative. Alternative A was removed from consideration because it was an urban solution for a rural area and would cause the highest level of construction and visual impacts. Alternative B2 was removed from consideration because it would not provide room for ramp connections between US 377 and SH 171 and would interfere with the potential couplet option along SH 171. Alternative B1 met the need and purpose, and was supported by Hood County and the City of Cresson. It was determined that Alternative B1 would be carried forward for analysis as the preferred build alternative.

C. Preferred (Build) Alternative

TxDOT Fort Worth District proposes to construct a 3.02-mile, four-lane relief route west of US 377 and the City of Cresson in Hood and Johnson Counties, Texas. The proposed project begins one mile south of the intersection of US 377 and SH 171 and ends approximately one mile north of the same intersection. The proposed roadway would be a four-lane divided roadway with two 12-foot wide lanes in each direction, 10-foot wide outside shoulders, and a 48-foot wide median which includes four-foot wide inside shoulders.

The proposed relief route would bridge SH 171 and the FWR. The proposed roadway would be constructed over SH 171 and the railroad on two parallel bridges which would each consist of two 12-foot wide lanes, four-foot wide inside shoulders, and 10-foot wide outside shoulders. The preferred alternative was presented to the public at two Public Meetings held in May 2010 and December 2011. The majority of comments received during and after the December 2011 Public Meeting requested that the jug handle connections between US 377 and SH 171 be removed from the proposed design. This request was supported by the City of Cresson and Hood County; therefore, the connections were removed from the design.

At the project termini, grade-separations with 14-foot wide ramps would provide connectivity to existing US 377. At the southern limit, the relief route would bridge over Old Granbury Road and ramps would allow access to the existing highway. At the northern project limit, the relief route would pass under a proposed access road and ramps would provide access. Travel on the proposed access road would be necessary for motorists who want to continue south on existing US 377 or those who have traveled north on the relief route and then want to travel south on existing US 377. Old Granbury Road and the proposed access road would include two 12-foot wide lanes in each direction and 10-foot wide shoulders. Reconstruction of Old Granbury Road would begin at the existing US 377 and extend for 0.1 mile under the proposed relief route. **Figure 4** provides the proposed project layout and **Figure 5** provides the existing and proposed typical sections.

According to Minute Order 108544 passed by the Texas Transportation Commission (TTC) on June 28, 2001, new location relief routes on the state highway system are to be developed with full control of access. To be consistent with this TTC policy, the proposed relief route would not provide access to adjacent properties and no frontage roads are proposed as part of the design. Because the proposed project is a highway facility with no access to adjacent properties and no frontage roads, pedestrian accommodations are not included.

The proposed action is consistent with the NCTOG's financially constrained Mobility 2040 and the 2017–2020 TIP, as amended, both of which were initially found to conform to the Texas Commission on Environmental Quality (TCEQ) State Implementation Plan (SIP) by FHWA and the Federal Transit Administration (FTA) on September 7, 2016. Copies of the MTP and TIP pages are included in **Appendix E**. All projects in the NCTCOG TIP that are proposed for federal or state funds were initiated in a manner consistent with federal guidelines in Section 450, of Title 23 CFR and Section 613.200, Subpart B, of Title 49 CFR. The proposed project letting is scheduled for August 2018 and it is anticipated the proposed relief route would be open for use in 2020. The total project cost is estimated as approximately \$ 51 million.

IV. ENVIRONMENTAL ISSUES

A. Community Impacts Assessment

1. Regional and Community Growth

No-Build Alternative

Implementation of the No-Build Alternative would increase traffic congestion causing travel delay costs, which would be borne by roadway users and businesses that are dependent on corridor roadways for employment and commerce activities. This, in turn, may affect regional and community growth.

Build Alternative

NCTCOG, the Metropolitan Planning Organization, collects demographic data for the North Central Texas region. According to the 2010 Census, this region added nearly 1.2 million residents since the 2000 Census. Regional and community growth in the vicinity of this project is expected to continue along present trends. **Table 3** summarizes the population forecasts for the surrounding cities and counties. Additionally, employment forecasts are presented for the surrounding counties.

Table 3: Population and Employment Trends and Forecasts				
	2000	2010	2035	2040
City of Benbrook				
Population	20,208	21,234	N/A	36,000**
City of Cresson				
Population	623	741	N/A	677**
City of Fort Worth				
Population	534,694	741,206	N/A	1,236,870**
City of Granbury				
Population	5,718	7,978	N/A	13,914**
Hood County				
Population	41,100	51,182	97,805*	121,852*
Employment	N/A	N/A	37,036*	40,742*
Johnson County				
Population	126,811	150,934	272,061*	295,364*
Employment	45,071***	N/A	132,917*	148,512*
Parker County				
Population	88,495	116,927	193,730*	208,141*
Employment	29,816***	N/A	91,660*	101,685*

Source: U.S. Census 2010 PL94-171, NCTCOG, February 2011.

* - NCTCOG 2040 Demographic Forecast, <http://www.nctcog.org/ris/demographics/forecast.asp>, February 2011.

** - 2011 Regional Water Plan Population Projections for 2000 - 2060, July 2010.

*** - NCTCOG Interactive Query for Demographic Data, <http://www.nctcog.org/ris/demographics/index.asp>, generated November 2011.

N/A - Not Available

As shown in **Table 3**, the population of Fort Worth is expected to grow by 67 percent between 2010 and 2040. The City of Benbrook population is expected to grow by 70 percent and the City of Granbury is expected to grow by 74 percent within the same time period. The City of Cresson population is forecasted to decrease by nine percent between 2010 and 2040. Johnson County is expected to grow by 96 percent between 2010 and 2040 and employment is expected to grow by 230 percent between 2000 and 2040. According to NCTCOG data, within the three counties

encompassing the proposed project area (Hood, Johnson, and Parker Counties) there are 23 major employers that each employs over 250 people.

Implementing the Build Alternative would improve traffic mobility and access through the study area and would likely increase commercial business opportunities along and near the proposed roadway. Adjacent and surrounding property values would be favorably affected by improved accessibility and mobility, thereby increasing the tax base and producing benefits that would accrue during the design life of the proposed project. A short-term benefit of the proposed action is employment for some area residents during the construction phase.

2. Right of Way Requirements, Relocations, and Displacements

No-Build Alternative

Implementation of the No-Build Alternative would not require ROW acquisition, relocations, or displacements.

Build Alternative

Implementing the Build Alternative would require ROW acquisition. The proposed new location relief route would typically require a width of 240 feet of new ROW. Additional ROW width will be required at locations where cut and fill are required for slopes, and near intersections with US 377 at the beginning and end of the project. The plan view, as depicted in the schematic, is available for viewing at the TxDOT Fort Worth District Office located at 2501 SW Loop 820, Fort Worth, Texas 76133. **Figure 5** presents the typical sections which show the proposed ROW width. Approximately 115 acres of additional ROW and no easements would be required to accommodate the proposed facility.

Eighteen parcels and seven property owners would be impacted by ROW acquisition; however, no residential or commercial displacements would be required. In the north half of the proposed project area, two family ranches would be divided by the proposed relief route. The land is grazed by cattle, and the proposed roadway would become a barrier for the cattle. In order to reduce impacts to the Groves' ranch, TxDOT would extend the proposed bridge over SH 171 and the railroad further to the north. This would allow the cattle to move under the proposed relief route between the two portions of the family ranch and continue grazing on either side of the proposed roadway. Regarding impacts to livestock operations of the Miles ranch, TxDOT would coordinate with affected property owners to explore the possibility of constructing a cattle pass over the proposed project. According to TAC, Title

43, Rule §21.81, TxDOT shall determine the necessity, location, and design of all passes and cattle guards based on a detailed study of current operations of land use. The use of a pass across the ROW may be by permit, contractual agreement, or retention of pass rights in the conveyance of ROW to the State. Additionally, TxDOT has previously met with livestock operation representatives of Miles Ranch to discuss the ranch operators concerns and determine damages, and will continue to do so in the future at the request of the property owner(s).

Both the U.S. and Texas Constitutions provide that no private land may be taken for public purposes without just compensation being paid. The TxDOT Right of Way Acquisition and Relocation Assistance Program would be conducted in accordance with the *Uniform Relocation Assistance and Real Property Acquisition Policy Act of 1970*, as amended.

3. Community Cohesion

No-Build Alternative

Implementation of the No-Build Alternative would not separate or isolate any distinct neighborhoods or communities whose individual members depend on each other.

Build Alternative

The proposed relief route would be located in a rural area within the City of Cresson and its extended territorial jurisdiction (ETJ). The proposed alternative was designed to reduce impacts to local residents as much as possible. Three large parcels would be divided by the proposed project. The parcel south of SH 171 is planned as a new master community and the proposed relief route would be incorporated into the development plan. The parcels north of SH 171 are associated with two family ranches and the proposed relief route would divide the ranches. However, the families would still be connected to the City of Cresson and the larger ranching community because of their access to SH 171 and US 377.

Impacts to community cohesion are not expected. The proposed project would not separate or isolate any distinct neighborhoods or communities whose individual members depend on each other.

4. Limited English Proficiency

Executive Order (EO) 13166, *Improving Access to Services for Persons with Limited English Proficiency* (LEP), requires federal agencies to examine the services they provide, identify any need

for services to those with LEP, and develop and implement a system to provide those services so that LEP persons can have meaningful access to them. The EO requires federal agencies to work to ensure that recipients of federal financial assistance provide meaningful access to their LEP applicants and beneficiaries. Failure to ensure that LEP persons can effectively participate in or benefit from federally assisted programs and activities may violate the prohibition under Title VI of the Civil Rights Restoration Act of 1987 and Title VI regulations against national origin discrimination. The populations (age five years and older) who speak English “less than very well” according to the 2011-2015 American Community Survey 5-Year Estimates are presented in **Table 4**.

Table 4: Project Area Population That Speaks English “Less Than Very Well”						
Census Data Level	Total	LEP	Languages Spoken by LEP Populations			
			Spanish	Other Indo-European	Asian and Pacific Island	Other
CT 1602.04	2,593	29 1.1%	29 1.1	--	--	--
BG 1	1,183	0 0.0%	--	--	--	--
CT 1602.09	7,643	39 0.5%	0	0 0.0%	39 0.5	0 0.0%
BG 2	2,969	39 1.1%	39 1.1%	0 0.0%	0 0.0%	0 0.0%
CT 1301	3,796	78 2.1%	78 2.1%	0 0.0%	0 0.0%	0 0.0%
BG 1	1,311	14 1.1%	14 1.1%	0 0.0%	0 0.0%	0 0.0%

Source: U.S. Census Bureau; American FactFinder; 2011-2015 American Community Survey 5-Year Estimates; B16004 data 5/31/17;
 CT - Census tract
 BG - Block group

Approximately 1.0 percent (53 people) of the population in the project area block groups and 1.0 percent (146 people) of the population in the project area census tracts speaks English “less than very well”. Spanish and Asian/Pacific Islander are the languages spoken by those that speak English “less than very well.” During the planning process, which included Work Group Meetings, Public Meetings, Public Hearing, and continual interaction with city and county officials, no LEP populations were identified. No non-English language signs are present in the area and Census data indicates a very small percentage of people in the area are considered to have LEP. While future public involvement will be conducted in English, TxDOT will provide language accommodations should a request be received. The requirements of EO 13166, pertaining to LEP, have been satisfied.

5. Environmental Justice

No-Build Alternative

Implementation of the No-Build Alternative would not have disproportionately high and adverse human health or environmental effects on minority populations and low-income populations.

Build Alternative

EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* requires each federal agency to “make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies and activities on minority populations and low-income populations.”

The FHWA has identified three fundamental principles of environmental justice:

1. To avoid, minimize or mitigate disproportionately high and adverse human health or environmental effects, including social and economic effects, on minority populations and low-income populations;
2. To ensure full and fair participation by all potentially affected communities in the transportation decision-making process;
3. To prevent the denial of, reduction in or significant delay in the receipt of benefits by minority populations and low-income populations.

Minority: means a person who is:

- Black (having origins in any of the black racial groups of Africa).
- Hispanic (of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race).
- Asian American (having origins in any of the original peoples of the Far East, Southeast Asian, the Indian subcontinent, or the Pacific Islands).
- American Indian and Alaskan Native (having origins in any of the original people of North American and who maintains cultural identification through tribal affiliation or community recognition) or,
- Native Hawaiian and Other Pacific Islander (having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands).

Low Income: means a household income at or below the Department of Health and Human Services (DHHS) poverty guidelines (\$24,600 for a family of four in 2017).

Disproportionately high and adverse human health or environmental effects are defined by FHWA as adverse effects that:

1. are predominately borne by a minority population and/or a low-income population or
2. will be suffered by the minority population and/or low-income population and are appreciably more severe or greater in magnitude than the adverse effects that will be suffered by the non-minority population and/or non-low- income population.

For purposes of this EA, U.S. Census data have been used to identify areas with high minority concentrations and low incomes. Three census tracts and three block groups encompass the proposed project area and ten blocks surround the proposed project ROW. Data obtained from these census tracts, block groups, and blocks were analyzed to determine race and ethnicity characteristics in the proposed project area. Five of the ten blocks have no recorded population. A total of 72 persons were recorded within the five blocks containing residents in the 2010 Census data. The race and ethnicity distribution within these blocks and associated block groups and census tracts is presented in **Table 5**.

Census Data Level	Total Population	White alone	Black or African American alone	American Indian and Alaska Native alone	Asian alone	Native Hawaiian and Other Pacific Islander alone	Some Other Race alone	Two or more races	Hispanic or Latino
CT 1602.04	2,773	87.5%	3.2%	0%	0.5%	0%	0%	0.7%	8.1%
BG 1	1,236	93.0%	0.6%	0%	0.0%	0%	0%	1.6%	5.3%
Block 1015	0	-	-	-	-	-	-	-	-
CT 1602.09	8,175	85.1%	0.1%	0.4%	2.3%	0%	0%	0.7%	11.4%
BG 2	3,723	76.9%	0.2%	0%	3.9%	0.1%	0%	0.2%	18.7%
Block 2000	4	100%	0%	0%	0%	0%	0%	0%	0%
Block 2080	2	0%	0%	0%	0%	0%	0%	0%	100%
Block 2082	52	90.4%	0%	0%	0%	0%	0%	3.8%	5.8%
Block 2085	0	-	-	-	-	-	-	-	-
Block 2092	0	-	-	-	-	-	-	-	-
Block 2093	0	-	-	-	-	-	-	-	-
CT 1301	4,023	82.8%	0%	0.2%	0%	0	0%	0.4%	16.6%
BG 1	1,413	74.6%	0%	0%	0%	0%	0%	1.1%	24.3%

Table 5: Demographic Data for Proposed Project Area

Census Data Level	Total Population	White alone	Black or African American alone	American Indian and Alaska Native alone	Asian alone	Native Hawaiian and Other Pacific Islander alone	Some Other Race alone	Two or more races	Hispanic or Latino
Block 1013	8	87.5%	0%	0%	0%	0%	0%	0%	12.5%
Block 1014	1	100%	0%	0%	0%	0%	0%	0%	0%
Block 1027	5	100%	0%	0%	-0%	-0%	-0%	0%	0%

Source: U.S. Census Bureau; American FactFinder; Block data from Census 2010 SF1 100% Data; P9 data : Census Tract and Block Group data from American FactFinder; 2011-2015 American Community Survey 5-Year Estimates; B03002 data 5/31/17.

Within the project area blocks, 88.9 percent of the population is White alone; 8.3 percent are Hispanic or Latino; and 2.8 percent are Two or More Races. This is comparable to the project area block groups in which 79.5 percent of the population is White alone; 17.4 percent is Hispanic or Latino; and 0.7 percent is Two or More Races. The remaining minority groups make up the final 2.4 percent. Because the percent minority does not exceed 50 percent, there is not a distinct minority population present within the project area blocks. One block, Block 2080 of Block Group 2 in Census Tract 1602.09, demonstrates a 100 percent minority population. However, the recorded population of this block is only two persons and, therefore, is not representative of the entire proposed project area population. The five remaining blocks with a recorded population reflect similar minority percentages to their respective block groups and census tracts.

Table 6 provides the median household incomes and percent of households below the poverty guideline from the 2007-2011 American Community Survey 5-Year Estimates for the project area census tracts and counties. Median household income data is also presented for the project area block groups. The percent of households below the poverty guideline is not available at the block group level.

Table 6: Income Data for the Proposed Project Area

Census Data Level	Total Households	Median Household Income (in 2015 inflation-adjusted dollars)	Households with Income Below Poverty Guideline
Hood County	20,832	\$56,100	2,094 10%
CT 1602.04	1,185	\$48,750	185 15.6%
BG 1	508	No Data	84 16.5%
CT 1602.09	2,914	\$70,202	245 8.4%

Census Data Level	Total Households	Median Household Income (in 2015 inflation-adjusted dollars)	Households with Income Below Poverty Guideline
BG 2	1,180	\$64,688	94 8.0%
Johnson County	53,685	\$58,135	5,874 10.9%
CT 1301	1,385	\$70,058	129 9.3%
BG 1	437	\$84,886	14 3.2%

Source: U.S. Census Bureau; American FactFinder; 2011-2015 American Community Survey 5-Year Estimates; B17071 and B19013 data;5/31/17.

As shown in **Table 6**, the median household income for the project area in two of the census tracts exceeds that of their associated county. In Hood County, the median household income for Block Group 2 is less than that of the associated census tract and there is no reported data for the other block group. In Johnson County, the median household income for Block Group 1 is higher than that of its associated census tract. With the exception of Census Tract 1602.04 and its Block Group 1, the percent of the households with income below the poverty guideline is less than that of the associated county. The median household income for the three project area block groups is substantially higher than the DHHS poverty guideline.

Although there are individuals that fall under the environmental justice classification present within the proposed project area, there is not a distinct environmental justice community present. Therefore, there are no disproportionately high or adverse impacts on minority or low-income populations. No displacements would occur, limited property owners would be affected by the proposed ROW acquisition, travel time for all motorists would decrease because of the proposed bridge over the railroad; and, no minority or low-income facilities and/or services would be affected by the proposed project. Therefore, the requirements of EO 12898, pertaining to environmental justice, are satisfied.

6. Public Facilities and Services

No-Build Alternative

Implementation of the No-Build Alternative would not require displacement or relocation of any public facilities. However, emergency services would continue to be negatively affected by the at-grade railroad crossing and extensive queuing at the SH 171 and FWRW intersections on existing US

377. Increased traffic congestion resulting from predicted higher traffic volumes would reduce accessibility and increase travel time.

Build Alternative

Implementing the Build Alternative would not displace any public facilities. Public facilities located in Cresson include a post office, city building (Historic Cresson School), and volunteer fire department. There are no schools, parks, hospitals, or police stations located in Cresson. Emergency public services would have a safer and more efficient facility to use in the performance of their various duties. Interruptions to public facilities and services during construction of the proposed project would be minimized through the use of appropriate traffic control and sequencing procedures. Commutability within Cresson for area residents would improve because through traffic would bypass the City leading to decreased traffic volumes which would result in less congestion and improved travel time in and around Cresson. While there are no sidewalks in Cresson, roadside pedestrians and bicyclists would likely experience safer travel conditions due to decreased traffic volumes.

7. Detours

No-Build Alternative

Implementation of the No-Build Alternative would not require detours related to new construction. However, normal pavement and structure maintenance and repair to the existing US 377 and SH 171 alignments would occur under this alternative. Temporary reduction of capacity and detour of traffic may occur as these maintenance procedures were implemented.

Build Alternative

Implementing the Build Alternative would require temporary lane closures at the project termini and at SH 171 and handling of traffic during construction. This would be planned during the construction plan preparation stage and coordinated during the construction stage. Traffic control planning and design would include efforts to maintain existing traffic capacity during peak travel periods and minimize impacts. Access to properties would be maintained at all times.

8. Utility Relocations / Adjustments

No-Build Alternative

Implementation of the No-Build Alternative would not require utility relocations or adjustments.

Build Alternative

Implementation of the Build Alternative may require the relocation and adjustment of utilities such as water lines, sewer lines, gas lines, telephone cables, electrical lines, and other subterranean and aerial utilities. The relocation and adjustment of any utilities would be coordinated with the affected utility provider to ensure that no substantial interruption of service would take place.

B. Natural Resources

1. Description of Natural Regions and Vegetation Type

The proposed project area is located within the Blackland Prairie region and the Grand Prairie: Tallgrass Prairie sub-region of Texas (Omernik, 1987 and El-Hage 1999). According to the *Vegetation Types of Texas* (Texas Parks and Wildlife Department [TPWD], 2011) maps, the proposed project area is within the Silver Bluestem - Texas Wintergrass Grassland physiognomic region. The Ecological Mapping System of Texas (EMST) and site visits show the area to be mapped as, Edwards Plateau Savannah, Woodland and Shrubland, Disturbed Prairie, Riparian, Urban, and Agriculture. It appears that the vegetation in much of the proposed project area is consistent with these mapped types.

A small portion of the study corridor has been developed over the past few years (Cresson Crossroads). Land-use within the proposed project area is a mix of open fields, cultivated portions, portions used for grazing, portions left fallow; and, a few office/commercial buildings. Within the existing ROW, the dominant vegetation type is maintained herbaceous vegetation in the form of mowed ROW. Herbaceous maintained vegetation includes Bermuda grass (*Cynodon dactylon*), Johnson grass (*Sorghum halepense*), perennial ryegrass (*Lolium perenne*), and silver bluestem (*Bothriochloa saccharoides*). Some fencerow vegetation is present. Predominant fencerow species are sugarberry (*Celtis laevigata*), cedar elm (*Ulmus crassifolia*), brasil (*Condalia hookeri*), and Eastern red cedar (*Juniperus virginiana*). Areas of natural vegetation (unmaintained) occur within or immediately adjacent to the proposed project ROW. Vegetative areas encountered during the survey comprised undisturbed herbaceous growth, livestock grazed disturbances and various types of man-made disturbances (grading, mowing, etc.) and a small area of tallgrass prairie remnant. Predominant unmaintained vegetation includes King Ranch bluestem (*Bothriochloa ischaemum*), silver bluestem, white tridens (*Tridens albescens*), Johnson grass, western ragweed (*Ambrosia psilostachya*), and prickly pear cactus (*Opuntia lindheimeri*).

Additional unmaintained vegetation within or immediately adjacent to the proposed project ROW includes a small wooded area, open undeveloped areas (exhibiting grassland and scattered sapling-

shrub vegetation and pasture). Project area photographs provided in **Appendix B** demonstrate a sample of the vegetation types along the proposed project corridor.

2. Vegetation Description and Impacts

No-Build Alternative

Implementation of the No-Build Alternative would not impact native and non-native vegetation in the proposed project area. If the No-Build Alternative were implemented, the existing facilities and clear zones would be mowed and maintained at the current maintenance intervals. The No-Build Alternative would not result in any conversion of land to transportation use.

Build Alternative

Field surveys conducted on October 26, 2010, November 16, 2011, February 2, 2012, and June 1, 2017 of vegetation in the proposed project corridor showed that the vegetation within the existing and proposed ROW is more consistent with a predominantly rural grassland environment, interspersed with remnants of woodland scrub-shrub and to a limited extent, tallgrass prairie-type vegetation.

a. Maintained Vegetation

Nearly all of the vegetation (16.8 acres) within the existing ROW is mowed and maintained grassland, at times interspersed with Eastern red cedar. The dominant species throughout the ROW is Bermuda grass. The most commonly occurring associated grass species observed include Johnson grass, silver bluestem, dallis grass (*Paspalum dilatatum*), perennial ryegrass, and hairy crabgrass (*Digitaria sanguinalis*). Common forbs identified in the maintained ROW are sow thistle (*Sonchus asper*), western ragweed, giant ragweed (*Ambrosia trifida*), and annual ragweed (*Ambrosia artemisiifolia*). These correspond to the EMST mapped Urban Low and High Intensity.

Impacts of the proposed project on the habitat types within the study area corridor are provided in **Table 7**. These impacts are associated with clearing of existing vegetation cover as required for the construction of the travel lanes, ramps, safety clear zone, and bridges. The unmaintained vegetation would be permanently impacted due to not only the aforementioned activities, but additionally by construction phasing, storage, and staging activities. The impacts are summarized separately for areas within the proposed ROW and for areas within existing ROW.

Habitat Type (EMST)	Approximate Acres Within Existing ROW	Approximate Acres Within Proposed ROW	Total Acreage Impacted	% of Total Impacts
Maintained Vegetation (Urban)	16.8	3.6	20.4	15.3
Unmaintained Vegetation (Edwards Plateau Savannah, Woodland, and Shrubland, Disturbed Prairie and Riparian)	0.3	109.2	109.5	82.4
Agriculture	0.0	3.0	3.0	2.3
Total	17.1	115.8	132.9	100

b. Unusual Vegetation Features

Unusual habitat features, as outlined in the TxDOT-TPWD Memorandum of Understanding (MOU), include unmaintained vegetation, fencerow vegetation, riparian vegetation, trees that are unusually larger than other trees in the area, and unusual stands or islands of vegetation. Unmaintained vegetation and fencerow vegetation are the only unusual vegetation features present within the proposed project ROW.

Unmaintained vegetation: Unmaintained vegetation within the proposed project area includes the following EMST TPWD MOU types: Disturbed Prairie, Edwards Plateau Savannah, Woodland, and Shrubland, and Riparian. Vacant unmaintained land within the existing and proposed ROW is comprised of undisturbed and disturbed areas of open grassland. Some of these areas exhibit scrubby scattered tree growth. These areas are primarily open with some scattered trees such as mesquite, eastern red cedar, bois d'arc (*Osage orange*), and sugarberry. Additional predominant unmaintained vegetation includes red grama (*Bouteloua trifida*), sump weed (*Iva annua*), perennial ryegrass, snow-on-the-prairie (*Euphorbia bicolor*), broomweed (*Amphiachyris dracunculoides*), western ironweed (*Vernonia baldwinii*), narrow leaf gay feather (*Liatris mucronata*), blue sage (*Salvia azura*), coreopsis (*Coreopsis basalis*), white prickly poppy (*Argemone aliliflora texana*), common sunflower (*Helianthus annuus*), and erect dayflower (*Commelina erecta*). Approximately 109.5 acres of unmaintained vegetation exists within the proposed project ROW.

Woody upland overstory vegetation comprises a portion of the proposed project including fencerow vegetation, a small wooded area, and areas of scattered tree/scrubby/sapling, shrub, within the unmaintained vegetation. Trees in the small wooded area were approximately 40 feet tall, had

approximately 40 percent canopy cover, and a diameter at breast height (dbh) of eight to 10 inches. Fencerow trees were 30 to 40 feet tall, exhibited a 20 to 30 percent canopy cover and ranged from two to eight inches dbh. Flora consists of the previously mentioned vegetation in addition to lovegrass (*Eragrostis intermedia*) and switchgrass (*Panicum virgatum*). Additional broadleaf herbaceous plants commonly observed are broomweed, Queen Anne's lace (*Daucus carota*), thistle species (*Carduus* or *Cirsium spp.*), nightshade species (*Solanum spp.*), Canada goldenrod (*Solidago canadensis* L.), numerous aster species (*Aster spp.*), common sunflower, Texas prickly pear, eryngo (*Eryngium leavenworthii*), buffalo bur (*Solanum rostratum*), curly dock (*Rumex crispus*), cockle-bur (*Xanthium strumarium*), and southern dewberry (*Rubus trivialis*). Dominant understory species are saw greenbrier (*Smilax bona-nox*), poison ivy (*Toxicodendron radicans*), and Johnson grass.

Fencerow vegetation: Existing fencerow vegetation is consistently narrow (four feet wide) with the dominant species being sugarberry, cedar elm, occasional eastern red cedar, and brasil, and saplings of each (**Appendix B**). **Figure 4** provides the locations of these woody fencerow areas. Approximately 0.4 acre of fencerow vegetation is present along the proposed project within the existing (0.3 acre) and proposed (0.1 acre) ROW. Size of these fencerow trees range from sapling to 10-inch dbh with the average dbh being 6 inches. Tree height ranges from 25 to 50 feet and the percent canopy cover is approximately 10 percent.

Agriculture: A portion of the proposed project area consists of ranchland with some grazing areas, fallow pasture of similar grass species as described in the unmaintained vegetation section above and some plowed/cultivated areas.

c. Special Habitat Features

Some special habitat features, which include bottomland hardwoods, caves, cliffs and bluffs, native prairies, ponds, seeps or springs, snags, water bodies, and bird or bat colonies, outlined in the TxDOT-TPWD Memorandum of Understanding (MOU), were observed in areas that are expected to be impacted by the proposed project. Two special habitat features are present within the proposed project ROW and include native prairie and water bodies.

Native Prairie: Approximately 0.6 acres of remnant tallgrass prairie would potentially be impacted by the proposed project. Impacts from grading for utilities and a private road in the past few years have already disturbed these areas. Predominant species of this ecosystem include King Ranch bluestem, silver bluestem, little bluestem (*Schiachyrium scoparium*), yellow indiagrass (*Sorghatrium nutans*),

side oats grama (*Bouteloua pendula*), hairy grama (*Bouteloua hirsuta*), Texas grama (*Bouteloua rigidisetata*), bee balm (*Monarda punctata*), white tridens, Wright three-awn (*Aristida wrightii*), broomsedge bluestem (*Andropogon virginicus* L.), and bushy bluestem (*Andropogon glomeratus*).

Water bodies: The proposed project crosses nine water bodies, one of which has an abutting wetland area. All of the following water bodies would be impacted:

- One intermittent tributary to Fall Creek with an abutting wetland area.
- Three intermittent tributaries to Fall Creek.
- One ephemeral tributary to Fall Creek.
- Four intermittent tributaries to Dickey's Branch.

Each water body is identified on **Figures 2** and **4**. Permanent impacts within the ordinary high water mark (OHWM) are expected to occur in all of these water bodies during construction. All waters and their expected impacts are presented in **Table 10**.

d. Mitigation

Of the potential vegetation impacts, approximately 33 acres would be permanently impacted by roadway pavement and bridges. The remainder of the impacted vegetated areas would be revegetated. During construction, TxDOT would avoid and/or minimize the amount of vegetation and potential wildlife habitat disturbed in the areas outside the construction or clear zone to the extent practicable. During final design, portions of the sensitive areas and trees may not require clearing if they are beyond the safety clear zone, in areas where guard fencing may be used, or if other design options are found practicable for preserving these areas and trees.

e. Invasive Species/Beneficial Landscaping

Permanent soil erosion control features would be constructed as soon as feasible during the early stages of construction through proper sodding and/or seeding techniques. Disturbed areas would be restored and stabilized as soon as the construction schedule permits and temporary sodding would be considered where large areas of disturbed ground would be left bare for a considerable length of time. In accordance with *EO 13112 on Invasive Species* and the *Executive Memorandum on Beneficial Landscaping*, seeding and replanting with TxDOT-approved seeding specifications that are in compliance with EO 13112 would be done where possible. Moreover, abutting turf grasses within the ROW are expected to re-establish throughout the proposed project length. Soil disturbance would be minimized to ensure that invasive species would not establish in the ROW.

3. Threatened and Endangered Species

No-Build Alternative

Implementation of the No-Build Alternative would have no effect on any federally listed species, its habitat, or designated critical habitat, nor would it adversely impact any state listed species.

Build Alternative

The Natural Diversity Database (NDD), available through the TPWD, was consulted on January 22, 2013 and March 22, 2017, to determine if any state or federally listed threatened or endangered species had been sighted within the project area. According to NDD data search results, no sightings of any state or federally listed threatened or endangered species, species of concern, or managed areas are recorded within 1.5 miles of the proposed project.

Absence of information in an area does not mean absence of occurrence. Given the small proportion of public versus private land in Texas, the NDD does not include a representative inventory of rare resources in the state. Data from the NDD do not provide a definitive statement as to the presence, absence, or condition of special species, natural communities, or other significant features within the project area. This data cannot substitute for an on-site evaluation by qualified biologists.

A review of state and federal lists of threatened and endangered species for Hood and Johnson Counties was performed. On October 26, 2010, November 16, 2011, February 6, 2014, and June 1, 2017 qualified biologists conducted field reconnaissance within areas of potential effect (APE) for which right-of entry was granted. The federal and state-listed threatened and endangered species and state species of concern of Hood and Johnson Counties are shown in **Table 8**.

Table 8

Federal and State Listed Threatened/Endangered/Species of Concern in Hood and Johnson Counties*

Birds						
American Peregrine Falcon <i>Falco peregrinus anatum</i>	DL	T	year-round resident and local breeder in west Texas, nests in tall cliff eyries; also, migrant across state from more northern breeding areas in US and Canada, winters along coast and farther south; occupies wide range of habitats during migration, including urban, concentrations along coast and barrier islands; low-altitude migrant, stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands.	No	No Impact	There are no tall cliffs, coastlines, lakeshores, or barrier islands with the APE of the proposed project.
Arctic Peregrine Falcon <i>Falco peregrinus tundrius</i>	DL	—	migrant throughout state from subspecies' far northern breeding range, winters along coast and farther south; occupies wide range of habitats during migration, including urban, concentrations along coast and barrier islands; low-altitude migrant, stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands.	No	No Impact	There are no barrier islands, lake shores, or coastlines within the APE of the proposed project.
Baird's Sparrow <i>Ammodramus bairdii</i>	—	—	shortgrass prairie with scattered low bushes and matted vegetation; mostly migratory in western half of State, though winters in Mexico and just across Rio Grande into Texas from Brewster through Hudspeth counties	No	No Impact	The scattered low bushes and matted vegetation component is missing within the APE of the proposed project.
Bald Eagle <i>Haliaeetus leucocephalus</i>	DL	T	found primarily near rivers and large lakes; nests in tall trees or on cliffs near water; communally roosts, especially in winter; hunts live prey, scavenges, and pirates food from other birds	No	No Impact	There are no large lakes or tall trees & cliffs near water within the APE of the proposed project.
Black-capped Vireo <i>Vireo atricapilla</i>	LE	E	oak-juniper woodlands with distinctive patchy, two-layered aspect; shrub and tree layer with open, grassy spaces; requires foliage reaching to ground level for nesting cover; return to same territory, or one nearby, year after year; deciduous and broad-leaved shrubs and trees provide insects for feeding; species composition less important than presence of adequate broad-leaved shrubs, foliage to ground level, and required structure; nesting season March-late summer	No	No Effect	There are no oak-juniper woodlands with patchy, two-layered aspect within the APE of the proposed project.

Table 8
Federal and State Listed Threatened/Endangered/Species of Concern in Hood and Johnson Counties*

Golden-cheeked Warbler <i>Setophaga chrysoparia</i>	LE	E	juniper-oak woodlands; dependent on Ashe juniper (also known as cedar) for long fine bark strips, only available from mature trees, used in nest construction; nests are placed in various trees other than Ashe juniper; only a few mature junipers or nearby cedar brakes can provide the necessary nest material; forage for insects in broad-leaved trees and shrubs; nesting late March-early summer	No	No Effect	There are no juniper-oak woodlands within the APE of the proposed project.
Henslow's Sparrow <i>Ammodramus henslowii</i>	—	—	wintering individuals (not flocks) found in weedy fields or cut-over areas where lots of bunch grasses occur along with vines and brambles; a key component is bare ground for running/walking	No	No Impact	The vines and bramble component is missing from weedy fields or areas with bunch grasses, within the APE of the proposed project.
Interior Least Tern <i>Sterna antillarum athalassos</i>	LE	E	subspecies is listed only when inland (more than 50 miles from a coastline); nests along sand and gravel bars within braided streams, rivers; also known to nest on man-made structures (inland beaches, wastewater treatment plants, gravel mines, etc); eats small fish and crustaceans, when breeding forages within a few hundred feet of colony	No	No Effect	There are no sand and gravel bars within braided streams or rivers within the APE of the proposed project.
Mountain Plover <i>Charadrius montanus</i>	—	—	breeding: nests on high plains or shortgrass prairie, on ground in shallow depression; nonbreeding: shortgrass plains and bare, dirt (plowed) fields; primarily insectivorous	Yes	May Impact	There are grasslands and small areas of plowed fields within the APE of the proposed project.
Peregrine Falcon <i>Falco peregrinus</i>	DL	T	both subspecies migrate across the state from more northern breeding areas in US and Canada to winter along coast and farther south; subspecies (<i>F. p. anatum</i>) is also a resident breeder in west Texas; the two subspecies' listing statuses differ, <i>F.p. tundrius</i> is no longer listed in Texas; but because the subspecies are not easily distinguishable at a distance, reference is generally made only to the species level; see subspecies for habitat.	No	No Impact	There are no suitable habitats for either species within the APE of the proposed project.

Table 8

Federal and State Listed Threatened/Endangered/Species of Concern in Hood and Johnson Counties*

Red knot <i>Calidris canutus rufa</i>	T	—	Red knots migrate long distances in flocks northward through the contiguous United States mainly April-June, southward July-October. The Red Knot prefers the shoreline of coast and bays and also uses mudflats during rare inland encounters. Wintering Range includes- Aransas, Brazoria, Calhoun, Cameron, Chambers, Galveston, Jefferson, Kennedy, Kleberg, Matagorda, Nueces, San Patricio, and Willacy. Habitat: Primarily seacoasts on tidal flats and beaches, herbaceous wetland, and Tidal flat/shore.	No	No Effect	There are no coasts, bays, or mudflats within the APE of the proposed project.
Sprague's Pipit <i>Anthus spragueii</i>	—	—	only in Texas during migration and winter, mid-September to early April; short to medium distance, diurnal migrant; strongly tied to native upland prairie, can be locally common in coastal grasslands, uncommon to rare further west; sensitive to patch size and avoids edges.	No	No Impact	There are no coastal grasslands; only a small patch of potential native prairie grasses within the APE of the proposed project.
Western Burrowing Owl <i>Anthene cucularia hypugaea</i>	—	—	open grasslands, especially prairie, plains, and savanna, sometimes in open areas such as vacant lots near human habitation or airports; nests and roosts in abandoned burrows	Yes	May Impact	Some open grasslands are present within the proposed project ROW. Much of the land is used for livestock grazing.
White-faced Ibis <i>Plegadis chihi</i>	—	T	prefers freshwater marshes, sloughs, and irrigated rice fields, but will attend brackish and saltwater habitats; nests in marshes, in low trees, on the ground in bulrushes or reeds, or on floating mats	No	No Impact	There are no freshwater marshes, sloughs, irrigated rice fields, or brackish and saltwater habitats within the APE of the proposed project.
Whooping Crane <i>Grus americana</i>	LE	E	potential migrant via plains throughout most of state to coast; winters in coastal marshes of Aransas, Calhoun, and Refugio counties	No	No Effect	There are no plains or coastal marshes within the APE of the proposed project.
Fishes						
Sharpnose shiner <i>Notropis oxyrhynchus</i>	LE	—	endemic to Brazos River drainage; also, apparently introduced into adjacent Colorado River drainage; large turbid river, with bottom a combination of sand, gravel, and clay-mud	No	No Effect	There are no large turbid rivers within the APE of the proposed project. Project area streams are often dry.

Table 8

Federal and State Listed Threatened/Endangered/Species of Concern in Hood and Johnson Counties*

Smalleye shiner <i>Notropis buccula</i>	LE	—	endemic to upper Brazos River system and its tributaries (Clear fork and Bosque); apparently introduced into adjacent Colorado River drainage; medium to large prairie streams with sandy substrate and turbid to clear warm water; presumably eats small aquatic invertebrates	No	No Effect	There are no medium to large prairie streams within the APE of the proposed project. Project area streams are often dry.
Mammals						
Black bear <i>Ursus americanus</i>	—	T	bottomland hardwoods and large tracts of inaccessible forested areas	No	No Impact	There are no bottomland hardwoods and large tracts of inaccessible forested areas within the APE of the proposed project.
Gray wolf <i>Canis lupus</i>	LE	E	extirpated; formerly known throughout the western two-thirds of the state in forests, brushlands, or grasslands	No	No Effect	Extirpated species, last known occurrences in Texas was Brewster County in 1970. There are no forests, brushlands within the APE of the proposed project.
Plains spotted skunk <i>Spilogale putorius interrupta</i>	—	—	catholic; open fields, prairies, croplands, fence rows, farmyards, forest edges, and woodlands; prefers wooded, brushy areas and tallgrass prairie	Yes	May Impact	There are open fields, prairies, croplands, fence rows, farmyards, within the APE of the proposed project.
Red wolf <i>Canis rufus</i>	LE	E	extirpated; formerly known throughout eastern half of Texas in brushy and forested areas, as well as coastal prairies	No	No Effect	There are no brushy and forested areas or coastal prairies within the APE of the proposed project.
Mollusks						
Smooth Pimpleback <i>Quadrula houstonensis</i>	C	—	small to moderate streams and rivers as well as moderate size reservoirs; mixed mud, sand, and fine gravel, tolerates very slow to moderate flow rates, appears not to tolerate dramatic water level fluctuations, scoured bedrock substrates, or shifting sand bottoms, lower Trinity (questionable), Brazos, and Colorado River basins	No	No Effect	Project area streams are intermittent or ephemeral and often dry.
Texas fawnsfoot <i>Truncilla macrodon</i>	C	T	little known; possibly rivers and larger streams, and intolerant of impoundment; flowing rice irrigation canals, possibly sand, gravel, and perhaps sandy-mud bottoms in moderate flows; Brazos and Colorado River basins	No	No Effect	Project area streams are intermittent or ephemeral and often dry.
Reptiles						

Table 8

Federal and State Listed Threatened/Endangered/Species of Concern in Hood and Johnson Counties*

Brazos water snake <i>Nerodia harteri</i>	—	T	upper Brazos River drainage; riffle specialist, in shallow water with rocky bottom and on rocky portions of banks	No	No Impact	There are no shallow waters with rocky bottoms or banks within the APE of the proposed project. Project area streams are intermittent or ephemeral.
Texas garter snake <i>Thamnophis sirtalis annectens</i>	—	—	wet or moist microhabitats are conducive to the species occurrence, but is not necessarily restricted to them; hibernates underground or in or under surface cover; breeds March-August	Yes	May Impact	There is potential habitat present such as wet or moist microhabitats (seasonal) within the APE of the proposed project.
Texas horned lizard <i>Phrynosoma cornutum</i>	—	T	open, arid and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush or scrubby trees; soil may vary in texture from sandy to rocky; burrows into soil, enters rodent burrows, or hides under rock when inactive; breeds March-September	Yes	May Impact	There is potential habitat present such as open areas with sparse vegetation within the APE of the proposed project.
Timber rattlesnake <i>Crotalus horridus</i>	—	T	swamps, floodplains, upland pine and deciduous woodlands, riparian zones, abandoned farmland; limestone bluffs, sandy soil or black clay; prefers dense ground cover, i.e. grapevines or palmetto	Yes	May Impact	There are floodplains, riparian zones, abandoned farmland, limestone bluffs, sand soil and marginal dense ground cover, within the APE of the proposed project.
Plants						
Comanche Peak prairie-clover <i>Dalea reverchonii</i>	—	—	Texas endemic; shallow, calcareous clay to sandy clay soils over limestone in grasslands or openings in post oak woodlands, often among sparse vegetation in barren, exposed sites, most known sites are underlain by Goodland Limestone, most known sites are on roadway right-of-ways; flowering April-June, one account for October.	No	No Impact	Project area soils contain clay loam and some gravelly clay over limestone. Closer examination of the project area geology maps showed that the preferred Goodland Limestone layer is not present within the project area. Surveys (transects within proposed project area) for the presence of the species were conducted; however, none was observed during the field surveys.
Glen Rose yucca <i>Yucca necopina</i>	—	—	Texas endemic; grasslands on sandy soils and limestone outcrops; flowering April-June	Yes	May Impact	There are grasslands with some limestone outcrops; however, project soils are not sandy within the APE of the proposed project. Surveys (transects within proposed project area) for the presence of the species were conducted. None were observed during the field surveys.

Table 8
Federal and State Listed Threatened/Endangered/Species of Concern in Hood and Johnson Counties*

Hall's prairie clover <i>Dalea hallii</i>	—	—	GLOBAL RANK: G3; In grasslands on eroded limestone or chalk and in oak scrub on rocky hillsides; Perennial; Flowering May-Sept; Fruiting June-Sept	Yes	May Impact	There is potential habitat present such grasslands on limestone within the APE of the proposed project.
Osage Plains false foxglove <i>Agalinis densiflora</i>	—	—	GLOBAL RANK: G3; Most records are from grasslands on shallow, gravelly, well drained, calcareous soils; Prairies, dry limestone soils; Annual; Flowering Aug-Oct	Yes	May Impact	There is potential habitat present such as grasslands on gravelly, calcareous soils within the APE of the proposed project.
Reverchon's curfpea <i>Pediomelum reverchonii</i>	—	—	GLOBAL RANK: G3; Mostly in prairies on shallow rocky calcareous substrates and limestone outcrops; Perennial; Flowering Jun-Sept; Fruiting June-July	Yes	May Impact	There are shallow rocky calcareous substrates and limestone outcrops within the APE of the proposed project.
Texas milk vetch <i>Astragalus reflexus</i>	—	—	GLOBAL RANK: G3; Grasslands, prairies, and roadsides on calcareous and clay substrates; Annual; Flowering Feb-June; Fruiting April-June	Yes	May Impact	There are grasslands, and roadsides on calcareous and clay substrates within the APE of the proposed project.
Tree dodder <i>Cuscuta exaltata</i>	—	—	GLOBAL RANK: G3; Parasitic on various Quercus, Juglans, Rhus, Vitis, Ulmus, and Diospyros species as well as Acacia berlandieri and other woody plants; Annual; Flowering May-Oct; Fruiting July-Oct	No	No Impact	There are no suitable tree species within the APE of the proposed project.
LE, LT - Federally Listed Endangered/Threatened PE, PT - Federally Proposed Endangered/Threatened SAE, SAT - Federally Listed Endangered/Threatened by Similarity of Appearance C - Federal Candidate for Listing; formerly Category 1 Candidate DL, PDL - Federally Delisted/Proposed for Delisting NL - Not Federally Listed E, T - State Listed Endangered/Threatened NT - Not tracked or no longer tracked by the State "—" - Rare, Species of Greatest Conservation Need (SCGN) but with no regulatory listing status				*Data Sources: U.S. Fish and Wildlife Service, Texas Parks and Wildlife Department and site visit/survey of project area. Date Accessed: USFWS List: 4/25/17 TPWD List: 4/25/17		

After reviewing habitat requirements and conducting field reconnaissance, it was determined that the proposed Build Alternative, if implemented, would have no effect on any federally listed species, its habitat, or designated critical habitat. However, construction of the Build Alternative, if implemented, would have impacts to potential habitat for two state-listed species and nine state species of concern as shown in **Table 8**.

During construction of the proposed Build Alternative, if implemented, there would be temporary impacts to open areas with habitat requirements for those species aforementioned. After

construction, the impacted areas would be returned to preconstruction contours. There are also ample open areas with requisite habitat requirements outside of the proposed construction limits of the proposed Build Alternative that could serve to replace the permanently impacted habitat. Avoidance and minimization as well as Best Management Practices (BMPs) would be implemented where practicable.

4. Migratory Birds

No-Build Alternative

Implementation of the No-Build Alternative would have no effect on migratory birds, their nests, eggs, or young.

Build Alternative

The Migratory Bird Treaty Act (MBTA) of 1918 states that it is unlawful to kill, capture, collect, possess, buy, sell, trade, or transport any migratory bird, nest, young, feather, or egg in part or in whole, without a federal permit issued in accordance within the Act's policies and regulations. Migration patterns would not be affected by the proposed project. No migratory birds or nests were identified during the field investigation. In the event that migratory birds are encountered on-site during project construction, adverse impacts on protected birds, active nests, eggs, and/or young would be avoided. The contractor would remove all old migratory bird nests between October 1 and February 15 from any structure where work will be done. In addition, the contractor would be prepared to prevent migratory birds from building nests between February 15 and October 1, per the Environmental Permits, Issues, and Commitments (EPIC) in the plans.

5. Farmland Issues

No-Build Alternative

Implementation of the No-Build Alternative would require no displacement, relocation, or division of farm operations.

Build Alternative

In accordance with the Farmland Protection Policy Act, the additional ROW has been scored using the U.S. Department of Agriculture's Farmland Conversion Impact Rating Form (Form CPA-106). Coordination with the Natural Resources Conservation Service (NRCS) occurred in February 2012 and the resulting score was 95. Further coordination with the NRCS is not necessary. A copy of the NRCS letter and completed form are provided in **Appendix C**.

6. Water Resources

No-Build Alternative

Implementation of the No-Build Alternative would have no effect on lakes, rivers, and streams, existing water quality, threatened and impaired waters, floodplains, and wetlands. This alternative would have no channel impacts. No additional permitting would be required.

Build Alternative

The analysis of implementing the Build Alternative on lakes, rivers, streams, water quality, threatened and impaired waters, floodplains, wetlands, channel impacts, and permitting is presented in the following sections.

a. Watershed / Basin Information

Storm water runoff from the proposed project would flow into the unnamed tributaries of Dickey's Branch and Fall Creek. According to the TCEQ Water Quality Inventory, the unnamed tributaries of Dickey's Branch flow into Segment 0830 (Benbrook Lake) and the unnamed tributary of Fall Creek flows into Segment 1204 (Brazos River Below Lake Granbury). According to the 2014 Clean Water Act (CWA) Section 303(d) Index of Water Quality Impairments list, the proposed project is not within five miles upstream of a threatened or impaired water. The water quality of wetlands and waters in the state shall be maintained in accordance with all applicable provisions of the Texas Surface Water Quality Standards including the General, Narrative and Numerical Criteria.

b. Federal Emergency Management Agency Floodplain Information

According to the USGS 7.5 Minute topographic Quadrangle Maps (Cresson and Chapin) and the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps for Johnson County, Texas and Incorporated Areas (Map Panel No. 48251C0025J [effective date December 4, 2012]) and Hood County, Texas and Incorporated Areas (Map Panel Nos. 48221C0100D and 48221C0125D [effective date August 16, 2012]), the proposed project crosses nine water bodies and two flood zones. Johnson and Hood Counties and the City of Cresson are participants in the National Flood Insurance Program (NFIP). The water bodies along the proposed project corridor can be found in **Table 9** of the Waters of the U.S.

The proposed project is located inside the FEMA designated special flood hazard areas inundated by 100-year flood (Zone A) and areas outside the 500-year flood (Zone X). The hydraulic design for this project would be in accordance with current FHWA and TxDOT design policies. The facility would

permit conveyance of the 100-year flood, inundation of the roadway being acceptable, without causing substantial damage to the facility, stream, or other property. The proposed project would not increase the base flood elevation to a level that would violate applicable floodplain regulations and ordinances. Coordination with the local Floodplain Administrator would be required.

c. Waters of the U.S. (including Wetlands) and Channel Impacts

Pursuant to EO 11990 (Protection of Wetlands) and Section 404 of the CWA, a field reconnaissance was conducted to identify Waters of the U.S. within the proposed project limits on October 26, 2010. According to the USACE, the Federal agency having authority over Waters of the U.S., wetlands must possess three essential characteristics. Under normal circumstances, these characteristics include the presence of hydrophytic vegetation, wetland hydrology, and hydric soils. Waters of the U.S. within the proposed project ROW were identified, characterized, and delineated in order to evaluate the Waters of the U.S. status of the locations in question. Nine areas were identified containing Waters of the U.S. One of these Waters of the U.S. has an abutting wetland (Crossing 2). Waters of the U.S. are located within the existing and proposed ROW, having a total delineated area of approximately 0.70 acre (0.59 acre of streams and 0.11 acre of wetlands). Because of lack of right-of-entry (ROE), Crossings 5, 6, 7, 8, and 9 were delineated using available aerial maps and estimation from field survey. Upon acquisition of the proposed ROW, areas encompassing Crossings 5, 6, 7, 8, and 9 would be evaluated for the presence of wetlands. The locations of the wetland data points are presented in **Figure 4** and the associated USACE Wetland Determination Data Forms are included in **Appendix D**. Potential impacts to these areas are detailed in **Table 9**. Open waters beyond the ROW of the proposed project were not included in the calculations.

Mitigation measures that have been considered include:

- Avoidance, where practicable, by spanning jurisdictional areas with bridges;
- Minimization of impacts by limiting excavation and/or fill quantities; and
- Compensatory mitigation for impacts would occur through mitigation banking, if necessary.

Permits

As shown in **Table 9**, impacts to all crossings would be authorized under Nationwide Permit (NWP) 14 - *Linear Transportation Crossings*. Because impacts to Crossings 1 through 7 exceed the 0.1 acre impact threshold, exceed 300 feet in length, and/or a discharge in wetlands, a Pre-Construction Notification (PCN) would be required. If temporary fills are needed in jurisdictional waters then the affected areas would be returned to their pre-construction elevations. Channelization would not be required to construct the proposed project. Mitigation for Section 404 impacts would be coordinated

with the USACE and performed in accordance with the terms of the approved permit. Final determination of impacts and permitting would be made during detailed design, and when right of entry has been obtained to all right-of-way parcels.

Table 9: Waters of the U.S.

Crossing	Name of Water Body	Existing Structure	Proposed Work or Structure	OHWM	Permanent Impacts		Temporary Impacts		NWP (indicate number)	PCN (Y/N)	IP (Y/N)
					Open Waters acres (LF)	Wetlands acres	Open Waters acres (LF)	Wetlands acres			
1	Intermittent tributary to Fall Creek	Culvert	Culvert	4	0.02 (210)	-	0.02 (204)	-	14	Y	N
2	Intermittent tributary to Fall Creek and abutting wetland	None	Culvert/Fill	2	0.02 (348)	0.11	-	-	14	Y	N
3	Intermittent tributary to Fall Creek	None	Culvert/Fill	2 - 3	0.13 (1,132)	-	0	-	14	Y	N
4	Ephemeral tributary to Fall Creek	Culvert	Culvert	6 - 16	0.11 (632)	-	0.05 (148)	-	14	Y	N
5*	Intermittent tributary to Fall Creek	None	Culvert	6	0.09 (652)	-	0	-	14	Y	N
6*	Intermittent tributary to Dickeys Branch	None	Culvert	6	0.03 (424)	-	0	-	14	Y	N
7*	Intermittent tributary to Dickeys Branch	Culvert	Culvert	6	0.07 (476)	-	0.01 (88)	-	14	Y	N
8*	Intermittent tributary to Dickeys Branch	None	Fill	4	0.01 (144)	-	-	-	14	N	N
9*	Intermittent tributary to Dickeys Branch	Culvert	Culvert/Fill	4	0.02 (124)	-	0.01 (158)	-	14	N	N
Total					0.50 (4,142)	0.11	0.09 (598)	0			

*Delineated using aerial maps because of denial of ROE. Wetlands may or may not be present.

d. TCEQ Section 401 Best Management Practice (BMP)

General Condition 21 of the NWP Program requires applicants to comply with Section 401 of the CWA. Compliance with Section 401 requires the use of BMPs to manage water quality on construction sites. The Storm Water Pollution Prevention Plan (SW3P) would include at least one BMP from the 401 Water Quality Certification Conditions for NWPs as published by the TCEQ. These BMPs would address each of the following categories:

- Category I – Erosion Control
- Category II – Sedimentation Control
- Category III – Post-construction TSS

Category I would be addressed by applying temporary vegetation and permanent vegetation through seeding. Category II would be addressed by utilizing silt fences and rock filter dams. Category III would be addressed by applying permanent vegetation through seeding. These methods will be used at various locations along the proposed project as warranted. Other approved methods may be substituted if necessary, using one of the BMPs from the identical category.

e. Texas Pollutant Discharge Elimination System (TPDES)

Because the proposed project would disturb more than one acre, TxDOT would be required to comply with the TCEQ – TPDES General Permit for Construction Activity. The proposed project would disturb more than five acres; therefore, a Notice of Intent (NOI) would be filed to comply with TCEQ stating that TxDOT would have a SW3P in place during construction of the proposed project. This SW3P utilizes the temporary control measures as outlined in TxDOT’s manual *Standard Specifications for the Construction and Maintenance of Highways, Streets, and Bridges*. Adverse effects would be minimized by avoiding work by construction equipment directly in the stream channels and/or adjacent areas. No long-term water quality effects are expected as a result of the proposed project.

To minimize impacts to water quality during construction, the proposed project would utilize temporary erosion and sedimentation control practices from TxDOT’s manual *Standard Specifications for the Construction and Maintenance of Highways, Streets, and Bridges*. Where appropriate, these temporary erosion and sedimentation control structures would be in place prior to the initiation of construction, and would be maintained throughout the duration of the construction. Clearing of vegetation would be limited and/or phased in, to maintain a natural water quality buffer and minimize the amount of earth exposed at any one time. Upon completion of the earthwork operations, disturbed areas would be restored and reseeded according to the TxDOT’s specifications for *Seeding for Erosion Control*.

f. Navigable Waters

The waterways crossed by US 377 are not navigable waterways. Navigational clearance under the General Bridge Act of 1946, Section 9 of the Rivers and Harbors Act of 1899 (administered by the

U.S. Coast Guard [USCG]) and Section 10 of the Rivers and Harbors Act of 1899 (administered by the USACE) is not applicable. Coordination with the USCG (for Section 9 and the Bridge Act) and the USACE (for Section 10) would not be required.

g. Municipal Separate Storm Sewer System (MS4)

A portion of the proposed project is located within the boundaries of the Phase II Johnson County small MS4, and would comply with the applicable MS4 requirements.

7. Texas Parks and Wildlife Coordination

Coordination with TPWD for proposed project impacts was completed on July 28, 2017. The coordination letters and relevant correspondence are attached in **Appendix C**.

C. Hazardous Materials

No-Build Alternative

Under the No-Build Alternative, no impacts to hazardous waste/substances are anticipated.

Build Alternative

Five gas wells were identified near the project study area. Only one of the five wells has a well surface location that is adjacent to the proposed project location. Well 1 (Map ID # on **Figure 6: Hazardous Materials Map**) is within the proposed project ROW but is 6,538 feet deep and there is no surface activity within the proposed ROW. **Table 10** provides information related to the five wells present near the proposed project; Well 5 (Map ID #) is adjacent to the proposed ROW and is the one well with a surface location near the proposed project area. The well locations and their associated surface locations are depicted on **Figure 6**.

Table 10: Natural Gas Wells in Proposed Project Area					
Map ID #	Gas Well #	Depth of Well (feet)	TRRC Status	Type	Gas Production In Nov 2015 (Mcf*)
1	22131351	6,538	Open	Temp Abandoned	0
2	22131350	6,548	Open	Producing	2,596
3	25133269	6,549	Open	Producing	10,118
4	25134203	6,551	Open	Producing	10,301
5	25130368	6,360	Open	Temp Abandoned	0

Source: Texas Railroad Commission (TRRC) *1,000 cubic feet

During the preliminary investigations, multiple pipelines were found to bisect the proposed project. The approximate locations of the pipelines can be found on **Figure 6**. Negotiations would be conducted with the pipeline owners to properly relocate the affected pipelines, if required.

Pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the Resource Conservation and Recovery Act (RCRA), a preliminary investigation was conducted to identify sites within the proposed project study area which are "at risk" of environmental contamination by hazardous wastes and substances.

Sites considered likely to be contaminated and within the proposed ROW or sites which have the potential to pose a hazard to construction of the Build Alternative are categorized as "high risk". Examples of "high risk" sites include landfills or sites which have a subsurface plume of contamination with the potential to have migrated within the proposed project limits. Sites are categorized as "low risk" if available information indicated that some potential for contamination exists, but the site is not likely to pose a contamination problem to highway construction.

The TxDOT Fort Worth District has procedures intended to minimize cost and construction delays when petroleum-contaminated soils are encountered during roadway construction. The Fort Worth District has a contractor to remove underground storage tanks (USTs); and a contract to excavate and haul petroleum-contaminated soils. This procedure has reduced the degree of impact that USTs could have for TxDOT construction activities. If this or any other type of encounter with hazardous substances does occur, it would be handled according to all applicable state, federal, and local regulations.

The proposed project area is located in a rural area with predominantly vacant land interspersed with agricultural, commercial, light industrial, and residential uses.

The scope of the preliminary investigation consisted of a review of the TxDOT-specified compliant federal and state environmental databases and the performance of a site visit to confirm information from the databases and note additional field observations. No land use history, title searches, records/historic aerial photographs/historic maps review, interviews, or consultation with local/state/federal authorities were conducted. A hazardous materials regulatory database search was conducted in March 18, 2010 and a site visit was completed on October 26, 2010. The databases and specified search distances are shown in **Table 11**.

Table 11: Federal and State Environmental Database Search	
Radii Database	Search Radius
Federal National Priorities List (NPL)	1.0 mile
Federal Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) list	0.5 mile
Federal RCRA Treatment, Storage, and Disposal (TSD) facilities list	0.5 mile
Federal RCRA Generators (G)	Build Alternative limits (existing and proposed ROW)
Federal Emergency Response Notification System (ERNS) list	Build Alternative limits (existing and proposed ROW)
State-equivalent CERCLIS list	0.5 mile
State landfill and/or Municipal Solid Waste Landfill Facility (MSWLF) list	0.5 mile
Texas Voluntary Compliance Program (TX VCP) list	0.5 mile
State Registered Leaking Petroleum Storage Tank (LPST) list	0.5 mile
State Registered Petroleum Storage Tank (PST) list	0.25 mile

Source: TxDOT Hazardous Materials and Project Development website.

http://www.txdot.gov/txdot_library/consultants_contractors/publications/environmental_resources.htm

No entries or listings were identified on these 10 databases within 0.5 mile of the proposed project. There are no sites that pose a high risk to ROW acquisition and/or construction of the proposed project. One Tier II Chemical Reporting Program Facility, Lucy #1 & 2 Production Facility, is within 0.01 mile of the proposed project. However, the facility is in compliance and would not be considered a risk to the proposed project.

One closed and abandoned landfill is present and was reported on Braddock Street within 0.3 mile of the proposed project. No evidence of a landfill or any potential hazardous materials was identified during the field investigation.

A visual survey of the proposed project limits and surrounding area was performed by qualified personnel to identify possible hazardous materials within the Build Alternative ROW. No surface evidence of contamination such as stained discolored, barren, exposed or foreign soil or dead, damaged, or stressed vegetation was observed. Documentation of the initial site assessment is maintained in the project files. The contractor would take appropriate measures to prevent,

minimize, and control the spill of hazardous materials in the construction staging area. The use of construction equipment within sensitive areas would be minimized or eliminated entirely. All construction materials used for this project would be removed as soon as work schedules permit.

The contractor would take appropriate measures to prevent, minimize, and control spill of hazardous materials in the construction staging area. The use of construction equipment within sensitive areas would be minimized or eliminated entirely. All construction materials used for this project would be removed as soon as the work schedule permits. Any unanticipated hazardous materials and/or petroleum contamination encountered during construction would be handled according to applicable Federal, State, and local regulations per TxDOT Standard Specifications.

D. Air Quality

No-Build Alternative

Implementation of the No-Build Alternative would lead to increased traffic congestion and decreased mobility on US 377, resulting in decreased vehicular speed and increased stop-and-go traffic. This, in turn, would likely increase vehicular pollutant emissions.

Build Alternative

This project is located within Hood and Johnson Counties. Johnson County is part of the ten-county area that has been designated by the U. S. Environmental Protection Agency (EPA) as a moderate nonattainment area for the 2008 ozone 8-hour National Ambient Air Quality Standard (NAAQS); therefore, transportation conformity rules apply.

The proposed action is consistent with the NCTCOG financially constrained MTP, *Mobility 2040* and the 2017-2020 TIP, as revised. Both the MTP and the TIP were initially found to conform to the TCEQ State Implementation Plan (SIP) by FHWA and FTA on September 7, 2016. Copies of the MTP and TIP pages are included in **Appendix E**. All projects in the NCTCOG TIP, as revised, that are proposed for federal or state funds were initiated in a manner consistent with federal guidelines in Section 450, of Title 23 CFR and Section 613.200, Subpart B, of Title 49 CFR

1. Traffic Air Quality Analysis

Traffic data for the design year (2035) is 33,900 vpd. A prior TxDOT modeling study and previous analyses of similar projects demonstrated that it is unlikely that a carbon monoxide standard would ever be exceeded as a result of any project with an average annual daily traffic (AADT) below

140,000 vpd. The AADT projections for the project do not exceed 140,000 vpd; therefore, a Traffic Air Quality Analysis was not required.

2. Congestion Management Process (CMP)

The CMP is a systematic process for managing congestion that provides information on transportation system performance and on alternative strategies for alleviating congestion and enhancing the mobility of persons and goods to levels that meet state and local needs. The project was developed from NCTCOG’s CMP, which meets all requirements of 23 CFR 450.320 and 500.109, as applicable. The CMP was adopted by NCTCOG in January 2014.

The region commits to operational improvements and travel demand reduction strategies at two levels of implementation: program level and project level. Program level commitments are inventoried in the regional CMP, which was adopted by NCTCOG; they are included in the financially constrained MTP, and future resources are reserved for their implementation.

The CMP element of the plan carries an inventory of all project commitments (including those resulting from major investment studies) that details type of strategy, implementing responsibilities, schedules, and expected costs. At the project’s programming stage, travel demand reduction strategies and commitments will be added to the regional TIP or included in the construction plans. The regional TIP provides for programming of these projects at the appropriate time with respect to the single occupancy vehicle (SOV) facility implementation and project-specific elements.

Committed congestion reduction strategies and operational improvements within the study boundary will consist of the individual projects listed in **Table 12**.

Table 12: Congestion Management Process Strategies		
Location	Type	Implementation Date
US 377 FROM NORTH OF SH 171 TO JOHNSON/HOOD COUNTY LINE	GRADE SEPARATION	2018
US 377 FROM JOHNSON/HOOD COUNTY LINE TO SOUTH OF SH 171	NEW ROADWAY	2018

Source: NCTCOG TIPINS,. Year of Implementation as provided by NCTCOG, <http://www.nctcog.org/trans/tip/tipins/>.

In an effort to reduce congestion and the need for SOV lanes in the region, TxDOT and NCTCOG will continue to promote appropriate congestion reduction strategies through the Congestion Mitigation and Air Quality Improvement (CMAQ) program, the CMP, and the MTP. The congestion reduction strategies considered for this project would help alleviate congestion in the SOV study boundary, but would not eliminate it.

Therefore, the proposed project is justified. The CMP analysis for added SOV capacity projects in the Transportation Management Area (TMA) is on file and available for review at NCTCOG.

3. Mobile Source Air Toxics (MSAT)

Controlling air toxic emissions became a national priority with the passage of the Clean Air Act Amendments (CAAA) of 1990, whereby Congress mandated that the U.S. Environmental Protection Agency (EPA) regulate 188 air toxics, also known as hazardous air pollutants. The EPA has assessed this expansive list in their latest rule on the Control of Hazardous Air Pollutants from Mobile Sources (Federal Register, Vol. 72, No. 37, page 8430, February 26, 2007), and identified a group of 93 compounds emitted from mobile sources that are listed in their Integrated Risk Information System (IRIS) (<http://www.epa.gov/iris/>). In addition, EPA identified nine compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers or contributors and non-cancer hazard contributors from the 2011 National Air Toxics Assessment (NATA) (<https://www.epa.gov/national-air-toxics-assessment..>). These are 1,3-butadiene, acetaldehyde, acrolein, benzene, diesel particulate matter (diesel PM), ethylbenzene, formaldehyde, naphthalene, and polycyclic organic matter. While FHWA considers these the priority mobile source air toxics, the list is subject to change and may be adjusted in consideration of future EPA rules.

Motor Vehicle Emissions Simulator (MOVES)

According to EPA, MOVES2014 is a major revision to MOVES2010 and improves upon it in many respects. MOVES2014 includes new data, new emissions standards, and new functional improvements and features. It incorporates substantial new data for emissions, fleet, and activity developed since the release of MOVES2010.

These new emissions data are for light- and heavy-duty vehicles, exhaust and evaporative emissions, and fuel effects. MOVES2014 also adds updated vehicle sales, population, age distribution, and

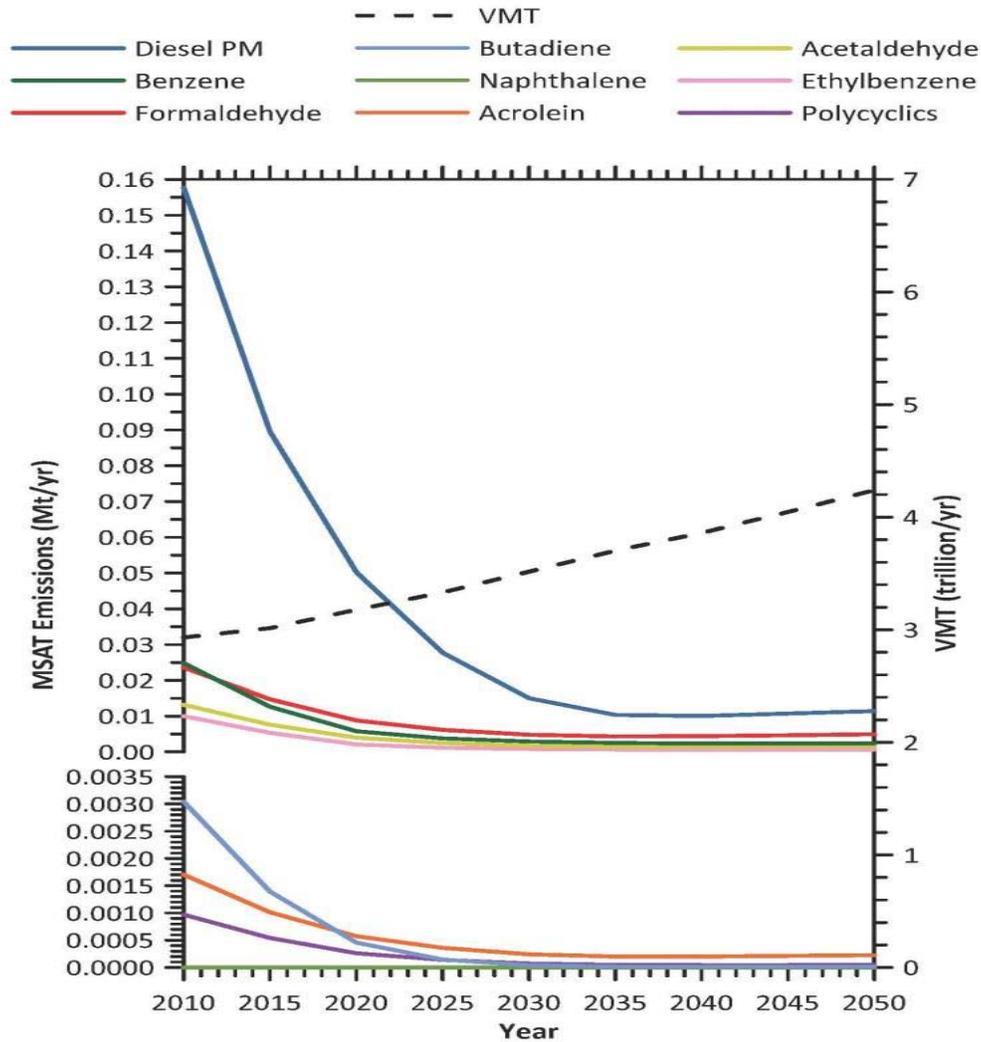
vehicle miles travelled (VMT) data. MOVES2014 incorporates the effects of three new Federal emissions standard rules not included in MOVES2010.

These new standards are all expected to impact MSAT emissions and include Tier 3 emissions and fuel standards starting in 2017 (79 FR 60344), heavy-duty greenhouse gas regulations that phase in during model years 2014-2018 (79 FR 60344), and the second phase of light duty greenhouse gas regulations that phase in during model years 2017-2025 (79 FR 60344).

Since the release of MOVES2014, EPA has released MOVES2014a. In the November 2015 MOVES2014a Questions and Answers Guide

<https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockkey=P100NNR0.txt>, EPA states that for on-road emissions, MOVES2014a adds new options requested by users for the input of local VMT, includes minor updates to the default fuel tables, and corrects an error in MOVES2014 brake wear emissions. The change in brake wear emissions results in small decreases in PM emissions, while emissions for other criteria pollutants remain essentially the same as MOVES2014. Using EPA's MOVES2014a model, as shown in Exhibit 1, FHWA estimates that even if VMT increases by 45 percent from 2010 to 2050 as forecast, a combined reduction of 91 percent in the total annual emissions for the priority MSAT is projected for the same time period.

**Exhibit 1: Projected National MSAT Emission Trends 2010-2050 for Vehicles Operating on Roadways
Using EPA's MOVES2014a Model**



Source: EPA MOVES2014a model runs conducted by FHWA, September 2016.

Note: Trends for specific locations may be different, depending on locally derived information representing vehicle-miles travelled, vehicle speeds, vehicle mix, fuels, emission control programs, meteorological, and other factors.

Diesel PM is the dominant component of MSAT emissions, making up 50 to 70 percent of all priority MSAT pollutants by mass, depending on calendar year. Users of MOVES2014a will notice some differences in emissions compared with MOVES2010b. MOVES2014a is based on updated data on some emissions and pollutant processes compared to MOVES2010b, and also reflects the latest Federal emissions standards in place at the time of its release. In addition, MOVES2014a emissions forecasts are based on lower VMT projections than MOVES2010b, consistent with recent trends suggesting reduced nationwide VMT growth compared to historical trends.

MSAT Research

Air toxics analysis is a continuing area of research. While much work has been done to assess the overall health risk of air toxics, many questions remain unanswered. In particular, the tools and techniques for assessing project-specific health outcomes as a result of lifetime MSAT exposure remain limited. These limitations impede the ability to evaluate how potential public health risks posed by MSAT exposure should be factored into project-level decision-making within the context of NEPA. The FHWA, EPA, the Health Effects Institute, and others have funded and conducted research studies to try to more clearly define potential risks from MSAT emissions associated with highway projects. The FHWA will continue to monitor the developing research in this field.

Project Specific MSAT Information

A qualitative analysis provides a basis for identifying and comparing the potential differences among MSAT emissions, if any, from the various alternatives. The qualitative assessment presented below is derived in part from a study conducted by the FHWA entitled A Methodology for Evaluating Mobile Source Air Toxic Emissions Among Transportation Project Alternatives, found at:

http://www.fhwa.dot.gov/environment/air_quality/air_toxics/research_and_analysis/mobile_source_air_toxics/msatemissions.cfm.

For each alternative in this document, the amount of MSAT emitted would be proportional to the vehicle miles traveled, or VMT, assuming that other variables such as fleet mix are the same for each alternative. Because the VMT estimated for the No Build Alternative is higher than for the Build Alternative, higher levels of MSAT are not expected from the Build Alternative compared to the No Build. Also, regardless of the alternative chosen, emissions will likely be lower than present levels in the design year as a result of EPA's national control programs that are projected to reduce annual MSAT emissions by over 90 percent from 2010 to 2050 (Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents, Federal Highway Administration, October 12, 2016 – http://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/msat/index.cfm

Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in virtually all locations.

Under each alternative there may be localized areas where VMT would increase, and other areas where VMT would decrease. Therefore, it is possible that localized increases and decreases in MSAT emissions may occur. The localized increases in MSAT emissions would likely be most pronounced along the new roadway sections that would be built at the intersections with the existing US 377. However, even if these increases do occur, they too will be substantially reduced in the future due to implementation of EPA's vehicle and fuel regulations.

In sum, under the Build Alternative in the design year it is expected there would be reduced MSAT emissions in the immediate area of the project, relative to the No Build Alternative, due to the reduced VMT associated with more direct routing, and due to EPA's MSAT reduction programs.

Incomplete or Unavailable Information for Project-Specific MSAT Health Impacts Analysis

In FHWA's view, information is incomplete or unavailable to credibly predict the project-specific health impacts due to changes in MSAT emissions associated with a proposed set of highway alternatives. The outcome of such an assessment, adverse or not, would be influenced more by the uncertainty introduced into the process through assumption and speculation rather than any genuine insight into the actual health impacts directly attributable to MSAT exposure associated with a proposed action.

The U.S. Environmental Protection Agency (EPA) is responsible for protecting the public health and welfare from any known or anticipated effect of an air pollutant. They are the lead authority for administering the Clean Air Act and its amendments and have specific statutory obligations with respect to hazardous air pollutants and MSAT. The EPA is in the continual process of assessing human health effects, exposures, and risks posed by air pollutants. They maintain the Integrated Risk Information System (IRIS), which is "a compilation of electronic reports on specific substances found in the environment and their potential to cause human health effects" (EPA, <http://www.epa.gov/iris/>). Each report contains assessments of non-cancerous and cancerous effects for individual compounds and quantitative estimates of risk levels from lifetime oral and inhalation exposures with uncertainty spanning perhaps an order of magnitude.

Other organizations are also active in the research and analyses of the human health effects of MSAT, including the Health Effects Institute (HEI). A number of HEI studies are summarized in Appendix D of FHWA's Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA

Documents

(http://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/msat/index.cfm)

Among the adverse health effects linked to MSAT compounds at high exposures are; cancer in humans in occupational settings; cancer in animals; and irritation to the respiratory tract, including the exacerbation of asthma. Less obvious is the adverse human health effects of MSAT compounds at current environmental concentrations (HEI Special Report 16,

<https://www.healtheffects.org/publication/mobile-source-air-toxics-critical-review-literature-exposure-and-health-effects> or in the future as vehicle emissions substantially decrease.

The methodologies for forecasting health impacts include emissions modeling; dispersion modeling; exposure modeling; and then final determination of health impacts – each step in the process building on the model predictions obtained in the previous step. All are encumbered by technical shortcomings or uncertain science that prevents a more complete differentiation of the MSAT health impacts among a set of project alternatives. These difficulties are magnified for lifetime (i.e., 70 year) assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over that time frame, since such information is unavailable.

It is particularly difficult to reliably forecast 70-year lifetime MSAT concentrations and exposure near roadways; to determine the portion of time that people are actually exposed at a specific location; and to establish the extent attributable to a proposed action, especially given that some of the information needed is unavailable.

There are considerable uncertainties associated with the existing estimates of toxicity of the various MSAT, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population, a concern expressed by HEI (Special Report 16,

<https://www.healtheffects.org/publication/mobile-source-air-toxics-critical-review-literature-exposure-and-health-effects>. As a result, there is no national consensus on air dose-response values assumed to protect the public health and welfare for MSAT compounds, and in particular for diesel PM. The EPA states that with respect to diesel engine exhaust, “[t]he absence of adequate data to develop a sufficiently confident dose-response relationship from the epidemiologic studies has prevented the estimation of inhalation carcinogenic risk (EPA IRIS database, Diesel Engine Exhaust, Section II.C.

https://cfpub.epa.gov/ncea/iris/iris_documents/documents/subst/0642.htm#quainhal .”

There is also the lack of a national consensus on an acceptable level of risk. The current context is the process used by the EPA as provided by the Clean Air Act to determine whether more stringent controls are required in order to provide an ample margin of safety to protect public health or to prevent an adverse environmental effect for industrial sources subject to the maximum achievable control technology standards, such as benzene emissions from refineries. The decision framework is a two-step process. The first step requires EPA to determine an “acceptable” level of risk due to emissions from a source, which is generally no greater than approximately 100 in a million. Additional factors are considered in the second step, the goal of which is to maximize the number of people with risks less than 1 in a million due to emissions from a source. The results of this statutory two-step process do not guarantee that cancer risks from exposure to air toxics are less than 1 in a million; in some cases, the residual risk determination could result in maximum individual cancer risks that are as high as approximately 100 in a million. In a June 2008 decision, the U.S. Court of Appeals for the District of Columbia Circuit upheld EPA’s approach to addressing risk in its two step decision framework. Information is incomplete or unavailable to establish that even the largest of highway projects would result in levels of risk greater than deemed acceptable

[https://www.cadc.uscourts.gov/internet/opinions.nsf/284E23FFE079CD59852578000050C9DA/\\$file/07-1053-1120274.pdf](https://www.cadc.uscourts.gov/internet/opinions.nsf/284E23FFE079CD59852578000050C9DA/$file/07-1053-1120274.pdf) .

Because of the limitations in the methodologies for forecasting health impacts described, any predicted difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with predicting the impacts. Consequently, the results of such assessments would not be useful to decision makers, who would need to weigh this information against project benefits, such as reducing traffic congestion, accident rates, and fatalities plus improved access for emergency response, that are better suited for quantitative analysis.

Conclusion

In this document, a qualitative MSAT assessment has been provided relative to the various alternatives of MSAT emissions and has acknowledged that the Build Alternative may result in increased exposure to MSAT emissions in certain locations, although the concentrations and duration of exposures are uncertain, and because of this uncertainty, the health effects from these emissions cannot be estimated.

4. Construction 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 particulate matter from diesel powered construction equipment and vehicles.

The potential impacts of particulate matter emissions will 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: <http://www.tceq.state.tx.us/implementation/air/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 will have any significant impact on air quality in the area.

E. Noise

No-Build Alternative

Traffic noise has been, is, and would continue to be the primary component of the existing ambient noise level in the study area. The predicted increase in future traffic volumes on US 377 would likely increase future ambient noise levels.

Build Alternative

This analysis was accomplished in accordance with TxDOT's FHWA approved 2011 *Guidelines for Analysis and Abatement of Roadway Traffic Noise*.

Sound from highway traffic is generated primarily from a vehicle's tires, engine and exhaust. It is commonly measured in decibels and is expressed as "dB."

Sound occurs over a wide range of frequencies. However, not all frequencies are detectable by the human ear; therefore, an adjustment is made to the high and low frequencies to approximate the

way an average person hears traffic sounds. This adjustment is called A-weighting and is expressed as "dB(A)."

Also, because traffic sound levels are never constant due to the changing number, type and speed of vehicles, a single value is used to represent the average or equivalent sound level and is expressed as "Leq."

The traffic noise analysis typically includes the following elements:

- Identification of land use activity areas that might be impacted by traffic noise.
- Determination of existing noise levels.
- Prediction of future noise levels.
- Identification of possible noise impacts.
- Consideration and evaluation of measures to reduce noise impacts.

The FHWA has established the following Noise Abatement Criteria (NAC) for various land use activity areas that are used as one of two means to determine when a traffic noise impact would occur (Table 13).

Table 13: Noise Abatement Criteria			
Activity Category	FHWA dB(A) Leq	TxDOT dB(A) Leq	Description of Land Use Activity Areas
A	57 (exterior)	56 (exterior)	Lands on which serenity and quiet are of extra-ordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 (exterior)	66 (exterior)	Residential.
C	67 (exterior)	66 (exterior)	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools , television studios, trails, and trail crossings.

Table 13: Noise Abatement Criteria			
Activity Category	FHWA dB(A) Leq	TxDOT dB(A) Leq	Description of Land Use Activity Areas
D	52 (interior)	51 (interior)	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E	72 (exterior)	71 (exterior)	Hotels, motels, offices, restaurants/bars, and other developed lands, properties, or activities not included in A-D or F.
F	--	--	Agricultural, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G	--	--	Undeveloped lands that are not permitted.

A noise impact occurs when either the absolute or relative criterion is met:

Absolute criterion: the predicted noise level at a receiver approaches, equals or exceeds the FHWA NAC. "Approach" is defined as one dB(A) below the FHWA NAC. For example: a noise impact would occur at a Category B residence if the noise level is predicted to be 66 dB(A) or above.

Relative criterion: the predicted noise level substantially exceeds the existing noise level at a receiver even though the predicted noise level does not approach, equal or exceed the FHWA NAC. "Substantially exceeds" is defined as more than 10 dB(A). For example: a noise impact would occur at a Category B residence if the existing level is 54 dB(A) and the predicted level is 65 dB(A).

When a traffic noise impact occurs, noise abatement measures must be considered. A noise abatement measure is any positive action taken to reduce the impact of traffic noise on an activity area.

The FHWA traffic noise modeling software was used to calculate existing and predicted traffic noise levels. The model primarily considers the number, type and speed of vehicles; highway alignment and grade; cuts, fills and natural berms; surrounding terrain features; and the locations of activity areas likely to be impacted by the associated traffic noise.

Because the proposed project is on a new location, existing noise levels were measured using an American National Standards Institute (ANSI) S1.4 type 2 ExTech 407780 Integrating Sound Level Datalogger sound level meter at one representative receiver along the corridor.

Existing and predicted traffic noise levels were modeled at receiver locations (**Table 14** and **Figure 4**) that represent the land use activity areas adjacent to the proposed project that might be impacted by traffic noise and potentially benefit from feasible and reasonable noise abatement.

Table 14: Traffic Noise Levels dB(A) Leq						
Representative Receiver	NAC Category	NAC Level	Existing	Predicted 2035	Change (+/-)	Noise Impact
R1 - Single-family Residence	B	66	47	51	+4	No
R2 - Single-family Residence	E	72	61	59	-2	No
R3 - Lucy #1H & 2 Production Facility	F	NA	--	--	--	NA
R4 - Single-family Residence	B	66	59*	60	+1	No
R5 - Single-family Residence	B	66	49	55	+6	No
R6 - Single-family Residence	B	66	50	54	+4	No

* - Ambient background noise was measured at the property line of this receiver because it is along the new location facility, away from existing US 377 and ROE was not available for the receiver.

As indicated in **Table 14**, the proposed project would not result in a traffic noise impact. However, to avoid noise impacts that may result from future development of properties adjacent to the project, local officials responsible for land use control programs must ensure, to the maximum extent possible, no new activities are planned or constructed along or within the following predicted (2035) noise impact contours.

<u>Land Use</u>	<u>Impact Contour</u>	<u>Distance from ROW</u>
NAC category B & C	66 dB(A)	10 feet
NAC category E	71 dB(A)	Within ROW

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 receivers is 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.

A copy of this traffic noise analysis will be available to local officials. 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.

F. Cultural Resources

Cultural resources are structures, buildings, archeological sites, districts (a collection of related structures, buildings, and/or archeological sites), cemeteries, and objects. Both federal and state laws require consideration of cultural resources during project planning. At the federal level, NEPA and the National Historic Preservation Act (NHPA) of 1966, among others, apply to transportation projects such as this one. In addition, state laws such as the Antiquities Code of Texas apply to these projects. Compliance with these laws often requires consultation with the Texas Historical Commission (THC)/ Texas State Historic Preservation Officer (SHPO) and/or federally-recognized tribes to determine the proposed project's effects on cultural resources. Review and coordination of this project followed approved procedures for compliance with federal and state laws.

No-Build Alternative

Implementation of the No-Build Alternative would have no effect on existing cultural resources in the proposed project area.

Build Alternative

A discussion of the potential effects from the Build Alternative on cultural resources is provided below.

1. Archeology

Based on the archeological study, no further work is warranted. The area of potential effects (APE) for the proposed project consists of the length of the proposed project (approximately 3 miles), the existing ROW width (80 to 300 feet), and the proposed or additional ROW width (230 feet, increasing to 400 feet near the grade separation at SH 171 at the FWWR). The geology of the APE is mapped entirely as Duck Creek limestone (Kdc) formation that is Lower Cretaceous in origin and precedes the appearance of humans on this planet by several million years, indicating a low potential for intact buried cultural deposits. Soils in the APE are mapped primarily as Aledo-Bolar association; Sunev clay loam, 5 to 8 percent slopes; Bolar clay loam; Purves clay; and Venus loam. The origin of these soils significantly predates the arrival of humans in the Americas indicating that any cultural deposits would likely occur on or near the surface. Other areas of the APE reflect upland settings and soils less than 20 inches in depth with little potential for cultural resources. TxDOT finds that the APE has been disturbed by previous activities, including road construction, installation of utilities, and modern land management practices. In light of these previous disturbances as well as the character of the soils mapped in the APE, the potential for intact deposits in the APE is minimal and any archeological sites which do occur within the APE will be poor or will lack sufficient integrity of location, association, and materials to be able to address important questions of prehistory or history.

Consultation with federally-recognized Native American tribes with a demonstrated historic interest in the area was initiated on June 22, 2012. No objections or expressions of concern were received within the comment period. No objections or expressions of concern were received from other contacted parties, including the Hood County Historical Commission and the Johnson County Historical Commission.

TxDOT archeologists completed their review of this project on June 22, 2012 and determined that the project will have no effect or no adverse effect on archeological sites or cemeteries that would be afforded further consideration under cultural resources laws. No consultation with the THC/SHPO was required (**Appendix C**). In addition, no public controversy exists regarding the project's potential impacts on archeological sites or cemeteries.

In the event that unanticipated archeological deposits are encountered during construction, work in the immediate area will cease, and TxDOT archeologists will be contacted to initiate post-review discovery procedures.

2. Standing Structures

A review of the National Register of Historic Places (NRHP), the list of State Archeological Landmarks (SAL), and the list of Recorded Texas Historic Landmarks indicated that no historically significant resources have been previously documented within the APE. It has been determined through consultation with the SHPO that the APE for the proposed project is 300 feet from the proposed ROW. A reconnaissance survey undertaken in September 2012 and an intensive survey undertaken in December 2012 revealed that there are 22 historic-age resources on four parcels (built prior to 1968) located within the project APE. The survey cut-off date is based on the current let date of 2018.

TxDOT historians have evaluated Resource #s 1-4 through application of the Criteria of Eligibility for listing in the NRHP, and concur with the attached survey report that they are not eligible for inclusion in the NRHP, either individually or as a whole. These resources do not have associations with significant historical figures or events to qualify for eligibility under Criteria A or B. They also represent common vernacular types that do not clearly reflect the distinctive characteristic of type, period, method of construction, work of a master, or high artistic value to qualify as eligible under Criterion C. Additionally, the properties evidence unsympathetic alterations that have compromised their integrity. Resource #1 is a c. 1940 ranch. ROE was denied for this property, therefore an intensive survey was undertaken to determine whether or not the ranch was eligible for the NRHP. The proposed project would bisect a portion of the property. TxDOT historians concur with the recommendations made in the intensive survey that the property is not eligible for NRHP-listing under Criteria A, B, or C. The ranch does not have any associations with significant historical events to qualify for eligibility under Criterion A. Historically, the ranch served as a cattle ranch and horse training/breeding facility. However, research did not indicate that it was significant within the cattle ranching industry, and there is no evidence to suggest that it introduced new or significant breeds, techniques, or approaches in cattle ranching. Moreover, there is no evidence to suggest that the ranch was important within the horse training and breeding industry. The ranch is also not eligible under Criterion B for its association with the Slocum Family. Although the original owner, Fred Slocum, was significant in the development of the community in the nineteenth century, the ranch no longer reflects this time period, as the majority of the resources were constructed thirty years after his death. Furthermore, the ranch is not eligible under Criterion C. The extant resources on the property are architecturally indistinct and do not represent a specific type, period, or method of construction or work of a master and do not possess high artistic value. Finally, TxDOT historians concur that there is no rural historic landscape present in the project area due to encroaching

development that compromises the area's integrity of setting, design, materials, workmanship, feeling, and association, and results in a change of land use patterns from agricultural to residential. Additionally, the remaining resources that were originally associated with cattle ranching have experienced alterations, are architecturally indistinct and do not rise to the level of significance necessary for NRHP-listing. Consequently, the landscape has lost its cohesiveness and its ability to convey a sense of time and place.

Pursuant to Stipulation VI "*Undertakings with Potential to Cause Effects*", Appendix 4 (2) of the Programmatic Agreement for Transportation Undertakings (PATU) between FHWA, the Texas SHPO, the Advisory Council on Historic Preservation, and TxDOT and the Memorandum of Understanding (MOU), TxDOT Historians determined that no historic properties are present within the proposed project's APE and individual project coordination with SHPO is not required (**Appendix C**).

G. Section 4(f) Properties

There are no Section 4(f) properties within the project area. The proposed action would not require the use of any publicly owned land such as a public park, recreational area, wildlife and waterfowl refuge lands or historic sites of national, state or local significance; therefore, a Section 4(f) statement would not be required.

H. Items of Special Nature

Coastal Zone Management Plan

The proposed project is not located within the Texas Coastal Zone Management Program boundary; therefore, the proposed project is not subject to the guidelines of the associated plan.

Wild and Scenic Rivers

There are no wild and scenic rivers in the project area; therefore, there would be no impacts to a river designated as a component or proposed for inclusion in the national system of Wild and Scenic Rivers.

Airway-Highway Clearance

No airway clearance problems are anticipated. There are no airports within the vicinity of the proposed project area. Based on the requirements of the Federal Air Regulations Part 77 Objects Affecting Navigable Airspace, coordination with the Federal Aviation Administration would not be required for the proposed project.

I. Indirect Effects

The Council on Environmental Quality (CEQ) defines indirect effects as those “caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect impacts may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems” (40 CFR Section 1508.8). Indirect effects differ from the direct impacts associated with the construction and operation of the Build Alternative and are caused by another action or actions that have an established relationship or connection to the Build Alternative. These induced actions are those that would not or could not occur except for the implementation of the Build Alternative.

The *National Cooperative Highway Research Program (NCRHP) Report 466, Desk Reference for Estimating the Indirect Effects of Proposed Transportation Projects*, outlines eight steps that should be followed when determining the indirect effects caused by a proposed transportation project. The *TxDOT September 2010 Guidance on Preparing Indirect and Cumulative Impact Analyses* refines these steps and provides seven steps for a thorough indirect effects analysis. These steps include:

1. Scoping
2. Identify the Study Area’s Goals and Trends
3. Inventory the Study Area’s Notable Features
4. Identify Impact-Causing Activities of Proposed Action and Alternatives
5. Identify Potentially Substantial Indirect Effects for Analysis
6. Analyze Indirect Effects and Evaluate Results
7. Assess Consequences and Develop Mitigation

Step 1: Scoping

The Build Alternative is located in Hood and Johnson Counties within the City of Cresson. **Table 15** introduces the level of effort determined for the indirect effects analysis through the scoping process.

Project Variables	Assessment Determination	Assessment Methodology
Project Type	New four-lane roadway	Quantitative
Project Scale	Medium – 3.02-mile relief route	Quantitative

Table 15: Level of Effort Required for Indirect Impacts Analysis		
Project Variables	Assessment Determination	Assessment Methodology
Project Scope	Local – providing relief for US 377 intersections with SH 171 and railroad at-grade crossing.	Quantitative
Stage of Study	Design alternatives – specific design identified	Quantitative
Project Setting	Rural – development pressure is low but increasing in immediate area	Qualitative
Design Features	New location divided four-lane roadway with limited access. Not serving existing or planned development.	Qualitative
Project Purpose	The purpose of the proposed project is to provide a long-term solution to identified traffic issues at the US 377 and SH 171 intersection.	Qualitative
Data Available	Discussions with city officials and local developers. Additional data from maps, demographics, and site reconnaissance.	Qualitative/Quantitative

Various methods can be implemented to determine the most accurate Area of Influence (AOI) associated with potential indirect effects caused by a proposed project. According to TxDOT's guidance on analyzing indirect effects, there are four preferred methods for determining the AOI: 1) adopting political/geographic boundaries, 2) using the project's commuteshed, 3) using watershed or habitat boundaries, or 4) incorporating data from stakeholder interviews or public involvement. Because the city of Cresson is a growing community and the proposed project extends beyond the current city limits in one area, the boundary of the extended territorial jurisdiction (ETJ) was chosen as the AOI. There are approximately 23,700 acres within the AOI (**Figure 7**).

Temporal boundaries for the indirect effects extend from construction of the proposed project until 2040, the end of the current MTP planning cycle.

Step 2: Identify the Study Area's Goals and Trends

Comprehensive plans are often developed by cities to guide growth and look toward future residential, commercial, transportation and environmental needs. The City of Cresson developed a comprehensive plan in 2003; however, per the mayor of Cresson, this plan no longer reflects the

goals of the city. The city has grown from two square miles in 2001 to 12 square miles in 2011 with the ETJ encompassing 33 square miles. The city has retained a consulting firm to prepare a future land use plan and thoroughfare plan and they plan to prepare a new comprehensive plan in the future. Because a detailed analysis of the city's needs and a plan to meet those needs is not available, this step of the analysis is based on conversations with the city's mayor and local stakeholders.

Goals

The City of Cresson has primarily been a ranching and retirement community with a population around 200 people since the 1970s. As the Dallas-Fort Worth metroplex has expanded and more people commute between the cities of Granbury and Fort Worth, the City of Cresson has benefited from its location between the two cities. The 2010 Census data indicates 741 people currently reside within the City of Cresson. Because of its location along a commuter route and at the crossroads of two major roadways, there is an expectation that the area is ripe for growth and development.

A major development goal of the city of Cresson is to attract new companies to bring more jobs to the area and increase the need for more housing. Another development goal is to be a destination city through the development of recreational facilities like the existing racetrack and recently constructed water park. A final development goal of the city is to capitalize on its location within the Barnett Shale and increase the number of natural gas-related businesses in their industrial park.

The city's main transportation goal is to reduce the congestion at SH 171 and the FWRW crossing. No other transportation goals have been identified. Other goals of the city include providing sewer and water lines to residents and building up other public services as the population grows. Their current economic goal is to maintain the city budget through the collection of sales tax only. The city does not plan to institute a property tax.

North Central Texas Council of Governments (NCTCOG) Region

Mobility 2040: The Metropolitan Transportation Plan for North Central Texas defines transportation systems and services in the DFW metropolitan area. It serves as a guide for the expenditure of state and federal funds through the year 2040. *Mobility 2040* addresses regional transportation needs that are identified through forecasting current and future travel demand,

developing and evaluating system alternatives and selecting those projects which are most needed to best meet the region’s transportation goals. *Mobility 2040* incorporates ongoing regional planning and project development efforts to implement policies, programs, and projects. The plan contains approximately \$119 billion of planned improvements that are recommended for implementation by the year 2040. The proposed project is consistent with *Mobility 2040*, which describes the proposed project as a regionally significant arterial with four general purpose lanes.

Trends

Population

According to the Texas State Historical Association’s “The Handbook of Texas Online,” the city of Cresson had a stable population of about 200 people for the latter part of the twentieth century, but the city grew in the 1990s to 623. As shown in **Table 16**, the City of Cresson and Hood and Johnson Counties experienced equal growth between 2000 and 2010. The City of Cresson population is forecasted to decrease by nine percent between 2010 and 2040. Between 2010 and 2040, Johnson County is expected to grow by 96 percent and Hood County is expected to grow by 138 percent.

Table 16: Population Growth Rate and Forecast				
Municipalities	2000 Population	2010 Population	Percent Growth Rate from 2000 to 2010	2040 Population Forecast
City of Cresson	623	741	19%	677**
Hood County	41,100	51,182	25%	121,852*
Johnson County	126,811	150,934	19%	295,364*

Source: Census 2000 and Census 2010

* - NCTCOG 2040 Demographic Forecast, <http://www.nctcog.org/ris/demographics/forecast.asp>, February 2011.

** - 2011 Regional Water Plan Population Projections for 2000 – 2060, July 2010.

Economy

The current economic downturn has affected the ability of Cresson to grow as a residential community. Although new businesses have moved into the area, local developers have delayed plans for new housing developments because of the national economic conditions. In the past three years, a new hotel, restaurant, company headquarters and a water park have all been

constructed within the Cresson city limits and have contributed to the economic growth of the city. The city expects to increase its economic base as it continues to expand and attract new development.

NCTCOG Development Monitoring

The NCTCOG maintains a development monitoring database that tracks over 8,000 major developments that exist, are under construction, are announced, or are in the conceptual stages within the metropolitan planning area. Major developments are over 100,000 square feet and/or 100 employees. There are no major developments within the AOI.

Existing Land Use

Table 17 provides a breakdown of the existing land uses by acreage within the AOI.

Table 17: Existing Land Uses within the AOI	
Land Use Type	Approximate Acreage
Commercial	415
Institutional	2
Industrial	144
Multi-family Residential	5
Oil and Gas	388
Public	18
Railroad	94
Single-Family Residential	1,287
Undeveloped/Ranchland	21,319
Total	23,672

Source: 2008 Aerials Express aerial photography and ArcMap calculations.

Step 3: Inventory the Study Area’s Notable Features

The following notable features are present within the proposed project AOI:

Public and Community Facilities: First Baptist Church of Cresson, Cresson United Methodist Church, Cresson Volunteer Fire Department, Bear Creek Community Church, Pate Museum, Bourland Field Airport, U.S. Post Office, Cresson Cemetery, and Historic Cresson School (used for city council meetings and other local events).

Historical markers: Dennis Methodist Church, Sunshine Special's "Ellsmere" (private rail car), and Goforth Graves.

Water bodies: Ike Branch and associated tributaries, Walnut Creek and associated tributaries, Fall Creek and associated tributaries, Nolan Branch and associated tributaries, Rucker Creek and associated tributaries, tributaries to Mustang Creek, Dickey Branch and associated tributaries, and South Bear Creek and associated tributaries.

Vegetation/Habitat: Riparian vegetation associated with the previously mentioned water bodies is located within the AOI. Approximately 0.6 acres of remnant, tall grass prairie was observed on the north side of Old Granbury Road near its intersection with US 377.

Step 4: Identify Impact-Causing Activities of Proposed Action and Alternative

A thorough understanding of project design features and the range of impacts they might cause is an important step toward the identification of indirect effects. The impact-causing activities from the Build Alternative are discussed below:

Modification of Regime – Approximately 133 acres of vegetation would be replaced by pavement and transportation ROW under the Build Alternative. BMPs would be employed to control soil erosion.

Under the Build Alternative, approximately 4,142 linear feet (0.5 acre) of intermittent and ephemeral tributaries and 0.11 acre of wetlands would be permanently impacted by the installation of box culverts.

Land Transformation and Construction –The Build Alternative involves the construction of approximately 3 miles of roadway on new location. Approximately 33 acres of vegetation would be permanently impacted by pavement and a bridge, and 100 acres of vegetation would become maintained herbaceous transportation ROW. Approximately 14 acres of open ranchland used for grazing, 17 acres of rural, open space (unmaintained herbaceous vegetation) that falls predominantly within Cresson Crossroads, 0.4 acre of maintained herbaceous vegetation, and 0.3 acre of tall grass prairie would be replaced by pavement. Approximately 0.8 acre of open ranchland and 0.4 acre of unmaintained herbaceous vegetation would be impacted by the bridge.

Resource Extraction – Approximately 982,687 cubic yards of materials are anticipated to be excavated and approximately 1,113,596 cubic yards of materials are anticipated to be used for embankment.

Processing – Storage of materials would occur off-site. If the contractor chooses to use undeveloped land or another site for material storage, impacts to natural resources may increase.

Land Alteration – Land alteration as a result of the Build Alternative would largely be limited to the increase in paved area. It is anticipated that approximately 133 acres of vegetation would be directly impacted. Temporarily impacted areas would be replaced with maintained herbaceous vegetation after construction of the Build Alternative.

Resource Renewal – Seeding and replanting with TxDOT-approved seeding specifications would be done where possible.

Changes in Traffic – The Build Alternative is expected to increase capacity and improve mobility in the AOI. This may result in some changes in traffic patterns on adjacent roadways, as commuters shift their preferred travel routes to take advantage of the Build Alternative. Additionally, travel times could decrease for commuters between Fort Worth and cities south of Cresson because they would no longer be required to stop at the train crossing or SH 171 traffic light.

Waste Emplacement and Treatment – No sanitary waste discharge is anticipated. Packing materials would be disposed of by a certified contractor.

Chemical Treatment – No use of fertilizer is anticipated during re-vegetation. Periodic applications of herbicide may occur during the maintenance phase of the Build Alternative.

Access Alteration – There would not be any access alteration with the proposed relief route. The TTC's Minute Order 108544 established that proposed relief routes should be developed with full control of access. No access will be provided to SH 171 or any future cross streets. Additionally, no frontage roads are proposed as part of the project. At the southern limit, the relief route would bridge over Old Granbury Road and the ramps would allow access to/from Old Granbury Road.

Step 5: Identify Potentially Substantial Indirect Effects for Analysis

Three types of indirect effects are discussed in TxDOT's guidance:

- Encroachment-alteration effects – Effects that alter the behavior and functioning of the physical environment, are related to design features, but are indirect in nature because they can be separated from the project in time or distance.
- Induced growth effects – Changes in traffic patterns and accessibility attributable to the design can influence the location of residential and commercial growth.
- Effects related to induced growth – Effects attributable to induced growth and not to project design features.

Encroachment-Alteration Effects

Encroachment-alteration effects are characterized into two categories:

- Ecological Effects – Possible ecological effects include habitat fragmentation, degradation of habitat, disruption of natural processes (e.g., hydrology, species competition), pollution effects on species, and disruption of ecosystem functioning.
- Socioeconomic Effects – Indirect socio-economic effects caused by transportation projects include alterations to neighborhoods, neighborhood cohesion, neighborhood stability, changes in travel patterns, changes in the local economy, changes in access, changes to recreational patterns at public facilities, changes in the perceived quality of the natural environment, concerns of personal safety and privacy, and aesthetic and cultural values.

Ecological Effects

The AOI is within the Silver Bluestem – Texas Wintergrass Grassland physiognomic region which indicates the AOI is a prairie ecosystem. The native prairie grasses in the area have been nearly eradicated by ranching activities over the past 100+ years. Additionally, large-lot ranchettes and other residential areas as well as commercial, recreational, and industrial facilities are present in the AOI; recently natural gas wells have also been constructed in the area. The existing ecosystem has been shaped by human activities, resulting in a weak ecosystem that supports flora and fauna that thrives in spite of human interference.

Because the proposed project is a new location roadway, habitat fragmentation would occur; however, the land directly adjacent to the proposed roadway, on the south side of SH 171, is currently under development by Cresson Crossroads. A private roadway associated with this development with a narrower ROW has been constructed in almost the same location as the proposed relief route, causing habitat fragmentation. The completion of Cresson Crossroads could occur ahead of the proposed project; therefore, once construction has begun on the proposed project, it is possible there will be little remaining habitat to fragment or disrupt in this portion of the AOI.

The proposed project's 230-foot wide ROW would create a physical barrier which could result in the disruption of natural processes. The movement and range of wildlife in the AOI could become restricted. Predators could suffer because of the reduced access and limited amount of prey. In addition, the amount of wildlife in the AOI could be reduced because of vehicles striking wildlife while crossing the proposed Build Alternative.

While habitat fragmentation and disruption of natural processes could occur to the local ecosystem, the project area does not provide ideal habitat for many species. As noted in **Table 8**, habitat for the Western Burrowing Owl, plains spotted skunk, Texas garter snake, Texas horned lizard, Comanche peak prairie-clover, Glen Rose yucca, Hall's prairie clover, Reverchon's curfpea, Osage Plains false foxglove, and Texas milk vetch is present in the proposed project area. The AOI has a similar ecological make-up to the proposed project area and there is no additional habitat present to support other threatened or endangered species or state species of concern in the AOI. Although conditions exist for four animal and two plant species to be present in the AOI, no sightings of these species have been recorded by the NDD within the immediate project proximity and none were identified during the field reconnaissance. No other wild animals were observed during the field reconnaissance but tracks of raccoon and coyote were identified. A variety of birds were heard, but not seen. It is likely that coyotes, opossums, rabbits, raccoons, and skunks are present in the AOI. These animals are typically found at the edges of or within areas of intense human habitation. These species are potentially present because they can adapt to the urbanized activities, roadways, vehicles, and structures that negatively affect other wild animals. Because the AOI is becoming suburbanized and the animals and plants present within the AOI are common and adaptable to suburban environments, it is likely that the ecosystem would recover from ecological effects associated with the proposed Build Alternative. Therefore, these effects will not be discussed in Step 6.

Other possible ecological effects on habitat and wildlife could include adverse effects from poor water quality resulting from roadway runoff. Appropriate BMPs would be used to minimize adverse water quality effects. No substantial ecological effects to water quality are anticipated to occur; therefore, these effects will not be discussed in Step 6.

Because the proposed project is a new location roadway, there is the potential for topographic changes associated with the proposed roadway to affect the flow of water downstream of the proposed project area. However, hydraulic modeling was conducted to identify the best locations for the proposed culverts in order to reduce impacts to the existing streams. A site reconnaissance, review of aerial photos, topographic maps and FEMA FIRM indicate that no distinct overland flow patterns are present and the AOI downstream of the proposed project has limited floodplains. Additionally, the existing US 377 already acts as an impediment to possible overland flow and rainwater runoff within the AOI. The potential for impacts to existing hydraulic conditions is low; therefore, these effects will not be discussed in Step 6.

The AOI is part of the EPA designated ten-county non-attainment area for ozone. The AOI is currently in attainment for all of the NAAQS pollutants except ozone. Based on the results of Steps 1 through 4 that evaluated the possible project-related actions that can indirectly impact air, it was determined that the Build Alternative would not be anticipated to cause indirect air quality impacts in the AOI. No change in attainment status is anticipated within the AOI as a result of emissions associated with the Build Alternative. For the region to achieve ozone attainment, a variety of point, nonpoint, and mobile source emission reduction strategies must be implemented for the entire DFW area as outlined in the SIP. Indirect air quality impacts from MSATs are unquantifiable due to existing limitations to determine pollutant emissions, dispersion, and impacts to human health. Emissions would likely be lower than present levels in future years as a result of EPA's national control regulations (e.g., new light-duty and heavy-duty on-road fuel and vehicle rules, the use of low sulfur diesel fuel). Even with an increase in VMT and possible temporary emission increases related to construction activities, the EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions of on-road emissions, MSATs, and the ozone precursors VOC and NOx. As the proposed project is not anticipated to result in indirect air quality impacts, further discussion in Steps 6 and 7 is not necessary.

Socio-economic Effects

Indirect socio-economic effects caused by the proposed project would include alterations to travel patterns and the local economy. Because motorists using the proposed relief route would not be hindered by the existing railroad and SH 171 crossings in Cresson, travel patterns in and around Cresson would change. These changes in travel patterns would, in turn, affect the local economy. Encroachment-alteration effects could be substantial and will be discussed in Step 6.

Induced Growth Effects

The purpose of the proposed project is to relieve congestion at the SH 171 and FWWR intersections with US 377 and not to provide access to or promote development of adjacent properties. During conversations with the two developers who own the land surrounding the proposed relief route south of SH 171, they indicated that their developments are not reliant on the proposed relief route. Development of their properties is closely tied to the economy, and the current economic downturn limits when and how much land they can afford to develop. However, it is possible that once the relief route is completed the economy will be stronger and the combination of these two factors could lead to increased development in the AOI. Therefore, induced growth will be discussed in Step 6.

Effects Related to Induced Growth

Because induced growth in the AOI could occur, effects related to this induced growth will be analyzed in Step 6.

Based on the above, indirect effects from the proposed project are not expected to substantially affect the public/community facilities or historical markers identified in Step 3; however, impacts to water bodies and vegetation/habitat could occur from the identified indirect effects. Discussion of how the indirect effects could impact these notable features will be discussed in Step 6.

Step 6: Analyze Indirect Effects and Evaluate Results

Encroachment-Alternation Effects

Socio-economics

As noted in Step 5, travel patterns would change once the proposed relief route is completed. In order to analyze this change, traffic counts taken by the TTI at two different points on the existing facility were analyzed to identify existing commuter movements. **Table 18** provides the TTI traffic

counts taken in 2007 along existing US 377 at a point north of the US 377/SH 171 intersection and a point south of the US 377/SH 171 intersection.

Table 18: 2007 US 377 Weekday Average Traffic Counts		
Hour	South Study Limit	North Study Limit
	Northbound Lanes	
6:00 am to 10:00 am	1,188	1,657
10:00 am to 3:00 pm	820	1,085
3:00 pm to 7:00 pm	817	1,526
7:00 pm to 6:00 am	226	334
	Southbound Lanes	
6:00 am to 10:00 am	714	825
10:00 am to 3:00 pm	742	823
3:00 pm to 7:00 pm	1,177	1,272
7:00 pm to 6:00 am	258	285

Source: TTI, 2007

Table 18 indicates that the northbound lanes of US 377 have the highest number of vehicles in the morning and the southbound lanes have the highest number of vehicles in the afternoon, indicating that US 377 is a commuter route for residents from Hood and Johnson Counties working in the City of Fort Worth. The number of vehicles using the northbound lanes is consistently higher at the north study limit than the south study limit, indicating that some commuter traffic flows in from the east and west via SH 171 to join existing commuter traffic on US 377. The intersection at SH 171 and US 377 would remain as is; therefore, commuters approaching US 377 from the east and west would not benefit from the proposed relief route. Only through traffic on US 377 would have the opportunity to follow a new travel pattern and use the proposed relief route. This new travel pattern would provide time savings to commuters between Granbury and Fort Worth.

Time savings were calculated based on the length of the facility, speed of travel, LOS of the facility, and LOS of the signalized intersection. The analysis indicates that the proposed relief route would provide 1 minute, 58 seconds time savings for northbound commuters in the peak hours and provide 2 minutes, 23 seconds time savings for southbound commuters in the peak hours. These

time savings do not include time savings associated with the bridging of the FWWR. Based on a TTI study conducted in 2008, there are at least 13 train movements across US 377 per day. Local commuters indicate the train movements have been known to delay movement through the intersection for up to 45 minutes.

Because the time savings could be substantial, it is anticipated that many weekday commuters would use the proposed relief route to bypass the signalized intersection and the at-grade railroad crossing. This change in travel pattern could negatively affect the economic status of the City of Cresson. Weekday commuters and weekend recreationists headed to Lake Granbury could use the relief route to navigate around the congestion at the SH 171 and railroad intersections. This shift in existing travel patterns would lead to less traffic passing through the City of Cresson's downtown area. Less traffic in Cresson could affect the local economy.

The mayor of Cresson is expecting that the loss of pass-through traffic would result in fewer planned and unplanned stops at local convenience stores, restaurants and businesses resulting in an approximately 30 percent loss in local sales tax. According to *Texas EDGE* data, 2010 sales tax allocations were \$325,438. A 30 percent loss would reduce city sales tax revenue to \$227,806, a reduction of almost \$100,000.

Two Public Meetings were held to present the proposed project to nearby residents and stakeholders. Both meetings provided attendees the opportunity to present TxDOT with their comments on the proposed project either verbally or in written format. Some area residents provided comments indicating that the proposed relief route could negatively affect the businesses in downtown Cresson. Three business owners indicated that the loss of traffic through Cresson would negatively affect their business. All three businesses have patrons who make unplanned stops. Moving the through traffic onto the relief route could decrease sales for these and other businesses. Four of the 56 written comments received at the two meetings related to negative impacts on local businesses from the proposed project.

TxDOT, the City of Cresson, and Hood and Johnson Counties have discussed the potential negative effects to the city of Cresson from the proposed relief route. In order to minimize impacts to the city of Cresson from the loss of potential revenue as commuters pass around downtown Cresson, TxDOT has removed the jug-handle connections that were considered at the intersection of the proposed relief route and SH 171. By removing the connections, motorists using SH 171 would maintain their

existing movements at the US 377/SH 171 intersection and would continue to pass through downtown Cresson. This would maintain some existing commerce activities within Cresson.

Induced Growth

The proposed relief route would not connect to any existing or future roadways except US 377. No frontage roads are associated with the proposed relief route. Land adjacent to the proposed relief route is primarily owned by Cresson Crossroads which is a planned community that is already under construction (56 acres already developed). Cresson Crossroads developers have stated that the development of their remaining 690 acres will continue with or without the proposed relief route. Another development, Cresson I, is planned for the remaining lands adjacent to the proposed relief route plus further land to the south (approximately 380 acres in total). It is possible that the construction of the relief route could open up this area to the south for development sooner than the no build alternative because commute time from Fort Worth would decrease. Because Granbury is already home to many people who work in Fort Worth and other areas of the metroplex, and Granbury is growing northward, the improved travel time around the FWWR intersection could contribute to faster growth in the Cresson I development.

The current economic climate has reduced the rate of development around Cresson over the past two years. Both Cresson Crossroads and Cresson I have held off developing much of their land because of the economic downturn. Both developers would need to provide water and sewer facilities and roads within their developments in order to attract commercial, industrial and residential developments. Because the current economy prevents them from moving forward with these initial preparations, the construction of the proposed relief route could not lead to increased development in the AOI.

Cresson Crossroads and Cresson I are the two areas most likely to be affected by the proposed project because of their locations adjacent to the proposed relief route. The City of Cresson accounts for 7,244 acres (30 percent) of the AOI and the Cresson Crossroads and Cresson I developments are the only planned developments within the city limits at this time. Although other undeveloped areas are present within the AOI, they are outside the city limits and no plans for developing any of the areas are known at this time. The proposed relief route could contribute to faster growth throughout the AOI but any identification of specific induced growth would be speculation because there are no known plans for development in the AOI.

Effects Related to Induced Growth

Any growth that may occur at a quicker pace in Cresson I or elsewhere in the AOI would impact the following notable features: water bodies and vegetation/habitat in the AOI. Overall, the proposed project is not expected to have substantial adverse effects related to induced growth.

Step 7: Assess Consequences and Consider/Develop Mitigation

If adverse impacts were to occur in the AOI due to encroachment-alteration effects or effects related to induced growth, joint economic development and redevelopment efforts on the part of the City of Cresson, Hood County, and local businesses would likely be the most effective strategy for mitigating the adverse impacts.

J. Cumulative Impacts

Cumulative impacts are defined as impacts “on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time” (NEPA, Section 1508.7, 1978). Cumulative impacts tend to be less defined than indirect impacts and are therefore more difficult to quantify.

In accordance with TxDOT’s revised *Guidance on Preparing Indirect and Cumulative Impact Analyses* (September, 2010), this analysis follows the following recommended approach:

1. Identify the resources to consider in the analysis.
2. Define the study area for each affected resource.
3. Describe the current health and historical context for each resource.
4. Identify direct and/or the indirect impacts that may contribute to a cumulative impact.
5. Identify other reasonably foreseeable actions that may affect resources.
6. Assess the potential cumulative impacts to each resource.
7. Report the results.
8. Assess and discuss mitigation issues for all adverse impacts.

Step 1 – Resources to Consider in the Analysis

The initial step of the cumulative impacts analysis uses information from the evaluation of direct and indirect impacts in the selection of environmental resources that should be evaluated for cumulative

effects. TxDOT's Guidance states: If a project would not cause direct or indirect impacts on a resource, it would not contribute to a cumulative impact on the resource. The cumulative impact analysis should focus only on: (1) those resources significantly impacted by the project; and (2) resources currently in poor or declining health or at risk even if project impacts are relatively small (less than significant). Similarly, the CEQ guidance recommends narrowing the focus of the cumulative impacts analysis to important issues of national, regional, or local significance so as to 'count what counts', not produce superficial analysis of a long laundry list of issues that have little relevance to the impacts of the proposed action or the eventual decisions. Thus, the cumulative impacts analysis should focus only on those resources that are substantially affected by the proposed project by direct and/or indirect impacts. Whether a resource is substantially affected is a function of the existing abundance and condition of the resource, and would include resources that are currently in poor or declining health, or are at risk even if the proposed project impacts are not major. The resources to consider in the cumulative impacts analysis were narrowed down by carrying forward the direct and indirect impacts that may contribute to a cumulative impact. In addition, only those resources substantially impacted or in poor or declining health were analyzed for cumulative impacts. **Table 19** identifies the resources to be analyzed in the cumulative impacts analysis.

Table 19: Resources Considered for the Cumulative Impacts Analysis				
Resource	Direct Impacts from Proposed Project	Indirect Effects from Proposed Project	Poor/Declining Health or At Risk Resource?	Result
Community Cohesion	None	No substantial effects	No	No analysis
Environmental Justice	No disproportionately high or adverse impacts	No substantial effects	No	No analysis
Public Facilities/ Services	None	No substantial effects	No	No analysis
Historical Sites	No potential to affect historic properties	No substantial effects	No	No analysis
Archeological Resources	None	No substantial effects	No	No analysis

Table 19: Resources Considered for the Cumulative Impacts Analysis

Resource	Direct Impacts from Proposed Project	Indirect Effects from Proposed Project	Poor/Declining Health or At Risk Resource?	Result
Threatened/ Endangered Species	Habitat present for four animal species and two plant species. May impact the Texas horned lizard, a state-listed threatened species.	No substantial effects	No	No analysis
Air Quality	Johnson County in non-attainment for 8-hour standard for the pollutant ozone	No substantial effects	At Risk	Cumulative impact analysis conducted
Hazardous Materials	None	No substantial effects	No	No analysis
Land Use	115 acres of land would be converted from vacant land use to transportation land use	No substantial effects	No	No analysis
Water Resources	Approximately 0.5 acre waters and 0.11 acre wetlands would be permanently impacted	No substantial effects	At Risk	Cumulative impact analysis conducted
Floodplains	None	No substantial effects	No	No analysis
Vegetation/ Wildlife Habitat	20.4 acres of maintained vegetation, 0.6 acres of prairie and 109.5 acres of unmaintained vegetation and 3.0 acres of agricultural areas would be impacted	No substantial effects	At Risk	Cumulative impact analysis conducted
Farmland	None	No substantial effects	No	No analysis

Step 2 – Study Area for Each Resource

The Resource Study Area (RSA) for each resource was chosen using resource-specific data, and reflects the influence that the proposed project would have on the surrounding area. The RSA has both temporal and geographic components. The temporal component of an RSA is the timeframe in which effects to resources are expected to occur, which for this analysis is 1990 to 2040. Extending the timeframe back to 1990 incorporates data from Census 2000 and Census 2010 to account for trends in population growth and demographic change. Additionally, in the 1990s the area began to change as natural gas wells were constructed. Extending the timeframe forward to 2040 correlates with the NCTCOG *Mobility 2040* MTP. This 50-year period should also be sufficient to capture cumulative impacts resulting from those actions for which construction has been initiated, but not yet completed.

The resources subject to cumulative impacts (vegetation and wildlife habitat, water resources, and air quality) are discussed below in separate sub-sections. **Steps 1, 2, and 5** are discussed collectively for the affected resources. **Steps 3, 4, 6, 7, and 8** of the cumulative impacts evaluation process are discussed separately within each resource sub-section.

The geographic area of each RSA varies from resource to resource. **Table 20** lists the affected resources and their corresponding RSAs. Maps of the RSAs are shown in **Figures 8 and 9**.

Table 20: Resource Study Area for Affected Resources	
Affected Resource	Resource Study Area
Vegetation and Wildlife Habitat	Sub-basins of Dickey's Branch and Fall Creek (approximately 5,323 acres); Figure 8
Water Resources	
Air Quality	Ozone - DFW Eight-hour Non-attainment Area Carbon Monoxide - ROW Line MSATs - Affected Transportation Network; Figure 9

As shown in **Table 21**, the 5,323-acre drainage sub-basins of Dickey's Branch and Fall Creek were chosen as the RSA for vegetation and wildlife habitat, and water resources. The sub-basins contain the streams, wetlands, floodplains, and the associated vegetative habitat that wildlife depends on for food, water, and shelter. In addition, all of the drainage from the proposed project and current and reasonably foreseeable actions in the area is within these sub-basins.

Evaluating Air Quality in relation to cumulative impacts requires looking at three distinct RSAs, as described below:

- Ozone - The RSA for evaluating the ozone NAAQS was designated as the Dallas-Fort Worth eight-hour ozone moderate non-attainment area, which includes Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, Tarrant, and Wise counties.
- Carbon Monoxide - The RSA for CO was based on the ROW line, which represents the locations with the highest potential for CO concentrations. However, the nature of the proposed project does not warrant a TAQA. Therefore, CO levels resulting from this project would not be expected to exceed the NAAQS for CO and negatively impact air quality in this area.
- MSAT - The RSA for MSAT is the affected transportation network in the 12-county MPA. Unlike the other resources evaluated, air quality impacts from MSATs have been evaluated qualitatively in this proposed project by TxDOT and FHWA. MSATs are regulated by EPA on a national basis through requirements for fuels and vehicle technology. The MSAT RSA qualitatively evaluated emission changes based upon the proposed project and national trends.

As noted previously, **Steps 3** and **4** will be discussed later in each resource sub-section.

Step 5 – Identify Other Reasonably Foreseeable Actions That May Affect Resources

Data collection associated with other current and reasonably foreseeable actions included a project area search query using NCTCOG's Transportation Improvement Program Information System; aerial photograph review; and interviews with city officials and developers. The other reasonably foreseeable actions discussed in this section of the EA that could contribute to the cumulative effects on the resources include:

- Addition of lanes to SH 171 from 0.58 mile west of SH 171/US 377 intersection to 0.48 mile east of the intersection. Amount of proposed ROW and easements, if any, unknown.
- Cresson Crossroads - A 746-acre master-planned new town comprised of single and multi-family residential, retail, commercial, and industrial development. Approximately 56 acres are currently developed, 68 acres are outside the RSA and 56 acres would become

ROW for the proposed project leaving 566 acres within the RSA for current and future development.

- Proposed multi-well pad site. Approximately two acres.
- Cresson I – Approximately 400 acres of planned development south of Granbury Road on the west side of existing US 377. Approximately 257 acres of the Cresson I development are within the RSA.

The total amount of land within the RSA that will be developed because of current and reasonably foreseeable actions is 825 acres.

Discussion of Cumulative Impacts by Resource (Steps 3, 4, 6, 7, and 8)

Vegetation and Wildlife Habitat

Step 3 – Current Status/Viability and Historical Context

The RSA was historically used for agricultural purposes with crops and ranches dominating the area up until the late 1990's, when drilling for natural gas was introduced to the area. Today, residential, industrial, and commercial/retail facilities dominate the land surrounding the US 377/SH 171 intersection. Beyond that, land continues to be utilized for agricultural purposes with natural gas wells, reserve pits, frack ponds, and pipelines scattered throughout the landscape. These practices have reduced the available habitat along the riparian corridors and reduced the ability of streams and wetlands to filter runoff and retain water. This allows increased erosion and degradation of the water features. Even though some areas have remained relatively unchanged for a number of years, they provide minimal habitat for wildlife and ecological benefits from water features. Some areas have been developed or fragmented to such an extent that little habitat exists for wildlife. As a result of continual impacts from agricultural practices, natural gas wells and residential/commercial development, highly adaptable animals such as coyotes, opossums, rabbits, raccoons, and skunks are the primary wildlife present in the project area.

The undeveloped land (4,518 acres) within the approximately 5,323-acre drainage sub-basins RSA consists of approximately 3,892 acres of herbaceous vegetation/rangeland, 200 acres of upland woodlands, 93 acres of bottomland hardwoods, eight acres of fence line trees, 41 acres of riparian vegetation, 263 acres of cropland, and 21 acres of open water and wetlands.

Step 4 – Identify Direct and Indirect Impacts of the Project that May Contribute to a Cumulative Impact

The proposed project would permanently impact approximately 20.4 acres of maintained herbaceous vegetation, 109.5 acres of unmaintained vegetation (including grassland and scattered sapling-scrub-shrub vegetation, pasture, and fencerow/upland overstory vegetation), 3.0 acres of agricultural areas and 0.6 acre of tall grass prairie.

The indirect impacts associated with the proposed project would not impact vegetation and wildlife habitat; and therefore, would not contribute to a cumulative impact.

Step 6 – Assess Potential Cumulative Impacts to Each Resource

Potential cumulative impacts considered and discussed include direct impacts to the vegetation and wildlife habitat as a result of implementation of the proposed project in combination with the effects of other current and reasonably foreseeable actions. The 5,323-acre sub-basins RSA was considered sufficient to capture most cumulative effects on vegetation and wildlife habitat because the sub-basins contain the streams, floodplains, and the associated vegetative habitat that wildlife depends on for food, water, and shelter. Acreages of vegetation types in the RSA were determined from aerial photographs and topographic maps. Acreages of impacted vegetation types were determined by using development overlays for the Build and No-Build Alternatives. For the purpose of this analysis, it was assumed that any of the other current and reasonably foreseeable developments would displace all the native vegetation and wildlife habitat within the confines of the development.

Step 7 – Report the Results

The cumulative impacts on vegetation and wildlife habitat resulting from the direct impacts and other current and reasonably foreseeable actions would decrease the amount of vegetation and wildlife habitat in the RSA by 952.9 acres. Of this acreage, approximately 20.4 acres of maintained herbaceous vegetation, 4.0 acres of bottomland hardwoods, 4.3 acres of riparian vegetation, 0.6 acres of tall grass prairie and 926.5 acres of unmaintained vegetation (including grassland and scattered sapling-scrub-shrub vegetation, pasture, and fencerow/upland overstory vegetation) would be impacted. The cumulative impact (952.9 acres) would reduce available vegetation and wildlife

habitat within the RSA by approximately 21 percent. Impacts from the proposed project would impact three percent of the RSA, which is not a substantial impact.

Under the No-Build Alternative, vegetation and wildlife habitat would still be impacted from the previously described other current and reasonably foreseeable actions, and would decrease the amount of vegetation and wildlife habitat in the RSA approximately 820 acres. Of this acreage, approximately 4 acres of bottomland hardwoods, 4.3 acres of riparian vegetation, and 811.7 acres of unmaintained vegetation (including grassland and scattered sapling-scrub-shrub vegetation, pasture, and fencerow/upland overstory vegetation) would be impacted.

Step 8 – Potential Mitigation

Incorporating parks, open spaces, and riparian corridors around and within developed areas would provide wildlife habitat and shelter. Planting these areas with native fruit or nut-bearing trees and shrubs, and native grain-bearing grasses would provide food for wildlife, and would help to mitigate impacts to habitat used by wildlife.

Water Resources

Step 3 – Current Status/Viability and Historical Context

There are approximately 28 linear miles of streams, 17 acres of wetlands, and four acres of open water (ponds) within the drainage sub-basin RSA. As stated previously, land use within the RSA, both historically and presently, is used for agricultural purposes with crops and ranches dominating the area. In the late 1990's, drilling for natural gas was introduced to the area. This has led to the development of natural gas wells, reserve pits, frack ponds, and pipelines which are now scattered throughout the landscape. Residential, industrial, and commercial/retail land uses exist around the US 377/SH 171 intersection. Water resources have been affected both physically and indirectly by the previously mentioned land use and development activities. Land clearing, soil compaction, riparian corridor encroachment and degradation, and modifications to the surface water drainage network have all accompanied development of the proposed project area and overall water quality has declined. Streams and wetlands have been altered and do not provide the same ecological benefits they once provided.

Step 4 – Direct and Indirect Impacts of the Project that Might Contribute to a Cumulative Impact

The proposed project would directly impact approximately 0.8 linear mile of streams and 0.11 acre of wetlands. The indirect impacts associated with the proposed project would not impact water resources; and therefore, would not contribute to a cumulative impact.

Step 6 – Identify and Assess Cumulative Impacts

Potential cumulative impacts considered and discussed include impacts on water resources resulting from the direct impacts of the proposed project, in combination with the effects of other current and reasonably foreseeable actions. The 5,323-acre sub-basin RSA was considered sufficient to capture most cumulative effects of the proposed project on water resources because the majority of waters within this portion of the area are included in this sub-basin. Data is not available to quantify the acreage of streams in the RSA; however, stream lengths in the RSA can be measured using aerial photographs and topographic maps, and the acreage of wetlands can be determined from NWI maps. Therefore, linear mile is the measurement unit used for determining stream impacts and acres is the measurement unit used for determining wetland impacts. The lengths of impacted streams and acres of impacted wetlands were determined by using development overlays for the Build and No-Build Alternatives.

Step 7 – Results of the Cumulative Impact Assessment

The cumulative impacts on water resources resulting from the direct impacts and other current and reasonably foreseeable actions would decrease the amount of water resources by 5.1 linear miles of streams and 1.4 acres of wetlands in the RSA. The proposed project would directly impact approximately 0.8 linear mile of streams and 0.11 acre of wetlands. Approximately 4.3 linear miles of streams and 1.3 acres of wetlands would be impacted by other current and reasonably foreseeable actions. The cumulative impact (5.1 linear miles of streams and 1.4 acres of wetlands) would reduce streams within the RSA by approximately 18 percent and wetlands by approximately eight percent. Impacts from the proposed project would impact two percent of the streams and 0.6 percent of the wetlands in the RSA, which is not a substantial impact.

Under the No-Build Alternative, water resources would still be impacted from the previously described other current and reasonably foreseeable actions. Approximately 4.3 linear miles of streams and 1.3 acres of wetlands would be impacted in the RSA.

Step 8 – Potential Mitigation

Avoidance or minimization of impacts to waters of the U.S. and wetlands should be performed during the development design phase so that only the least amount of impacts would occur. Mitigation is only conducted when impacts to waters of the U.S. and wetlands cannot be avoided. Typical mitigation for impacts to waters of the U.S. includes the construction of mitigation areas or purchasing credits from a mitigation bank. Mitigation is frequently conducted as one of the requirements for obtaining a Section 404 permit. The USACE decides what the ratio of the mitigation area would be relative to the acreage of impacts to waters of the U.S. A typical mitigation ratio is three times the amount of acreage impacted, while the minimum mitigation ratio is one time the amount of acreage impacted (i.e. 1:1 ratio). A mitigation bank is a wetland, stream, or other aquatic resource area that has been restored, established, enhanced, or in certain circumstances, preserved for the purpose of providing compensation for unavoidable impacts to aquatic resources permitted under Section 404 or a similar state or local wetland regulation. Mitigation banks are used in situations where the construction of a mitigation area is not practical. Mitigation banks are a form of “third-party” compensatory mitigation, in which the responsibility for compensatory mitigation implementation and success is assumed by a party other than the permittee. The USACE would have jurisdiction over mitigation activities for impacts to waters of the U.S., and as such, would determine the mitigation responsibilities of the developers.

Air Quality

Step 3 – Current Status/Viability and Historical Context

The EPA establishes limits on atmospheric pollutant concentrations through enactment of the NAAQS for six principal, or criteria, pollutants. The EPA designated ten counties in the Dallas-Fort Worth area as moderate non-attainment for ozone. The region is currently in attainment for all other criteria pollutants (except for lead in portions of Collin County). Although there have been year-to-year fluctuations, the ozone trend continues to show improvement. The trend of improving air quality in the region is attributable in part to the effective integration of highway and alternative modes of

transportation, cleaner fuels, improved emission control technologies, and NCTCOG regional clean air initiatives.

Step 4 – Direct and Indirect Impacts of the Project that Might Contribute to a Cumulative Impact

Direct impacts on air quality and MSATs from the project are primarily those associated with the increased capacity, accessibility and the resulting projected increases in VMT. Emission reductions as a result of EPA's new fuel and vehicle standards are anticipated to offset impacts associated with VMT increases.

Indirect impacts on air quality and MSATs are primarily related to any expected development resulting from the project's increased accessibility or capacity to the area. Any increased air pollutant or MSAT emissions resulting from the potential development of the area must meet regulatory emissions limits established by the TCEQ and EPA as well as obtain appropriate authorization from the TCEQ and therefore are not expected to result in any degradation of air quality or MSAT levels.

Step 6 – Identify and Assess Cumulative Impacts

Any increased air pollutant or MSAT emissions resulting from increased capacity, accessibility and development are projected to be more than offset by emissions reductions from EPA's new fuel and vehicle standards or addressed by EPA's and TCEQ's regulatory emissions limits programs. Projected traffic volumes are expected to result in minimal impacts on air quality; improved mobility and circulation may benefit air quality. Increases in urbanization would likely have a negative impact on air quality. However, planned transportation improvements in the project area as listed in a conforming MTP and TIP coupled with EPA's vehicle and fuel regulations fleet turnover, are anticipated to have a cumulatively beneficial impact on air quality.

Step 7 - Results of the Cumulative Impact Assessment

The cumulative impact on air quality from the proposed project and other reasonably foreseeable transportation projects are addressed at the regional level by analyzing the air quality impacts of transportation projects in the *Mobility 2040* MTP and the 2017-2020 TIP. The proposed project and the other reasonably foreseeable transportation projects were included in the *Mobility 2040* MTP and the 2017-2020 TIP and have been determined to conform to the SIP. When combined, planned

transportation improvements, revised EPA fuel and vehicle regulations, and fleet turnover are anticipated to have a cumulatively beneficial impact on air quality. Therefore, the cumulative impact on air quality is not considered substantial.

Step 8 - Potential Mitigation

A variety of federal, state, and local regulatory controls as well as local plans and projects have had a beneficial impact on regional air quality. The CAA, as amended, provides the framework for federal, state, tribal, and local rules and regulations to protect air quality. The CAA required the EPA to establish NAAQS for pollutants considered harmful to public health and the environment. In Texas, the TCEQ has the legal authority to implement, maintain, and enforce the NAAQS. The TCEQ establishes the level of quality to be maintained in the state's air and to control the quality of the state's air by preparing and developing a general comprehensive plan. Authorization in the Texas Clean Air Act (TCAA) allows the TCEQ to do the following: collect information and develop an inventory of emissions; conduct research and investigations; prescribe monitoring requirements; institute enforcement; formulate rules to control and reduce emissions; establish air quality control regions; encourage cooperation with citizens' groups and other agencies and political subdivisions of the state as well as with industries and the federal government; and to establish and operate a system of permits for construction or modification of facilities. Local governments having some of the same powers as the TCEQ can make recommendations to the commission concerning any action of the TCEQ that may affect their territorial jurisdiction, and can execute cooperative agreements with the TCEQ or other local governments. In addition, a city or town may enact and enforce ordinances for the control and abatement of air pollution not inconsistent with the provisions of the TCAA or the rules or orders of the TCEQ.

The CAA also requires states with areas that fail to meet the NAAQS prescribed for criteria pollutants to develop a SIP. The SIP describes how the state would reduce and maintain air pollution emissions in order to comply with the federal standards. Important components of a SIP include emission inventories, motor vehicle emission budgets, control strategies to reduce emissions, and an attainment demonstration. The TCEQ develops the Texas SIP for submittal to the EPA. One SIP is created for each state, but portions of the plan are specifically written to address each of the non-attainment areas. These regulatory controls, as well as other local transportation and development initiatives implemented throughout the Dallas-Fort Worth metropolitan area by local governments and other entities provide the framework for growth throughout the area consistent with air quality

goals. As part of this framework, all major transportation projects, including the proposed project, are evaluated at the regional level by the NCTCOG for conformity with the SIP.

The cumulative impact of reasonably foreseeable future growth and urbanization on air quality within this area would be minimized by enforcement of federal and state regulations, including the EPA and TCEQ, which are mandated to ensure that such growth and urbanization would not prevent attainment with the eight-hour ozone non-attainment area standard or threaten the maintenance of the other air quality standards.

V. PUBLIC INVOLVEMENT

Three Work Group meetings (held February 17, March 25, and July 28, 2010) were held in order to involve major landowners, community leaders, and key decision makers within the proposed US 377 Study Area. TxDOT's feasibility and corridor routing process was explained during the meetings and the group's assistance was requested in identifying additional constraints and alignments to contribute to the comprehensive study. The Preferred Alternative was presented at the third Work Group meeting.

A Public Meeting was held on May 13, 2010 to describe the proposed project to the public and present the preliminary route alternatives, constraints, and typical sections. The Alternatives Analysis Matrix and project schedule for the proposed US 377 Mobility Project were presented and feedback was requested via survey and comment forms.

After analyzing public input, three alternatives were the most preferred by the public. TxDOT compared and analyzed the design elements and identified impacts of the three alternatives and determined that Alternative B1 was the technically preferred alternative. The route was further evaluated for feasibility and funding. Since that time, refinements have occurred to the Preferred Alternative preliminary design.

A second Public Meeting was held on December 12, 2011. The refined Preferred Alternative was presented to the public for their review. Feedback from the public was requested via comment forms. Based on comments received at the Public Meeting and during the comment period, the jug handle connections originally proposed between US 377 and SH 171 have been removed from the design; the profile of the proposed relief route would be depressed at the future Crossroads Boulevard; and, the intersection of the proposed relief route and existing US 377 has been shifted to the west to provide a safer intersection between existing US 377 and Old Granbury Road.

A Public Hearing was held on February 25, 2014 for the proposed relief route. The Preferred (Build) Alternative, which consisted of a four-lane divided roadway with two 12-foot wide lanes in each direction, 10-foot wide outside shoulders, and a 48-foot wide median which includes four-foot wide inside shoulders, was presented to the public for their review. Feedback from the public was requested via verbal statements and comment forms. Major comments/issues brought to TxDOT's attention at the hearing and during the comment period included (1) impacts to farming/ranching operation and division of land; (2) effect of the proposed project on area drainage; (3) access between the proposed project/Business US 377 and personal property; (4) the claim that the traffic problem at the railroad no longer exists; and (5) proposed design alternatives to the Preferred Build Alternative. After review of the comments received, TxDOT developed more detailed design and costs analyses of a through-town bridge option that would provide an elevated highway through the City of Cresson. TxDOT presented these analyses during an additional Public Meeting held July 28, 2015.

Alternative exhibits presented at the July 28, 2015 Public Meeting included a four-lane relief route west of US 377 and the City of Cresson and a four-lane through-town bridge option that would provide an elevated highway along the existing US 377 alignment. Feedback from the public was requested via comment forms. Comments received at the Public Meeting and during the comment period demonstrated a preference for the US 377 Cresson Relief Route and opposition for the Existing Alignment Elevated (Bridge) Option. Several commenters also noted that the relief route would be more visually appealing than the Elevated (Bridge) option. Moving forward, TxDOT will continue to work with the local municipalities and property owners during the detailed design and construction phases of the US 377 Cresson Relief Route project.

VI. ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS

This section summarizes the elements that constitute the EPIC Sheet. The EPICs document and communicate permit issues and environmental commitments that must be incorporated into the Plans, Specifications, and Estimates. The permits, impacts and commitments relevant to the proposed project are as follows:

CWA Section 402 Commitments

The proposed project would disturb more than five acres; therefore, a Notice of Intent would be filed to comply with TCEQ stating that TxDOT would have a SW3P in place during construction of the proposed project. A portion of the proposed project is located within the boundaries of the Phase II Johnson County small MS4, and would comply with the applicable MS4 requirements.

CWA Section 401/404 Commitments

Waters of the U.S. are located within the existing and proposed ROW. Impacts to all nine crossings would be authorized under NWP 14 - *Linear Transportation Crossings*. Because impacts exceed the 0.1 acre impact threshold and/or a discharge in wetlands, a Pre-Construction Notification (PCN) would be required for seven crossings.

Because of lack of ROE, Crossings 5, 6, 7, 8, and 9 were delineated using available aerial maps and estimation from field survey. Upon acquisition of the proposed ROW, areas encompassing Crossings 5, 6, 7, 8, and 9 would be evaluated for the presence of wetlands and NWP-14 permitting requirements.

Compliance with Section 401 requires the use of BMPs to manage water quality on construction sites. The SW3P would include at least one BMP from the 401 Water Quality Certification Conditions for NWPs as published by the TCEQ. Category I would be addressed by applying temporary vegetation and permanent vegetation through seeding. Category II would be addressed by utilizing silt fences and rock filter dams. Category III would be addressed by applying permanent vegetation through seeding. These methods will be used at various locations along the proposed project as warranted. Other approved methods may be substituted if necessary, using one of the BMPs from the identical category.

Cultural Resources Commitment

In the event that 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 under the provisions of the PA and MOU.

Vegetation Resources Commitment

During construction, efforts would be taken to avoid and minimizing disturbance of vegetation and soils. Areas within the existing ROW, but outside the limits of construction, would not be disturbed. Every effort would be made to preserve trees where they would neither compromise safety nor substantially interfere with the proposed projects. Mitigation for impacts to the two remnant tallgrass prairie areas (approximately 0.6 acres) would be to assess the remainder once the ROW is acquired for avoidance potential before deciding whether to coordinate with local groups for salvage interest.

Invasive Species/Beneficial Landscaping Commitment

Permanent soil erosion control features would be constructed as soon as feasible during the early stages of construction through proper sodding and/or seeding techniques. Disturbed areas would be restored and stabilized as soon as the construction schedule permits and temporary sodding would be considered where large areas of disturbed ground would be left bare for a considerable length of time. In accordance with EO 13112 on *Invasive Species and the Executive Memorandum on Beneficial Landscaping*, seeding and replanting with TxDOT approved seeding specifications that are in compliance with EO 13112 would be done where possible.

Federally- Listed and State-Listed Species, Species of Greatest Conservation Need, and MBTA Commitments

Construction of the Build Alternative, if implemented, would have the potential to impact the following state-listed species and their habitats and state species of concern and their habitats.

Terrestrial Reptile BMPs (for the Texas garter snake, Texas horned lizard, and Timber rattlesnake)

Apply hydromulching and/or hydroseeding in areas for soil stabilization and/or revegetation of disturbed areas where feasible. If hydromulching and/or hydroseeding are not feasible due to site conditions, utilize erosion control blankets or mats that contain no netting or contain loosely woven, natural fiber netting is preferred. Plastic netting should be avoided to the extent practicable. For open trenches and excavated pits, cover when not in use, and visually inspect excavation areas for trapped wildlife prior to backfilling. Inform contractors that if reptiles are found on project site allow species to safely leave the project area. Avoid or minimize disturbing or removing downed trees, rotting stumps, and leaf litter where feasible. Contractors will be advised of potential occurrence in the project area, and to avoid harming the species if encountered. For the Texas Horned Lizard, this should include avoiding harvester ant mounds in the selection of Project Specific Locations (PSLs).

Whooping Crane (BMP included because project is within the potential migratory path of the species):

The contractor and/or TxDOT personnel would be advised of potential for Whooping Cranes to occur within the project limits. Construction personnel will be advised to avoid adverse impacts to this species and to report any sightings to TxDOT District Environmental staff. Drainage modifications will be limited to the extent practical to accommodate the additional paved surface needed to bring the roadway up to current TxDOT safety standards. The construction personnel will report all sightings to

TxDOT Fort Worth District Environmental staff. Reports should include the time, date and location and any available photos.

Western Burrowing Owl

Contractors would be advised of potential occurrence of the Western burrowing owl. The contractor would be prepared to take appropriate measures to avoid disturbing, destroying, or removing active nests, including ground nesting birds, during the nesting season. Avoid the removal of unoccupied, inactive nests, as practicable. As necessary, take appropriate measures to prevent the establishment of active nests during the nesting season on facilities and structures proposed for replacement or repair. Collecting, capturing, relocation, or transporting birds, eggs, young, or active nests without a permit is prohibited.

Plains Spotted Skunk

Contractors would be advised of potential occurrences in the project area, and to avoid harming the species if encountered, and avoid unnecessary impacts to dens.

Texas milkvetch, Hall's prairie clover, Reverchon's curfpea, Osage Plains false foxglove, and Glen Rose yucca

Contractors will be advised of potential of the species to occur in the project area. In the event the species is discovered, the species shall be avoided to the extent practicable; and notify TxDOT of its occurrence.

During construction of the proposed Build Alternative, if implemented, there would be temporary impacts to open areas with habitat requirements for those species aforementioned. After construction, the impacted areas would be returned to preconstruction contours. There are also ample open areas with requisite habitat requirements outside of the proposed construction limits of the proposed Build Alternative that could serve to replace the permanently impacted habitat.

Migratory Bird Treaty Act

In the event that migratory birds are encountered on-site during project construction, adverse impacts on protected birds, active nests, eggs, and/or young would be avoided. The contractor would remove all old migratory bird nests from October 1 to February 15 from any structure where work will be done. In addition, the contractor would be prepared to prevent migratory birds from building nests between February 15 and October 1, per the EPIC in the plans.

Hazardous Materials or Contamination Issues Commitment

During preliminary investigations, multiple pipelines were found to bisect the proposed project. Negotiations would be conducted with the pipeline owners to properly relocate the affected pipelines, if required.

Any unanticipated hazardous materials encountered during construction would be handled according to applicable federal, state, and local regulations per TxDOT Standard Specifications. The design-build contractor would take appropriate measures to prevent, minimize, and control the spill of hazardous materials in the construction staging area. All construction materials used for this project would be removed as soon as the work schedules permit.

Should hazardous materials/substances be encountered, the TxDOT Fort Worth District Hazardous Materials Section would be notified and steps would be taken to protect personnel and the environment. If necessary, the plans, specifications, and estimates would include provisions for the appropriate soil and/or groundwater management plans for activities within these areas. The management plans would be initiated in accordance with all applicable federal, state and local regulations.

Air Quality

Potential impacts of particulate matter emissions will be minimized by using fugitive dust control measures such as covering or treating disturbed areas with dust suppression techniques, sprinkling, covering loaded trucks, and other dust abatement controls, as appropriate.

Noise

Construction usually occurs during daylight hours when occasional loud noises are more tolerable. No extended disruption of normal activities is 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.

Traffic

Although temporary congestion may occur as a result of project construction, access to residential and business areas in the project vicinity would be maintained during all phases of construction. All

practical steps would be taken to minimize the inconvenience to drivers using the roadway during the construction phase.

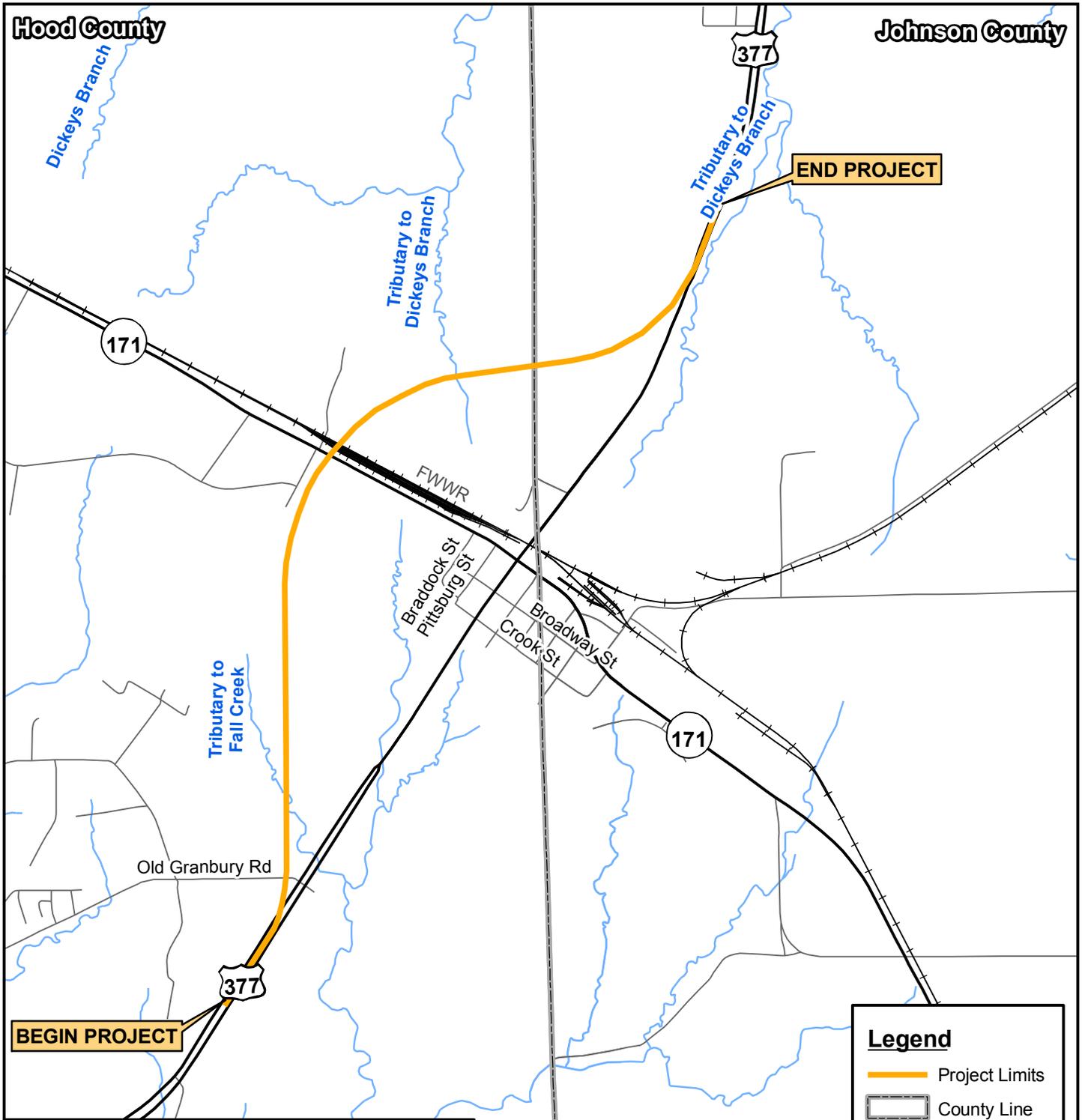
The proposed Old Granbury Road and bridge over Old Granbury Road would be constructed in phases to allow continued use during construction. The roadway may be closed temporarily to allow placement of the bridge over the roadway, but this would be planned for a non-peak time.

Because this is a new location roadway, no detours would be required during construction of the proposed project. The final Traffic Control Plan would be established during the final Plans, Specifications & Engineering stage of the project. No residence or business access would be adversely impacted during the construction of the proposed project.

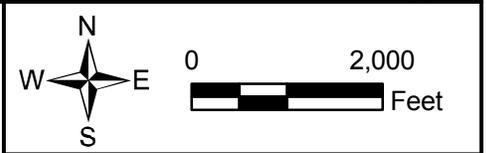
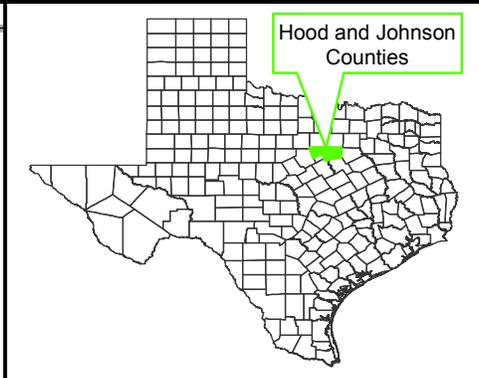
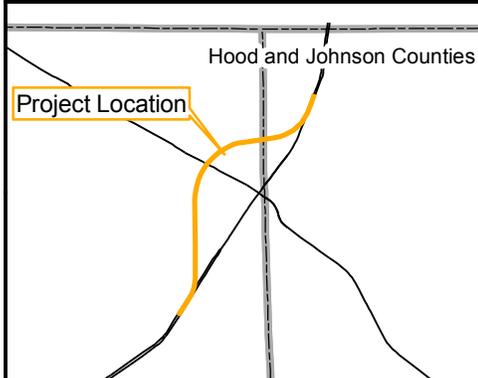
VII. RECOMMENDATION FOR ALTERNATIVE SELECTION AND A FONSI

The engineering, social, and environmental investigations conducted thus far indicate that the proposed project would have no significant impact on the quality of the human environment. A Finding of No Significant Impact (FONSI) is anticipated for this proposed project.

FIGURES



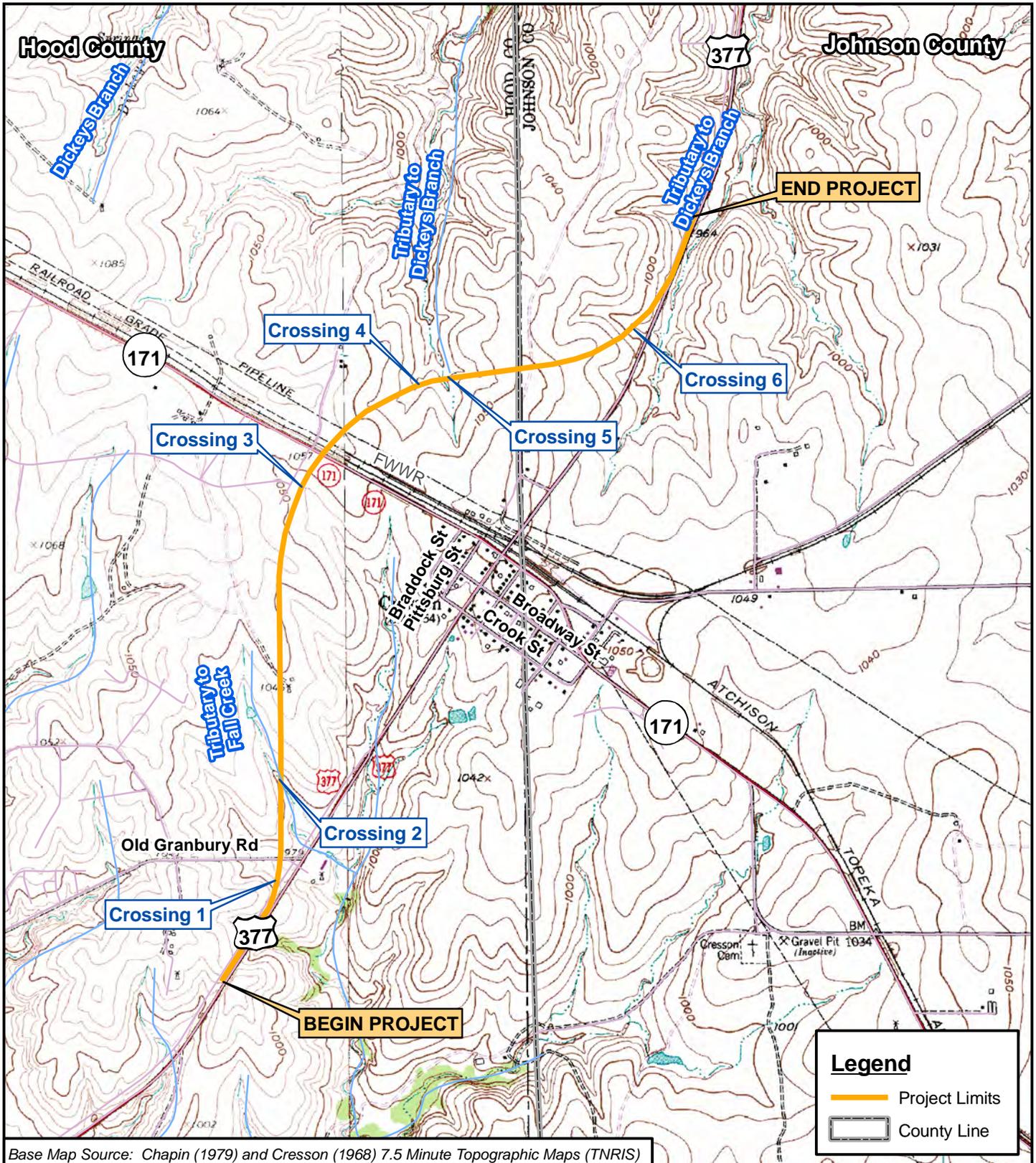
Base Map Source: Hood and Johnson Counties (NCTCOG, 2011)



**FIGURE 1
PROJECT LOCATION MAP**

US 377
CRESSON MOBILITY PROJECT

CSJs: 0080-11-001 AND 0080-12-001



Base Map Source: Chapin (1979) and Cresson (1968) 7.5 Minute Topographic Maps (TNRIS)

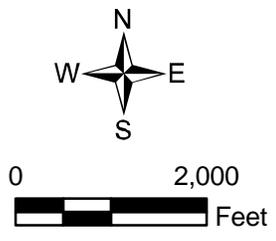
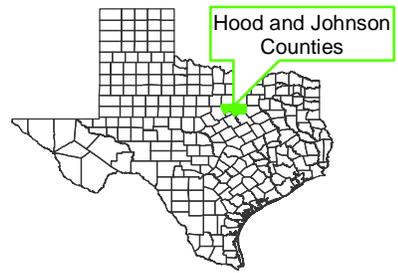
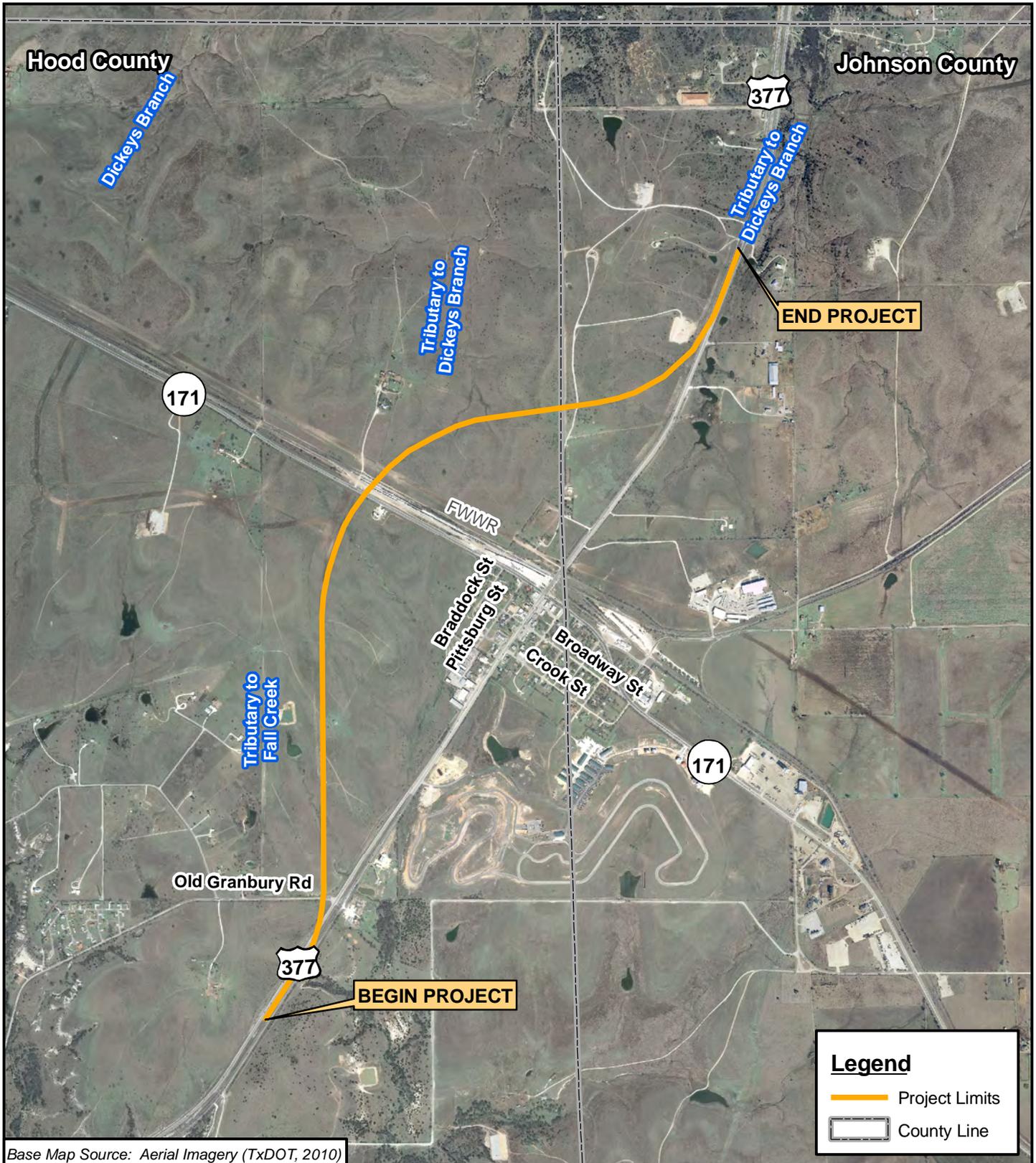


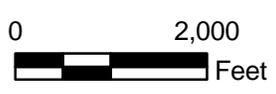
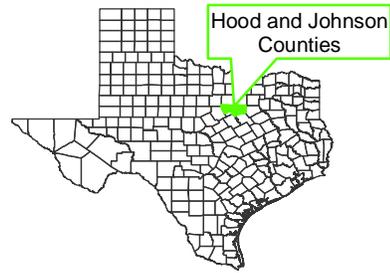
FIGURE 2
USGS TOPOGRAPHIC MAP

US 377
CRESSON MOBILITY PROJECT

CSJs: 0080-11-001 AND 0080-12-001



Base Map Source: Aerial Imagery (TxDOT, 2010)



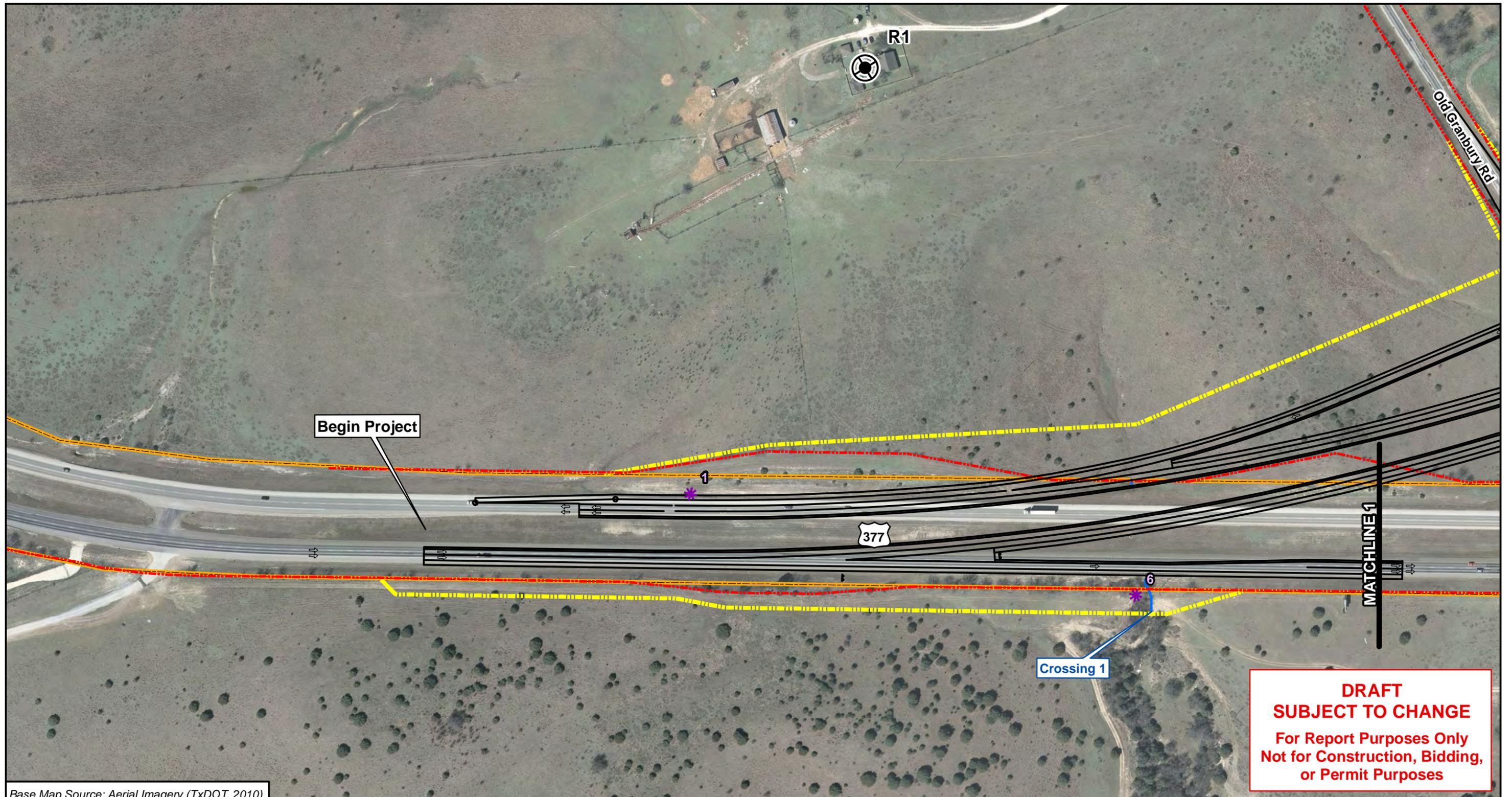
Legend

- Project Limits
- County Line

**FIGURE 3
AERIAL MAP**

US 377
CRESSON MOBILITY PROJECT

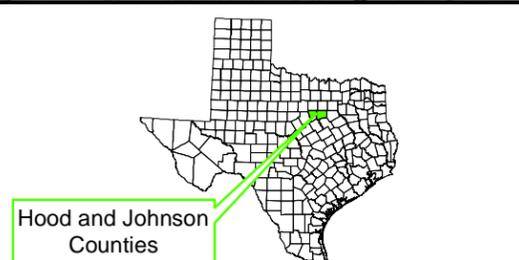
CSJs: 0080-11-001 AND 0080-12-001



Base Map Source: Aerial Imagery (TxDOT, 2010)

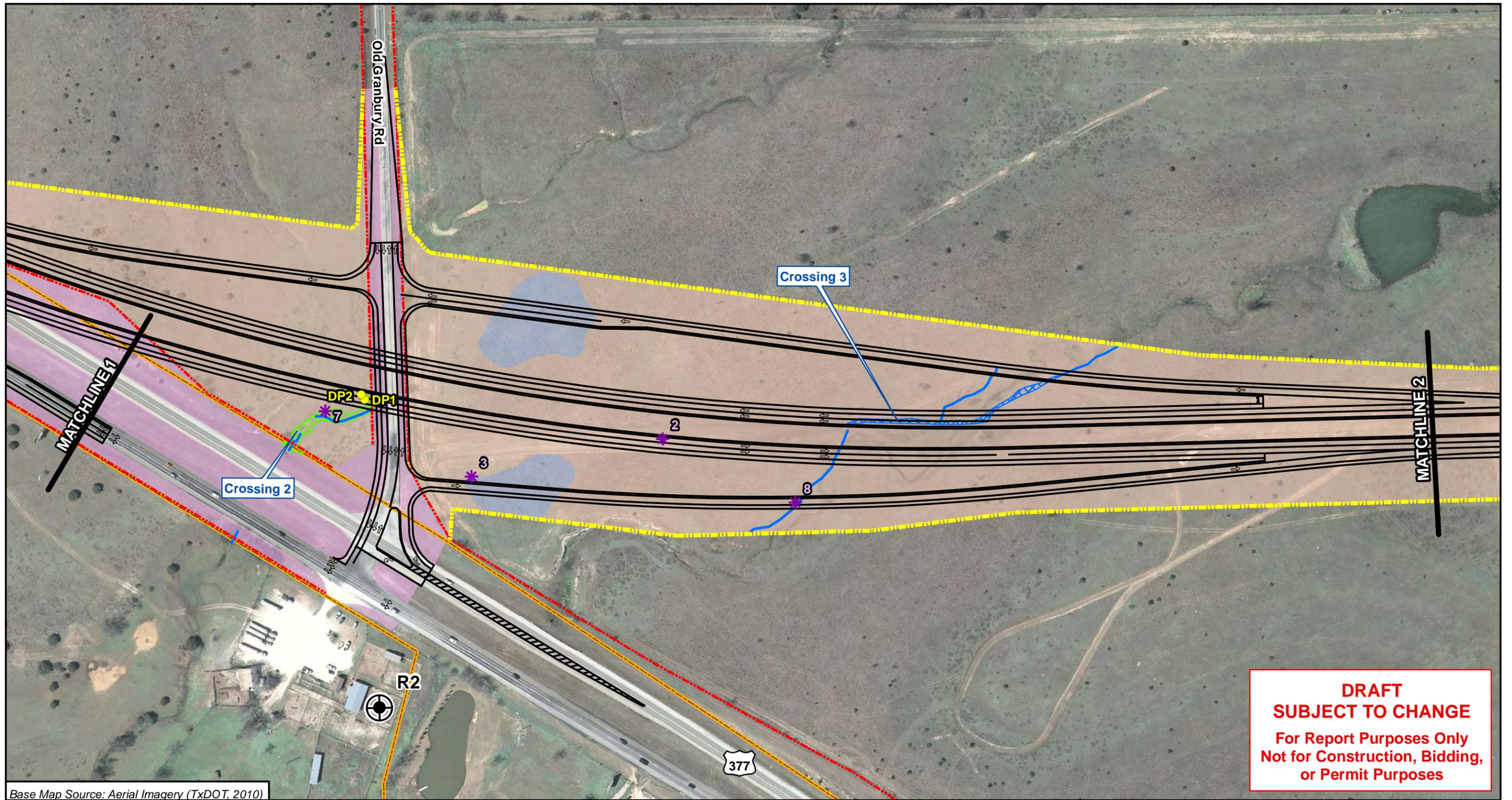
LEGEND

Existing ROW	Cresson City Limits	Existing ROW Fence Row
Proposed ROW	Delineated Wetland	Existing ROW Maintained Vegetation
Proposed Pavement	Delineated Stream	Proposed ROW Fence Row
Data Sampling Point	Non-Delineated Stream	Proposed ROW Unmaintained Vegetation
Noise Receiver	Photograph Location	Proposed ROW Tall Grass Prairie
		Proposed ROW Upland Overstory



**DRAFT
SUBJECT TO CHANGE**
For Report Purposes Only
Not for Construction, Bidding,
or Permit Purposes

**FIGURE 4
PLAN VIEW**
US 377
CRESSON MOBILITY PROJECT
CSJs: 0080-11-001 AND 0080-12-001
SHEET 1 OF 6



DRAFT
SUBJECT TO CHANGE
 For Report Purposes Only
 Not for Construction, Bidding,
 or Permit Purposes

Base Map Source: Aerial Imagery (TxDOT, 2010)

LEGEND

Existing ROW	Cresson City Limits	Existing ROW Fence Row
Proposed ROW	Delineated Wetland	Existing ROW Maintained Vegetation
Proposed Pavement	Delineated Stream	Proposed ROW Fence Row
Data Sampling Point	Non-Delineated Stream	Proposed ROW Unmaintained Vegetation
Noise Receiver	Photograph Location	Proposed ROW Tall Grass Prairie
		Proposed ROW Upland Overstory

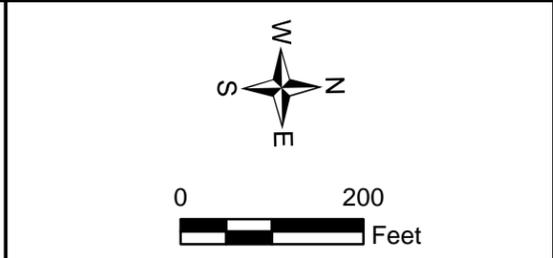
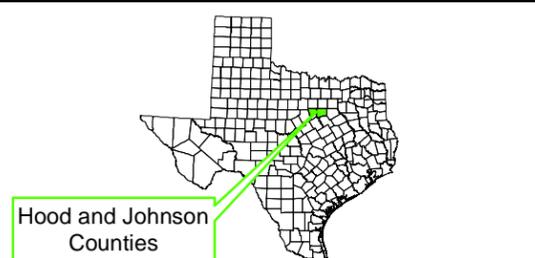
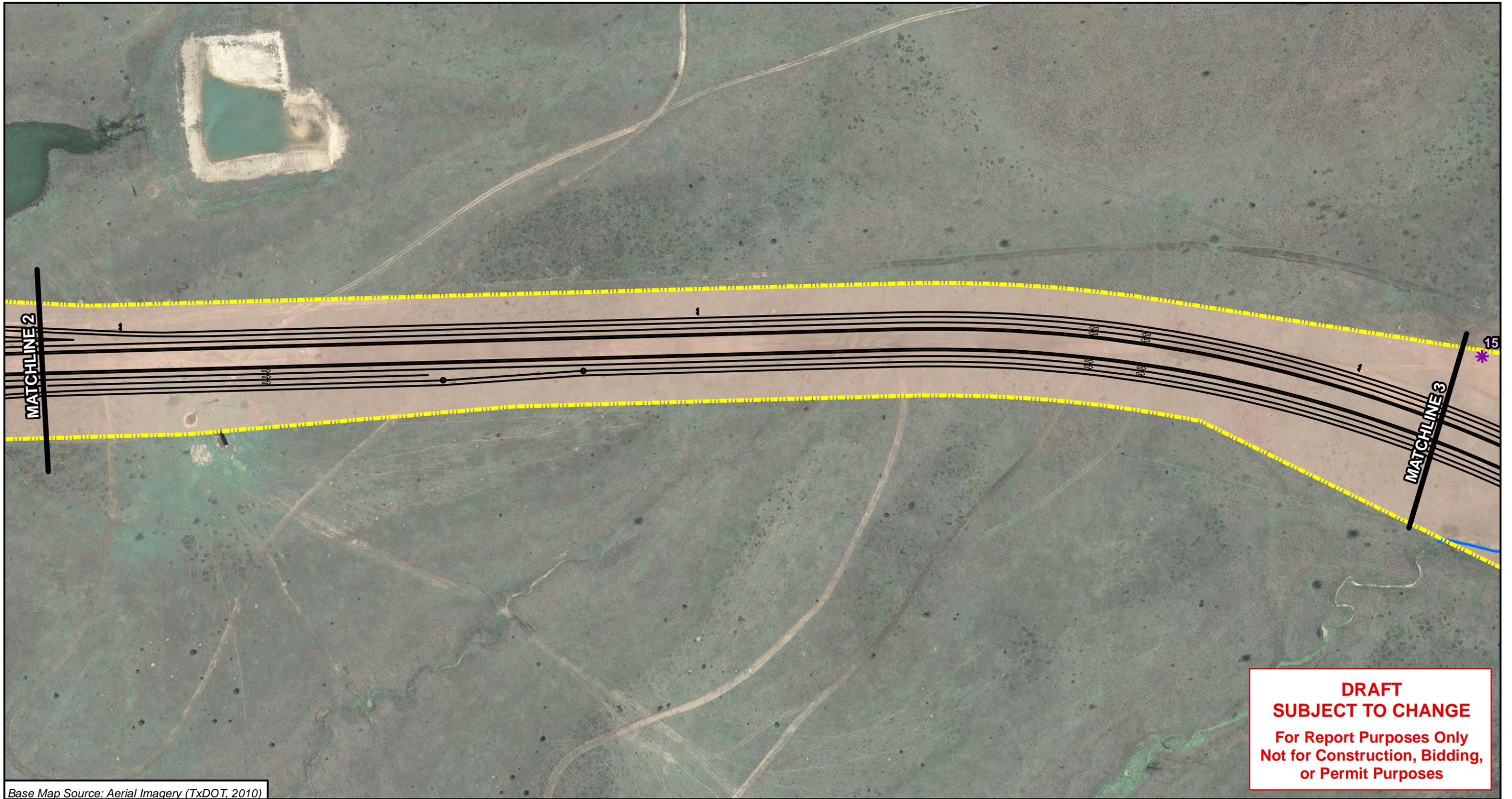


FIGURE 4
PLAN VIEW
 US 377
 CRESSON MOBILITY PROJECT
 CSJs: 0080-11-001 AND 0080-12-001
 SHEET 2 OF 6



DRAFT
SUBJECT TO CHANGE
 For Report Purposes Only
 Not for Construction, Bidding,
 or Permit Purposes

Base Map Source: Aerial Imagery (TxDOT, 2010)

LEGEND

- | | | |
|---------------------|-----------------------|--------------------------------------|
| Existing ROW | Cresson City Limits | Existing ROW Fence Row |
| Proposed ROW | Delineated Wetland | Existing ROW Maintained Vegetation |
| Proposed Pavement | Delineated Stream | Proposed ROW Fence Row |
| Data Sampling Point | Non-Delineated Stream | Proposed ROW Unmaintained Vegetation |
| Noise Receiver | Photograph Location | Proposed ROW Tall Grass Prairie |
| | | Proposed ROW Upland Overstory |

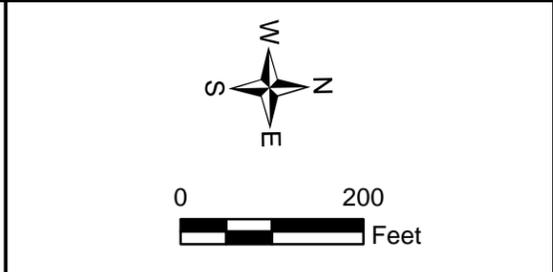
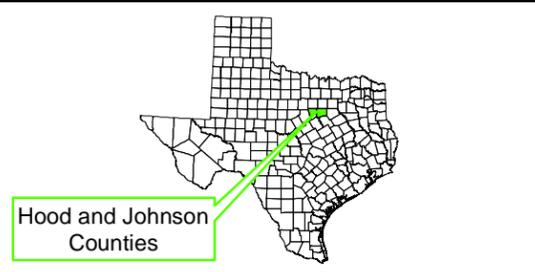
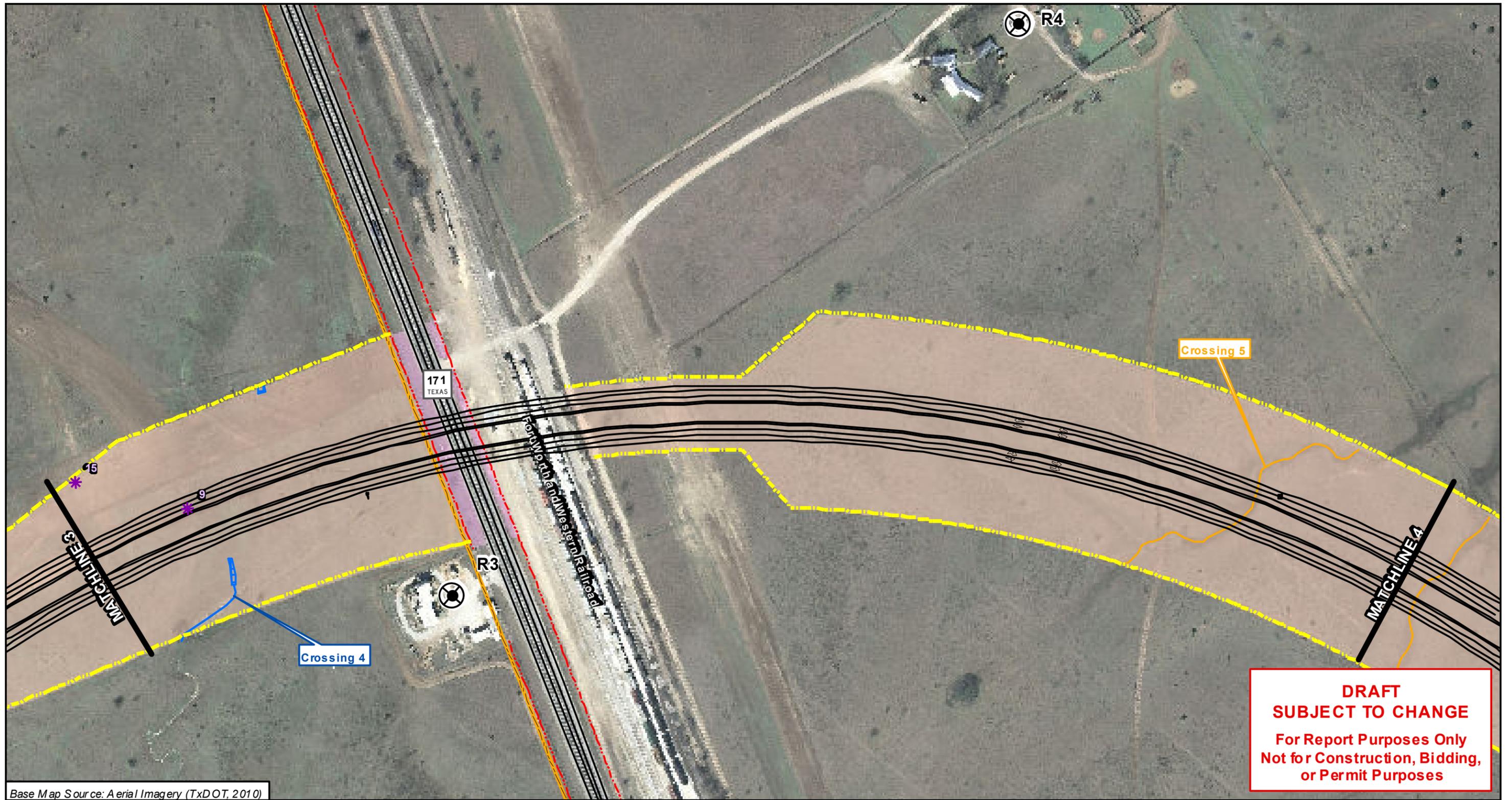
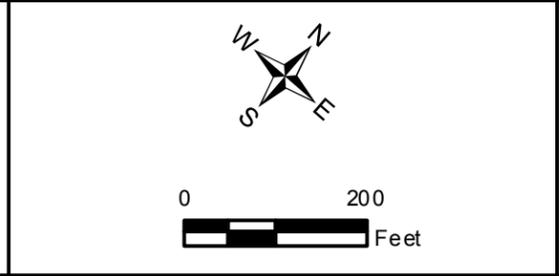
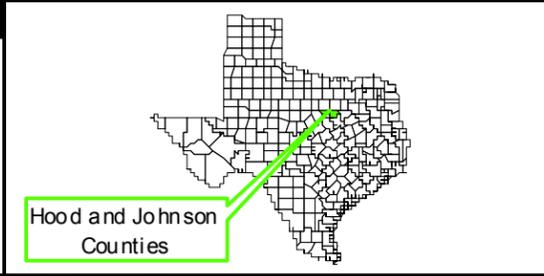


FIGURE 4
PLAN VIEW
 US 377
 CRESSON MOBILITY PROJECT
 CSJs: 0080-11-001 AND 0080-12-001
 SHEET 3 OF 6



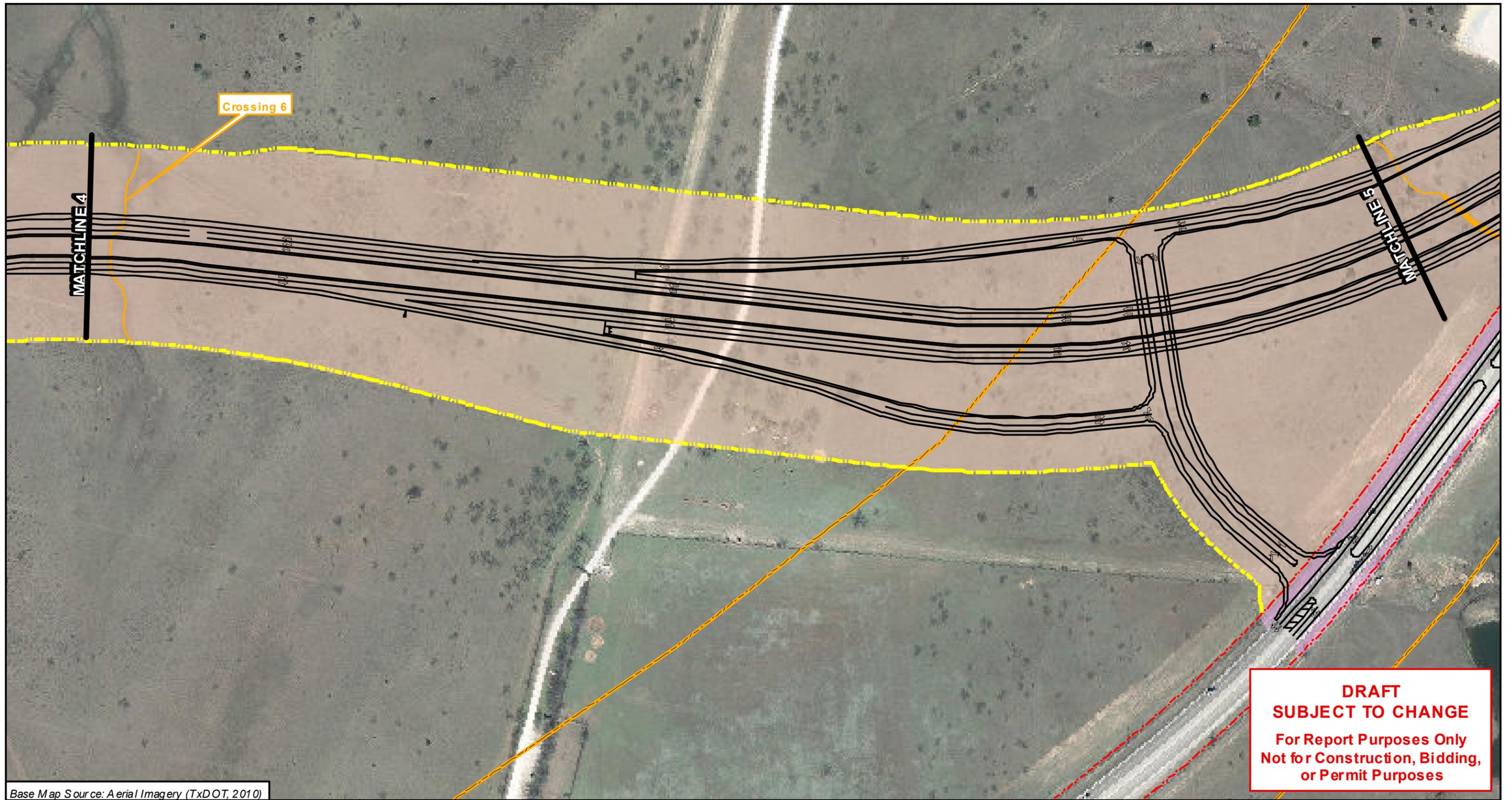
Base Map Source: Aerial Imagery (TxDOT, 2010)

LEGEND			
	Existing ROW		Existing ROW Fence Row
	Proposed ROW		Existing ROW Maintained Vegetation
	Proposed Pavement		Proposed ROW Fence Row
	Data Sampling Point		Proposed ROW Unmaintained Vegetation
	Noise Receiver		Proposed ROW Tall Grass Prairie
	Cresson City Limits		Photograph Location
	Delineated Wetland		Proposed ROW Upland Overstory
	Delineated Stream		
	Non-Delineated Stream		



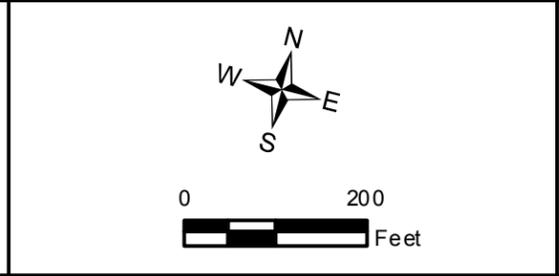
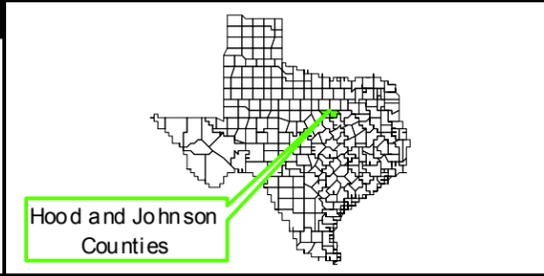
DRAFT
SUBJECT TO CHANGE
 For Report Purposes Only
 Not for Construction, Bidding,
 or Permit Purposes

FIGURE 4
PLAN VIEW
 US 377
 CRESSON MOBILITY PROJECT
 CSJs: 0080-11-001 AND 0080-12-001
 SHEET 4 OF 6



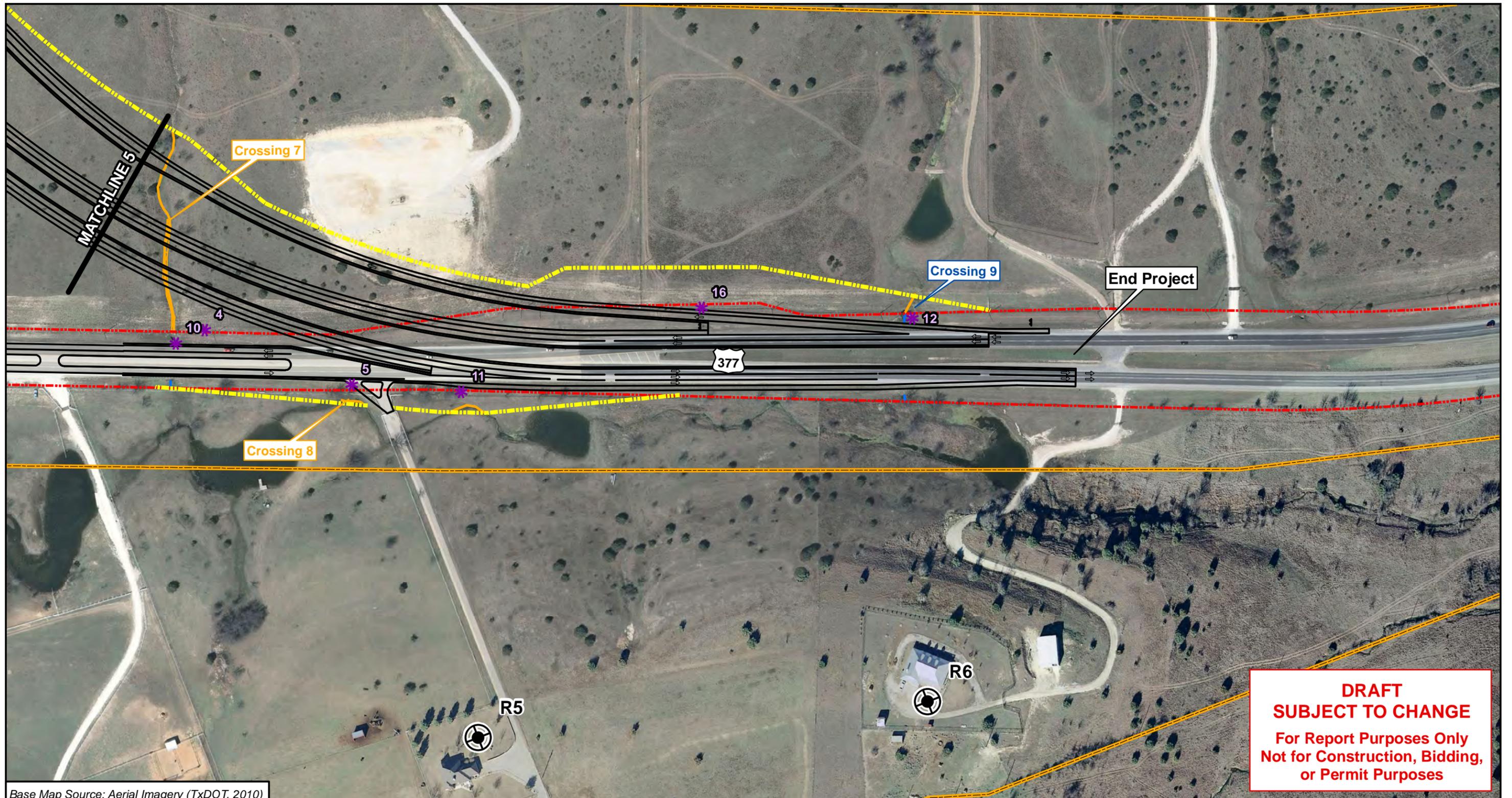
Base Map Source: Aerial Imagery (TxDOT, 2010)

LEGEND		
	Existing ROW	
	Proposed ROW	
	Proposed Pavement	
	Data Sampling Point	
	Noise Receiver	
	Photograph Location	
	Cresson City Limits	
	Delineated Wetland	
	Delineated Stream	
	Non-Delineated Stream	
	Existing ROW Fence Row	
	Existing ROW Maintained Vegetation	
	Proposed ROW Fence Row	
	Proposed ROW Unmaintained Vegetation	
	Proposed ROW Tall Grass Prairie	
	Proposed ROW Upland Overstory	



DRAFT
SUBJECT TO CHANGE
 For Report Purposes Only
 Not for Construction, Bidding,
 or Permit Purposes

FIGURE 4
PLAN VIEW
 US 377
 CRESSON MOBILITY PROJECT
 CSJs: 0080-11-001 AND 0080-12-001
 SHEET 5 OF 6



DRAFT
SUBJECT TO CHANGE
 For Report Purposes Only
 Not for Construction, Bidding,
 or Permit Purposes

Base Map Source: Aerial Imagery (TxDOT, 2010)

LEGEND

Existing ROW	Cresson City Limits	Existing ROW Fence Row
Proposed ROW	Delineated Wetland	Existing ROW Maintained Vegetation
Proposed Pavement	Delineated Stream	Proposed ROW Fence Row
Data Sampling Point	Non-Delineated Stream	Proposed ROW Unmaintained Vegetation
Noise Receiver	Photograph Location	Proposed ROW Tall Grass Prairie
		Proposed ROW Upland Overstory

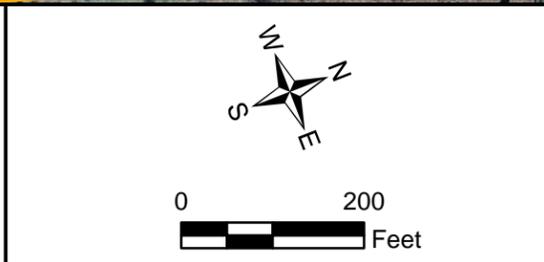
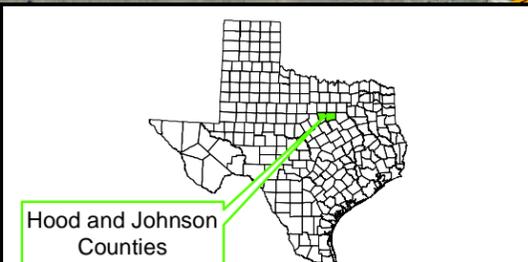
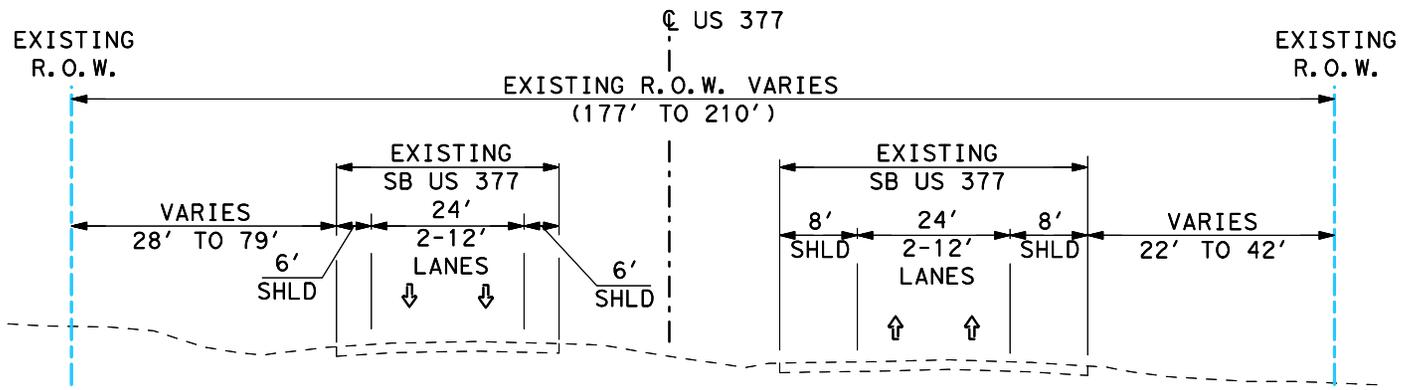
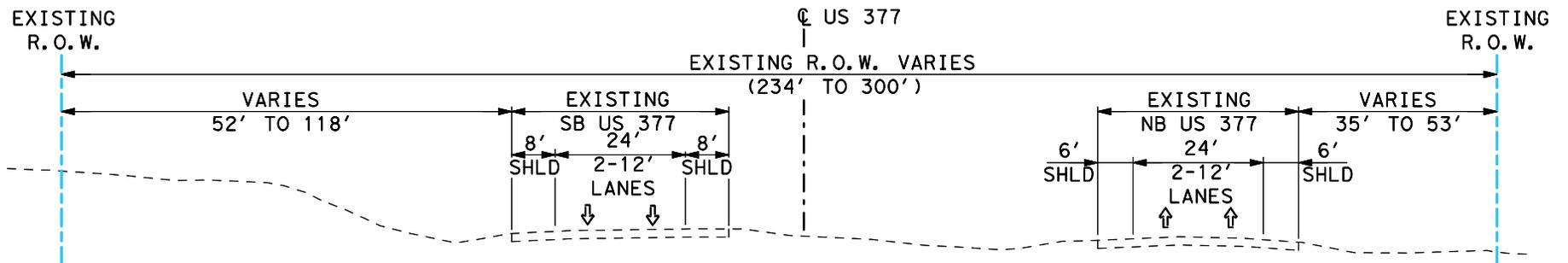


FIGURE 4
PLAN VIEW
 US 377
 CRESSON MOBILITY PROJECT
 CSJs: 0080-11-001 AND 0080-12-001
 SHEET 6 OF 6

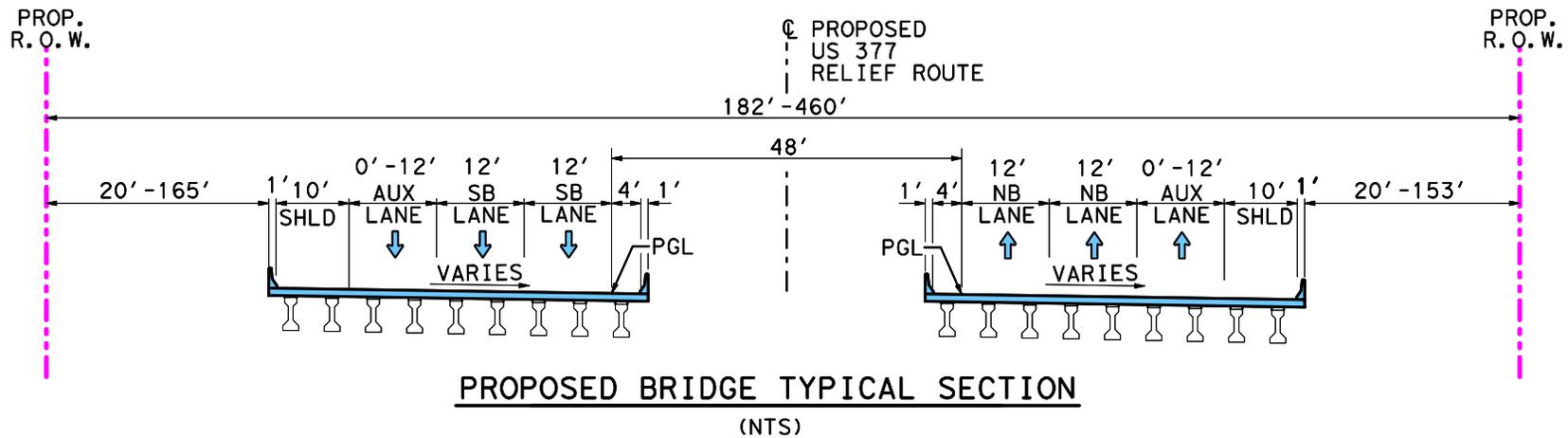
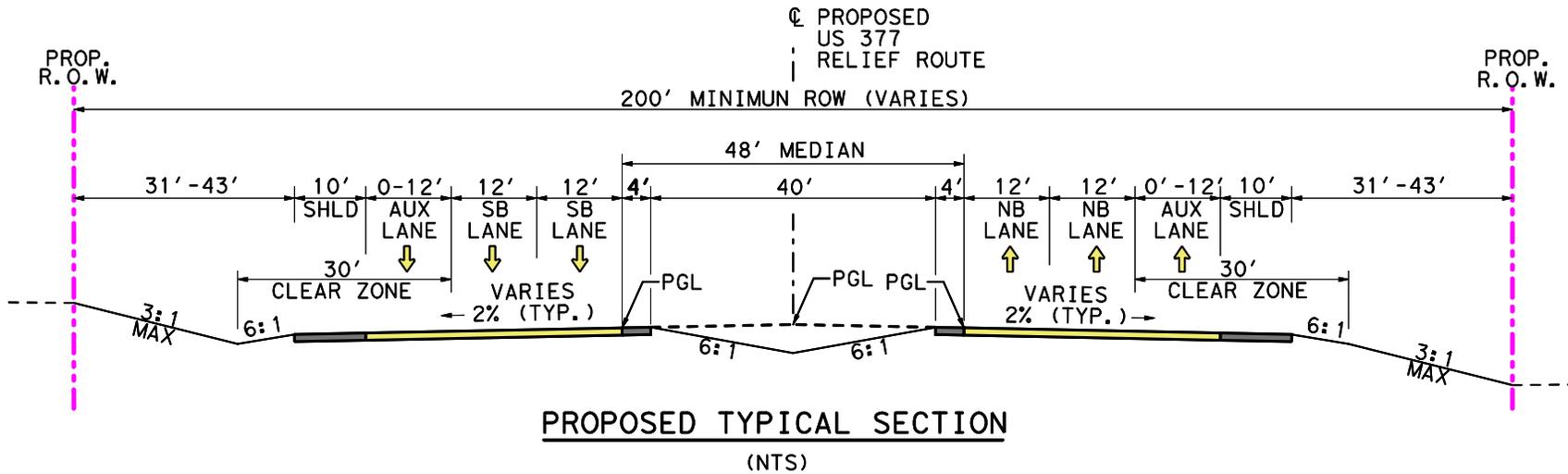


EXISTING TYPICAL SECTION
(NTS)



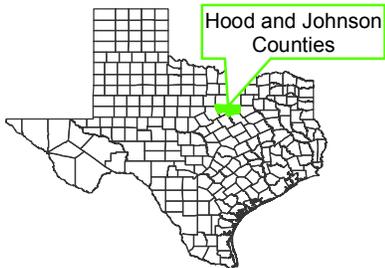
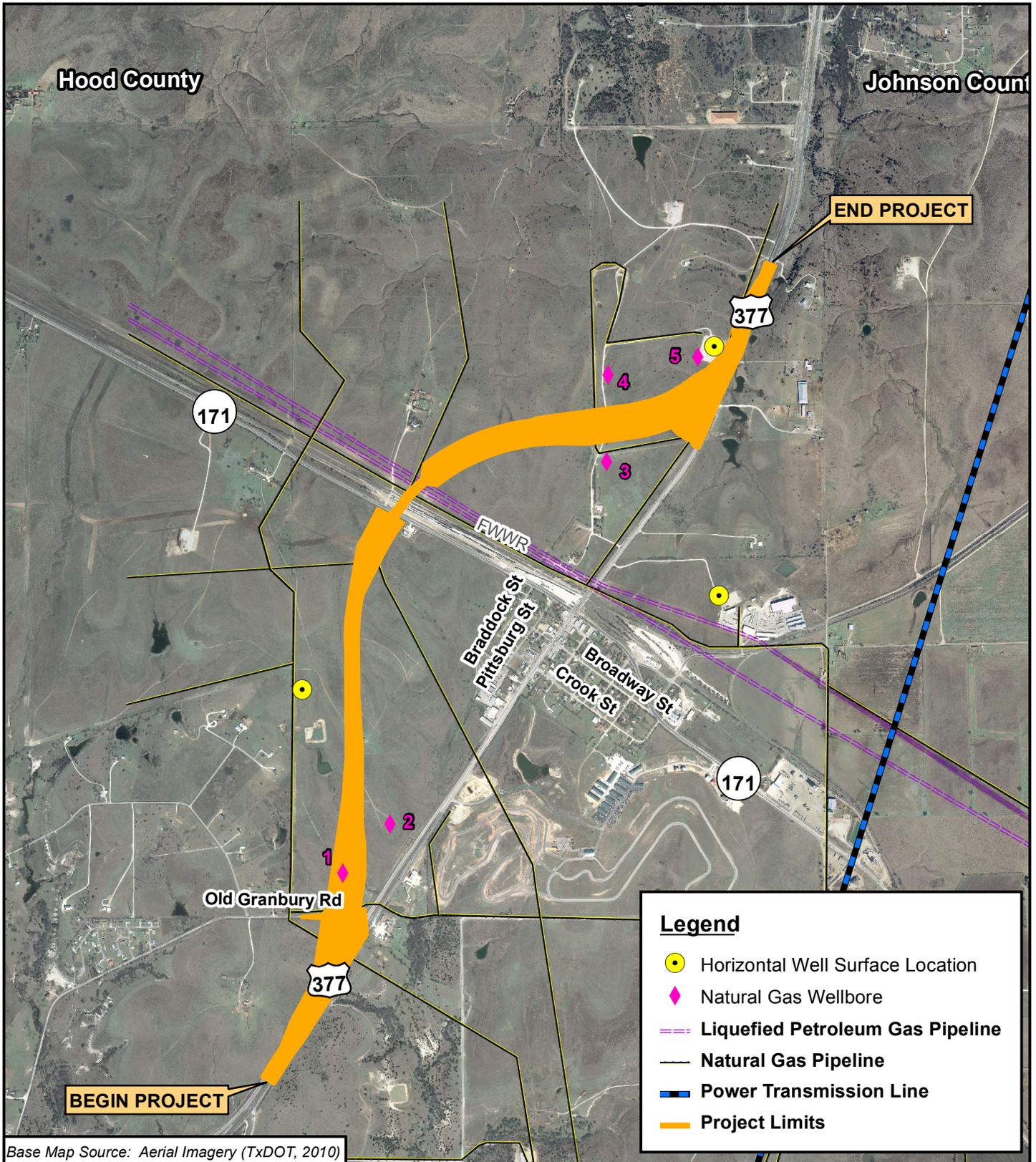
EXISTING TYPICAL SECTION
(NTS)

<p>DRAFT SUBJECT TO CHANGE FOR REPORT PURPOSES ONLY Not for construction, bidding, or permit purposes.</p>	<p>FIGURE 5 TYPICAL SECTIONS US 377 CRESSON MOBILITY PROJECT CSJs: 0080-11-001 AND 0080-12-001 SHEET 1 OF 2</p>
--	---



DRAFT
 SUBJECT TO CHANGE
 FOR REPORT PURPOSES
 ONLY
 Not for construction, bidding,
 or permit purposes.

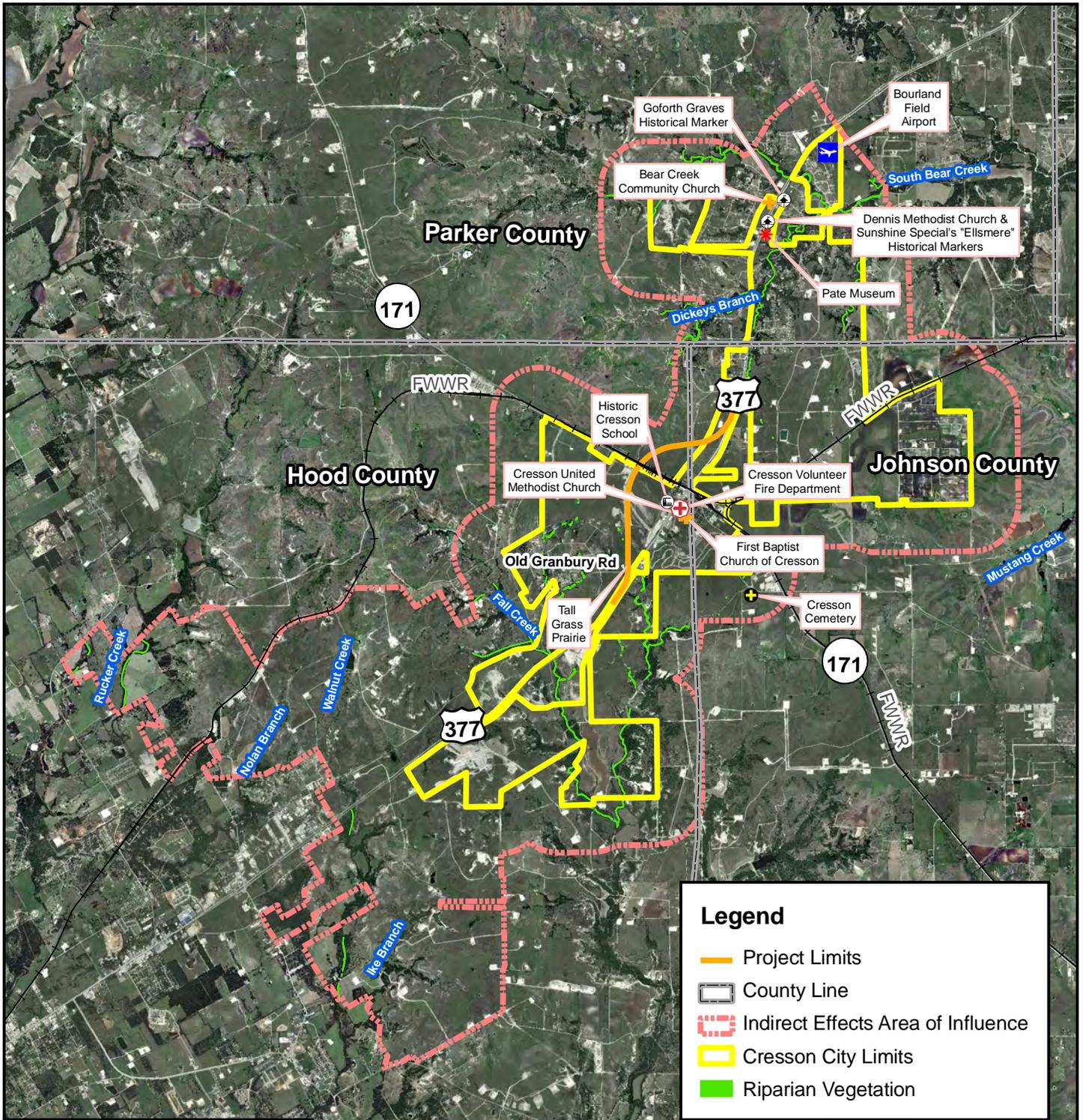
FIGURE 5
 TYPICAL SECTIONS
 US 377
 CRESSON MOBILITY PROJECT
 CSJs: 0080-11-001 AND 0080-12-001
 SHEET 2 OF 2



**FIGURE 6
HAZARDOUS MATERIALS MAP**

US 377
CRESSON MOBILITY PROJECT

CSJs: 0080-11-001 AND 0080-12-001



Base Map Source: Aerials Express, 2008

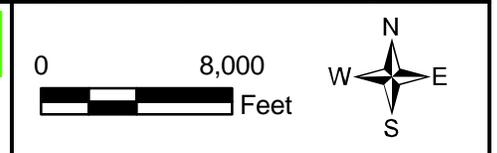
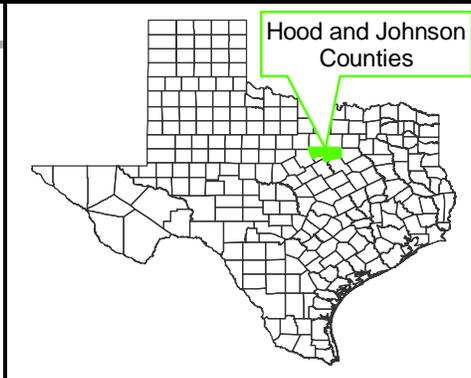
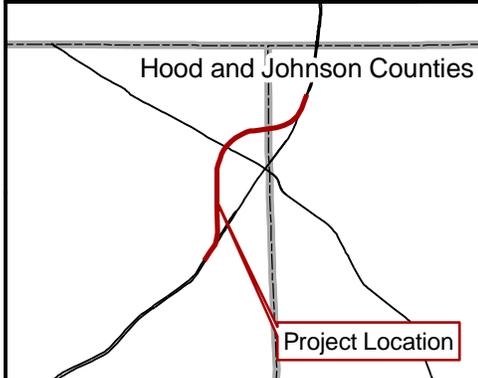
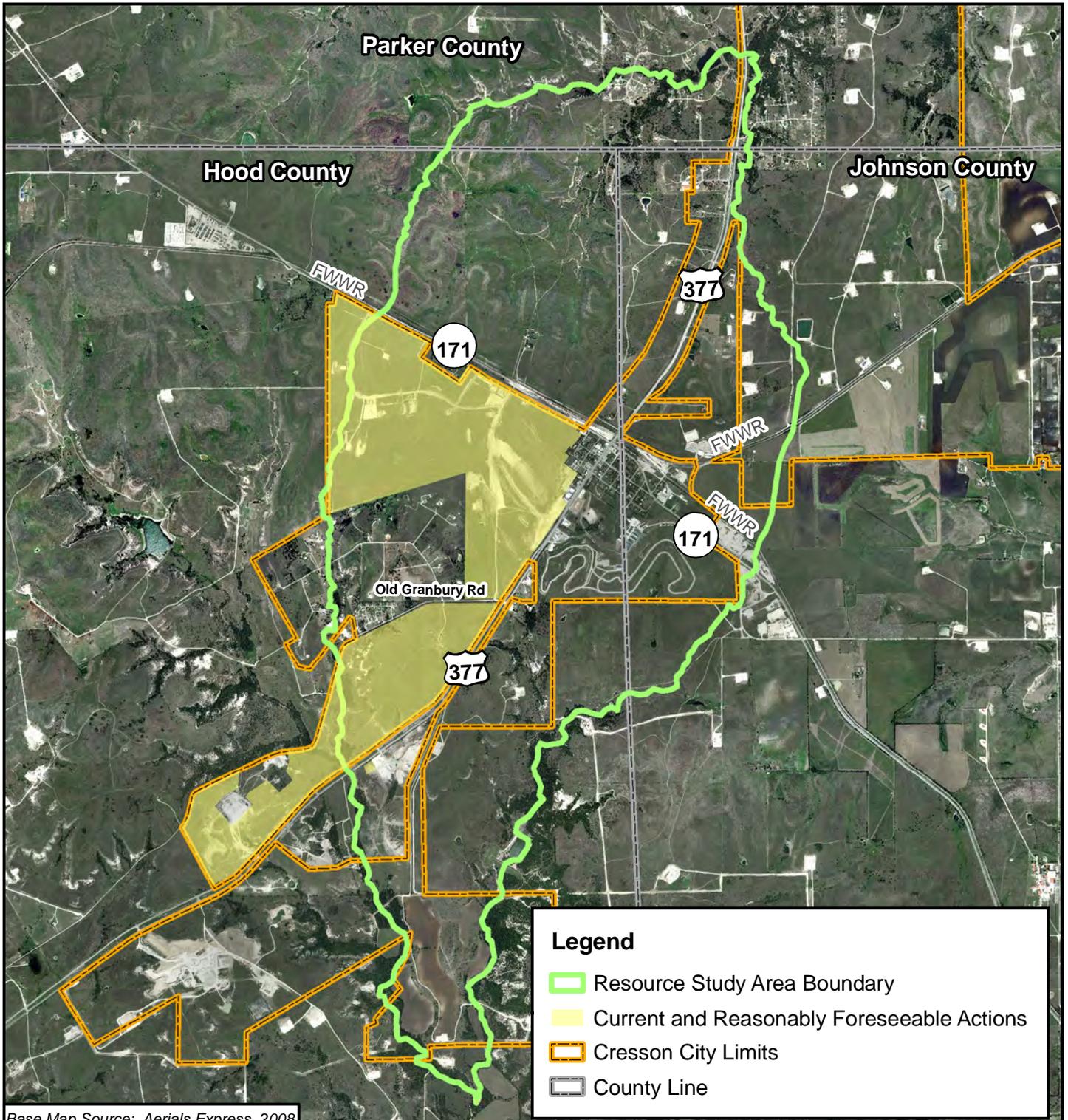


FIGURE 7
INDIRECT EFFECTS
AREA OF INFLUENCE MAP
 US 377
 CRESSON MOBILITY PROJECT
 CSJs: 0080-11-001 AND 0080-12-001



Base Map Source: Aerials Express, 2008

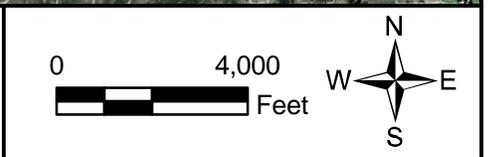
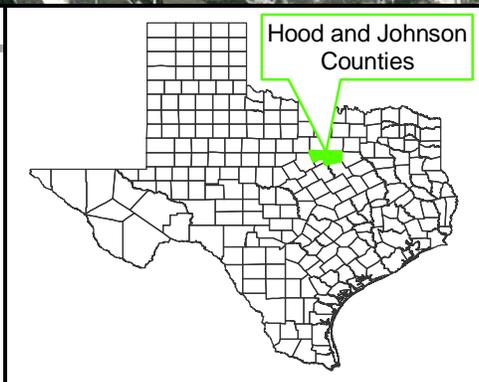
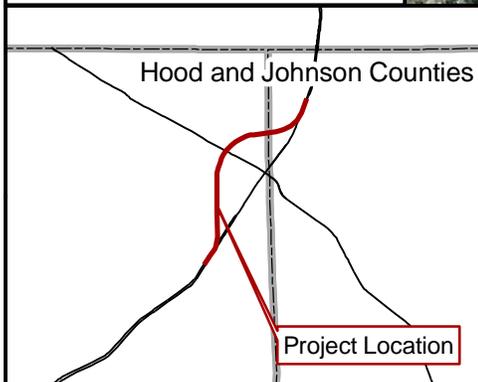
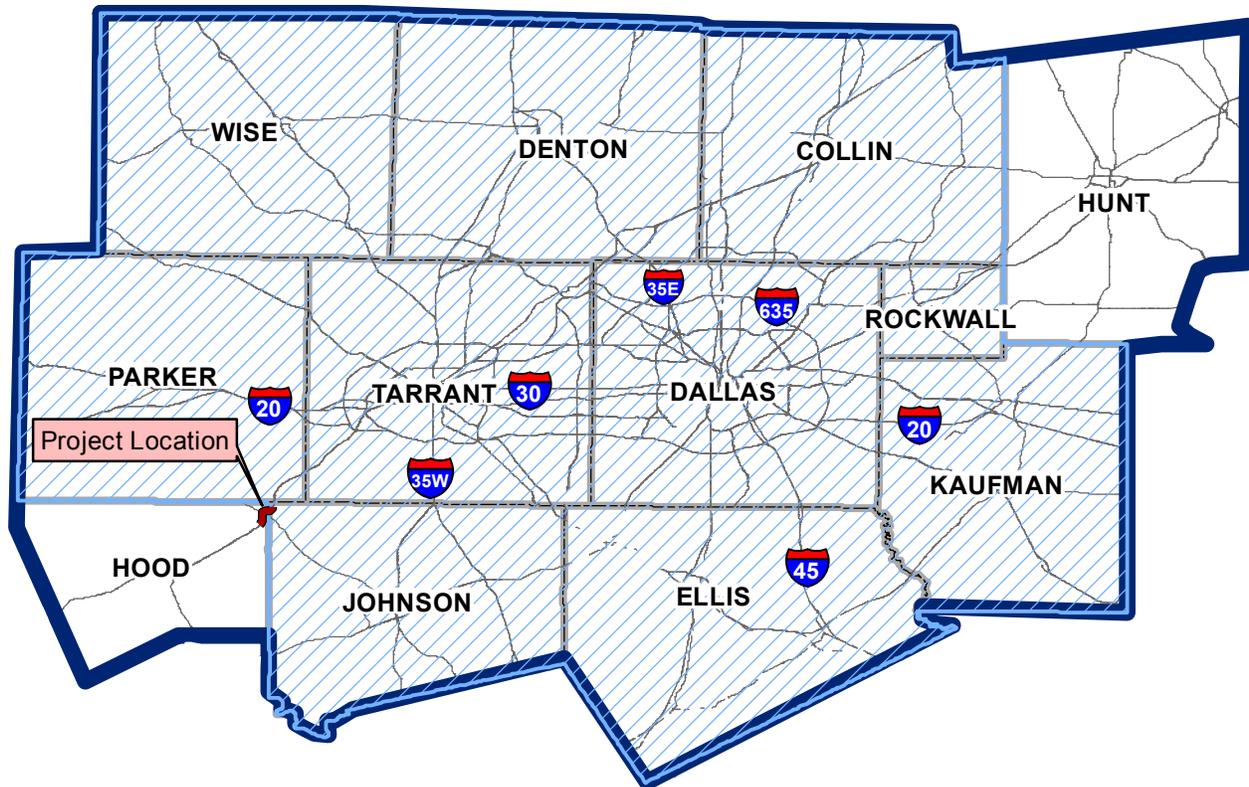


FIGURE 8
CUMULATIVE IMPACTS
NATURAL RESOURCES
RESOURCE STUDY AREA MAP
 US 377
 CRESSON MOBILITY PROJECT
 CSJs: 0080-11-001 AND 0080-12-001



LEGEND

-  CO RSA
-  Ozone RSA – DFW 8-hour Non-attainment Area
-  MSAT RSA – Affected Transportation Network
-  County Line

Base Map Source: NCTCOG (2011) and U.S. EPA (2012)

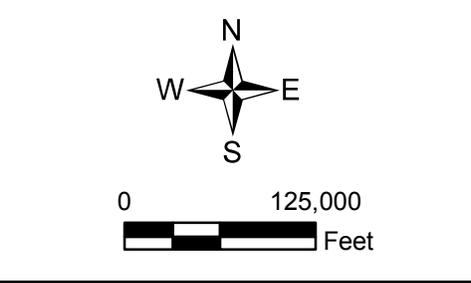
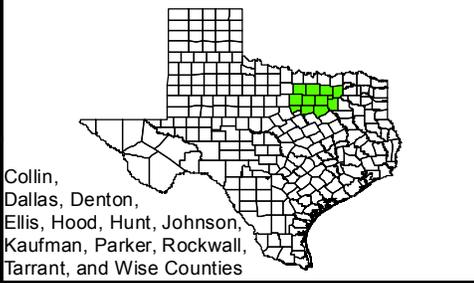


FIGURE 9
CUMULATIVE IMPACTS
AIR QUALITY
RESOURCE STUDY AREA MAP

US 377
 CRESSON MOBILITY PROJECT

CSJs: 0080-11-001 AND 0080-12-001

Appendix A
EA Classification Memo



Texas Department of Transportation

DEWITT C. GREER STATE HIGHWAY BLDG. • 125 E. 11TH STREET • AUSTIN, TEXAS 78701-2483 • (512) 463-8585

Ms. Janice W. Brown
Division Administrator
Federal Highway Administration, Texas Division
300 East 8th Street, Suite 826
Austin, TX 78701

RECEIVED ON

JAN 25 2012

TEXAS DIVISION
FHWA

SUBJECT: Request for Environmental Classification
US 377 Mobility Project – 0080-04-090
Hood and Johnson Counties

Dear Ms. Brown:

I. INTRODUCTION

This request for environmental classification as an EA is for the proposed construction of an approximate 2.8-mile long new location relief route west of the City of Cresson, Johnson and Hood Counties, Texas. **Figure 1** shows the location of the proposed project. The relief route would be a four-lane divided highway that would begin approximately one mile south of the intersection of US 377 and SH 171 and end approximately one mile north of the same intersection.

Five build alternatives, and the no-build alternative were examined and analyzed by TxDOT, the City of Cresson, Hood and Johnson Counties, local stakeholders and the public. Through an extensive public involvement process described in more detail in **Section VI**, a Preferred Alternative was recommended, and it was proposed to move forward in the NEPA process. Land use along the project corridor consists of rangeland with some fallow pasture and sparsely scattered residences. Additionally, certain phases of Cresson Crossroads, a “Master-Planned New Town” are undergoing construction in the project area.

II. PROJECT DEVELOPMENT

In 2008, the North Central Texas Council of Governments (NCTCOG) and the Texas Transportation Institute (TTI) studied the US 377/SH 171/Fort Worth & Western Railroad (FWWR) intersection in the City of Cresson and provided short-term solutions to the existing traffic problems. However, it was noted by NCTCOG and TTI that the best long-term solution would be to provide a US 377 grade-separated railroad crossing. In 2010, the TxDOT Fort Worth District began the process of developing conceptual alternatives for a proposed relief route. Studies were performed by TxDOT to develop detailed cross section alternatives, construction costs, right-of-way (ROW) requirements, and potential environmental concerns for five conceptual alternatives. These conceptual alternatives included a bridge over the railroad along the existing corridor, a tunnel under the railroad along the existing corridor, two relief routes along the western side of the City of Cresson and one relief route along the east side of the City of Cresson. Work Group meetings were conducted in order to review and discuss the data TxDOT developed. The data were presented to the public in May 2010. After analyzing the comments presented during and after the Public Meeting, the preferred alternative was identified and presented to the Work Group. **Section VI** provides more detail related to the Work Group and Public Meetings.

THE TEXAS PLAN

REDUCE CONGESTION • ENHANCE SAFETY • EXPAND ECONOMIC OPPORTUNITY • IMPROVE AIR QUALITY
PRESERVE THE VALUE OF TRANSPORTATION ASSETS

An Equal Opportunity Employer

The proposed project is included in the region's *Mobility 2035: The Metropolitan Transportation Plan for North Central Texas* (MTP) as a regionally significant arterial (RSA – 450.1) but the proposed project is not currently listed in the 2011 – 2014 State Transportation Improvement Program (STIP). It will be included in the February Revisions to the 2011 – 2014 STIP. The proposed project is expected to be consistent with the appropriate planning documents prior to environmental approval. The Johnson County portion of the proposed project is funded through Texas Transportation Commission Proposition 12 funds and the Hood County portion of the proposed project is funded through a Pass-Through Financing agreement between Hood County and TxDOT.

III. NEED AND PURPOSE

The proposed project is needed because proximity of the at grade railroad crossing on US 377 to the SH 171 intersection impedes traffic flow; accidents occur along US 377 near SH 171; there is a high level of truck traffic leading to congestion along US 377; short-term solutions currently in place will not provide extended relief for motorists using US 377 and SH 171; and, US 377 belongs to the Texas Highway Trunk System (the Trunk System) but does not meet TxDOT design criteria for the Trunk System.

The purpose of the proposed project is to provide a long-term solution to identified traffic issues at the US 377 and SH 171 intersection.

IV. PREFERRED ALTERNATIVE

The TxDOT Fort Worth District proposes to construct an approximate 2.8-mile, four-lane relief route west of US 377 and the City of Cresson in Johnson and Hood Counties, Texas. The proposed project begins approximately one mile south of the intersection of US 377 and SH 171 and ends approximately one mile north of the same intersection. The proposed roadway would be a four-lane divided roadway with two 12-foot wide lanes in each direction, 10-foot wide outside shoulders, four-foot wide inside shoulders and a 48-foot wide grassy median. **Figure 2** presents the proposed typical section. The proposed relief route would bridge SH 171 and the FWWR.

According to Minute Order 108544 passed by the Texas Transportation Commission (TTC) on June 28, 2001, new location relief routes on the state highway system are to be developed with full control of access. To be consistent with this TTC policy, the proposed relief route would not provide access to adjacent properties. In addition, no frontage roads are proposed as part of the design.

V. SPECIFIC AREAS OF ENVIRONMENTAL CONCERN

The proposed project would require approximately 115 acres of right-of-way (ROW) within a primarily rural area of Hood and Johnson Counties. There are no existing structures within the proposed ROW and the land use is either agricultural or undeveloped. No displacements would occur. No substantial negative impacts associated with regional and community growth, socio-economics, community cohesion, 4(f) and 6(f) properties, public facilities and services, floodplains, water quality, hazardous materials, air quality, or noise are anticipated for the proposed project. Impacts to historic and archeological studies are currently unknown; studies are ongoing and results are pending. Direct, indirect, and cumulative effects would be determined during the preparation of the EA.

The main project issues consist of farmlands, waters of the U.S., wildlife habitat and vegetation, and threatened and endangered species. These issues are as follows:

Farmlands

The Preferred Alternative could potentially impact approximately 65 acres of ranchland. Coordination with the U.S. Department of Agriculture's Natural Resources Conservation Service would be required due to the possibility of converting potentially important agricultural land to non-agricultural use.

Waters of the U.S.

The Preferred Alternative crosses eight waters of the U.S. that consist of ephemeral and intermittent streams. The southern section of the Preferred Alternative crosses an intermittent tributary to Fall Creek, an adjacent wetland, and two ephemeral tributaries to Fall Creek. The middle section of the Preferred Alternative (west of SH 171) crosses one ephemeral tributary to Fall Creek. In the middle section east of SH 171, the Preferred Alternative crosses two unnamed ephemeral tributaries to Dickey's Branch. Two unnamed intermittent tributaries to Dickey's Branch are crossed in the northern section of the proposed project. Preliminary acreage amounts of potentially impacted waters of the U.S. and wetlands are not available; however, approximately 4,000 linear feet of stream could be impacted. Based on the length of the streams potentially impacted and the presence of wetlands within the proposed ROW, it is assumed that a Nationwide Permit with Preconstruction Notification would be required and it is possible that an Individual Permit could be required.

Wildlife Habitat and Vegetation

Within existing ROW, the Preferred Alternative could displace approximately 14 acres of maintained vegetation and 0.3 acre of fence line vegetation. Within the proposed ROW, the Preferred Alternative could displace approximately 0.5 acre of woodlands, 3 acres of remnant tallgrass prairie, and 105 acres of unmaintained herbaceous vegetation. Based on review of aerial photographs, there could be impacts to approximately 6 acres of mesquite/sugarberry/cedar elm savanna on property in which TxDOT was denied access.

Threatened and Endangered Species

Based on aerial photography, preliminary field reconnaissance, review of the Natural Diversity Database, and the wildlife habitat and vegetation quantified above, there is potential for state listed threatened and endangered species, species of concern, and their habitats to be present in the area. These species include the Texas horned lizard (State listed threatened), Western Burrowing Owl, plains spotted-skunk, Texas garter snake, and Comanche Peak prairie-clover (all species of concern). Coordination with the Texas Parks and Wildlife Department would be required for potential impacts to the Texas horned lizard habitat.

VI. PUBLIC INVOLVEMENT

Three Work Group meetings (held February 17, March 25, and July 28, 2010) were held in order to assemble major landowners, community leaders, and key decision makers within the proposed US 377 Study Area. TxDOT's feasibility and corridor routing process was explained during the meetings and the group's assistance was requested in identifying additional constraints and alignments to contribute to the comprehensive study. The Preferred Alternative was presented at the third Work Group meeting.

A Public Meeting was held on May 13, 2010 to introduce the proposed project to the public and present the preliminary route alternatives, constraints, and typical sections. The Alternatives Analysis Matrix and project schedule for the proposed US 377 Mobility Project were presented and feedback was requested via survey and comment forms.

After analyzing public input, it was determined that three alternatives were the most preferred by the public. TxDOT compared and analyzed the design elements and identified impacts of the three alternatives and determined that Alternative B1 was the technically preferred alternative. The route was further evaluated for feasibility and funding. Since that time, refinements have occurred to the Preferred Alternative design.

A second Public Meeting was held on December 12, 2011. The refined Preferred Alternative was presented to the public for their review. Feedback from the public was requested via comment forms.

VII. CONCLUSION

Based on 23 CFR 771.115, there are three classes of actions, two of which are discussed here, that prescribe the level of documentation required in the National Environmental Policy Act (NEPA) process.

Class I Environmental Impact Statements (EISs): Actions that significantly affect the environment require an EIS (40 CFR 1508.27). A new controlled access freeway and a highway project of four or more lanes on new location are two examples of actions that normally require an EIS.

Class III Environmental Assessments (EAs): Actions in which the significance of the environmental impact is not clearly established. All actions that are not Class I or II (Categorical Exclusions [CEs]) are Class III. All actions in this class require the preparation of an EA to determine the appropriate environmental document required.

Per 23 CFR 771.119, "An EA shall be prepared by the applicant in consultation with the Administration for each action that is not a CE and does not clearly require the preparation of an EIS, or where the Administration believes an EA would assist in determining the need for an EIS."

Since the proposed project is a new location highway with four lanes and preliminary evaluations indicate the proposed project would not likely result in significant impacts, TxDOT believes the US 377 Mobility Project should be classified and evaluated as an EA in accordance with 43 TAC 2.11 and 23 CFR 771.119. An EIS will be prepared if significant impacts are discovered during the EA process. Your concurrence is requested that the proposed environmental classification for the proposed project, as described above, is appropriate. If you have any questions, please contact Scott A. Ford, AICP, at 512-416-2687.

Sincerely,



Melissa A. Neeley
Director of Project Delivery Management
Environmental Affairs Division

Attachments

Concur: Walter J. Kainenheit P.E.
Federal Highway Administration

Date: 3/5/12

Appendix B
Project Area Photographs



Photograph 1: View looking northeast toward the beginning of the proposed project.



Photograph 2: View looking north toward the proposed project location.



Photograph 3: View looking northwest toward a tall grass prairie remnant within the proposed project ROW.



Photograph 4: View looking southwest toward maintained herbaceous vegetation within the existing ROW.



Photograph 5: View looking southwest toward fence row vegetation.



Photograph 6: View looking east toward Crossing 1.



Photograph 7: View looking northeast toward Crossing 2.



Photograph 8: View looking southeast toward Crossing 3.

APPENDIX B
Project Area Photographs
US 377
Cresson Mobility Project
CSJs: 0080-11-001 and 0080-12-001
Sheet 2 of 4



Photograph 9: View looking northeast toward Crossing 4.



Photograph 10: View looking west toward Crossing 7.



Photograph 11: View looking north toward Crossing 8.



Photograph 12: View looking west toward Crossing 9.



Photograph 13: View looking north at the intersection of existing US 377 and SH 171/FWWR (from the southeast corner). Note that traffic is currently stopped for a railroad crossing.



Photograph 14: View looking south from the southeast corner of the intersection of existing US 377 and SH 171/FWWR. Note that traffic is backed up waiting through a railroad crossing.



Photograph 15: View looking north-northeast from Slocum Ranch Road at the approximate area where the new alignment will go over SH 171/FWWR.



Photograph 16: View from the northern project limit looking southwest from the west side of US 377.

APPENDIX B
Project Area Photographs

US 377
Cresson Mobility Project

CSJs: 0080-11-001 and 0080-12-001
Sheet 4 of 4

Appendix C
Coordination Letters

United States Department of Agriculture



Natural Resources Conservation Service

101 S. Main Street
Temple, TX 76501-6624
Phone: 254-742-9826
FAX: 254-742-9859

February 9, 2012

Civil Associates
1521 Northwest Highway
Garland, TX 75041

Attention: Ms. Bradley

Subject: LNU-Farmland Protection
Proposed Cresson US 377 – Four Lane Relief Route
Hood and Johnson Counties, Texas

We have reviewed the information provided concerning the proposed project in Hood and Johnson Counties, Texas as outlined in your email dated February 8, 2012. This review is part of the National Environmental Policy Act (NEPA) evaluation for FHWA. We have evaluated the proposed site as required by the Farmland Protection Policy Act (FPPA).

There are Important Farmland Soils in the subject area. We have developed a rating for the soils of this preferred corridor and completed Parts II, IV, and V of the Farmland Conversion Impact Rating for Corridor Type Projects (form CPA-106). The relative value of farmland in Part V should be used in your calculation for Part VII.

To meet reporting requirements of section 1546 of the Act, 7 U.S.C 4207, and for data collection purposes, after your agency has made a final decision on a project in which one or more of the alternative sites contain farmland subject to the FPPA, NRCS is requesting a return copy of the Form CPA-106, which indicates the final decision. We urge you to use accepted erosion control methods during all phases of construction.

We have attached the completed form. If you have any questions, please contact me at (254) 742-9855, Fax (254) 742-9859.

Sincerely,

A handwritten signature in blue ink that reads "Wayne J. Gabriel".

Wayne Gabriel
NRCS Soil Scientist

Attachment

FARMLAND CONVERSION IMPACT RATING
FOR CORRIDOR TYPE PROJECTS

PART I (To be completed by Federal Agency)		3. Date of Land Evaluation Request 2/8/12	4. Sheet 1 of 1
--	--	--	-----------------

1. Name of Project Cresson US 377	5. Federal Agency Involved FHWA
--------------------------------------	------------------------------------

2. Type of Project Transportation - New Location	6. County and State Hood and Johnson Counties, TX
---	--

PART II (To be completed by NRCS)		1. Date Request Received by NRCS	2. Person Completing Form Wayne J. Gabriel
-----------------------------------	--	----------------------------------	---

3. Does the corridor contain prime, unique statewide or local important farmland? (If no, the FPPA does not apply - Do not complete additional parts of this form.)		YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	4. Acres Irrigated Average Farm Size 5198 250
--	--	---	--

5. Major Crop(s) Grain Sorghum	6. Farmable Land in Government Jurisdiction Acres: 477,034 % 65	7. Amount of Farmland As Defined in FPPA Acres: 477,334 % 65
-----------------------------------	--	---

8. Name Of Land Evaluation System Used LESA	9. Name of Local Site Assessment System NA	10. Date Land Evaluation Returned by NRCS 2-15-2012
--	---	--

PART III (To be completed by Federal Agency)	Alternative Corridor For Segment			
	Corridor A	Corridor B	Corridor C	Corridor D
A. Total Acres To Be Converted Directly	115			
B. Total Acres To Be Converted Indirectly, Or To Receive Services	0			
C. Total Acres In Corridor	115			

PART IV (To be completed by NRCS) Land Evaluation Information				
A. Total Acres Prime And Unique Farmland	16.4			
B. Total Acres Statewide And Local Important Farmland	0			
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted	100.34			
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value	73%			

PART V (To be completed by NRCS) Land Evaluation Information Criterion Relative value of Farmland to Be Serviced or Converted (Scale of 0 - 100 Points)				
	39			

PART VI (To be completed by Federal Agency) Corridor Assessment Criteria (These criteria are explained in 7 CFR 658.5(c))		Maximum Points			
1. Area in Nonurban Use	15	11			
2. Perimeter in Nonurban Use	10	7			
3. Percent Of Corridor Being Farmed	20	2			
4. Protection Provided By State And Local Government	20	20			
5. Size of Present Farm Unit Compared To Average	10	2			
6. Creation Of Nonfarmable Farmland	25	0			
7. Availability Of Farm Support Services	5	0			
8. On-Farm Investments	20	13			
9. Effects Of Conversion On Farm Support Services	25	0			
10. Compatibility With Existing Agricultural Use	10	1			
TOTAL CORRIDOR ASSESSMENT POINTS	160	56	0	0	0

PART VII (To be completed by Federal Agency)					
Relative Value Of Farmland (From Part V)	100	39	0	0	0
Total Corridor Assessment (From Part VI above or a local site assessment)	160	56	0	0	0
TOTAL POINTS (Total of above 2 lines)	260	95	0	0	0

1. Corridor Selected: A	2. Total Acres of Farmlands to be Converted by Project: 121 ac.	3. Date Of Selection: 2/20/12	4. Was A Local Site Assessment Used? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>
----------------------------	--	----------------------------------	---

5. Reason For Selection:
Corridor A is the preferred alternative.

Signature of Person Completing this Part: *Yusef B...* DATE: 2-20-12

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



Texas Department of Transportation

DEWITT C. GREER STATE HIGHWAY BLDG. • 125 E. 11TH STREET • AUSTIN, TEXAS 78701-2483 • (512) 463-8585

June 21, 2012

Environmental Document Coordination
CSJ: 0080-11-001/0902-50-107/0902-51-025
Highway: US 377 Mobility Project - Cresson Relief Route
New Location – remnant native prairie
County: Hood/Johnson District: Fort Worth

Ms. Kathy Boydston
Texas Parks and Wildlife Department
Wildlife Division – Wildlife Habitat Assessment Program
4200 Smith School Road
Austin, Texas 78744

Dear Ms. Boydston:

Consistent with the Memorandum of Understanding signed by our two agencies, attached is a copy of the environmental document covering the subject project for your review and comment. Any comments you may have on this document will assist the Texas Department of Transportation (Department) in ensuring that the Department's projects are sensitive to the natural resources of the state.

Please submit any comments you may have within 45 days from the date of this letter. If you do not have any comments on the document, please sign and date the bottom of this letter and return a copy to the Environmental Affairs Division. If no response is received after the 45 days have expired, we will proceed with project development. If you have any questions regarding this project please contact me at (512) 416-2604.

Sincerely,

Susan M. Shuffield
Ecological Resources Branch
Environmental Affairs Division

SMS: jas
Enclosure
Bcc: FTW SMS FILE/rl

NO COMMENT: _____

Wildlife Habitat Assessment Program

DATE: _____

THE TEXAS PLAN

REDUCE CONGESTION • ENHANCE SAFETY • EXPAND ECONOMIC OPPORTUNITY • IMPROVE AIR QUALITY
PRESERVE THE VALUE OF TRANSPORTATION ASSETS

An Equal Opportunity Employer



MEMORANDUM

TO: 850 File, Various Road Projects, Various CSJs, Various Districts

FROM: Scott Pletka, Ph.D. **DATE:** June 27, 2012

SUBJECT: Internal review under the First Amended 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 (PA-TU), and internal review under the Memorandum of Understanding (MOU) Between the Texas Historical Commission and the Texas Department of Transportation

Attached are the lists of projects reviewed internally by qualified TxDOT archeologists from 06/21/12 to 06/27/12. These projects either do not warrant survey as a result of a low probability of encountering archeological historic properties and State Archeological Landmarks, or the projects were inspected by survey or impact evaluation and do not warrant further work. As provided under the PA-TU, consultation with the Texas State Historic Preservation Officer is not necessary for these undertakings. As provided under the MOU, the proposed projects do not require individual coordination with the Texas Historical Commission.

CSJ	DISTRICT	ROADWAY	WORK PERFORMED
0315-05-026	Bryan	SH 105	Survey
0080-11-001	Fort Worth	US 377	No Survey
0901-22-104	Paris	CR 538-1	Background Study

Signature 
For FHWA and TxDOT

Date: 6/28/2012

Attachment

cc: ECOS Data Entry; PD; ENV_ARC; PA File

**No Survey
Weekly List**

CSJ 0080-11-001: US377 Bypass at SH171, City of Cresson, Hood and Johnson Counties, FTW District

The proposed project would construct an approximately 3-mile, four-lane relief route west of US 377 and the City of Cresson within a primarily rural area of Hood and Johnson Counties. The proposed project begins approximately 1.5 miles south of the intersection of US 377 and SH 171 and ends approximately 1.5 miles north of the same intersection. See Figures 1 through 3 for location maps and aerial photograph. The proposed roadway would be a four-lane divided roadway with two 12-foot wide lanes in each direction, 10-foot wide outside shoulders, four-foot wide inside shoulders and a 40-foot wide grassy median.. The proposed relief route would bridge SH 171 and the FWWR. Project Schematics and Typical Sections are attached. Land use is either agricultural or undeveloped and much of the proposed construction would be built on fill with excavation taking place only in a few specific locations.

The area of potential effects (APE) for the proposed project consists of the length of the proposed project (approximately 3 miles) and the existing right-of-way (ROW) width (80 to 300 feet) and the proposed or additional ROW width (230 feet, increasing to 400 feet near the grade separation at SH 171 and the Fort Worth and Western Railroad (FWWR)). The proposed project would require approximately 124 acres of proposed or additional ROW for a total project area of approximately 166 acres. Although most construction would occur on fill and subsurface disturbance would be significantly limited, specific locations may be excavated to a maximum depth of 50 feet in the northern portion of the APE from approximately US377 west to the Johnson/Hood county line. grade separation at SH 171 and the Fort Worth and Western Railroad (FWWR).

The geology of the APE is mapped entirely as Duck Creek limestone (Kdc) formation that is Lower Cretaceous in origin and precedes the appearance of humans on this planet by several million years indicating a low potential for intact buried cultural deposits. Soils in the APE are mapped primarily (95%) as Aledo-Bolar association (AbC, 1), (71%); Sunev clay loam (46, 47), (15%), 5 to 8 percent slopes; Bolar clay loam (BoC, 10, 11), (10%) with Purves Clay (PuB, 42) and Venus Loam (53) comprising minor (5%) components. With the exception of Sunev clay loam, these soils are typically shallow (8-20 inches deep to bedrock) and occur on the backslope, shoulder, and summit of ridges and most, with the exception of Sunev clay loam and Venus loam, are derived from loamy residuum weathered from limestone (Kdc). All of these soils are derived from Lower Cretaceous Geology of the area. The origin of these soils significantly predates the arrival of humans in the Americas indicating that any cultural deposits would likely occur on or near the surface. Although the parent material for Sunev clay loam and Venus loam is loamy alluvium, suggesting moderate potential for archeological deposits, the aerial photographs where these soils are located show signs of grading (See soils map and Exhibit A) and earthmoving, evidenced by exposed bedrock, indicating significant surface and subsurface disturbance in these locations. Other areas of the APE reflect upland settings and soils less than 20 inches in depth with little potential for cultural resources. The northeastern portion of the APE immediately east of US377 appears to have been bordered by a stream channel or drainage at one point in time, however, no less than five tanks have been constructed in this immediate area indicating significant surface and subsurface disturbance. These data suggest little or no potential for intact, buried archeological deposits.

The project setting is unlikely to contain intact archeological sites. A review of the Texas Archeological Sites Atlas in June 2012 revealed no archeological sites have been identified within the APE and no sites occur within one kilometer of the APE. A review of the 1936 Texas Highways map revealed no historic age structures in the APE. In addition, the majority of the APE is located in an upland setting (see soils

data) in which soils are both shallow and far older than the accepted dates for human occupation indicating it is unlikely that any intact cultural deposits would be present. Furthermore, the southwestern as well as the northeastern portion of the project area reflect significant disturbance has occurred due to development. Moreover, the proposed project calls for fill in most portions of the APE with the exception of the northeastern area immediately west of US377 where excavations may be as deep as 50 ft. However, according to soils data, the depth of soils in this upland location is less than 20 inches and the potential for encountering intact archeological deposits at this location is minimal. TxDOT finds that the APE has been disturbed by previous activities, including road construction, installation of utilities, and modern land management practices. In light of these previous disturbances as well as the character of soils mapped in the APE, the potential for intact deposits in the APE is minimal and any archeological sites which do occur within the APE will be poor and will lack sufficient integrity of location, association, and materials to be able to address important questions of prehistory or history.

TxDOT completed its review on 6/22/2012. Section 106 consultation with federally recognized Native American tribes with a demonstrated historic interest in the area was initiated on 6/22/2012. No objections or expressions of concern are anticipated.

Pursuant to Stipulation VI of the PA and 43 TAC 2.24(f)(1)(C) of the MOU, TxDOT finds that the proposed undertaking would not affect archeological historic properties (36 CFR 800.16(l)), State Archeological Landmarks, or cemeteries (Health & Safety Code, Title 1, Section 711). No further investigations are warranted. In the event that 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 under the provisions of the PA-TU and MOU.

References Cited

Geologic Sites Atlas

2012 <http://www.twdb.state.tx.us/groundwater/aquifer/GAT/>
accessed 6/20/12

United States Department of Agriculture, NRCS, Web Soil Survey

2012 <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>
accessed 6/20/12

Texas Historical Commission, Texas Archeological Sites Atlas

2012 <http://nueces.thc.state.tx.us/>
accessed 6/20/12



Texas Department of Transportation

DEWITT C. GREER STATE HIGHWAY BLDG. • 125 E. 11TH STREET • AUSTIN, TEXAS 78701-2483 • (512) 463-8585

June 22, 2012

Mr. Donnie Cabaniss, Chairman
Apache Tribe of Oklahoma
P.O. Box 1220
Anadarko, OK 73005

RE: CSJ: 0080-11-001; US 377 Bypass at SH 171, Construct Relief Route, City of Cresson,
Hood and Johnson Counties, Fort Worth District

Dear Mr. Cabaniss:

The above referenced transportation project is being considered for construction by the Federal Highway Administration (FHWA) and the Texas Department of Transportation (TxDOT). Environmental studies are in the process of being conducted for this project. The purpose of this letter is to contact you in order to initiate Section 106 consultation with your Tribe pursuant to stipulations of the First Amended 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 (PA-TU). The project is located in an area that is of interest to your Tribe.

The proposed project would construct a four-lane relief route west of United States Highway (US) 377 and the City of Cresson, within a primarily rural area of Hood and Johnson Counties, Texas. Maps that show the proposed project area are enclosed, as well as a map of the state that indicates the location of Hood and Johnson Counties.

The proposed project begins approximately 1.5 miles south of the intersection of US 377 and State Highway (SH) 171 and ends approximately 1.5 miles north of the same intersection (see Figures 1 through 3 for location maps and aerial photograph). The proposed roadway would be a four-lane divided roadway with two 12-foot-wide lanes in each direction, 10-foot-wide outside shoulders, four-foot-wide inside shoulders and a 40-foot-wide grassy median. The proposed relief route would bridge SH 171 and the Fort Worth and Western Railroad (FWWR) (see attached project plan sheets). Land use is either agricultural or undeveloped and much of the

THE TEXAS PLAN

REDUCE CONGESTION • ENHANCE SAFETY • EXPAND ECONOMIC OPPORTUNITY • IMPROVE AIR QUALITY
PRESERVE THE VALUE OF TRANSPORTATION ASSETS

An Equal Opportunity Employer

Re: Section 106 Consultation, National Historic Preservation Act;
Proposed Texas Department of Transportation Project, Fort Worth District
CSJ: 0080-11-001; US 377 Bypass at SH 171, Construct Relief Route,
City of Cresson, Hood and Johnson Counties

proposed construction would be built on fill with excavation taking place in only a few specific locations.

The area of potential effects (APE) for the proposed project would consist of the length of the proposed project (approximately 3 miles), and the existing right of way (ROW) width (80 to 300 feet), and the proposed or additional ROW width (230 feet, increasing to 400 feet near the grade separation at SH 171 and the FWWR. The proposed project would require approximately 124 acres of proposed or additional ROW for a total project area of approximately 166 acres. Although most construction would occur on fill and subsurface disturbance would be none or significantly limited, specific locations would be excavated to a maximum depth of 50 feet near the grade separation at SH 171 and the FWWR. For the purposes of this cultural resource review, potential impacts are considered within an area that includes the stated APE, as well as a 50-ft lateral buffer to account for potential alterations to the proposed APE included in the final project design.

The geology of the APE is mapped entirely as Duck Creek limestone (Kdc) formation that is Lower Cretaceous in origin and precedes the appearance of humans on this planet by several million years, which indicates a low potential for intact buried cultural deposits. Soils in the APE are mapped primarily as Aledo-Bolar association (AbC, 1) (71 percent); Sunev clay loam (46, 47) (15 percent), 5 to 8 percent slopes; Bolar clay loam (BoC, 10, 11) (10 percent), with Purves Clay (PuB, 42) and Venus Loam (53) comprising minor (5 percent) components. With the exception of Sunev clay loam, these soils are typically shallow (8 to 20 inches deep to bedrock) and occur on the backslope, shoulder, and summit of ridges; and most, with the exception of Sunev clay loam and Venus loam, are derived from loamy residuum weathered from limestone (Kdc). All of these soils are derived from Lower Cretaceous geology of the area. The origin of these soils significantly predates the arrival of humans in the Americas indicating that any cultural deposits would likely occur on or near the surface. The parent material for Sunev clay loam and Venus loam is loamy alluvium, which suggests moderate potential for archeological deposits. However, the aerial photographs where these soils are located show significant disturbance (See soils map). Other areas of the APE reflect upland settings and soils less than 20 inches in depth with little potential for cultural resources. The northeastern portion of the APE, immediately east of US 377, appears to have been bordered by a stream channel or drainage at one point in time, however, no less than five tanks have been constructed in this immediate area indicating significant surface and subsurface disturbance. These data suggest little or no potential for intact, buried archeological deposits.

The project setting is unlikely to contain intact archeological sites. A review of the Texas Archeological Sites Atlas in June 2012 shows no previously recorded archeological sites in or within 1.0 kilometer (0.62 mile) of the APE. A review of the 1936 Texas Highways map revealed no historic-age structures in the APE. In addition, the majority of the APE is located in an upland setting (see soils data) in which soils are both shallow and far older than the accepted dates for human occupation, indicating it is unlikely that any intact cultural deposits would be present. Furthermore, the southwestern as well as the northeastern portion of the project area reflect significant disturbance has occurred due to development. Moreover, the proposed project calls for fill in most portions of the APE with the exception of the northeastern area immediately west of US377 where excavations may be as deep as 50 feet. However, according to soils data, the depth of soils in this upland location is less than 20 inches and the potential for encountering intact archeological deposits at this location is minimal. TxDOT finds that the APE has been

Re: Section 106 Consultation, National Historic Preservation Act;
Proposed Texas Department of Transportation Project, Fort Worth District
CSJ: 0080-11-001; US 377 Bypass at SH 171, Construct Relief Route,
City of Cresson, Hood and Johnson Counties

disturbed by previous activities, including road construction, installation of utilities, and modern land management practices. The integrity of any archeological sites which do occur within the APE will be poor. Any sites in the APE will lack sufficient integrity of location, association, and materials to be able to address important questions of prehistory or history.

Pursuant to Stipulation VI of the PA-TU and 43 TAC 2.24(f)(1)(C) of the Memorandum of Understanding (MOU) with the Texas Historical Commission, TxDOT provides the following findings and recommendations for this proposed project:

- that no archeological historic properties (36 CFR 800.16(l)) or State Archeological Landmarks (13 TAC 26.8) would be affected by this project;
- that a buffer zone of 50 feet beyond the APE be considered as part of the cultural resources evaluation;
- that no further archeological investigation is warranted at this time.

According to our Programmatic Agreement under Section 106 of the National Historic Preservation Act, we are writing to request your comments on historic properties of cultural or religious significance to your Tribe that may be affected by the proposed project APE and the area within the above defined buffer. Any comments you may have on the TxDOT recommendation should also be provided. Please provide your comments within 30 days of receipt of this letter. Any comments provided after that time will be addressed to the fullest extent possible. If you do not object with a recommendation of "no historic properties affected," please sign below to indicate your concurrence. In the event that further investigations by our office disclose the presence of archeological deposits, we will contact your Tribe to continue consultation.

Thank you for your attention to this matter. If you have questions, please contact John Arnn (TxDOT Archeologist) at 512/416-2639 (email: John.Arn@txdot.gov) or me at 512/416-2631 (email: Scott.Pletka@txdot.gov). When replying to this correspondence, please ensure that the envelope address includes reference to the Archeological Studies Branch, Environmental Affairs Division.

Sincerely,



Scott Pletka, Ph.D., Supervisor
Archeological Studies Branch
Environmental Affairs Division

Concurrence by:

Date:

Attachments

Re: Section 106 Consultation, National Historic Preservation Act;
Proposed Texas Department of Transportation Project, Fort Worth District
CSJ: 0080-11-001; US 377 Bypass at SH 171, Construct Relief Route,
City of Cresson, Hood and Johnson Counties

cc w/attachments:

Curtis Hanan, TxDOT Fort Worth District Environmental Coordinator;
Scott Ford, ENV-PD TxDOT;
John Arnn, ENV-ARCH TxDOT;
ENV-ARCH Project File
ENV-ARCH ECOS / EDMS Scan

References Cited

Texas Water Development Board

2012 Geologic Sites Atlas, <http://www.twdb.state.tx.us/groundwater/aquifer/GAT/>, accessed June 20, 2012

United States Department of Agriculture

2012 Natural Resources Conservation Service, Web Soil Survey, <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>, accessed June 20, 2012

Texas Historical Commission

2012 Texas Archeological Sites Atlas, <http://nueces.thc.state.tx.us/>, accessed June 20, 2012

The attached letter was sent by Email to the following tribes on June 22, 2012:

Mr. Donnie Cabaniss, Chairman
Apache Tribe of Oklahoma
P.O. Box 1220
Anadarko, OK 73005

Mr. Robert Cast, THPO
Caddo Nation of Oklahoma
P.O. Box 487
Binger, OK 73009

Mr. Jimmy Arterberry, THPO
Comanche Nation of Oklahoma
Comanche Nation Office of Historic Preservation
P.O. Box 908
Lawton, OK 73502

Mr. Tiger Hobia, Town King
Kialegee Tribal Town
P.O. Box 332
Wetumka, OK 74883

Mr. Ronald Twohatchet, Chairman
Kiowa Business Committee
Kiowa Indian Tribe of Oklahoma
P.O. Box 369
Carnegie, OK 73015

Mr. Frederick Chino, Sr., President
c/o Holly Houghten
Mescalero Apache Tribe
P.O. Box 227
Mescalero, NM 88340

[copy to Chuck Tsoodle]

Ms. Tamara Francis, Director
Cultural Preservation
The Delaware Nation
P.O. Box 825
Anadarko, OK 73005

Mr. Don Patterson, President
Tonkawa Tribe of Indians of Oklahoma
1 Rush Buffalo Rd
Tonkawa, OK 74653

[copy to Jason Ross]

[emailed to Miranda Allen]



U.S. Department
of Transportation
**Federal Highway
Administration**

**FEDERAL HIGHWAY ADMINISTRATION
300 EAST 8TH STREET, RM 826
AUSTIN, TEXAS 78701**



**Texas
Department
of Transportation**
**TEXAS DEPARTMENT OF TRANSPORTATION
125 E. 11th STREET
AUSTIN, TEXAS 78701-2483**

June 22, 2012

Mr. Gilbert Salazar, Chairperson
Business Committee
Kickapoo Tribe of Oklahoma
P.O. Box 70
McLoud, OK 74851

RE: CSJ: 0080-11-001; US 377 Bypass at SH 171, Construct Relief Route, City of Cresson,
Hood and Johnson Counties, Fort Worth District

Dear Mr. Salazar:

The above referenced transportation project is being considered for construction by the Federal Highway Administration (FHWA) and the Texas Department of Transportation (TxDOT). Environmental studies are in the process of being conducted for this project. The purpose of this letter is to contact you in order to initiate Section 106 consultation with your Tribe pursuant to stipulations of the First Amended 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 (PA-TU). The project is located in an area that may be of interest to your Tribe.

The proposed project would construct a four-lane relief route west of United States Highway (US) 377 and the City of Cresson, within a primarily rural area of Hood and Johnson Counties, Texas. Maps that show the proposed project area are enclosed, as well as a map of the state that indicates the location of Hood and Johnson Counties.

The proposed project begins approximately 1.5 miles south of the intersection of US 377 and State Highway (SH) 171 and ends approximately 1.5 miles north of the same intersection (see Figures 1 through 3 for location maps and aerial photograph). The proposed roadway would be a four-lane divided roadway with two 12-foot-wide lanes in each direction, 10-foot-wide outside shoulders, four-foot-wide inside shoulders and a 40-foot-wide grassy median. The proposed relief route would bridge SH 171 and the Fort Worth and Western Railroad (FWWR) (see attached project plan sheets). Land use is either agricultural or undeveloped and much of the

Re: Section 106 Consultation, National Historic Preservation Act;
Proposed Texas Department of Transportation Project, Fort Worth District
CSJ: 0080-11-001; US 377 Bypass at SH 171, Construct Relief Route,
City of Cresson, Hood and Johnson Counties

proposed construction would be built on fill with excavation taking place in only a few specific locations.

The area of potential effects (APE) for the proposed project would consist of the length of the proposed project (approximately 3 miles), and the existing right of way (ROW) width (80 to 300 feet), and the proposed or additional ROW width (230 feet, increasing to 400 feet near the grade separation at SH 171 and the FWWR). The proposed project would require approximately 124 acres of proposed or additional ROW for a total project area of approximately 166 acres. Although most construction would occur on fill and subsurface disturbance would be none or significantly limited, specific locations would be excavated to a maximum depth of 50 feet near the grade separation at SH 171 and the FWWR. For the purposes of this cultural resource review, potential impacts are considered within an area that includes the stated APE, as well as a 50-ft lateral buffer to account for potential alterations to the proposed APE included in the final project design.

The geology of the APE is mapped entirely as Duck Creek limestone (Kdc) formation that is Lower Cretaceous in origin and precedes the appearance of humans on this planet by several million years, which indicates a low potential for intact buried cultural deposits. Soils in the APE are mapped primarily as Aledo-Bolar association (AbC, 1) (71 percent); Sunev clay loam (46, 47) (15 percent), 5 to 8 percent slopes; Bolar clay loam (BoC, 10, 11) (10 percent), with Purves Clay (PuB, 42) and Venus Loam (53) comprising minor (5 percent) components. With the exception of Sunev clay loam, these soils are typically shallow (8 to 20 inches deep to bedrock) and occur on the backslope, shoulder, and summit of ridges; and most, with the exception of Sunev clay loam and Venus loam, are derived from loamy residuum weathered from limestone (Kdc). All of these soils are derived from Lower Cretaceous geology of the area. The origin of these soils significantly predates the arrival of humans in the Americas indicating that any cultural deposits would likely occur on or near the surface. The parent material for Sunev clay loam and Venus loam is loamy alluvium, which suggests moderate potential for archeological deposits. However, the aerial photographs where these soils are located show significant disturbance (See soils map). Other areas of the APE reflect upland settings and soils less than 20 inches in depth with little potential for cultural resources. The northeastern portion of the APE, immediately east of US 377, appears to have been bordered by a stream channel or drainage at one point in time, however, no less than five tanks have been constructed in this immediate area indicating significant surface and subsurface disturbance. These data suggest little or no potential for intact, buried archeological deposits.

The project setting is unlikely to contain intact archeological sites. A review of the Texas Archeological Sites Atlas in June 2012 shows no previously recorded archeological sites in or within 1.0 kilometer (0.62 mile) of the APE. A review of the 1936 Texas Highways map revealed no historic-age structures in the APE. In addition, the majority of the APE is located in an upland setting (see soils data) in which soils are both shallow and far older than the accepted dates for human occupation, indicating it is unlikely that any intact cultural deposits would be present. Furthermore, the southwestern as well as the northeastern portion of the project area reflect significant disturbance has occurred due to development. Moreover, the proposed project calls for fill in most portions of the APE with the exception of the northeastern area immediately west of US377 where excavations may be as deep as 50 feet. However, according to soils data, the depth of soils in this upland location is less than 20 inches and the potential for encountering intact archeological deposits at this location is minimal. TxDOT finds that the APE has been

Re: Section 106 Consultation, National Historic Preservation Act;
Proposed Texas Department of Transportation Project, Fort Worth District
CSJ: 0080-11-001; US 377 Bypass at SH 171, Construct Relief Route,
City of Cresson, Hood and Johnson Counties

disturbed by previous activities, including road construction, installation of utilities, and modern land management practices. The integrity of any archeological sites which do occur within the APE will be poor. Any sites in the APE will lack sufficient integrity of location, association, and materials to be able to address important questions of prehistory or history.

Pursuant to Stipulation VI of the PA-TU and 43 TAC 2.24(f)(1)(C) of the Memorandum of Understanding (MOU) with the Texas Historical Commission, TxDOT provides the following findings and recommendations for this proposed project:

- that no archeological historic properties (36 CFR 800.16(l)) or State Archeological Landmarks (13 TAC 26.8) would be affected by this project;
- that a buffer zone of 50 feet beyond the APE be considered as part of the cultural resources evaluation;
- that no further archeological investigation is warranted at this time.

According to our procedures and at the request of the FHWA under Section 106 of the National Historic Preservation Act, we are writing to request your comments on historic properties of cultural or religious significance to your Tribe that may be affected by the proposed undertaking APE and the area within the above defined buffer. Any comments you may have on the TxDOT recommendation should also be provided. Please provide your comments within 30 days of receipt of this letter. Any comments provided after that time will be addressed to the fullest extent possible. If you do not object with a recommendation "no historic properties affected," please sign below to indicate your concurrence. In the event that further investigations by our office disclose the presence of archeological deposits, we will contact your Tribe to continue consultation.

Thank you for your attention to this matter. If you have questions, please contact John Arnn (TxDOT Archeologist) at 512/416-2639 (email: John.Arn@txdot.gov) or me at 512/416-2631 (email: Scott.Pletka@txdot.gov). When replying to this correspondence, please ensure that the envelope address includes reference to the Archeological Studies Branch, Environmental Affairs Division.

Sincerely,



Scott Pletka, Ph.D., Supervisor
Archeological Studies Branch
Environmental Affairs Division

Concurrence by:

Date:

Attachments

Re: Section 106 Consultation, National Historic Preservation Act;
Proposed Texas Department of Transportation Project, Fort Worth District
CSJ: 0080-11-001; US 377 Bypass at SH 171, Construct Relief Route,
City of Cresson, Hood and Johnson Counties

cc w/attachments:

Curtis Hanan, TxDOT Fort Worth District Environmental Coordinator;
Scott Ford, ENV-PD TxDOT;
John Arnn, ENV-ARCH TxDOT;
ENV-ARCH Project File
ENV-ARCH ECOS / EDMS Scan

References Cited

Texas Water Development Board

2012 Geologic Sites Atlas, <http://www.twdb.state.tx.us/groundwater/aquifer/GAT/>, accessed June 20, 2012

United States Department of Agriculture

2012 Natural Resources Conservation Service, Web Soil Survey, <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>, accessed June 20, 2012

Texas Historical Commission

2012 Texas Archeological Sites Atlas, <http://nueces.thc.state.tx.us/>, accessed June 20, 2012

The attached letter was sent by Email to the following tribes on June 22, 2012:

Mr. Gilbert Salazar, Chairperson
Business Committee
Kickapoo of Oklahoma
P.O. Box 70
McLoud, OK 74851

Mr. Juan Garza, Jr., Chairperson
NAGPRA Coordinator
Kickapoo Traditional Tribe of Texas
HC1 Route, Box 9700
Eagle Pass, TX 78852

Mr. Leslie Standing, President
Wichita and Affiliated Tribes
P.O. Box 729
Anadarko, OK 73005

Mr. Buford Rolin, Chairperson
Poarch Band of Creek Indians
5811 Jack Springs Road
Atmore, AL 36502

[emailed to M. Peebles]



Texas Department of Transportation

DEWITT C. GREER STATE HIGHWAY BLDG. • 125 E. 11TH STREET • AUSTIN, TEXAS 78701-2483 • (512) 463-8585

July 26, 2012

Environmental Assessment
Hood and Johnson Counties
CSJs: 0080-11-001 and 0080-12-001

US 377 Mobility Project

Ms. Janie Roman
Texas Commission on Environmental Quality
Intergovernmental Relations Division, MC 119
P. O. Box 13087
Austin, TX 78711-3087

Dear Ms. Roman:

Consistent with the Memorandum of Understanding between our two agencies, attached is one copy of the environmental document covering the US 377 Mobility Project for your review and comment related to Air Quality. Any comments you may have related to Air Quality will assist TxDOT in ensuring that the Department's projects are sensitive to the natural resources of the state.

Please provide any comments you may have within 30 days of the date of this letter. If you have no comments, please sign below and return a copy of this letter to the Environmental Affairs Division. If no response is received within 30 days, we will proceed with project development. If you have any questions, please feel free to contact me at (512) 416-2687.

Sincerely,

Scott Ford, AICP
Project Delivery Section
Environmental Affairs Division

Attachments

No Comment:

for Coyde E. Foltz Date: 8/10/2012
Texas Commission on Environmental Quality

ENV 850



Bryan W. Shaw, Ph.D., *Chairman*
Carlos Rubinstein, *Commissioner*
Toby Baker, *Commissioner*
Zak Covar, *Executive Director*



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

August 20, 2012

Mr. Scott Ford, AICP
Project Delivery Section
Environmental Affairs Division
Texas Department of Transportation
125 E. 11th Street
Austin, TX 78701

Re: US 377 Mobility Project
Hood and Johnson Counties

Dear Mr. Ford,

The Texas Commission on Environmental Quality has reviewed the above-referenced project and offers following comments:

This project is in an area of Texas designated by the United States Environmental Protection Agency as both attainment and nonattainment for the 1997 and 2008 ozone National Ambient Air Quality Standard. As you know, transportation and/or general conformity may apply in this situation.

Thank you for the opportunity to review this project. If I may answer any questions please contact me at (512) 239-4905 or holly.brightwell@tceq.texas.gov.

Regards,

A handwritten signature in black ink, appearing to read "Holly Brightwell".

Holly Brightwell
Mobile Source Programs Team
Air Quality Division





MEMORANDUM

TO: Project Management 850 File
District: Ft Worth
County: Hood/Johnson
CSJ#: 0080-11-001, 0080-12-001
Highways: US 377 Relief Route
Limits: From 1.5 miles south of US 377/SH 171 intersection to 1.5 miles north of US 377/SH 171 intersection

Project Description: HIST: Stipulation VI, Appendix 4. Extend existing roadway. 115 acres new ROW. No historic properties present.

FROM: Shonda Mace **DATE:** January 4, 2013
SUBJECT: Internal review under the Programmatic Agreement for Transportation Undertakings among the Federal Highway Administration, Texas State Historic Preservation Officer, Advisory Council on Historic Preservation, and the Texas Department of Transportation; and the Memorandum of Understanding (MOU) between the Texas Historical Commission and the Texas Department of Transportation.

PROJECT DESCRIPTION

The Texas Department of Transportation (TxDOT) Ft Worth District proposes to make alterations to US Highway 377 near and within the town of Cresson, Hood and Johnson Counties, Texas. Currently, US 377 is a four-lane roadway, serving as a primary north-south artery for the community. The improvement involves constructing a relief route west of Cresson that begins approximately 1.5 miles south of the US 377 and State Highway 171 intersection and ends approximately 1.5 miles north of the same intersection. The relief route would consist of two 12-foot travel lanes in each direction with a four-foot inside shoulder, a 10-foot wide outside shoulder, and a 40-foot wide median. The length of the project would be approximately 3.02 miles. Approximately 115 acres of new right-of-way would be required.

STATEMENT OF METHODS

A review of the National Register of Historic Places (NRHP), the list of State Archeological Landmarks (SAL), and the list of Recorded Texas Historic Landmarks (RTHL) indicated that no historically significant resources have been previously documented within the area of potential effects (APE). It has been determined through consultation with the State Historic Preservation Officer (SHPO) that the APE for the proposed project is 300 feet from the proposed right-of-way. A reconnaissance survey undertaken in September 2012 and an intensive survey undertaken in December 2012 revealed that there are 22 historic-age resources on four parcels (built prior to 1968) located within the project APE (see attached Historic Resources Survey Report). The survey cut-off date is based on the current let date of 2013.

IDENTIFICATION OF HISTORIC AGE RESOURCES

TxDOT historians have evaluated Resource #s 1-4 through application of the Criteria of Eligibility for listing in the National Register of Historic Places, and concur with the attached survey reports that they are **not eligible** for inclusion in the NRHP, either individually or as a whole. These resources do not have associations with significant historical figures or events to qualify for eligibility under Criteria A or B. They also represent common vernacular types that do not clearly reflect the distinctive characteristic of type, period, method of construction, work of a master, or high artistic value to qualify as eligible under Criterion C. Additionally, the properties evidence unsympathetic alterations that have compromised their integrity.

Resource #1 is a c. 1940 ranch. Right of entry (ROE) was denied for this property, therefore an intensive survey was undertaken to determine whether or not the ranch was eligible for the NRHP. The proposed project would

Jamye Sawey

From: Sue Reilly <Sue.Reilly@tpwd.texas.gov>
Sent: Friday, July 28, 2017 5:06 PM
To: Jamye Sawey
Cc: John Maresh
Subject: RE: Early Coordination Request- CSJ 0080-11-001 US 377 Hood and Johnson Counties; FTW

Jamye,

Thank you. I do not have any further comments.

Thank you for submitting the following project for early coordination: Cresson bypass from 1 mi south of 171 to 1 mi north of 171 to the west of 377 (CSJ 0080-11-001). TPWD appreciates TxDOT's commitment to implement the practices listed in the Biological Evaluation Form and supporting documents submitted on July 27, 2017 and in subsequent emails. Based on a review of the documentation, the avoidance and mitigation efforts described, and provided that project plans do not change, TPWD considers coordination to be complete. However, please note it is the responsibility of the project proponent to comply with all federal, state, and local laws that protect plants, fish, and wildlife. According to §2.204(g) of the 2013 TxDOT-TPWD MOU, TxDOT agreed to provide TXNDD reporting forms for observations of tracked SGCN (which includes federal- and state-listed species) occurrences within TxDOT project areas. Please keep this mind when completing project due diligence tasks. For TXNDD submission guidelines, please visit the following link: http://tpwd.texas.gov/huntwild/wild/wildlife_diversity/txnndd/submit.phtml

Thank you,

Sue Reilly
Transportation Assessment Liaison
TPWD Wildlife Division
512-389-8021

From: Jamye Sawey [mailto:Jamye.Sawey@txdot.gov]
Sent: Friday, July 28, 2017 3:42 PM
To: Sue Reilly <Sue.Reilly@tpwd.texas.gov>
Cc: John Maresh <John.Maresh@txdot.gov>
Subject: RE: Early Coordination Request- CSJ 0080-11-001 US 377 Hood and Johnson Counties; FTW

Sue,
TxDOT will have to perform jurisdictional determinations and delineations for the waters of the US Section 404 permitting when the ROW has been obtained. , we'll notify TPWD if we find any of the SGCN plant species in the ROW during those surveys.

Thanks-
Jamye L. Sawey
District Environmental Supervisor
Advance Project Development
TxDOT-Fort Worth District

2501 SW Loop 820
Fort Worth, TX 76133
Office: 817-370-6862
Fax: 817-370-6759
Jamye.Sawey@txdot.gov

From: Sue Reilly [<mailto:Sue.Reilly@tpwd.texas.gov>]
Sent: Friday, July 28, 2017 3:07 PM
To: Jamye Sawey; John Maresh
Subject: RE: Early Coordination Request- CSJ 0080-11-001 US 377 Hood and Johnson Counties; FTW

Jamye,

I just wanted to clarify one thing. Your response to Karen Hardin's 2012 letter states that TxDOT will assess the remainder of vegetation before coordinating with local groups. Will TxDOT be performing plant surveys for SGCN plants with habitat in the ROW at that time, or at any time? Please contact TPWD at the WHAB_TxDOT email address if salvage efforts will be attempted and if SGCN plants are present.

Thank you,

Sue Reilly
Transportation Assessment Liaison
TPWD Wildlife Division
512-389-8021

From: WHAB_TxDOT
Sent: Thursday, July 27, 2017 5:04 PM
To: Jamye Sawey <Jamye.Sawey@txdot.gov>; John Maresh <John.Maresh@txdot.gov>
Cc: Sue Reilly <Sue.Reilly@tpwd.texas.gov>
Subject: RE: Early Coordination Request- CSJ 0080-11-001 US 377 Hood and Johnson Counties; FTW

The TPWD Wildlife Habitat Assessment Program has received your request and has assigned it project ID # 38238. The Habitat Assessment Biologist who will complete your project review is copied on this email.

Thank you,

John Ney
Administrative Assistant
Texas Parks & Wildlife Department
Wildlife Diversity Program – Habitat Assessment Program
4200 Smith School Road
Austin, TX 78744
Office: (512) 389-4571

-----Original Message-----

From: Jamye Sawey [<mailto:Jamye.Sawey@txdot.gov>]

Sent: Thursday, July 27, 2017 3:14 PM

To: WHAB_TxDOT <WHAB_TxDOT@tpwd.texas.gov>

Cc: John Maresh <John.Maresh@txdot.gov>

Subject: Early Coordination Request- CSJ 0080-11-001 US 377 Hood and Johnson Counties; FTW

Good afternoon,

The TxDOT Fort Worth District would like to request early coordination for a roadway reconstruction project located in Hood and Johnson Counties. The Tier I Site Assessment and other supporting documentation have been uploaded into TXECOS under CSJ: 0080-11-001. Alternately, you can retrieve the drop-off by clicking the following link (or copying and pasting it into your web browser) within 21 days:

<https://ftp.dot.state.tx.us/dropbox/pickup.php?claimID=saPffvCCn3nGn5MM&claimPasscode=e3A8uYC9eQoQ7k7r&emailAddr=jamye.sawey%40txdot.gov>

Thanks-

Jamye L. Sawey

District Environmental Supervisor

Advance Project Development

TxDOT-Fort Worth District

2501 SW Loop 820

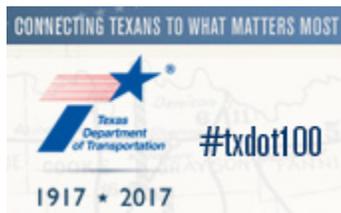
Fort Worth, TX 76133

Office: 817-370-6862

Fax: 817-370-6759

Jamye.Sawey@txdot.gov

[Connecting Texans to what matters most. Texas Department of Transportation: 1917-2017
#txdot100]<<http://www.dot.state.tx.us/txdot100/>>





2501 SW Loop 820, FORT WORTH, TEXAS 76133-2300 | 817.370.6500 | WWW.TXDOT.GOV

July 27, 2017

US 377

From Approximately 1 Mile North of SH 171

To Approximately 1 Mile South of SH 171

Hood and Johnson Counties

CSJs 0080-11-001 and 0080-12-001

TPWD Project Number WL25670

Ms. Laura Zebehazy
Texas Parks and Wildlife Department
Wildlife Division – Wildlife Habitat Assessment Program
4200 Smith School Road
Austin, TX 78744

Dear Ms. Zebehazy:

This letter is in response to comments received from Texas Parks and Wildlife Department dated July 23, 2012.

Recommendation 1: Because 1.3 acres of native tallgrass prairie will be permanently impacted by the proposed project and because TxDOT has not been able to avoid these areas or protect them, TPWD recommends TxDOT provide compensatory mitigation at a 1: 1 ratio through prairie restoration at an alternative site. TPWD recommends that TxDOT communicate with the Native Prairies Association of Texas (NPAT) or the nearby U.S. Army Corps of Engineers - Benbrook Lake Project to locate areas in need of restoration. If a restoration site cannot be determined, TPWD recommends TxDOT coordinate with local Master Gardener's groups who may have an interest in salvaging tallgrass prairie species from the project site for use in demonstration gardens.

TxDOT Response: TxDOT declines to provide mitigation at an alternate site for these impacts to vegetation that has been further disturbed by other entities. Private landowner activities within this area including grading, land clearing and alterations to a private road have decreased the area to less than 0.6 acre of prairie grasses. It is uncertain whether any of the vegetation would remain, since the landowner or utilities can continue such activities until the property is acquired by TxDOT. Once acquired, TxDOT would assess the remainder of the vegetation before coordinating with local groups to solicit salvage interest.

Recommendation 2: Because the project would permanently remove approximately 124 acres of unmaintained vegetation that may serve as habitat for 6 state-listed species and species of concern, TPWD recommends that prior to construction, areas of suitable habitat within the proposed ROW be surveyed for the state-listed and species of concern addressed above (homed lizard, Texas garter snake, Western Burrowing Owl, Plains spotted skunk, Comanche Peak prairie-clover, and Glen Rose yucca. Surveys for plants should occur during the species' flowering season.

OUR VALUES: *People • Accountability • Trust • Honesty*

OUR MISSION: *Through collaboration and leadership, we deliver a safe, reliable, and integrated transportation system that enables the movement of people and goods.*

An Equal Opportunity Employer

TxDOT Response 2: Impacts to unmaintained vegetation have been further reduced to less than 110 acres and TxDOT will look for further opportunities to avoid and/or minimize the amount of vegetation and potential wildlife habitat disturbed to the extent practicable. TPWD Programmatic Agreement (PA) Best Management Practices (BMPs) for the Texas horned lizard, Texas garter snake, Western burrowing owl, Plains spotted skunk as well as other Terrestrial Reptile and bird BMPs, will be included in the project plans and discussed at the project Pre-Construction meeting to alert the contractors to the species potential occurrence in the project area and to avoid harming the species if encountered. Prior surveys for the plant species of concern in areas with right of entry were negative. Prior coordination and field surveys of other Fort Worth District areas with Comanche Peak Prairie clover experts from the Botanical Research Institute (BRIT) and further examination of the project area geology reveal that the proposed project area does not contain the Goodland limestone formations preferred by the species.

Recommendation 3: TPWD recommends a biological monitor be present during clearing and construction activities to avoid or minimize impact to the state threatened Texas horned lizard and other species of concern that may be encountered during project activities. TPWD recommends that TxDOT utilize a biological monitor that can identify and relocate Texas homed lizards to a nearby area with similar habitat that would not be disturbed by construction. Relocation may only be conducted by an individual permitted to handle state-listed species. If an individual permitted to handle state-listed species is not available, then Texas homed lizards encountered on-site should be allowed to safely leave the site without harm or harassment.

TxDOT Response: TxDOT does not propose to utilize a biological monitor onsite. The TPWD PA BMPs for terrestrial reptiles, Texas horned lizard, Western burrowing owl, migratory/ground nesting birds, and plains spotted skunk will be included in the plans and discussed at the Pre-Construction meeting so that contractors will be advised of potential occurrence in the project area, and to avoid harming the species if encountered. If found on the project site, contractors will be instructed to allow the species to leave the project area without harm or harassment.

If you have any questions regarding this project, please contact me at (817) 370-6862 or Jamye.Sawey@txdot.gov.

Sincerely,



Digitally signed by Jamye L. Sawey
DN: cn=Jamye L. Sawey, o=TxDOT,
ou=Environmental,
email=jamye.sawey@txdot.gov, c=US
Date: 2017.07.27 14:18:20 -05'00'

Jamye L. Sawey

Environmental Supervisor



July 23, 2012

Life's better outside.

Commissioners

T. Dan Friedkin
Chairman
Houston

Ralph H. Duggins
Vice-Chairman
Fort Worth

Antonio Falcon, M.D.
Rio Grande City

Karen J. Hixon
San Antonio

Dan Allen Hughes, Jr.
Beeville

Bill Jones
Austin

Margaret Martin
Boerne

S. Reed Morian
Houston

Dick Scott
Wimberley

Lee M. Bass
Chairman-Emeritus
Fort Worth

Carter P. Smith
Executive Director

Susan M. Shuffield
Ecological Resources Branch
Environmental Affairs Division
Texas Department of Transportation
125 East 11th Street
Austin, TX 78701-2483

RE: Environmental Assessment for US 377 Mobility Project – Cresson Relief Route;
Hood and Johnson Counties (CSJs 0902-50-107 and 0902-51-025)

Dear Ms. Shuffield:

The Texas Parks and Wildlife Department (TPWD) has reviewed the Environmental Assessment (EA) for the project referenced above. The proposed project involves the construction of a 3-mile long relief route around the US 377 and SH 171 intersection and the US 377 and the Fort Worth and Western Railroad (FWWR), both of which are at-grade intersections. The relief route would consist of a 4-lane divided highway and would provide a grade-separated crossing over SH 171 and the FWWR. The project would require 124 acres of new right-of-way (ROW).

Under section 12.0011 of the Texas Parks and Wildlife Code, TPWD is charged with "providing recommendations that will protect fish and wildlife resources to local, state, and federal agencies that approve, permit, license, or construct developmental projects" and "providing information on fish and wildlife resources to any local, state, and federal agencies or private organizations that make decisions affecting those resources." TPWD provides the following recommendations to minimize impact to fish and wildlife resources:

Native Prairie Remnant

The EA indicates that the project would impact 16.8 acres maintained vegetation within the existing ROW. Within the proposed ROW the project would impact 122.6 acres unmaintained vegetation and 1.3 acres native tallgrass prairie remnants. The unmaintained vegetation includes disturbed and undisturbed grasslands, a small wooded area, and fencerow vegetation with areas of scattered tree/sapling/shrub habitat.

In accordance with the Memorandum of Agreement between the Texas Department of Transportation (TxDOT) and TPWD regarding impacts to habitat, TxDOT considered mitigation for native prairie impacts. The EA indicates that mitigation for 1.3 acres of impact to remnant tallgrass prairie areas include avoiding the areas and minimizing impacts as much as possible.

Native tallgrass prairies have become lost due to conversion to agriculture, woody encroachment and development. Remaining areas of native tallgrass prairie are important relics of Texas's natural history and provide habitat for grassland birds and other grassland-dependent wildlife.

Recommendation: Because 1.3 acres of native tallgrass prairie will be permanently impacted by the proposed project and because TxDOT has not been able to avoid these areas or protect them, TPWD recommends TxDOT provide compensatory mitigation at a 1:1 ratio through prairie restoration at an alternative site. TPWD recommends that TxDOT communicate with the Native Prairies Association of Texas (NPAT) or the nearby U.S. Army Corps of Engineers - Benbrook Lake Project to locate areas in need of restoration. If a restoration site cannot be determined, TPWD recommends TxDOT coordinate with local Master Gardener's groups who may have an interest in salvaging tallgrass prairie species from the project site for use in demonstration gardens.

State-Threatened and Rare Species

Chapter 68.015 of the TPW Code regulates state-listed species. Please note that there is no provision for take (incidental or otherwise) of state-listed species. A copy of TPWD Guidelines for Protection of State-Listed Species which includes a list of penalties for take of state-listed species is attached for your reference. State-listed species may only be handled by persons with a scientific collection permit obtained through TPWD. For more information on this permit, please contact the Wildlife Permits Office at (512) 389-4647.

The EA indicates that the project has the potential to impact the state-threatened Texas horned lizard (*Phrynosoma cornutum*) and its habitat and the following state species of concern and their habitat: Texas garter snake (*Thamnophis sirtalis annectens*), Western Burrowing Owl (*Athene cunicularia hypugaea*), Plains spotted skunk (*Spilogale putorius interrupta*), Comanche Peak prairie-clover (*Dalea reverchonii*), and Glen Rose yucca (*Yucca necopina*).

The EA states that survey transects were conducted for the Comanche Peak prairie-clover and Glen Rose yucca, though the dates of the surveys were not provided. The EA shows that field reconnaissance for rare species occurred on October 26, 2010, November 16, 2011, and February 6, 2012. Detection of plant species is best conducted during the flowering season which is April – June for these species. The yucca produces 1-3 meter tall flowering stalks that increase detection probability. Because the prairie-clover is low growing, detection is aided by the magenta-purple flowers that provide a visual cue during searches. The TxDOT reconnaissance dates do not occur during the flowering season for the plant species of concern, thus the probability of detection for the species would have been decreased. For the wildlife species of concern, although no species were observed during field surveys, no comprehensive biological surveys were conducted. Where suitable habitat is present for the state-threatened Texas Horned Lizard, TPWD believes that take may occur as a result of the project during construction.

Recommendation: Because the project would permanently remove approximately 124 acres of unmaintained vegetation that may serve as habitat for 6 state-listed species and species of concern, TPWD recommends that prior to construction, areas of suitable habitat within the proposed ROW be surveyed for the state-listed and species of concern addressed above. Surveys for plants should occur during the species' flowering season.

Susan Shuffield
Page 3
July 23, 2012

Texas horned lizards are generally active from mid-April through September. At that time of year, they may be able to avoid slow (less than 15 miles per hour) moving equipment, although when a threat is perceived they often flatten themselves against the ground to blend into their surroundings. The remainder of the year, this species hibernates only a few inches underground and will be much more susceptible to earth moving equipment and compaction.

Recommendation: TPWD recommends a biological monitor be present during clearing and construction activities to avoid or minimize impact to the state-threatened Texas horned lizard and other species of concern that may be encountered during project activities. TPWD recommends that TXDOT utilize a biological monitor that can identify and relocate Texas horned lizards to a nearby area with similar habitat that would not be disturbed by construction. Relocation may only be conducted by an individual permitted to handle state-listed species. If an individual permitted to handle state-listed species is not available, then Texas horned lizards encountered on-site should be allowed to safely leave the site without harm or harassment.

Please be aware that a written response to a TPWD recommendation or informational comment received by a state governmental agency may be required by state law. For further guidance, see the Texas Parks and Wildlife Code, Section 12.0011, which can be found online at <http://www.statutes.legis.state.tx.us/Docs/PW/htm/PW.12.htm#12.0011>. For tracking purposes, please refer to TPWD Project Number WL25670 in any return correspondence regarding this project.

If you have any questions, please contact me at (903) 322-5001.

Sincerely,

A handwritten signature in blue ink that reads "Karen B. Hardin". The signature is fluid and cursive, with a long horizontal stroke at the end.

Karen B. Hardin
Wildlife Habitat Assessment Program
Wildlife Division

kbh/WL25670

Appendix D
Wetland Data Forms

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: US 377 Mobility Project City/County: Cresson/Hood County Sampling Date: 10/26/2010
 Applicant/Owner: TxDOT State: TX Sampling Point: DP1
 Investigator(s): ARC, JS Section, Township, Range: Not Applicable
 Landform (hillslope, terrace, etc.): Stream terrace Local relief (concave, convex, none): Concave Slope (%): 5.0000
 Subregion (LRR): J Lat: 32.520280 Long: -97.628853 Datum: NAD83
 Soil Map Unit Name: Sunev clay loam, 5 to 8 percent slopes NWI Classification: PEM1

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

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

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Is the Sampled Area Within a Wetland?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>			
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>			

Remarks: Sampling location meets all three of the wetland criteria.

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30' rad</u>)	Absolute% Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1.	<u>Celtis laevigata</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	
2.					
3.					
		<u>20</u> = % Total Cover			
Sapling/Shrub Stratum	(Plot size: <u>15' rad</u>)				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
1.	<u>Celtis laevigata</u>	<u>10</u>	<u>Yes</u>	<u>FAC</u>	
2.					
3.					
		<u>10</u> = % Total Cover			
Herb Stratum	(Plot size: <u>5' rad</u>)				Hydrophytic Vegetation Indicators: <u>X</u> 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1.	<u>Eleocharis palustris</u>	<u>75</u>	<u>Yes</u>	<u>OBL</u>	
2.	<u>Iva annua</u>	<u>20</u>	<u>Yes</u>	<u>FAC</u>	
3.	<u>Rumex crispus</u>	<u>5</u>	<u>No</u>	<u>FACW</u>	
4.					
5.					
6.					
7.					
8.					
9.					
10.					
		<u>100</u> = % Total Cover			
Woody Vine Stratum	(Plot size: <u>30' rad</u>)				
1.	<u>None</u>				
2.					
		<u>0</u> = % Total Cover			
% Bare Ground in Herb Stratum		<u>0</u>			

Remarks: Vegetation meets hydrophytic vegetation criterion.

SOIL

Sampling Point: DP1

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

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

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

²Location: PL=Pore Lining, M=Matrix.

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

Indicators for Problematic Hydric Soils³:

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

Restrictive Layer (if present):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks: Soils meet hydric soil criterion.

HYDROLOGY

Wetland Hydrology Indicators:

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

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

Remarks: Hydrology criterion met.

WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: US 377 Mobility Project City/County: Cresson/Hood County Sampling Date: 10/26/2010
 Applicant/Owner: TxDOT State: TX Sampling Point: DP2
 Investigator(s): ARC, JS Section, Township, Range: Not Applicable
 Landform (hillslope, terrace, etc.): Stream terrace Local relief (concave, convex, none): Concave Slope (%): 3.0000
 Subregion (LRR): J Lat: 32.520261 Long: -97.628885 Datum: NAD83
 Soil Map Unit Name: Sunev clay loam, 5 to 8 percent slopes NWI Classification: Upland
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
 Are Vegetation No, Soil No, or Hydrology No Significantly disturbed? Are "Normal Circumstances" present? Yes X No
 Are Vegetation No, Soil No, or Hydrology No Naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <u> </u>	No <u>X</u>	Is the Sampled Area Within a Wetland?	Yes <u> </u>	No <u>X</u>
Hydric Soil Present?	Yes <u>X</u>	No <u> </u>			
Wetland Hydrology Present?	Yes <u> </u>	No <u>X</u>			

Remarks: Sampling location does not meet two of the three wetland criteria.

VEGETATION – Use scientific names of plants.

Tree Stratum	(Plot size: <u>30' rad</u>)	Absolute% Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC-): <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>7</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>14</u> (A/B)
1.	<u>None</u>				
2.					
3.					
		<u>0</u> = % Total Cover			
Sapling/Shrub Stratum	(Plot size: <u>15' rad</u>)				Prevalence Index worksheet: Total % Cover of: <u> </u> Multiply by: <u> </u> OBL species <u> </u> x 1 = <u> </u> FACW species <u> </u> x 2 = <u> </u> FAC species <u> </u> x 3 = <u> </u> FACU species <u> </u> x 4 = <u> </u> UPL species <u> </u> x 5 = <u> </u> Column Totals: <u> </u> (A) <u> </u> (B) Prevalence Index = B/A = <u> </u>
1.	<u>Juniperus virginiana</u>	<u>5</u>	<u>Yes</u>	<u>FACU-</u>	
2.	<u>Celtis laevigata</u>	<u>5</u>	<u>Yes</u>	<u>FAC</u>	
3.					
		<u>10</u> = % Total Cover			
Herb Stratum	(Plot size: <u>5' rad</u>)				Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u> </u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on separate sheet) <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1.	<u>Xanthium spinosum</u>	<u>10</u>	<u>Yes</u>	<u>FACU</u>	
2.	<u>Solidago canadensis</u>	<u>10</u>	<u>Yes</u>	<u>FACU+</u>	
3.	<u>Aster ericoides</u>	<u>10</u>	<u>Yes</u>	<u>FACU-</u>	
4.	<u>Ambrosia psilostachya</u>	<u>10</u>	<u>Yes</u>	<u>FAC-</u>	
5.	<u>Monarda punctata</u>	<u>10</u>	<u>Yes</u>	<u>UPL</u>	
6.					
7.					
8.					
9.					
		<u>50</u> = % Total Cover			
Woody Vine Stratum	(Plot size: <u>30' rad</u>)				Hydrophytic Vegetation Present? Yes <u> </u> No <u>X</u>
1.	<u>None</u>				
2.					
		<u>0</u> = % Total Cover			
% Bare Ground in Herb Stratum <u>50</u>					

Remarks: Vegetation does not meet hydrophytic vegetation criterion.

SOIL

Sampling Point: DP2

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

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

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

²Location: PL=Pore Lining, M=Matrix.

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

Indicators for Problematic Hydric Soils³:

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

Restrictive Layer (if present):

Type: _____
 Depth (inches): _____

Hydric Soil Present? Yes No

Remarks: Soils meet hydric soil criterion.

HYDROLOGY

Wetland Hydrology Indicators:

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

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

Remarks: No primary or secondary hydrology indicators were present.

Appendix E
TIP/MTP Pages

STATEWIDE TRANSPORTATION IMPROVEMENT PROGRAM
DALLAS-FORT WORTH MPO - HIGHWAY PROJECTS
FY 2017

2017-2020 STIP		07/2016 Revision: Approved 12/19/2016							
DISTRICT	MPO	COUNTY	CSJ	HWY	PHASE	CITY	YOE COST		
FORT WORTH	DALLAS-FORT WORTH	HOOD	0080-11-001	US 377	C	CRESSON	\$ 18,801,000		
LIMITS FROM JOHNSON/HOOD COUNTY LINE						PROJECT SPONSOR TXDOT-FORT WORTH			
LIMITS TO SOUTH OF SH 171						REVISION DATE 07/2016			
PROJECT CONSTRUCT NEW 4 LANE DIVIDED ROADWAY WITH INTERCHANGE AT US 377 AND BU 377 AND G						MPO PROJ NUM 54114			
DESCR RADE SEPARATION AT FWWR AND SH 171						FUNDING CAT(S)			
REMARKS NO LONGER PASS THRU PROJECT; LOCAL CONTRIBUTION PAID BY HOOD COUNTY; CAT 1, CAT 2, & CAT 11 FUNDS ARE PROP 1			PROJECT HISTORY						
TOTAL PROJECT COST INFORMATION			AUTHORIZED FUNDING BY CATEGORY/SHARE						
PREL ENG \$	1,678,434	COST OF APPROVED PHASES	CATEGORY	FEDERAL	STATE	REGIONAL	LOCAL	LC	TOTAL
ROW PURCH \$	5,807,221		1	\$ 0	\$ 3,140,000	\$ 0	\$ 0	\$ 0	\$ 3,140,000
CONSTR \$	18,801,000		2M	\$ 0	\$ 3,421,000	\$ 0	\$ 0	\$ 0	\$ 3,421,000
CONST ENG \$	0		3LC	\$ 0	\$ 0	\$ 0	\$ 0	\$ 11,000,000	\$ 11,000,000
CONTING \$	0		11	\$ 0	\$ 1,240,000	\$ 0	\$ 0	\$ 0	\$ 1,240,000
INDIRECT \$	0		TOTAL	\$ 0	\$ 7,801,000	\$ 0	\$ 0	\$ 11,000,000	\$ 18,801,000
BOND FIN \$	0								
PT CHG ORD \$	0								
TOTAL CST \$	26,286,655								

2017-2020 STIP		07/2016 Revision: Approved 12/19/2016							
DISTRICT	MPO	COUNTY	CSJ	HWY	PHASE	CITY	YOE COST		
FORT WORTH	DALLAS-FORT WORTH	TARRANT	0008-15-051	IH 820	C	FORT WORTH	\$ 216,260		
LIMITS FROM NORTH OF WESTPOINT BLVD						PROJECT SPONSOR TXDOT-FORT WORTH			
LIMITS TO SOUTH OF NORMANDEALE ST						REVISION DATE 07/2016			
PROJECT REPLACE STOLEN ELECTRICAL CONDUCTORS AND CONDUIT FOR ROADWAY ILLUMINATION A						MPO PROJ NUM 55161			
DESCR ND IMPLEMENT STRATEGIES TO REDUCE WIRE THEFT						FUNDING CAT(S)			
REMARKS CHANGE CSJ FROM 0008-15-914 TO 0008-15-051			PROJECT HISTORY						
P7									
TOTAL PROJECT COST INFORMATION			AUTHORIZED FUNDING BY CATEGORY/SHARE						
PREL ENG \$	25,000	COST OF APPROVED PHASES	CATEGORY	FEDERAL	STATE	REGIONAL	LOCAL	LC	TOTAL
ROW PURCH \$	0		7	\$ 173,008	\$ 43,252	\$ 0	\$ 0	\$ 0	\$ 216,260
CONSTR \$	216,260		TOTAL	\$ 173,008	\$ 43,252	\$ 0	\$ 0	\$ 0	\$ 216,260
CONST ENG \$	0								
CONTING \$	0								
INDIRECT \$	0								
BOND FIN \$	0								
PT CHG ORD \$	0								
TOTAL CST \$	241,260								

2017-2020 STIP		07/2016 Revision: Approved 12/19/2016							
DISTRICT	MPO	COUNTY	CSJ	HWY	PHASE	CITY	YOE COST		
FORT WORTH	DALLAS-FORT WORTH	TARRANT	0008-15-050	IH 820	C,E,ENG	FORT WORTH	\$ 309,600		
LIMITS FROM NORTH OF TEAM RANCH RD						PROJECT SPONSOR TXDOT-FORT WORTH			
LIMITS TO SOUTH OF TEAM RANCH RD						REVISION DATE 07/2016			
PROJECT REPLACE STOLEN ELECTRICAL CONDUCTORS AND CONDUIT FOR ROADWAY ILLUMINATION A						MPO PROJ NUM 55160			
DESCR ND IMPLEMENT STRATEGIES TO REDUCE WIRE THEFT						FUNDING CAT(S)			
REMARKS CHANGE CSJ FROM 0008-15-907 TO 0008-15-050			PROJECT HISTORY						
P7									
TOTAL PROJECT COST INFORMATION			AUTHORIZED FUNDING BY CATEGORY/SHARE						
PREL ENG \$	25,000	COST OF APPROVED PHASES	CATEGORY	FEDERAL	STATE	REGIONAL	LOCAL	LC	TOTAL
ROW PURCH \$	0		7	\$ 227,680	\$ 56,920	\$ 0	\$ 0	\$ 0	\$ 284,600
CONSTR \$	284,600		SBPE	\$ 0	\$ 25,000	\$ 0	\$ 0	\$ 0	\$ 25,000
CONST ENG \$	0		TOTAL	\$ 227,680	\$ 81,920	\$ 0	\$ 0	\$ 0	\$ 309,600
CONTING \$	0								
INDIRECT \$	0								
BOND FIN \$	0								
PT CHG ORD \$	0								
TOTAL CST \$	309,600								

STATEWIDE TRANSPORTATION IMPROVEMENT PROGRAM
DALLAS-FORT WORTH MPO - HIGHWAY PROJECTS
FY 2017

2017-2020 STIP		07/2016 Revision: Approved 12/19/2016							
DISTRICT	MPO	COUNTY	CSJ	HWY	PHASE	CITY	YOE COST		
FORT WORTH	DALLAS-FORT WORTH	JOHNSON	0080-12-001	US 377	C	CRESSON	\$ 15,130,000		
LIMITS FROM		NORTH OF SH 171		PROJECT SPONSOR TXDOT-FORT WORTH					
LIMITS TO		JOHNSON/HOOD COUNTY LINE		REVISION DATE 07/2016					
PROJECT		CONSTRUCT NEW 4 LANE DIVIDED ROADWAY WITH AN INTERCHANGE AT US 377 AND BU 377				MPO PROJ NUM 54125			
DESCR		FUNDING CAT(S)							
REMARKS			PROJECT HISTORY						
CAT 1 & CAT 11 ARE PROP 1 FUNDS P7									
TOTAL PROJECT COST INFORMATION			AUTHORIZED FUNDING BY CATEGORY/SHARE						
PREL ENG \$	830,780	COST OF APPROVED PHASES	CATEGORY	FEDERAL	STATE	REGIONAL	LOCAL	LC	TOTAL
ROW PURCH \$	850,000		1	\$ 0	\$ 3,140,000	\$ 0	\$ 0	\$ 0	\$ 3,140,000
CONSTR \$	15,130,000		11	\$ 0	\$ 1,240,000	\$ 0	\$ 0	\$ 0	\$ 1,240,000
CONST ENG \$	0		12_425	\$ 8,600,000	\$ 2,150,000	\$ 0	\$ 0	\$ 0	\$ 10,750,000
CONTING \$	0		TOTAL	\$ 8,600,000	\$ 6,530,000	\$ 0	\$ 0	\$ 0	\$ 15,130,000
INDIRECT \$	0								
BOND FIN \$	0								
PT CHG ORD \$	0								
TOTAL CST	\$ 16,810,780								

2017-2020 STIP		07/2016 Revision: Approved 12/19/2016							
DISTRICT	MPO	COUNTY	CSJ	HWY	PHASE	CITY	YOE COST		
DALLAS	DALLAS-FORT WORTH	DALLAS	2374-01-171	IH 635	E,ENG,R,ACQ,UTL	DALLAS	\$ 4,779,931		
LIMITS FROM		AT SKILLMAN/AUDELIA INTERCHANGE		PROJECT SPONSOR TXDOT-DALLAS					
LIMITS TO				REVISION DATE 07/2016					
PROJECT		INTERCHANGE IMPROVEMENTS				MPO PROJ NUM 54111			
DESCR		FUNDING CAT(S)							
REMARKS			PROJECT HISTORY						
P7									
TOTAL PROJECT COST INFORMATION			AUTHORIZED FUNDING BY CATEGORY/SHARE						
PREL ENG \$	3,579,931	COST OF APPROVED PHASES	CATEGORY	FEDERAL	STATE	REGIONAL	LOCAL	LC	TOTAL
ROW PURCH \$	1,200,000		3LC	\$ 0	\$ 0	\$ 0	\$ 0	\$ 3,579,931	\$ 3,579,931
CONSTR \$	4,330,000		S102	\$ 1,080,000	\$ 120,000	\$ 0	\$ 0	\$ 0	\$ 1,200,000
CONST ENG \$	0		TOTAL	\$ 1,080,000	\$ 120,000	\$ 0	\$ 0	\$ 3,579,931	\$ 4,779,931
CONTING \$	0								
INDIRECT \$	0								
BOND FIN \$	0								
PT CHG ORD \$	0								
TOTAL CST	\$ 9,109,931								

2017-2020 STIP		07/2016 Revision: Approved 12/19/2016							
DISTRICT	MPO	COUNTY	CSJ	HWY	PHASE	CITY	YOE COST		
DALLAS	DALLAS-FORT WORTH	COLLIN	1013-01-026	FM 546	C	MCKINNEY	\$ 19,970,564		
LIMITS FROM		SH 5		PROJECT SPONSOR TXDOT-DALLAS					
LIMITS TO		EAST OF COUNTRY LANE/AIRPORT ROAD		REVISION DATE 07/2016					
PROJECT		NEW 4-LANE (6-LANE ULTIMATE) DIVIDED ROADWAY, INCLUDING A BRIDGE OVER THE DART R				MPO PROJ NUM 20275			
DESCR		FUNDING CAT(S)							
REMARKS			PROJECT HISTORY						
RTR121-CC1; CAT 2M IS PROP 1 FUNDING P7									
TOTAL PROJECT COST INFORMATION			AUTHORIZED FUNDING BY CATEGORY/SHARE						
PREL ENG \$	1,770,000	COST OF APPROVED PHASES	CATEGORY	FEDERAL	STATE	REGIONAL	LOCAL	LC	TOTAL
ROW PURCH \$	0		2M	\$ 0	\$ 18,406,066	\$ 0	\$ 0	\$ 0	\$ 18,406,066
CONSTR \$	19,970,564		3RTR121	\$ 0	\$ 0	\$ 1,347,561	\$ 216,937	\$ 0	\$ 1,564,498
CONST ENG \$	1,212,678		TOTAL	\$ 0	\$ 18,406,066	\$ 1,347,561	\$ 216,937	\$ 0	\$ 19,970,564
CONTING \$	309,357								
INDIRECT \$	1,195,354								
BOND FIN \$	0								
PT CHG ORD \$	0								
TOTAL CST	\$ 24,457,953								

Mobility 2040

Regionally Significant Arterials

County	MTP ID	Facility	From Street	To Street	2017 Lanes	2027 Lanes	2037 Lanes	2040 Lanes	YOE Cost *
Denton	RSA1-2.150.610	Outer Loop **	West Of Dallas North Tollway	Dallas North Tollway	0	1/1	N/A	N/A	N/A
Denton	RSA1-2.150.275	Outer Loop Greenbelt Pkwy **	IH 35	US 377	0	2	3/3	N/A	N/A
Denton	RSA1-2.150.375	Outer Loop Greenbelt Pkwy **	US 377	Legacy Drive	0	2	3/3	N/A	N/A
Denton	RSA1-2.205.425	SH 114	County Line Road	.8 Mile West Of FM 156	2	2	2/2	2/2	\$ 33.82
Denton	RSA1-2.205.450	SH 114	.8 Mile West Of FM 156	FM 156	2	2/2	2/2	2/2	\$ 1.94
Denton	RSA1-2.325.500	SH 170 **	US 377	Roanoke Road	2/2	2/2	N/A	N/A	N/A
Denton	RSA1-2.325.550	SH 170 **	Roanoke Road	Jt Ottinger Road	2/2	3/3	N/A	N/A	N/A
Denton	RSA1-2.325.560	SH 170 **	Jt Ottinger Road	East Of Jt Ottinger Road	3/3	N/A	N/A	N/A	N/A
Denton	RSA1-2.325.575	SH 170 **	East Of Jt Ottinger Road	SH 114	2/2	N/A	N/A	N/A	N/A
Denton	RSA1-1.475.200	State School Road	IH 35E	State School Road	2	6	6	6	\$ 34.86
Denton	RSA1-1.540.210	US 377	IH 35E	FM 1830 Country Club Road	2	6	6	6	\$ 13.48
Denton	RSA1-1.540.220	US 377	FM 1830	Crawford Road	2	6	6	6	\$ 60.60
Denton	RSA1-1.540.230	US 377	Crawford Road	Marshall Creek Road	2	4	4	4	\$ 2.94
Denton	RSA1-1.540.260	US 377	.2 Mile North Of Byron Nelson Blvd	Paris Lane	2	4	4	4	\$ 16.80
Denton	RSA1-2.225.275	US 380	FM 156	IH 35	2	6	6	6	\$ 45.70
Denton	RSA1-2.225.425	US 380	.2 Mile East Of Fish Trap Road	US 377	2/2	3/3	3/3	3/3	\$ 1.58
Denton	RSA1-2.225.440	US 380	US 377	Potter Shop Road	2/2	3/3	3/3	3/3	\$ 0.36
Denton	RSA1-2.225.445	US 380	Potter Shop Road	FM 720	4	6	6	6	\$ 10.20
Denton	RSA1-2.225.450	US 380	FM 720	FM 423	4	6	6	6	\$ 51.41
Denton	RSA1-2.225.475	US 380	FM 423	.5 Mile West Of CR 26	4	6	6	6	\$ 17.16
Denton	RSA1-2.225.300	US 380 University Drive	Bonnie Brae Street	Malone Street	4	6	6	6	\$ 7.46
Denton	RSA1-2.267.300	Valley Ridge Blvd	Mill Street	College Street	0	4	4	4	\$ 5.88
Denton	RSA1-1.430.225	Vintage Parkway	IH 35W	US 377	2	4	4	4	\$ 11.34
Ellis	RSA1-2.787.250	BU 287 BU 45	Paris Street	IH 45	2	4	4	4	\$ 7.61
Ellis	RSA1-2.710.250	FM 664	Westmoreland Road	IH 35E	2	6	6	6	\$ 45.10
Ellis	RSA1-2.710.225	FM 664 Ovilla Road	Ovilla Main Street	Westmoreland Road	2	4	4	4	\$ 7.32
Ellis	RSA1-1.840.650	SH 34	FM 2451	Sunridge Drive	2	2	4	4	\$ 18.45
Ellis	RSA1-1.840.655	SH 34	Sunridge Drive	Sonoma Trail	2	2	4	4	\$ 4.88
Ellis	RSA1-1.840.660	SH 34	Sonoma Trail	IH 45	2	2	4	4	\$ 2.66
Ellis	RSA1-1.840.700	SH 34	FM 1181	Kaufman Street	2	4	4	4	\$ 1.22
Ellis	RSA1-1.840.725	SH 34	FM 1183	SP 437 Clay Street	2	2	4	4	\$ 4.81
Ellis	RSA1-1.840.750	SH 34 Lake Bardwell Drive	SP 437 Clay Street	IH 35E	2	2	4	4	\$ 141.09
Ellis	RSA1-1.595.390	SH 342	Loop 9	FM 664	0	2	2	2	\$ 12.35
Ellis	RSA1-1.220.875	US 287	SH 34	IH 45	2	N/A	N/A	N/A	\$ 75.49
Ellis	RSA1-1.580.325	US 77	FM 66	FM 877	2	4	4	4	\$ 0.50
Ellis	RSA1-1.580.300	US 77 Elm Street	Ferris Avenue	FM 66	2	4	4	4	\$ 4.88
Ellis	RSA1-1.580.310	US 77 Elm Street	Ferris Avenue	Rogers Street	2	2/2	2/2	2/2	\$ 20.60
Hood	RSA1-1.540.457	BU 377	US 377	.22 Mile North Of US 377	0	1	1	1	\$ 0.79
Hood	RSA1-2.745.250	FM 4 FM 167 Fall Creek	North Gate Road	FM 167	2	2	4	4	\$ 4.52
Hood	RSA1-1.205.275	SH 144	1.4 Mi West Of CR 3330	.5 Mile East Of Cemetary Road	2	2	4	4	\$ 24.48
Hood	RSA1-1.200.275	SH 171	US 377 Bypass	BU 377	2	2/2	2/2	2/2	\$ 4.09
Hood	RSA1-1.540.452	US 377	BU 377	US 377	0	1	1	1	\$ 0.79
Hood	RSA1-1.540.455	US 377	BU 377	.36 Mile North Of BU 377	2/2	4	4	4	\$ 5.17
Hood	RSA1-1.540.470	US 377	FM 167 Fall Creek Hwy	FM 167 Temple Hall Hwy	2/2	3/3	3/3	3/3	\$ 4.45
Hood	RSA1-1.540.480	US 377	FM 167 Temple Hall Hwy	Western Hills Trail	4	6	6	6	\$ 24.70
Hood	RSA1-1.540.490	US 377	Western Hills Trail	Harbor Lakes Drive	2/2	3/3	3/3	3/3	\$ 3.30
Hood	RSA1-1.540.500	US 377	Harbor Lakes Drive	Old Cleburne Road	4	6	6	6	\$ 8.19
Hood	RSA1-1.540.510	US 377	Old Cleburne Road	.2 Mile East Of SH 144	2/2	3/3	3/3	3/3	\$ 2.94
Hood	RSA1-1.540.520	US 377	.2 Mile East Of SH 144	.2 Mile West Of SH 144	2/2	3/3	3/3	3/3	\$ 0.79
Hood	RSA1-1.540.530	US 377	.2 Mile West Of SH 144	FM 51	2/2	3/3	3/3	3/3	\$ 10.53
Hood	RSA1-1.540.540	US 377	FM 51	BU 377	2/2	2/2	2/2	2/2	\$ 43.11
Hood	RSA1-1.540.560	US 377	.5 Mile West Of Howard Clemmons Road	Powell Cemetery Road	2	2	4	4	\$ 85.94
Hood	RSA1-1.540.600	US 377	Cedar Lane	3.5 Mile West Of Campbell Road	2	2	4	4	\$ 37.34
Hood	RSA1-1.250.200	US 377 Bypass	.7 Mi North Of SH 171	Old Granbury Road	0	2/2	2/2	2/2	\$ 51.00
Hunt	RSA1-2.225.275	BU 377	BU 377 Johnson Street	BU 377	1/2	1/3	1/3	1/3	\$ 0.72
Hunt	RSA1-2.380.425	SH 276 Bypass	SH 276 Quinlan Parkway	SH 34	0	4	4	4	\$ 36.19
Hunt	RSA1-1.840.400	SH 34	Traders Road	.6 Mile South Of CR 3703/CR 331	2	2	4	4	\$ 131.90
Hunt	RSA1-2.370.825	SH 66	County Line Rd	FM 2642	2	4	4	4	\$ 20.53

Mobility 2040

Freeway/Tollway Interchanges

Revised August 30, 2016

TxDOT Fort Worth District

MTP ID	Facility	Connection	Staging	Description	Year Operational Between *
IN1- 31.38.1	Chisholm Trail Parkway (SH 121)	US 67		New Interchange	2018-2027
IN1- 30.31.1 IN1- 22.31.1	Chisholm Trail Parkway (SH 121)	IH 20/SH 183		New Interchange	2018-2027
IN1- 30.584.1	IH 20	Centerpoint Drive		Improvements	2018-2027
IN1- 30.579.1	IH 20	FM 1187/FM 3325		Reconstruct	2017
IN1- 30.585.1	IH 20	Lakeshore Drive		Reconstruct	2017
IN1- 1.30.1	IH 20	US 287		Reconstruct	2028-2037
IN1- 30.568.2	IH 20	Walsh Ranch (Minor 1)		New Interchange	2018-2027
IN1- 30.161.1	IH 20	Walsh Ranch (Minor 2)		New Interchange	2018-2027
IN1- 30.568.1	IH 20	Walsh Ranch Pkwy.		New Interchange	2018-2027
IN1- 28.580.1	IH 30	Academy Blvd.		Reconstruct	2018-2027
IN1- 28.580.1	IH 30	Chapel Creek		Reconstruct	2018-2027
IN1- 9.28.1	IH 30	SH 360		New Interchange	2018-2027
IN1- 28.515.1	IH 30	Spur 580		Reconstruct	2018-2027
IN1- 28.569.1	IH 30	Walsh Ranch (Minor 1)		New Interchange	2018-2027
IN1- 5.160.1	IH 35W	FM 917		Reconstruct	2018-2027
IN1- 5.150.1	IH 35W	IH 820 NE		Reconstruct	2018-2027
IN1- 5.536.1	IH 35W	McPhearson/Garden Acres		New WB Bridge	2018-2027
IN1- 5.11.1	IH 35W	SH 121 (NTE)		Reconstruct	2028-2037
IN1- 1.28.1	IH 35W	US 287 (NTE)		Reconstruct	2018-2027
IN1- 11.151.1	IH 820	SH 121/Trinity Blvd.		Reconstruct	2018-2027
IN1- 1.151.1	IH 820	US 287		Reconstruct	2028-2037
IN1- 14.571.1	SH 199	Hanger Cut-Off Road		Grade Separation	2018-2027
IN1- 14.153.1	SH 199	IH 820		New Interchange	2018-2027
IN1- 14.572.1	SH 199	Nine Mile Azle Road		Grade Separation	2018-2027
IN1- 14.573.1	SH 199	Western Center		Grade Separation	2018-2027
IN1- 1.9.1	SH 360	US 287	Phase I	New Interchange	2017
IN1- 1.9.1	SH 360	US 287	Phase II	Improvements	2028-2037
IN1- 538.1	US 180	Weatherford Loop		Phased New Interchange	2018-2027
IN1- 1.581.1	US 287	BU 81D (South Decatur)		New Interchange	2017
IN1- 1.581.2	US 287	CR 4227/CR 4228		New Interchange	2018-2027
IN1- 1.582.1	US 287	FM 1810 (Decatur)		New Interchange	2018-2027
IN1- 1.536.1	US 287	North Tarrant Pkwy/Harmon Road		Reconstruct	2018-2027
IN1- 1.587.1	US 287	Ramhorn Hill		New Interchange	2018-2027
IN1- 37.46.1	US 377	Cresson Bypass	No connection to SH 171	New Interchange	2018-2027
IN1- 46.170.5	US 377	SH 144		Reconstruct	2018-2027
IN1- 1.538.1	US 81/US 287	CR 4838		New Interchange	2018-2027

* "Year Operation Between" indicates the year range the final build will be open to traffic. Some facilities are staged and may have interim improvements that are not consistent with the proposed build.