



# Final Environmental Assessment

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Farm-to-Market Road 2854 from Loop 336  
to Interstate Highway 45

CSJ 2744-01-011

Montgomery County, Texas; Houston District

July 2016

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried-out by TxDOT pursuant to 23 U.S.C. 327 and a memorandum of understanding dated December 16, 2014, and executed by FHWA and TxDOT.

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### Acronyms and Abbreviations

AADT	Annual Average Daily Traffic
APE	Area of Potential Effects
AOI	Area of Influence
BMP	Best Management Practice
BNSF	Burlington Northern Santa Fe
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CGP	Construction General Permit
CMAQ	Congestion Mitigation and Air Quality
CMP	Congestion Management Process
CWA	Clean Water Act
dB(A)	Decibels (A-weighted)
DBH	Diameter at Breast Height
DHHS	U.S. Department of Health and Human Services
EA	Environmental Assessment
EMST	Ecological Mapping System of Texas
EPA	U.S. Environmental Protection Agency
EPIC	Environmental Permits, Issues, and Commitments
EO	Executive Order
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impact
FM	Farm-to-Market Road
FPPA	Farmland Protection Policy Act
HEI	Health Effects Institute
H-GAC	Houston-Galveston Area Council
IH	Interstate Highway
IP	Individual Permit
IRIS	Integrated Risk Information System
ISA	Initial Site Assessment
LEP	Limited English Proficiency
LPST	Leaking Petroleum Storage Tank
MBTA	Migratory Bird Treaty Act
MOU	Memorandum of Understanding
MS4	Municipal Separate Storm Sewer System
MSAT	Mobile Source Air Toxics
MTP	Metropolitan Transportation Plan
NAAQS	National Ambient Air Quality Standards

**Acronyms and Abbreviations (cont'd)**

NATA	National Air Toxics Assessment
NEPA	National Environmental Policy Act
NOI	Notice of Intent
NOT	Notice of Termination
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWP	Nationwide Permit
PA	Programmatic Agreement
PCN	Pre-construction Notification
PM	Particulate Matter
PST	Petroleum Storage Tank
ROE	Right-of-Entry
RTP	Regional Transportation Plan
SGCN	Species of Greatest Conservation Need
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SOV	Single Occupancy Vehicle
SW3P	Storm Water Pollution Prevention Plan
TCAP	Texas Conservation Action Plan
TCEQ	Texas Commission on Environmental Quality
TERP	Texas Emissions Reduction Plan
TCEs	Temporary Construction Easements
THC	Texas Historical Commission
TIP	Transportation Improvement Program
TMA	Transportation Management Area
TMDL	Total Maximum Daily Load
TPDES	Texas Pollution Discharge Elimination System
TPWD	Texas Parks and Wildlife Department
TSS	Total Suspended Solids
TxDOT	Texas Department of Transportation
TXNDD	Texas Natural Diversity Database
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	Underground Storage Tank
VCP	Voluntary Cleanup Program
VMT	Vehicle-Miles Traveled
vpd	Vehicles per day

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## 1.0 INTRODUCTION

The Houston District of the Texas Department of Transportation (TxDOT) proposes to reconstruct the Farm-to-Market (FM) Road 2854 roadway from a two-lane, undivided facility to a four-lane, divided facility with curb and gutter and a flush median, between Loop (LP) 336 and Interstate Highway (IH) 45, in Montgomery County, Texas. This Environmental Assessment (EA) has been prepared to comply with the requirements of the National Environmental Policy Act (NEPA) (42 U.S. Code [U.S.C.] Sections 4321-4375) and implementing regulations promulgated by the Council on Environmental Quality (CEQ, 40 Code of Federal Regulations [CFR] Part 1500) and the Federal Highway Administration (FHWA) (23 CFR Part 771). The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried-out by TxDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding (MOU) dated December 16, 2014, and executed by FHWA and TxDOT.

**Appendix A** includes all project figures. **Figure 1** depicts the project location, and **Figure 2** shows the U.S. Geological Survey (USGS) topographic map for the project area. **Appendix B** includes project area photographs. The design schematic for the proposed improvements has been prepared and is available for inspection at the TxDOT Houston District office at 7600 Washington Avenue, Houston, Texas 77007.

### 1.1 DESCRIPTION OF THE EXISTING FACILITY

The proposed project is a roadway reconstruction and improvement project. The existing typical section consists of two 12-foot-wide travel lanes, with 6-foot-wide shoulders and open vegetated ditches. A signalized intersection exists at Sergeant (Sgt.) Ed Holcomb Boulevard with dedicated left turn lanes in both directions. This intersection also provides crosswalks in both directions. At Pinewood Drive, a dedicated left-turn lane is present from westbound FM 2854 to southbound Pinewood Drive. The existing facility does not provide any sidewalks or accommodations for bicyclists and pedestrians.

FM 2854 widens to two lanes in the westbound direction as it approaches the LP 336 intersection. At LP 336, there is a dedicated left-turn lane from eastbound FM 2854 to the northbound frontage road of LP 336.

FM 2854 widens to two lanes in the eastbound direction as it approaches the IH 45 intersection. A dedicated left-turn lane is present at IH 45 in addition to the existing eastbound lanes. There are two existing westbound lanes that transition to a single westbound lane at IH 45. There are no pedestrian or bicycle accommodations, other than the crosswalks at Sgt. Ed Holcomb Boulevard, within the existing project limits. The existing typical sections are shown on **Figure 3**.

### 1.2 DESCRIPTION OF THE PROPOSED PROJECT

The proposed improvements would reconstruct the existing two-lane, undivided facility to a four-lane roadway with a curb and gutter and a flush median. The project location is shown on **Figures 1** and **2** in **Appendix A**. The improvements include the addition of one 12-foot-wide travel lane and one 15-foot-wide shared use lane in each direction with a 14-foot-wide flush median. Along the north side of the right-of-way, a 6-foot-wide sidewalk would be constructed. The proposed drainage system consists of storm sewers, an open, shared ditch with the Burlington Northern and Santa Fe (BNSF) railroad and two detention ponds. The proposed detention ponds are located along Alligator Creek near the eastern

1 project terminus and west of Sgt. Ed Holcomb Boulevard, both north of the existing right-of-way. The  
2 typical sections and the proposed layout are shown on **Figures 3 and 4**, respectively.

### 3 **1.2.1 Right-of-Way Requirements and Utility Relocations**

4 The proposed project would require approximately 4.1 acres of new right-of-way, including land for  
5 the detention ponds. Implementation of the proposed project may require the relocation and adjustment  
6 of utilities such as water lines, sewer lines, gas lines, telephone cables, electrical lines, and other  
7 subterranean and aerial utilities. The relocation and adjustment of any utilities would be coordinated  
8 with the affected utility provider to ensure that no substantial interruption of service would take place.

9 The project includes approximately 3.5 acres of common ditch boundaries and the proposed work would  
10 occur within a shared drainage ditch with the BNSF railroad that runs along the southern edge of the  
11 existing right-of-way. Additional work within the project area includes approximately 0.1-acre of  
12 proposed driveway improvements to adjacent properties and areas where riprap would be placed to  
13 protect existing and proposed drainage structures.

14 A reduction in the additional proposed right-of-way did occur since the public meeting was held in  
15 October 2015 (see **Section 10.0**). This reduction was due to additional right-of-way information  
16 becoming available within the project limits, in particular near the intersection of Loop 336 and  
17 FM 2854.

### 18 **1.2.2 Logical Termini**

19 The logical termini for the project are FM 2854 at LP 336 and IH 45. LP 336 is a principal arterial  
20 (TxDOT 2015) which provides long periods of uninterrupted, higher speed travel versus collectors or  
21 local streets in the region. Striping improvements are proposed slightly beyond LP 336 in order to allow  
22 for a transition to the existing configuration of FM 2854 west of LP 336. At the eastern end, the  
23 proposed project would tie into the existing FM 2854 infrastructure under IH 45 and east of IH 45, and  
24 also includes some striping improvements. The proposed project has independent utility and would not  
25 preclude other foreseeable transportation improvements within the project area.

## 26 **2.0 NEED AND PURPOSE**

### 27 **2.1 PROJECT NEED**

28 The FM 2854 project is needed to improve mobility in western and central Montgomery County and to  
29 improve safety by providing a divided roadway.

30 The proposed roadway would provide additional capacity for traffic traversing this quickly growing  
31 part of the county. According to the Houston-Galveston Area Council's (H-GAC) Regional Growth  
32 forecast, the project area is projected to see particularly strong growth. Two of the area census tracts  
33 are predicted to outpace growth in the county and city as a whole. A decrease in growth is expected  
34 in one census tract, with slow growth in the remaining census tracts. The proposed facility is expected to  
35 accommodate about 9,900 vehicles per day (vpd) in 2015, increasing to about 14,500 vpd by 2040  
36 (an increase of approximately 46.5 percent). This increased growth is anticipated to result in increased  
37 traffic demand.

In addition to improving mobility, the proposed project would also improve safety. Currently, turning movements onto Pinewood Drive from FM 2854 are unprotected. The proposed roadway would be a divided facility. TxDOT data from 2015 (the most recent year available) show that crash rates are lowest for divided roadways with four or more lanes (see Error! Reference source not found.).

Crash data available for the project area (2012 - 2015) are presented in **Table 2**. Crashes have more than doubled between 2012 and 2015, with the most dramatic increase occurring between 2013 and 2014. No fatal crashes occurred during this period. More than half of the crashes typically occurred at intersections.

Table 1: 2015 TxDOT Statewide Crash Rates		
Road Type	Traffic Crashes per 100 million vehicle miles	
	Rural	Urban
Two-lane, two-way	100.60	250.50
Four or more lanes, divided	64.79	164.74

Source: [http://ftp.dot.state.tx.us/pub/txdot-info/trf/crash\\_statistics/2015/02.pdf](http://ftp.dot.state.tx.us/pub/txdot-info/trf/crash_statistics/2015/02.pdf)

Table 2: Crashes within the Proposed Project Area (2012-2015)			
Year*	Number of Crashes	Non-Fatal Crashes	Number of Intersection-Related Crashes
2012	12	12	6
2013	15	15	10
2014	25	25	17
2015*	27	27	16

\* Crash data is through December 2, 2015

Source: TxDOT Traffic Engineering, 2015

The project area does not provide for bicycle and pedestrian accommodations except at crosswalks present at Sgt. Holcomb Boulevard. To meet current FHWA and TxDOT guidelines and policies, the existing facility would need to accommodate bicycle and pedestrian facilities within its design. The proposed improvements include a 15-foot-wide shared-use travel lane and 6-foot-wide sidewalks along the north side of the proposed right-of-way.

## 2.2 PROJECT PURPOSE

The purpose of the proposed project is to improve safety and mobility, and reduce congestion for the traveling public by constructing a divided roadway and signalized intersections. The roadway improvements would accommodate anticipated future growth in the region by adding additional capacity needed, while providing accommodations for bicyclists and pedestrians through the construction of shared-use lanes and sidewalks, in accordance with FHWA and TxDOT guidelines and policies.

## 3.0 PLANNING AND PROGRAMMING STATUS/ PROJECT FUNDING

The estimated construction cost is approximately \$15.3 million, with funding to be provided by 20 percent state and 80 percent federal sources. The proposed action is consistent with the area's financially constrained Regional Transportation Plan (RTP), the H-GAC's 2040 RTP. The project is

1 included in Amendment 37 of the 2015-2018 Transportation Improvement Plan (TIP), revised in  
2 November 2015 and approved on January 22, 2016 (see **Appendix C**).

## 3 **4.0 ALTERNATIVES**

### 4 **4.1 NO-BUILD ALTERNATIVE**

5 The No-Build Alternative represents the case in which the proposed project would not be constructed.  
6 Other transportation improvements may or may not be constructed, depending on project development  
7 and funding availability issues for each proposed improvement.

8 The No-Build Alternative would not improve mobility or safety in the project area. For these reasons,  
9 the No-Build Alternative would not satisfy the need and purpose of the proposed project. The No-Build  
10 Alternative is carried forward throughout the document as a baseline comparison to the Build  
11 Alternative.

### 12 **4.2 BUILD ALTERNATIVE**

13 The Build Alternative is described in **Section 1.2**. The typical sections and project layout are shown on  
14 **Figures 3** and **4**, respectively. The Build Alternative is the preferred alternative, as it would best fulfill  
15 the purpose and need of the project.

## 16 **5.0 EXISTING ENVIRONMENT**

17 The proposed project area is located within the city of Conroe, Texas, in Montgomery County, Texas.  
18 The project area is located within the Western Gulf Coastal Plain, as shown in **Figure 5** (TPWD 2011).  
19 Vegetation in the project vicinity is primarily characterized as grassland with occasional wooded areas.

20 The existing right-of-way is dedicated to transportation use. Land surrounding the existing right-of-way  
21 consists of a mixture of rural, residential, and commercial uses.

## 22 **6.0 IMPACTS**

### 23 **6.1 ISSUES ELIMINATED FROM FURTHER STUDY**

#### 24 **6.1.1 Airway-Highway Clearance**

25 The nearest airport is the Lone Star Executive Airport, which is approximately 4.5 miles northeast of the  
26 proposed project limits. As the distance to the airport is greater than 2 miles, further examination of  
27 airway-highway clearance is not required.

#### 28 **6.1.2 Farmland Protection Policy Act**

29 The Farmland Protection Policy Act (FPPA), as detailed in Subtitle I of Title XV of the Agricultural and  
30 Food Act of 1981, provides protection to the following: (1) prime farmland; (2) unique farmland; and  
31 (3) farmland of local or statewide importance. Transportation projects conducted by a federal agency  
32 or with federal agency assistance that irreversibly convert protected farmland (directly or indirectly) to  
33 nonagricultural use require coordination with the Natural Resources Conservation Service (NRCS) under

1 the FPPA. Transportation projects conducted by a federal agency or with federal agency assistance  
2 that irreversibly convert protected farmland (directly or indirectly) to nonagricultural use are required  
3 to coordinate with the NRCS under the FPPA. The proposed project would require approximately 4.1  
4 acres of new right-of-way. However, the project is located in an urbanized area and does not contain  
5 areas mapped as prime farmland by the NRCS Project Area Soil Survey, and is therefore not subject  
6 to the FPPA.

### 7 **6.1.3 General Bridge Act and Rivers and Harbors Act of 1899**

8 The proposed project would not require construction or modification of a bridge over a navigable  
9 waterway. Therefore, the General Bridge Act of 1946 and the Rivers and Harbors Act of 1899 do not  
10 apply.

## 11 **6.2 ISSUES STUDIED IN DETAIL**

### 12 **6.2.1 Waters of the U.S., Including Wetlands**

#### 13 No-Build Alternative

14 No impacts to waters of the U.S., including wetlands, would occur as a result of the No-Build Alternative.

#### 15 Build Alternative

16 The U.S. Army Corps of Engineers (USACE) regulates the discharge of dredged and fill material into  
17 wetlands and other waters of the U.S. under Section 404, subsection 330.5(a)(21), of the Clean Water  
18 Act (CWA). Authorization is required from the USACE for any activity that would result in the discharge  
19 of dredged or fill material into waters of the U.S. Regulated activities may be permitted through the  
20 USACE via Individual Permits (IP), Regional General Permits, or Nationwide Permits (NWP).

21 A field assessment to identify and delineate potential waters of the U.S. occurring within the project  
22 area was completed in September 2015 and updated in June 2016, but was limited to those areas  
23 where right-of-entry (ROE) had been obtained. The findings are detailed in the Wetland/Waters of  
24 the U.S. Delineation Technical Report and are summarized below.

25 Five potential waters of the U.S. were identified within the project right-of-way during field  
26 investigations. These potential waters of the U.S. include three unnamed tributaries to the West Fork of  
27 the San Jacinto River (WOUS 1, 2, and 3), Alligator Creek (WOUS 4), and an adjacent emergent  
28 wetland (WL1). The project would permanently impact 0.144-acre of potential waters of the U.S.,  
29 including wetlands, as described below:

- 30 • WOUS 1 – 0.03-acre; 90 linear feet (Culverted crossing)
- 31 • WOUS 2 – 0.02-acre; 109 linear feet (Culverted crossing)
- 32 • WOUS 3 – 0.004-acre; 25 linear feet (Culverted crossing)
- 33 • WOUS 4 – 0.03-acre; 108 linear feet (Bridge structure)
- 34 • WL 1 – 0.06-acre (Embankment fill associated with bridge structure over Alligator Creek)

#### 35 ***Permits and Mitigation***

36 All proposed roadway and drainage improvements should be designed in a manner to avoid or  
37 minimize impacts to jurisdictional crossings. It is anticipated that impacts to waters of the U.S. would be  
38 authorized through NWP 14 (Linear Transportation Crossings) with a Preconstruction Notification (PCN)

1 because of impacts to Alligator Creek, one emergent wetland, and three unnamed tributaries to the  
2 West Fork San Jacinto River within the existing and proposed right-of-way. Designs for this project are  
3 preliminary, and specific structures for the crossings are not finalized. The actual amount of impacts to  
4 USACE-jurisdictional waters would be confirmed during the final design phase, based on acquisition of  
5 complete ROE and detailed construction plans. If any impacts to individual waters of the U.S. exceed  
6 0.5 acre, or the thresholds set forth in the NWP general conditions, an IP would be required.

7 No single and complete crossing associated with the proposed project would have the potential to  
8 exceed the 0.5-acre impact threshold that would require USACE authorization through an IP, as  
9 established by Section 404 of the CWA. Potential impacts to jurisdictional features would likely be  
10 authorized by NWP 14 Linear Transportation Projects. Due to the impacts to a wetland site, a PCN  
11 would be required for NWP 14 authorization.

### 12 **Executive Order 11990, Wetlands**

13 Executive Order (EO) 11990, Protection of Wetlands (42 *Federal Register* 26961, May 24, 1977),  
14 provides the requirement “to avoid to the extent possible the long- and short-term adverse impacts  
15 associated with the destruction or modification of wetlands, and to avoid direct or indirect support of  
16 new construction in wetlands wherever there is a practicable alternative.”

17 All proposed roadway and drainage improvements should be designed in a manner to avoid or  
18 minimize impacts to wetlands. Designs for this project are preliminary, and specific structures for the  
19 crossings are not finalized. The actual amount of impacts to USACE-jurisdictional waters will be  
20 confirmed during the final design phase, based on acquisition of complete ROE and detailed construction  
21 plans.

### 22 **6.2.2 Floodplains**

#### 23 No-Build Alternative

24 No floodplains would be impacted by the No-Build Alternative.

#### 25 Build Alternative

26 The project area generally drains south to the West Fork San Jacinto River, which connects to the Gulf  
27 of Mexico, and the project crosses two 100-year Federal Emergency Management Agency (FEMA)  
28 floodplains (see **Figure 6**).

29 The project is located entirely within Montgomery County, which is a participant in the National Flood  
30 Insurance Program. According to FEMA Flood Insurance Rate Maps (Flood Hazard Boundary Map  
31 Community Panel Numbers 48339C0380G [revised 2014]), approximately 8.0 acres of floodplain,  
32 associated with the San Jacinto River Basin is within the proposed project area (see **Figure 6**).  
33 Approximately 1.16 acres of designated floodway is present within Alligator Creek. EO 11988,  
34 “Floodplain Management,” requires federal agencies to “identify and evaluate practicable alternatives  
35 to locating in the base floodplain, including alternative sites outside of the floodplain.” Due to the extent  
36 of the floodplain in the project area, there are no practicable routes that would avoid floodplain  
37 encroachments.

38 The hydraulic design for this project would be in accordance with current FHWA and TxDOT design  
39 policies. The facility would permit the conveyance of the 100-year floodplain, inundation of the  
40 roadway being acceptable, without causing significant damage to the facility, stream, or other  
41 property. The proposed project would not increase the base flood elevation to a level that would violate

1 applicable floodplain regulations and ordinances. The design of the roadway would maintain  
2 floodplain connectivity and would minimize impacts to natural and beneficial floodplain values. Any  
3 proposed development actions by others would be subject to the permitting and coordination  
4 requirements of local floodplain ordinances. Efforts would be made to minimize permanent impacts to  
5 the floodplain to the extent practicable during detailed design. As natural and beneficial floodplain  
6 values are not anticipated to be affected, no specific measures to restore and preserve these values  
7 are proposed. However, construction in this floodplain is regulated by the Montgomery County  
8 Floodplain Administrator. Therefore, coordination with the Administrator would be required before  
9 construction.

### 10 **6.2.3 Water Quality**

#### 11 No-Build Alternative

12 No impacts to water quality would occur as a result of the No-Build Alternative.

#### 13 Build Alternative

#### 14 **Section 303(d) of the Clean Water Act**

15 The project area is located within the San Jacinto River Basin, which drains approximately 5,600 square  
16 miles (TCEQ 2013). Principal tributaries to the San Jacinto River Basin include the East and West Forks  
17 of the San Jacinto River, which merge in the headwaters of Lake Houston. For the purposes of monitoring  
18 water quality, the Texas Commission on Environmental Quality (TCEQ) has divided the major water  
19 bodies within the San Jacinto River Basin into 17 discrete segments (TCEQ 2013). The proposed project  
20 is within Segment 1004 – West Fork San Jacinto River of the San Jacinto River Basin. Stream segments  
21 1004\_01 (West Fork San Jacinto River From the Spring Creek confluence upstream to the Stewart Creek  
22 confluence), 1004\_02 (West Fork San Jacinto River From the Stewart Creek confluence upstream to the  
23 Lake Conroe Dam), and 1004E\_02 (Stewarts Creek From Airport Road to confluence with West Fork  
24 San Jacinto River) are all within 5 miles of the project area. Assessment unit 1004\_01 is listed as  
25 threatened or impaired for bacteria, assessment unit 1004\_02 is listed as threatened or impaired for  
26 bacteria, and 1004E\_02 is not listed as threatened or impaired on the 2014 Texas Integrated Report  
27 of Surface Water Quality (TCEQ 2014). Coordination with the TCEQ for water quality would be  
28 required.

#### 29 **Section 402 of the Clean Water Act**

30 The project area is within the boundaries of the Conroe-The Woodlands, Texas, Urbanized Area  
31 regulated Phase II Municipal Separate Storm Sewer System (MS4) and would comply with the  
32 applicable MS4 requirements.

#### 33 **Section 402 of the Clean Water Act: Texas Pollutant Discharge Elimination System, Construction** 34 **General Permit**

35 This project would include five or more acres of earth disturbance. TxDOT would comply with TCEQ's  
36 Texas Pollutant Discharge Elimination System (TPDES) Construction General Permit (CGP). A Storm  
37 Water Pollution Prevention Plan (SW3P) would be implemented, and a construction site notice would  
38 be posted on the construction site. A Notice of Intent (NOI) and a Notice of Termination (NOT) would be  
39 required.

1 **TCEQ Section 401 Water Quality Certification, Best Management Practices**

2 The proposed project would comply with Section 401 requirements. The 401 Certification requirements  
3 for NWP 14 would be met by implementing approved erosion control, sedimentation control, and post-  
4 construction Total Suspended Solids (TSS) control Best Management Practices (BMPs) from TCEQ's 401  
5 Water Quality Certification Conditions for NWPs.

6 **6.2.4 Vegetation and Wildlife Habitat**

7 No-Build Alternative

8 No impacts to vegetation or wildlife habitat would result from the No-Build Alternative.

9 Build Alternative

10 **Natural Region and Vegetation Types**

11 The project area is located within the Western Gulf Coastal Plain (TPWD, 2011). The footprint of the  
12 project area was overlain on Ecological Mapping System of Texas (EMST) vegetation type maps as  
13 shown in **Figure 7**. The EMST Vegetation Types correspond to NatureServe Ecological System Types and  
14 the vegetation types outlined in TxDOT's 2013 MOU with Texas Parks and Wildlife Department (TPWD)  
15 as shown in **Table 3**. According to the EMST, 6 vegetation types within four MOU habitat types are  
16 mapped as occurring within the project area (MoRAP 2013).

17 Vegetation types observed within the project area are not accurately represented by EMST. The project  
18 area is dominated by Low Intensity Urban and High Intensity Urban EMST vegetation types and also  
19 includes relatively small areas best described as Riparian Woodland and Pine Hardwood Forest  
20 vegetation. Existing vegetation at the site, as observed during the field investigations, is described  
21 below and shown on **Figures 8a-d**, and impact acreages are summarized in **Table 3**.

**Table 3: Vegetation Types Mapped by EMST and Observed Vegetation Occurring Within the Project Area**

EMST Mapped Vegetation Type	NatureServe Ecological System Type	MOU Vegetation Type	MOU Threshold (acres)	Mapped EMST Acres in Limits of Construction	Observed Vegetation Type	Observed Vegetation Acres in Limits of Construction	Corresponding MOU Type	MOU Threshold (acres)	Threshold Exceeded?
Barren	Barren	Agriculture	10	0.086	--	--	--	--	--
Pineywoods: Disturbance or Tame Grassland	Disturbance Grassland	Disturbed Prairie	3	0.27	--	--	--	--	--
Pineywoods: Pine – Hardwood Forest or Plantation	West Gulf Coastal Plain Pine-Hardwood Forest	Mixed Woodlands and Forest	3	0.000024	Pine Hardwood Forest	1.66	Mixed Woodlands and Forest	3	No
Pineywoods: Pine Forest or Plantation	West Gulf Coastal Plain Pine-Hardwood Forest	Mixed Woodlands and Forest	3	0.19					
Pineywoods: Upland Hardwood Forest	West Gulf Coastal Plain Pine-Hardwood Forest	Mixed Woodlands and Forest	3	4.79					
Urban High Intensity	Urban	Urban	None	10.19	Urban High Intensity	10.13	Urban	None	No
Urban Low Intensity	Urban	Urban	None	8.81	Urban Low Intensity	11.58	Urban	None	No
--	--	--	--	--	Riparian Woodland	0.93	Riparian	0.10	Yes

1 Sources: Missouri Resource Assessment Partnership (MoRAP). MoRAP Project: Texas Ecological Systems Classification  
 2 <http://morap.missouri.edu/Projects.aspx?ProjectId=57>, also known as Ecological Mapping Systems of Texas (EMST), prepared for Texas Parks and Wildlife  
 3 Department, accessed September 9, 2015. Last Modified October 1, 2013.  
 4

1 Urban Low Intensity

2 The Urban Low Intensity vegetation type is described, in part, as maintained roadway grasses in the  
3 right-of-way. At the time of the field investigations, the roadway right-of-way was dominated by  
4 maintained roadside grasses and forbs. These included Johnsongrass (*Sorghum halepense*), common  
5 bermudagrass (*Cynodon dactylon*), yellow bluestem (*Bothriochloa ischaemum* var. *songarica*), little  
6 bluestem (*Schizachyrium scoparium*), tievine (*Ipomoea cordatotriloba*), paspalum species (*Paspalum* spp.),  
7 finger grass (*Digitaria eriantha*), alligatorweed (*Alternanthera philoxeroides*), turkey tangle frog fruit  
8 (*Phyla nodiflora*), and woolly croton (*Croton capitatus*). Approximately 11.58 acres of this vegetation  
9 type would be impacted by the proposed construction activities.

10 Urban High Intensity

11 The Urban High Intensity vegetation type is made up of paved, impervious surfaces located within the  
12 limits of FM 2854, including commercial pads, parking lots, roadway, and rooftop surfaces.  
13 Approximately 10.13 acres of this vegetation type would be impacted by the proposed construction  
14 activities.

15 Riparian Woodland

16 The Riparian Woodland vegetation type is composed of areas dominated by woody species occurring  
17 within the proposed eastern detention pond. These areas are a mosaic of floodplain terraces and  
18 woodland vegetation, which serve a riparian function. Canopy cover was approximately 55 percent  
19 with a height ranging from 35 to 70 feet and averaging 60 feet. The diameter at breast height (DBH)  
20 for canopy species ranged from 6 to 22 inches and averaged approximately 14 inches. Canopy species  
21 observed include green ash (*Fraxinus pennsylvanica*), boxelder (*Acer negundo*), sweetgum (*Liquidambar*  
22 *styraciflua*), American sycamore (*Platanus occidentalis*), cedar elm (*Ulmus crassifolia*), pecan (*Carya*  
23 *illinoensis*), and sugarberry (*Celtis laevigata*). The understory is composed of great ragweed (*Ambrosia*  
24 *trifida*), peppervine (*Nekemias arborea*), Indian woodoats (*Chasmanthium latifolium*), southern dewberry  
25 (*Rubus trivialis*), and Canada wildrye (*Elymus canadensis*). Approximately 0.93 acre of this vegetation  
26 type would be impacted by the proposed construction activities.

27 Pine-Hardwood Forest

28 The Pine-Hardwood Forest vegetation type is made up of areas dominated by a mixture of deciduous  
29 and evergreen woody vegetation occurring within the proposed western detention pond. Canopy cover  
30 was approximately 70 percent with a height ranging from 35 to 85 feet and averaging 55 feet. The  
31 DBH for canopy species ranged from 4 to 20 inches with an average of approximately 12 inches. The  
32 dominate canopy species include white oak (*Quercus alba*), loblolly pine (*Pinus taeda*), American elm  
33 (*Ulmus americana*), sweetgum, and black hickory (*Carya texana*). Understory species were primarily  
34 yaupon (*Ilex vomitoria*) and round-leaf green briar (*Smilax rotundifolia*). Approximately 1.66 acres of  
35 this vegetation type would be impacted by the proposed construction activities.

36 According to the Observed Vegetation Mapping shown in **Table 3**, four vegetation types within three  
37 MOU habitat types occur within the project area (MoRAP 2013). **Table 3** indicates that thresholds set  
38 by the *Threshold Table Programmatic Agreement* (PA) would be exceeded for the “Riparian” habitat  
39 type.

**1 Special Habitat Features**

2 As defined in the 2013 MOU, special habitat features can include bottomland hardwoods, caves, cliffs  
3 and bluffs, native prairies, seeps or springs, snags or groups of snags, existing bridges with known or  
4 observed bird or bat colonies, rookeries, and prairie dog towns. No Special Habitat Features are  
5 located within the proposed project area. No impacts to Special Habitat Features are expected.

6 Unusual vegetation features can include unmaintained vegetation, fencerow vegetation, riparian  
7 vegetation, significant (historically or ecologically) or locally important trees, or unusual stands or islands  
8 of vegetation. Unusual vegetation features identified within the project area include riparian vegetation.  
9 Approximately 0.93 acre of riparian habitat would be impacted by the proposed project. Impacts to  
10 this vegetation type would be minimized as much as practicable.

**11 Invasive Species/Beneficial Landscaping**

12 During construction, efforts would be taken to avoid and minimize disturbance of vegetation and soils.  
13 All disturbed areas would be restored and reseeded according to TxDOT’s Vegetation Management  
14 Guidelines and in compliance with the intent of EO 13112 on Invasive Species as soon as it becomes  
15 practicable. In accordance with EO 13112 on Invasive Species, the Executive Memorandum on Beneficial  
16 Landscaping, and the 1999 FHWA guidance on invasive species, all revegetation would, to the extent  
17 practicable, use only native species. Further, BMPs would be used to control and prevent the spread of  
18 invasive species.

**19 TPWD Coordination**

20 A Tier I site assessment was performed in accordance with TxDOT’s 2013 *Memorandum of Understanding*  
21 *with the Texas Parks and Wildlife Department* to determine whether coordination with TPWD would be  
22 required for the proposed project. The Tier I site assessment defines the type and amount of habitat  
23 impacted using information from the Texas Conservation Action Plan (TCAP); EMST; Texas Natural  
24 Diversity Database (TXNDD); county lists of rare, candidate, threatened, and endangered species  
25 maintained by TPWD and United State Fish and Wildlife Service (USFWS); information collected during  
26 field investigations; and, the most current aerial photography available. **Table 4** lists the coordination  
27 triggers and responses to each.

**Table 4: Tier I Site Assessment – TPWD Coordination Triggers**

Trigger	Applies to the Project?	Explanation
The project is within the range of a state-threatened or endangered species or Species of Greatest Conservation Need (SGCN), as identified by the TPWD county list, and there is suitable habitat for the species within the project area unless BMPs as defined in the MOU are implemented as provided by a PA.	Yes	Habitat is present within the existing project right-of-way for the following species: timber rattlesnake, wood stork, creek chubsucker, Gulf Coast clubtail, Texas emerald dragonfly, southern crawfish frog, and the plains spotted skunk.  No BMPs have been established for the state-designated SGCNs Gulf Coast clubtail, Texas emerald dragonfly, or southern crawfish frog. The BMPs for the remainder of these species are defined in the MOU PA, as listed in <b>Table 7</b> .
The project may adversely impact important remnant vegetation based on the judgment of a qualified biologist or as mapped in the TXNDD.	No	No important remnant vegetation was identified within the project area by project biologists or by the TXNDD.

Table 4: Tier I Site Assessment – TPWD Coordination Triggers		
Trigger	Applies to the Project?	Explanation
The project requires an NWP with preconstruction notification or an IP issued by the USACE.	Yes	The proposed project would have the potential to impact four streams which cross the proposed project area (impacts: 0.03-acre, 0.02-acre, 0.004-acre, and 0.03-acre). One wetland is also located within the area of impact, approximately 0.06-acre, and is likely under the jurisdiction of the USACE. No single and complete crossing associated with the proposed project would have the potential to exceed the 0.5-acre impact threshold that would require USACE authorization through an IP, as established by Section 404 of the Clean Water Act. Potential impacts to jurisdictional features would likely be authorized by NWP 14 Linear Transportation Projects. Due to the impacts to a special aquatic site (a single wetland), a Preconstruction Notification would be required for the NWP 14 authorization.
The project includes in the TxDOT right-of-way or conservation, construction, or drainage easement, more than 200 linear feet of stream channel for each single and complete crossing of one or more of the following that is not already channelized or otherwise maintained: a) channel realignment; or b) stream bed or stream bank excavation, scraping, clearing, or other permanent disturbance.	No	The proposed improvements would include the construction of additional culverts, but at no single and complete crossing would more than 200 feet of previously unmodified or unmaintained channel be impacted.
The project contains known isolated wetlands outside existing TxDOT right-of-way that will be directly impacted by the project.	No	The project would not impact isolated wetlands outside of the existing TxDOT right-of-way.
The project may impact at least 0.10 acre of riparian vegetation based on the judgment of a qualified biologist or as mapped in the EMST.	Yes	Approximately 0.93 acre of riparian vegetation would be impacted by the proposed project.
The project disturbs habitat in an area equal to or greater than the area of disturbance indicated in the <i>Threshold Table Programmatic Agreement</i> .	Yes	The project exceeds thresholds set by the Threshold Table PA. Thresholds would be exceeded for the “Riparian” habitat type (see <b>Table 3</b> ). Approximately 0.93 acre of riparian vegetation would be impacted by the proposed project. The threshold for riparian habitat is 0.1 acre.

1 Source: TPWD MOU; Project Team 2015.

2 As described in **Table 4**, the proposed project requires coordination with TPWD in accordance with  
 3 TxDOT’s 2013 *Memorandum of Understanding with the Texas Parks and Wildlife Department*. Four  
 4 coordination triggers are met: the proposed project is within range and habitat is present for state-  
 5 listed threatened species and an SGCN species without an approved BMP as defined in the PA. The  
 6 project is expected to require a NWP with PCN. The project would impact at least 0.10 acre of riparian  
 7 vegetation based on the judgment of a qualified biologist. Additionally, the project exceeds thresholds  
 8 set by the Threshold Table PA for the “Riparian” habitat type. A copy of the Biological Evaluation Form  
 9 is on file at the TxDOT Houston District Office.

1 Coordination with TPWD occurred via email sent on December 16, 2015, under the provisions of the  
2 TxDOT-TPWD MOU. TPWD responded on December 22, 2015, via email to TxDOT Houston District,  
3 which indicated, based on the review of the documentation, the avoidance and mitigation efforts, and  
4 provided that the project plans do not change, TPWD considered coordination to be complete (see  
5 **Appendix D**).

#### 6 ***Migratory Bird Treaty Act of 1918***

7 The Migratory Bird Treaty Act (MBTA) of 1918 states that it is unlawful to kill, capture, collect, possess,  
8 buy, sell, trade, or transport any migratory bird, nest, young, feather, or egg in part or in whole, without  
9 a federal permit issued in accordance within the act's policies and regulations.

10 The project area was investigated for any structures containing migratory birds or indications of nesting  
11 migratory birds. No migratory birds were observed nesting during the site visit, though individuals may  
12 arrive in the project area to breed during construction of the proposed project. Measures would be  
13 taken to avoid the take of migratory birds, their occupied nests, eggs, or young, in accordance with the  
14 MBTA, through phasing of work or preventative measures. Bird BMPs will be followed to minimize  
15 impacts: not disturbing, destroying, or removing active nests, including ground nesting birds, during the  
16 nesting season; avoiding the removal of unoccupied, inactive nests, as practicable; preventing the  
17 establishment of active nests during the nesting season on TxDOT owned and operated facilities and  
18 structures proposed for replacement or repair; and not collecting, capturing, relocating, or transporting  
19 birds, eggs, young, or active nests without a permit.

#### 20 ***Fish and Wildlife Coordination Act***

21 The proposed project would have the potential to impact four streams (impacts: 0.03-acre, 0.02-acre,  
22 0.004-acre, and 0.03-acre) and one wetland (0.06-acre), which are likely under the jurisdiction of the  
23 USACE. No single and complete crossing associated with the proposed project would have the potential  
24 to exceed the 0.5-acre impact threshold that would require USACE authorization through an IP, as  
25 established by Section 404 of the CWA. Potential impacts to jurisdictional features would likely be  
26 authorized by NWP 14 Linear Transportation Projects. Due to the impacts to a wetland site, a PCN  
27 would be required for NWP 14 authorization.

28 The Fish and Wildlife Coordination Act does not apply to the proposed project because likely impacts  
29 to jurisdictional waters would not require authorization through an IP.

### 30 **6.2.5 Threatened/Endangered Species**

#### 31 No-Build Alternative

32 No effects or impacts to federally or state-listed threatened or endangered species, or SGCNs, would  
33 result from the No-Build Alternative.

#### 34 Build Alternative

#### 35 ***Endangered Species Act***

36 The Endangered Species Act (ESA) affords protection for federally listed threatened and endangered  
37 species and their habitats. State law prohibits direct harm to state-listed species. SGCNs are designated  
38 by TPWD, and may be either federally-listed or state-listed species, or have no regulatory listing status.

1 Lists of threatened and endangered species maintained by the USFWS and TPWD were consulted to  
2 determine species of potential occurrence in the vicinity of the proposed project. **Table 5** lists the  
3 federally- and state-listed threatened and endangered species, and SGCNs of potential occurrence in  
4 Montgomery County, along with habitat descriptions for each species, a determination of whether  
5 appropriate habitat for the species occurs within the project area, and a discussion of potential  
6 effects/impacts to the species. Field investigations were performed by qualified biologists in September  
7 2015.

#### 8 ***Texas Natural Diversity Database***

9 TPWD maintains the TXNDD, which provides information regarding recorded occurrences of rare species  
10 and habitats. The TXNDD was consulted on September 3, 2015, using data obtained from TPWD.  
11 Information files were reviewed for the known locations of species in the *Conroe, Conroe Northeast, Cowl*  
12 *Spur, Cut and Shoot, Keenan, Magnolia East, Montgomery, Oklahoma, Outlaw Pond, Shepard Hill, Tamina,*  
13 *and Willis* USGS 7.5-minute topographic quadrangle maps, which included the project area and  
14 surrounding vicinity.

15 Elements of Occurrence records for one mollusk species (Element of Occurrence ID Number 979) was  
16 identified within 1.5 miles of the proposed project (**Table 6**). The sandbank pocketbook (*Lampsilis satura*)  
17 is a state-listed threatened species. No habitat for this species is present within the project area, and  
18 no impacts to these species are anticipated. No managed areas were identified within 1.5 miles of the  
19 project area. It should be noted that the TXNDD cannot be used for presence/absence determinations.

**Table 5: Rare, Threatened, and Endangered Species of Potential Occurrence in Montgomery County, Texas**

Species	Federal Status	State Status	Species/Habitat Description	Habitat Present in Project Area?	Species Effect/ Impact	Pertinent Project Information
<b>Plants</b>						
Bristle nailwort <i>Paronychia setacea</i>	NL	SGCN	Flowering vascular plant endemic to eastern southcentral Texas, occurring in sandy soils	No	No impact	No saline, upland prairie grasslands on clayey loams occur within the project area.
Correll's false dragon-head <i>Physostegia correllii</i>	NL	SGCN	Wet, silty clay loams on streamsides, in creek beds, irrigation channels and roadside drainage ditches; or seepy, mucky, sometimes gravelly soils along riverbanks or small islands in the Rio Grande; or underlain by Austin Chalk limestone along gently flowing spring-fed creek in central Texas; flowering May-September	No	No impact	Project area is in historical range, though the only current population in Texas is located in Travis County.
<b>Mollusks</b>						
Louisiana pigtoe <i>Pleurobema riddellii</i>	NL	T; SGCN	Streams and moderate-size rivers; usually flowing water on substrates of mud, sand, and gravel; not generally known from impoundments; Sabine, Neches, and Trinity (historic) River basins	No	No impact	No sustainably flowing streams occur in the project area.
Sandbank pocketbook <i>Lampsilis satura</i>	NL	T; SGCN	Small to large rivers with moderate flows and swift current on gravel, gravel-sand, and sand bottoms; east Texas, Sulphur through San Jacinto River basins, Neches River	No	No impact	No rivers occur in the project area.
Texas pigtoe <i>Fusconaia askewi</i>	NL	T; SGCN	Rivers with mixed mud, sand, and fine gravel in protected areas associated with fallen trees or other structures; east Texas, Sabine through Trinity River basins, San Jacinto River	No	No impact	No rivers present in project area.
<b>Insects</b>						
Mayfly <i>Tricorythodes curvatus</i>	NL	SGCN	adult stage generally found in bankside	No	No impact	No large rivers or creeks occur in the project area.
Mayfly <i>Plauditus gloveri</i>	NL	SGCN	adult stage generally found in bankside	No	No impact	Species may occur in project area.

**Table 5: Rare, Threatened, and Endangered Species of Potential Occurrence in Montgomery County, Texas**

Species	Federal Status	State Status	Species/Habitat Description	Habitat Present in Project Area?	Species Effect/ Impact	Pertinent Project Information
Gulf Coast clubtail <i>Gomphus modestus</i>	NL	SGCN	Medium river, moderate gradient, and streams with silty sand or rocky bottoms	Yes	No impact	Streams with rocky bottoms occur in the project area and may flow during times of spawning and larval development. Larvae are generally intolerant of polluted water. Surface water quality will be protected through the use of erosion and sedimentation control BMPs during the construction phase.
Texas emerald dragonfly <i>Somatochlora margarita</i>	NL	SGCN	East Texas piney woods; spring fed creeks and bogs; small sandy forested streams with moderate current	Yes	May impact	Species may occur in project area.
<b>Fishes</b>						
Creek chubsucker <i>Erimyzon oblongus</i>	NL	T; SGCN	Tributaries of the Red, Sabine, Neches, Trinity, and San Jacinto rivers; small rivers and creeks of various types; seldom in impoundments; prefers headwaters, but seldom occurs in springs; young typically in headwater rivulets or marshes; spawns in river mouths or pools, riffles, lake outlets, upstream creeks	Yes	May impact	This species may occur in the project area. All drainages in the project area are ephemeral and highly modified. Surface water quality will be protected through the use of erosion and sedimentation control BMPs. No individuals of this species were observed during field visits.
Paddlefish <i>Polyodon spathula</i>	NL	T; SGCN	Prefers large, free-flowing rivers, but will frequent impoundments with access to spawning sites; spawns in fast, shallow water over gravel bars; larvae may drift from reservoir to reservoir	No	No impact	No rivers occur in the project area.

**Table 5: Rare, Threatened, and Endangered Species of Potential Occurrence in Montgomery County, Texas**

Species	Federal Status	State Status	Species/Habitat Description	Habitat Present in Project Area?	Species Effect/ Impact	Pertinent Project Information
<b>Amphibians</b>						
Southern crawfish frog <i>Lithobates areolatus</i>	NL	SGCN	Abandoned crawfish holes and small mammal burrows; inhabits moist meadows, pasturelands, pine scrub, and river flood plains, shallow water, herbaceous wetland, riparian, temporary pools, cropland/hedgerow, grassland/herbaceous, suburban/orchard, woodland conifer	Yes	May impact	This species may occur in the project area. No individuals of this species were observed during field visits.
<b>Reptiles</b>						
Alligator snapping turtle <i>Macrochelys temminckii</i>	NL	T; SGCN	Perennial water bodies; deep water of rivers, canals, lakes, and oxbows; swamps, bayous, and ponds near deep running water; brackish coastal waters; usually in water with mud bottom and abundant aquatic vegetation; active March-October; breeds April-October	No	No impact	No rivers occur in the project area.
Texas horned lizard <i>Phrynosoma cornutum</i>	NL	T; SGCN	Open, arid and semi-arid regions with sparse vegetation, soil varies in texture from sandy to rocky; burrows into soil, enters rodent burrows, or hides under rock when inactive; breeds March-September	No	No impact	No arid areas with sparse vegetation occur within the project area.
Timber rattlesnake <i>Crotalus horridus</i>	NL	T; SGCN	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	The species could occur within the project area. No individuals of this species were observed during field visits.
<b>Birds</b>						
American peregrine falcon <i>Falco peregrinus anatum</i>	DL	T; SGCN	Resident of west Texas, migrant across the rest of the state; winters along coast; occupies wide range of habitats during migration, including urban; stopovers at leading landscape edges	No	No impact	The species is a potential migrant.
Arctic peregrine falcon <i>Falco peregrinus tundrius</i>	DL	SGCN	Migrant throughout state from far northern breeding range, winters along coast; occupies wide range of habitats during migration, including urban; stopovers at leading landscape edges	No	No impact	The species is a potential migrant.

**Table 5: Rare, Threatened, and Endangered Species of Potential Occurrence in Montgomery County, Texas**

Species	Federal Status	State Status	Species/Habitat Description	Habitat Present in Project Area?	Species Effect/ Impact	Pertinent Project Information
Bald eagle <i>Haliaeetus leucocephalus</i>	DL	T; SGCN	Found primarily near rivers and large lakes; nests in tall trees or on cliffs near water	No	No impact	No rivers or large lakes occur within the project area.
Piping plover <i>Charadrius melodus</i>	LT	T; SGCN	Wintering migrant along the Texas Gulf Coast; beaches and bayside mud or salt flats	No	No effect	No beaches or bayside mud or salt flats occur in the project area.
Henslow's sparrow <i>Ammodramus henslowii</i>	NL	SGCN	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	No bunch grasses with bare ground occur within the project area.
Red knot <i>Calidris canutus rufus</i>	LT	SGCN	Shoreline of coast and bays and also uses mudflats during rare inland encounters; primarily seacoasts on tidal flats and beaches, herbaceous wetland, and tidal flat/shore	No	No effect	No seacoasts on tidal flats and beaches, suitable herbaceous wetlands, or tidal flat/shores occur in the project area.
Red-cockaded woodpecker <i>Picoides borealis</i>	LE	E; SGCN	Cavity nests in older pine (60+ years); forages in younger pine (30+ years); prefers longleaf, shortleaf, and loblolly pines	No	No effect	No suitable habitat occurs project area.
Least tern <i>Sterna antillarum</i>	LE	E; SGCN	Nests along sand and gravel bars within braided streams, rivers; also know to nest on man-made structures (inland beaches, wastewater treatment plants, gravel mines, etc.	No	No effect	The species is a potential migrant; the project area is not located on or adjacent to the beach.
Sprague's pipit <i>Anthus spragueii</i>	C	SGCN	Only in Texas mid-September to early April; strongly tied to native upland prairie; sensitive to patch size and avoids edges	No	No effect	No native upland prairie occurs within the project area.
White-faced ibis <i>Plegadis chihi</i>	NL	T; SGCN	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	No marshes, sloughs, or rice fields occur within the project area.
Whooping crane <i>Grus americana</i>	LE*	E; SGCN	Potential migrant via plains throughout state to coast; winters in coastal marshes	No	No effect	The species is a potential migrant; the project area is not located on or adjacent to the beach and contains no marshes.

**Table 5: Rare, Threatened, and Endangered Species of Potential Occurrence in Montgomery County, Texas**

Species	Federal Status	State Status	Species/Habitat Description	Habitat Present in Project Area?	Species Effect/ Impact	Pertinent Project Information
Wood stork <i>Mycteria americana</i>	LT*	T; SGCN	Forages in prairie ponds, flooded pastures or fields, ditches and other shallow water, including saltwater; roosts communally in tall snags in active heronries; breeds in Mexico	Yes	No effect	The species is a potential migrant; however, no nesting habitat occurs in the project area and any use would be incidental. No individuals of this species were observed during field visits.
<b>Mammals</b>						
Louisiana black bear <i>Ursus americanus luteolus</i>	LT*	T; SGCN	Possible as transient; bottomland hardwoods and large tracts of inaccessible forested areas	No	No effect	No suitable bottomland hardwoods or large tracts of inaccessible forested areas occur within the project area.
Plains spotted skunk <i>Spilogale putorius interrupta</i>	NL	SGCN	Catholic; open fields, prairies, croplands, fence rows, farmyards, forest edges, and woodlands; prefers wooded, brushy areas and tallgrass prairie	Yes	May impact	The species could occur within the project area. No individuals of this species were observed during field visits.
Rafinesque's big-eared bat <i>Cornorhinus rafinesquii</i>	NL	T; SGCN	Roosts in cavity trees of bottomland hardwoods, concrete culverts, and abandoned man-made structures	No	No impact	No bottomland hardwoods present within the project area. No individuals or evidence of occurrence was seen in culverts.
Red wolf <i>Canis rufus</i>	LE*	E	Extirpated; formerly known throughout eastern half of Texas	No	No effect	The species is extirpated.

**Table 5: Rare, Threatened, and Endangered Species of Potential Occurrence in Montgomery County, Texas**

Species	Federal Status	State Status	Species/Habitat Description	Habitat Present in Project Area?	Species Effect/ Impact	Pertinent Project Information
Southeastern myotis bat <i>Myotis austroriparius</i>	NL	SGCN	Roosts in cavity trees of bottomland hardwoods, concrete culverts, and abandoned man-made structures	No	No impact	No bottomland hardwoods present within the project area. No individuals or evidence of occurrence was seen in culverts.
Status Codes:	LE = Federally-Listed Endangered LT = Federally-Listed Threatened E = State-Listed Endangered T = State-Listed Threatened * = Species not recognized by USFWS as occurring within the project area but designated by TPWD as potentially occurring within County		SGCN = Species of Greatest Conservation Need NL = Not listed DL = Delisted C = Candidate for listing			

Sources:

Texas Parks and Wildlife Department (TPWD). *Annotated County Lists of Rare Species: Montgomery County* (last revision 3/23/2015). <http://www.tpwd.state.tx.us/gis/ris/es/>, accessed September 3, 2015.

U.S. Fish and Wildlife Service (USFWS). IPaC report for project area. <http://ecos.fws.gov/ipac/>, accessed September 3, 2015.

Center for Plant Conservation: CPC National Collection Plant Profile-*Physostegia correllii*. [http://www.centerforplantconservation.org/Collection/CPC\\_ViewProfile.asp?CPCNum=3448](http://www.centerforplantconservation.org/Collection/CPC_ViewProfile.asp?CPCNum=3448), accessed October 26th, 2015.

Table 6: Elements of Occurrence from TXNDD Within 1.5 Miles of the Proposed Project				
Element of Occurrence Number	Species Name	Listing Status		Approximate Distance and Direction from the Project
		Federal	State	
9793	Sandbank pocketbook <i>Lampsilis satura</i>	NL	T	0.36-mile west

1 **Effects to Federally-Listed Threatened and Endangered Species**

2 The project would have no effect on federally-listed threatened or endangered species.

3 **Impacts to State-listed Species**

4 Habitat is present for three state-threatened species: creek chubsucker (*Erimyzon oblongus*), timber  
5 rattlesnake (*Crotalus horridus*), and Wood stork (*Mycteria americana*). No individuals of these species  
6 were identified during field investigations. Although individuals of these species may be impacted, the  
7 species as a whole are not likely to be adversely impacted.

8 **Impacts to SGCNs**

9 Additionally, habitat is present for four SGCNs: Gulf Coast clubtail (*Gomphus modestus*), Texas emerald  
10 dragonfly (*Somatochlora margarita*), southern crawfish frog (*Lithobates areolatus areolatus*), and plains  
11 spotted skunk (*Spilogale putorius interrupta*). No individuals of these species were identified during field  
12 investigations. Although individuals of these species may be impacted, the species as a whole are not  
13 likely to be adversely impacted.

14 **BMPs for State-listed Species and SGCNs**

15 In accordance with the *Best Management Practices Programmatic Agreement between TxDOT and TPWD*  
16 *Under the 2013 MOU*, BMPs have been defined to be implemented by TxDOT in order to minimize  
17 impacts to federally- and state-listed species and SGCNs. **Table 7** lists those BMPs related to species  
18 that may be impacted by the proposed project.

19 No BMPs have been established for the potentially impacted SGCNs Gulf Coast clubtail, Texas emerald  
20 dragonfly, or southern crawfish frog.

Table 7: BMPs for State-listed Species and SGCNs	
Species Name	BMP
<i>State-listed Species</i>	
Creek chubsucker	<ul style="list-style-type: none"> <li>For projects within the range of a SGCN or State-Listed fish and work is adjacent to water: Water Quality BMPs for SW3P and 401 water quality only. No TPWD Coordination required.</li> <li>For projects within the range of a SGCN or State-Listed fish, and work is in the water: TPWD coordination required.</li> </ul>
Timber rattlesnake	<ul style="list-style-type: none"> <li>Contractors will be advised of potential occurrence in the project area, and to avoid harming the species if encountered.</li> </ul>

Table 7: BMPs for State-listed Species and SGCNs	
Wood stork	<ul style="list-style-type: none"> <li>Not disturbing, destroying, or removing active nests, including ground nesting birds, during the nesting season</li> <li>Avoiding the removal of unoccupied, inactive nests, as practicable</li> <li>Preventing the establishment of active nests during the nesting season on TxDOT owned and operated facilities and structures proposed for replacement or repair</li> <li>Not collecting, capturing, relocating, or transporting birds, eggs, young, or active nests without a permit.</li> </ul>
<i>Species of Greatest Conservation Need</i>	
Plains spotted skunk	<ul style="list-style-type: none"> <li>Contractors will be advised of potential occurrence in the project area, to avoid harming the species if encountered, and to avoid unnecessary impacts to dens.</li> </ul>

1 Source: *Best Management Practices Programmatic Agreement between TxDOT and TPWD Under the 2013 MOU.*

## 2 **6.2.6 Air Quality**

### 3 No-Build Alternative

4 Implementation of the No-Build Alternative would lead to increased traffic congestion and decreased  
5 mobility, resulting in decreased vehicular speed and increased stop-and-go traffic. The No-Build  
6 Alternative is inconsistent with the 2040 RTP, which contains specific projects, programs, and policies  
7 intended to improve mobility, access, and air quality in the Houston-Galveston Area.

### 8 Build Alternative

9 The proposed project is included in the H-GAC's financially constrained 2040 RTP and 2015-2018 TIP,  
10 as amended, which were initially found to conform to the TCEQ State Implementation Plan (SIP) by the  
11 U.S. DOT (FHWA/Federal Transit Authority) on January 25, 2011 and December 2, 2014, respectively.  
12 A copy of the RTP and TIP pages are included in **Appendix C**. All projects in the HGAC TIP that are  
13 proposed for federal or state funds were initiated in a manner consistent with federal guidelines in  
14 Section 450, of Title 23 CFR and Section 613.200, Subpart B, of Title 49 CFR. The proposed project is  
15 consistent with this conformity determination because it is included in the 2015-2018 TIP.

16 The proposed project is located in Montgomery County, which is part of the Houston-Galveston-Brazoria  
17 (HGB) area designated by the U.S. Environmental Protection Agency (EPA) as a marginal nonattainment  
18 area for ozone national ambient air quality standards (NAAQS); therefore, transportation conformity  
19 rules apply. The FHWA determined project-level conformity on February 22, 2016.

20 The project is not located within a CO or PM nonattainment or maintenance area; therefore, a project  
21 level hot-spot analysis is not required.

### 22 **Traffic Air Quality Analysis**

23 Traffic data for 2016 is projected to be 10,900 vpd. Traffic data for the design year (2036) is  
24 projected to be 14,900 vpd. A prior TxDOT modeling study and previous analyses of similar projects  
25 demonstrated that it is unlikely that a carbon monoxide standard would ever be exceeded as a result  
26 of any project with an Annual Average Daily Traffic (AADT) below 140,000 vpd. The AADT projections  
27 for the project do not exceed 140,000 vpd; therefore, a Traffic Air Quality Analysis is not required.

**Congestion Management Process**

The congestion management process (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 H-GAC’s operational CMP, which meets all requirements of 23 CFR 500.109. The CMP was adopted by H-GAC on January 25, 2013.

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 H-GAC; they are included in the financially constrained 2035 RTP Update, 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 consist of signalization and intersection improvements. Individual projects are listed in **Table 8**.

Table 8: Congestion Management Process Strategies		
Location	Type	Implementation Date
IH 45, Loop 336 to Harris County Line	Reconstruction to add 2 HOV Lanes	2015
Conroe Park-N-Ride, IH 45 at FM 2854	Park-And-Ride Lot Construction	2015
Multiple Locations	Access Management	2015
Multiple Locations	Pedestrian/Bicycle Facilities, Medians, and Transit Stops	2015 - 2023
Conroe College, Downtown Terminals	Construct Bus Terminals	2025

Source: H-GAC 2015-2018 TIP

In an effort to reduce congestion and the need for SOV lanes in the region, TxDOT and H-GAC will continue to promote appropriate congestion reduction strategies through the Congestion Mitigation and Air Quality (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 H-GAC.

**Mobile Source Air Toxics**

Background

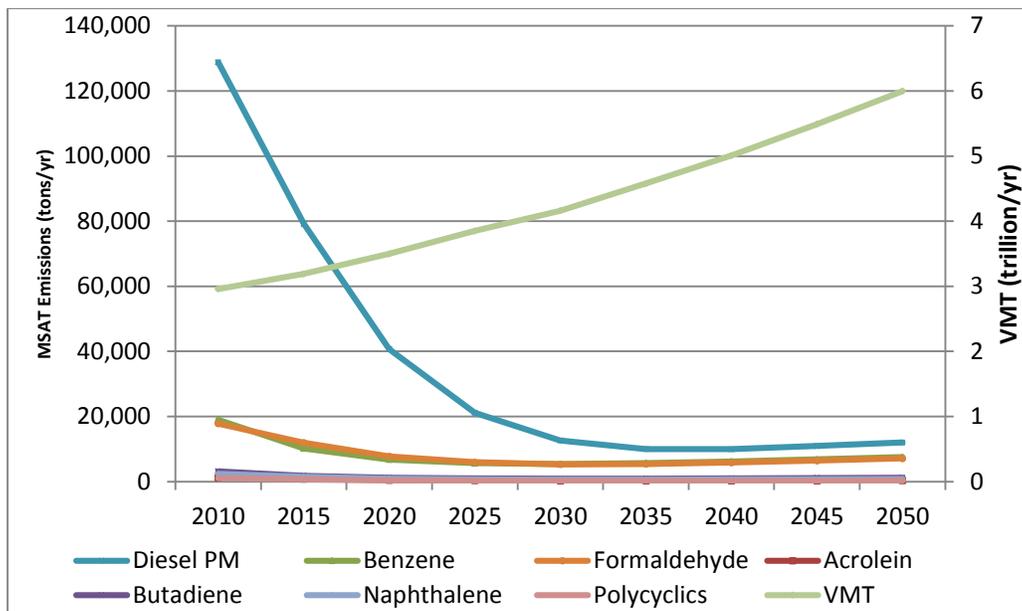
Controlling air toxic emissions became a national priority with the passage of the Clean Air Act Amendments (CAAA) of 1990, whereby Congress mandated that the EPA regulate 188 air toxics, also known as hazardous air pollutants. The EPA has assessed this expansive list in their latest rule on the Control of Hazardous Air Pollutants from Mobile Sources (Federal Register, Vol. 72, No. 37, page 8430,

1 February 26, 2007), and identified a group of 93 compounds emitted from mobile sources that are  
 2 listed in their Integrated Risk Information System (IRIS) (<http://www.epa.gov/iris/>). In addition, EPA  
 3 identified seven compounds with significant contributions from mobile sources that are among the  
 4 national and regional-scale cancer risk drivers from their 1999 National Air Toxics Assessment (NATA)  
 5 (<http://www.epa.gov/ttn/atw/nata1999/>). These are acrolein, benzene, 1,3-butadiene, diesel  
 6 particulate matter plus diesel exhaust organic gases (diesel PM), formaldehyde, naphthalene, and  
 7 polycyclic organic matter. While FHWA considers these the priority mobile source air toxics, the list is  
 8 subject to change and may be adjusted in consideration of future EPA rules.

9 The 2007 EPA Mobile Source Air Toxics (MSAT) rule mentioned above requires controls that will  
 10 dramatically decrease MSAT emissions through cleaner fuels and cleaner engines. Based on an FHWA  
 11 analysis using EPA’s MOVES2010b model, as shown in **Exhibit 1** and **Table 9**, even if vehicle-miles  
 12 travelled (VMT) increases by 102% as assumed from 2010 to 2050, a combined reduction of 83% in  
 13 the total annual emissions for the priority MSAT is projected for the same time period.

14  
15  
16

**Exhibit 1: Projected National MSAT Emission Trends 2010–2050  
for Vehicles Operating on Roadways Using EPA’s MOVES2010b Model**



17  
18  
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21  
22

Source: **Error! Reference source not found.** below.  
 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, meteorology, and other factors.

1

Table 9: Projected National MSAT Emission Trends 2010–2050 for Vehicles Operating on Roadways Using EPA’s MOVES2010b Model										
Pollutant / VMT	Pollutant Emissions (tons) and Vehicle-Miles Traveled (VMT) by Calendar Year									% Change 2010 to 2050
	2010	2015	2020	2025	2030	2035	2040	2045	2050	
Acrolein	1,244	805	476	318	258	247	264	292	322	-74
Benzene	18,995	10,195	6,765	5,669	5,386	5,696	6,216	6,840	7,525	-60
Butadiene	3,157	1,783	1,163	951	890	934	1,017	1,119	1,231	-61
Diesel PM	128,847	79,158	40,694	21,155	12,667	10,027	9,978	10,942	11,992	-91
Formaldehyde	17,848	11,943	7,778	5,938	5,329	5,407	5,847	6,463	7,141	-60
Naphthalene	2,366	1,502	939	693	607	611	659	727	802	-66
Polycyclics	1,102	705	414	274	218	207	219	240	262	-76
Trillions VMT	2.96	3.19	3.5	3.85	4.16	4.58	5.01	5.49	6.0	102

2 Source: EPA MOVES2010b model runs conducted during May–June 2012 by FHWA.

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

12 A qualitative analysis provides a basis for identifying and comparing the potential differences among  
 13 MSAT emissions, if any, from the various alternatives. The qualitative assessment presented below is  
 14 derived in part from a study conducted by the FHWA entitled *A Methodology for Evaluating Mobile*  
 15 *Source Air Toxic Emissions Among Transportation Project Alternatives*, found at:  
 16 [http://www.fhwa.dot.gov/environment/air\\_quality/air\\_toxics/research\\_and\\_analysis/mobile\\_source](http://www.fhwa.dot.gov/environment/air_quality/air_toxics/research_and_analysis/mobile_source_air_toxics/msatemissions.pdf)  
 17 [air\\_toxics/msatemissions.pdf](http://www.fhwa.dot.gov/environment/air_quality/air_toxics/research_and_analysis/mobile_source_air_toxics/msatemissions.pdf).

18 For the Build and No-Build Alternatives, the amount of MSAT emitted would be proportional to the  
 19 vehicle miles traveled, or VMT, assuming that other variables such as fleet mix are the same for each  
 20 alternative. The VMT estimated for the Build Alternative is slightly higher than that for the No-Build  
 21 Alternative, because the additional capacity increases the efficiency of the roadway and attracts  
 22 rerouted trips from elsewhere in the transportation network. This increase in VMT would lead to higher  
 23 MSAT emissions for the preferred action alternative along the roadway corridor, along with a  
 24 corresponding decrease in MSAT emissions along the parallel routes. The emissions increase is offset  
 25 somewhat by lower MSAT emission rates due to increased speeds; according to EPA's MOVES2010b  
 26 model, emissions of all of the priority MSAT decrease as speed increases. Also, regardless of the  
 27 alternative chosen, emissions will likely be lower than present levels in the design year as a result of  
 28 EPA's national control programs that are projected to reduce annual MSAT emissions by over 80 percent  
 29 between 2010 and 2050. Local conditions may differ from these national projections in terms of fleet  
 30 mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-

1 projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study  
2 area are likely to be lower in the future in nearly all cases.

3 The additional travel lanes contemplated as part of the Build Alternative will have the effect of moving  
4 some traffic closer to nearby homes and businesses; therefore, there may be localized areas where  
5 ambient concentrations of MSAT could be higher under the Build Alternative than the No-Build  
6 Alternative. The localized increases in MSAT concentrations would likely be most pronounced to the  
7 south of the expanded roadway under the Build Alternative. However, the magnitude and the duration  
8 of these potential increases compared to the No-Build Alternative cannot be reliably quantified due to  
9 incomplete or unavailable information in forecasting project-specific MSAT health impacts. In sum, when  
10 a highway is widened, the localized level of MSAT emissions for the Build Alternative could be higher  
11 relative to the No-Build Alternative, but this could be offset due to increases in speeds and reductions  
12 in congestion (which are associated with lower MSAT emissions). Also, MSAT will be lower in other  
13 locations when traffic shifts away from them. However, on a regional basis, EPA's vehicle and fuel  
14 regulations, coupled with fleet turnover, will over time cause substantial reductions that, in almost all  
15 cases, will cause region-wide MSAT levels to be significantly lower than today.

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

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

30 Other organizations are also active in the research and analyses of the human health effects of MSAT,  
31 including the HEI. Two HEI studies are summarized in Appendix D of FHWA's *Interim Guidance Update*  
32 *on Mobile Source Air Toxic Analysis in NEPA Documents*. Among the adverse health effects linked to  
33 MSAT compounds at high exposures include cancer in humans in occupational settings, cancer in animals,  
34 and irritation to the respiratory tract, including the exacerbation of asthma. Less obvious is the adverse  
35 human health effects of MSAT compounds at current environmental concentrations (HEI,  
36 <http://pubs.healtheffects.org/view.php?id=282>) or in the future as vehicle emissions substantially  
37 decrease (HEI, <http://pubs.healtheffects.org/view.php?id=306>).

38 The methodologies for forecasting health impacts include emissions modeling; dispersion modeling;  
39 exposure modeling; and then final determination of health impacts – each step in the process building  
40 on the model predictions obtained in the previous step. All are encumbered by technical shortcomings  
41 or uncertain science that prevents a more complete differentiation of the MSAT health impacts among  
42 a set of project alternatives. These difficulties are magnified for lifetime (i.e., 70-year) assessments,  
43 particularly because unsupportable assumptions would have to be made regarding changes in travel

1 patterns and vehicle technology (which affects emissions rates) over that time frame, since such  
2 information is unavailable.

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

7 There are considerable uncertainties associated with the existing estimates of toxicity of the various  
8 MSAT, because of factors such as low-dose extrapolation and translation of occupational exposure  
9 data to the general population, a concern expressed by HEI ([http://pubs.healtheffects.org/  
10 view.php?id=282](http://pubs.healtheffects.org/view.php?id=282)). As a result, there is no national consensus on air dose-response values assumed to  
11 protect the public health and welfare for MSAT compounds, and in particular for diesel PM. The EPA  
12 (<http://www.epa.gov/risk/basicinformation.htm#g>) and the HEI ([http://pubs.healtheffects.org/  
13 getfile.php?u=395](http://pubs.healtheffects.org/getfile.php?u=395)) have not established a basis for quantitative risk assessment of diesel PM in ambient  
14 settings.

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

28 Information is incomplete or unavailable to establish that even the largest of highway projects would  
29 result in levels of risk greater than deemed acceptable. Because of the limitations in the methodologies  
30 for forecasting health impacts described, any predicted difference in health impacts between  
31 alternatives is likely to be much smaller than the uncertainties associated with predicting the impacts.  
32 Consequently, the results of such assessments would not be useful to decision makers, who would need  
33 to weigh this information against project benefits, such as reducing traffic congestion, accident rates,  
34 and fatalities plus improved access for emergency response, that are better suited for quantitative  
35 analysis.

36 In conclusion, a qualitative MSAT assessment has been provided relative to the Build and No-Build  
37 Alternatives of MSAT emissions and has acknowledged that both the Build and No-Build Alternatives  
38 may result in increased exposure to MSAT emissions in certain locations, although the concentrations and  
39 duration of exposures are uncertain, and because of this uncertainty, the health effects from these  
40 emissions cannot be estimated.

1 **Air Quality Construction Emissions Reduction Strategies**

2 During the construction phase of this project, temporary increases in air pollutant emissions may occur  
3 from construction activities. The primary construction-related emissions are particulate matter (fugitive  
4 dust) from site preparation. These emissions are temporary in nature (only occurring during actual  
5 construction); it is not possible to reasonably estimate impacts from these emissions due to limitations of  
6 the existing models. However, the potential impacts of particulate matter emissions will be minimized  
7 by using fugitive dust control measures such as covering or treating disturbed areas with dust suppression  
8 techniques, sprinkling, covering loaded trucks, and other dust abatement controls, as appropriate.

9 The construction activity phase of this project may generate a temporary increase in MSAT emissions  
10 from construction activities, equipment and related vehicles. The primary MSAT construction-related  
11 emissions are particulate matter from site preparation and diesel particulate matter from diesel-  
12 powered construction equipment and vehicles. The Texas Emissions Reduction Plan (TERP) includes  
13 incentive programs to encourage the development of multi-pollutant approaches to ensure that the air  
14 in Texas is both safe to breathe and meets minimum federal standards. TxDOT encourages construction  
15 contractors to utilize this program to the fullest extent possible to minimize diesel emissions. Information  
16 about the TERP program can be found at: <http://www.tceq.state.tx.us/implementation/air/terp/>.

17 However, considering the temporary and transient nature of construction-related emissions, as well as  
18 the mitigation actions to be utilized, it is not anticipated that emissions from construction of this project  
19 will have any significant impact on air quality in the area.

20 **6.2.7 Traffic Noise**

21 No-Build Alternative

22 Highway traffic is the dominant source of noise in developed areas adjacent to the proposed project.  
23 Under the No-Build Alternative, project-related noise impacts would not occur because the improvements  
24 would not be constructed.

25 Build Alternative

26 A traffic noise analysis was conducted in accordance with TxDOT's (FHWA approved) *Guidelines for*  
27 *Analysis and Abatement of Roadway Traffic Noise* (2011) (see the 2015 Traffic Noise Technical Report).

28 Existing and predicted traffic noise levels were modeled at nine receiver locations (see Traffic Noise  
29 Technical Report) that represent the land use activity areas adjacent to the proposed project that might  
30 be impacted by traffic noise and potentially benefit from feasible and reasonable noise abatement.  
31 Two receivers were churches and the remaining seven receivers were residences.

32 The proposed project would result in a traffic noise impact at one representative receiver, R6, a  
33 residence. No other receivers showed noise impacts. The following noise abatement measures were  
34 considered for receiver R6: traffic management, alteration of horizontal and/or vertical alignments,  
35 acquisition of undeveloped property to act as a buffer zone and the construction of noise walls.

36 Before any abatement measure can be proposed for incorporation into the project, it must be both  
37 feasible and reasonable. In order to be "feasible," the abatement measure must be able to reduce the  
38 noise level at greater than 50 percent of impacted, first row receivers by at least five decibels (A  
39 weighted) (dB(A)); and to be "reasonable," it must not exceed the cost-effectiveness criterion of  
40 \$25,000 for each receiver that would benefit by a reduction of at least five dB(A) and the abatement

1 measure must be able to reduce the noise level at least one impacted, first row receiver by at least  
2 seven dB(A).

3 One receiver, R6, is a separate, individual residence. Noise walls that would achieve the minimum  
4 feasible reduction of 5 dB(A) while achieving a 7 dB(A) noise reduction design goal at this receiver  
5 would exceed the reasonable, cost-effectiveness criterion of \$25,000. None of the noise abatement  
6 measures would be both feasible and reasonable; therefore, no abatement measures are proposed for  
7 this project. Please refer to the 2015 Traffic Noise Technical Report for further details.

8 Noise associated with the construction of the project is difficult to predict. Heavy machinery, the major  
9 source of noise in construction, is constantly moving in unpredictable patterns. However, construction  
10 normally occurs during daylight hours when occasional loud noises are more tolerable. None of the  
11 receivers are expected to be exposed to construction noise for a long duration; therefore, any extended  
12 disruption of normal activities is not expected. Provisions will be included in the plans and specifications  
13 that require the contractor to make every reasonable effort to minimize construction noise through  
14 abatement measures such as work-hour controls and proper maintenance of muffler systems.

### 15 **6.2.8 Community Impact Assessment**

16 The following section summarizes the findings of the *2015 Community Impacts Assessment Technical*  
17 *Report* prepared for this project.

#### 18 Community Profile

19 The proposed project is located in the western portion of the city of Conroe, in central Montgomery  
20 County. The project area links commuters from western and northwestern portions of the county  
21 surrounding Lake Conroe, and the cities of Montgomery and Conroe. FM 2854 also provides an  
22 additional east-west route into the city south of Lake Conroe. For the purposes of this analysis, the  
23 community profile study area is defined as parcels adjacent to the FM 2854 roadway within the project  
24 limits. Along FM 2854 in the study area, the land use is a mix of commercial, institutional, single-family  
25 residential, and undeveloped parcels (see **Figure 9**).

26 The H-GAC develops a Regional Growth Forecast, including population, employment, and land use for  
27 an eight-county area. According to the H-GAC projections, the city of Conroe and Montgomery County  
28 are anticipated to see strong growth between 2010 and 2040. A majority of the Census tracts within  
29 the project area are anticipated to see strong growth between 2010 and 2040. Two of the five project  
30 area Census tracts are projected to outpace the growth of Harris County and the city of Conroe as a  
31 whole.

32 Data from the 2010 Census for the populated census blocks that are traversed or are immediately  
33 adjacent to the proposed project indicates that minority populations ranged from 19.5 to 100 percent  
34 (see **Figure 10**). The parent Census block groups reported minority populations ranging from 18.1  
35 percent to 93.1 percent. There are eight Census blocks within the study area with populations of minority  
36 persons equal to or exceeding 50 percent. The 2009-2013 American Community Survey indicates that  
37 the median household income in the past 12 months within the block groups traversed by the proposed  
38 project ranges from \$30,729 to \$72,356.

1 Community Impacts

2 **No-Build Alternative**

3 Implementation of the No-Build Alternative would not require right-of-way acquisition, relocations, or  
4 displacements, and would not affect access and travel patterns or community cohesion.

5 **Build Alternative**

6 The Build Alternative would require the acquisition of approximately 4.1 acres of right-of-way, including  
7 land for two detention ponds, 3.5 acres of common ditch boundaries, 0.1-acre of driveway  
8 improvements to adjacent properties, and areas where riprap would be placed. The proposed project  
9 is not anticipated to require residential or commercial relocations. No community or public facilities  
10 would be displaced by the project.

11 TxDOT would be responsible for right-of-way acquisitions. Acquisition and relocation assistance would  
12 be in accordance with the TxDOT Right-of-Way Acquisition and Relocation Assistance Program, U.S.  
13 Department of Transportation policy, and the Uniform Relocation Assistance and Real Property  
14 Acquisition Act, as amended in 1987. All property owners from whom property is needed are entitled  
15 to receive just compensation for their land and property. Just compensation is based on the fair market  
16 value of the property.

17 The Build Alternative is anticipated to maintain access to adjacent properties at all times, and no  
18 permanent detours are anticipated. Temporary construction detours proposed are anticipated during  
19 intersection improvement construction at Pinewood Drive and Royal College Hill Road.

20 During construction of the Pinewood Drive intersection, only local traffic would be allowed to travel on  
21 Pinewood Drive from FM 2854 to Lost Pine Court. All neighborhood traffic from the Pinewood Forest  
22 and Artesian Forest subdivisions would be detoured south and west along either Magnolia Lane or  
23 Maple Lane to Riverbend. Eventually these detours would lead vehicles to the intersection of Owen  
24 Drive and LP 336, south of the interchange of LP 336 and FM 2854 (PGAL 2015a). The communities  
25 present in these subdivisions are not located in census blocks that contain minority populations.

26 During construction of the Royal College Hill Drive intersection, all traffic would be detoured from Little  
27 John, Williams Street, and/or Tucker Roads north to Royal College Hill Road or south to Anderson Road.  
28 Traffic would be able to access FM 2854 from Sargent Ed Holcomb Boulevard. The intersection  
29 improvements at Royal College Hill Road are anticipated to last one weekend, with work starting after  
30 7:00 pm on Friday and ending before 5:00 am the following Monday. Fast-track concrete will be used  
31 (PGAL 2015b). The communities present adjacent to the intersection improvements contain minority  
32 populations (Census Tract 6936/Block 2017).

33 Permanent right-of-way acquisition is proposed near the intersection of LP 336 and FM 2854, including  
34 an area that is currently owned by the Jones Chapel Baptist Church. The property owned by the church  
35 is outside of their existing parking lot in between two driveway access points. The area impacted at  
36 the church is not anticipated to affect church operations or amenities. The census block in the LP 336/FM  
37 2854 area does not show a minority population present in this area.

38 Permanent right-of-way acquisition is also proposed for two drainage ponds. The westernmost pond is  
39 not located within a census block group that exhibits minority populations. The easternmost pond is  
40 located immediately adjacent to Alligator Creek. This eastern pond is located within Census Tract

1 6936/Block Group 2/Block 2017, which contains minority populations. The location of the ponds was  
2 chosen based on hydrological and hydraulic characteristics of the drainage basin, along with its  
3 proximity to Alligator Creek and other waterbodies within the project area.

4 The existing community in the area traversed by the Build Alternative is characterized by a mix of  
5 commercial, institutional, and residential uses. Outside of the Artesian Forest and Pinewood Forest  
6 subdivisions, and near Royal College Hill Road, residences are scattered throughout the project area,  
7 including a few residences abutting the existing FM 2854 right-of-way. The existing FM 2854 roadway,  
8 along with the BNSF railroad, currently divide the project area from these subdivisions and residences.  
9 No residential subdivisions span the FM 2854 roadway. No permanent changes in travel patterns and  
10 access are anticipated as a result of the proposed improvements due to the addition of two main lanes  
11 with a flush median. The proposed project would not substantially change the way local area residents  
12 access other parts of the community or participate in local activities. Temporary detours would allow  
13 local area residents to access these areas and activities. The proposed improvements would not affect,  
14 separate, or isolate any distinct neighborhoods, ethnic groups, or other specific groups, as FM 2854 is  
15 an existing major thoroughfare. TxDOT has and will continue to facilitate communication with the general  
16 public, adjacent property owners, business owners, residents, neighborhood groups, and public officials  
17 with interests along FM 2854.

#### 18 Environmental Justice

19 An environmental justice analysis was conducted in accordance with Presidential EO 12898, FHWA  
20 Order 6640.23A, and U.S. Department of Transportation Order 5610(a) (see the Socioeconomic  
21 Technical Report for more details). These regulations call for federal agencies to identify and address,  
22 as appropriate, disproportionately high and adverse human health or environmental effects of a project  
23 on minority and low-income populations.

24 FHWA Order 6640.23A defines a minority as a person who is:

- 25 • Black: a person having origins in any of the black racial groups of Africa;
- 26 • Hispanic or Latino: a person of Mexican, Puerto Rican, Cuban, Central or South American, or  
27 other Spanish culture or origin, regardless of race;
- 28 • Asian American: a person having origins in any of the original peoples of the Far East, Southeast  
29 Asia, or the Indian subcontinent;
- 30 • American Indian and Alaska Native: a person having origins in any of the original people of  
31 North America, South America (including Central America), and who maintains cultural  
32 identification through tribal affiliation or community recognition; or
- 33 • Native Hawaiian and Other Pacific Islander: people having origins in any of the original  
34 peoples of Hawaii, Guam, Samoa, or other Pacific Islands.

35 Low-income is defined as a household income at or below the U.S. Department of Health and Human  
36 Services (DHHS) poverty guidelines. In 2016, the DHHS poverty guideline for a four-person family is  
37 \$24,300. There are no project-area block groups with incomes below this level.

1 **No-Build Alternative**

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

4 **Build Alternative**

5 Environmental justice populations and all of the users of the FM 2854 facility would benefit from the  
6 proposed improvements. The benefits associated with the proposed project would include increased  
7 capacity, improved traffic operations, improved drainage, and enhanced safety.

8 Temporary detours during construction at the Pinewood Drive intersection would have no effect to  
9 minority populations. The Royal College Hill Drive intersection improvements are located within blocks  
10 that contain minority populations. Both temporary detour plans do not restrict access to facilities or other  
11 businesses along FM 2854 during construction. The siting of detention pond locations and additional  
12 proposed right-of-way was chosen based on hydraulic, hydrologic, and other engineering  
13 considerations to ensure a project design that benefitted public health, safety, and welfare. Adverse  
14 effects to minority or low-income populations are not anticipated.

15 The proposed project would not isolate any persons, groups, or neighborhoods and would not cause  
16 any change in community cohesion. The proposed project would not directly affect major employers,  
17 and the regional economic effects associated with the proposed Build Alternative would be beneficial  
18 for the overall community. The Build Alternative would not result in the displacement or relocations of  
19 business or residential structures. The Build Alternative would not cause disproportionately high and  
20 adverse effects on any minority populations or low-income populations consistent with EO 12898  
21 regarding environmental justice.

22 Limited English Proficiency

23 **No-Build Alternative**

24 Under both the No-Build and Build alternatives, Limited English Proficiency (LEP) individuals would be  
25 afforded the opportunity to participate in the decision-making process as discussed below.

26 **Build Alternative**

27 EO 13166, Improving Access to Services for Persons with Limited English Proficiency, requires agencies  
28 to examine the services they provide, identify any need for services to those with LEP, and develop and  
29 implement a system to provide those services so that LEP persons can have meaningful access to them.  
30 This EO requires federal agencies to work to ensure that recipients of federal financial assistance  
31 provide meaningful access to their LEP applicants and beneficiaries. Failure to ensure that LEP persons  
32 can effectively participate in or benefit from federally assisted programs and activities may violate the  
33 prohibition under Title VI of the Civil Rights Restoration Act of 1987 and Title VI regulations.

34 Within the population that is five years of age and older, persons who speak English less than “very  
35 well” are considered to have a limited English proficiency. The LEP populations in the individual Census  
36 block groups within the project area range from approximately 0 to 56.9 percent of the total  
37 population. Reasonable steps would be taken to ensure that all persons have meaningful access to the  
38 programs, services, and information TxDOT provides. Public involvement activities completed for the  
39 project are discussed in **Section 10.0** and included Spanish language accommodations. Future public  
40 involvement information and/or materials would be made available in English and Spanish as necessary,

1 and a translator (for language or other special communication needs) would be provided upon request.  
2 Therefore, the requirements of EO 13166 appear to be satisfied.

### 3 **6.2.9 Cultural Resources**

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

#### 13 Non-Archeological Historic Resources

##### 14 **No-Build Alternative**

15 Under the No-Build Alternative, additional right-of-way would not be acquired; therefore, no impacts  
16 to historic resources are anticipated.

##### 17 **Build Alternative**

18 A review of the National Register of Historic Places (NRHP), the list of State Antiquities Landmarks, and  
19 the list of Recorded Texas Historic Landmarks indicated no previously identified resources located within  
20 the area of potential effects (APE), which was defined as a 500-foot buffer from the proposed or  
21 existing right-of-way in the 2004 historic resources reconnaissance survey. Additionally, there are no  
22 Official Texas Historical Markers in the APE.

23 The 2004 historic resources reconnaissance survey (same CSJ) identified 18 buildings, 14 structures, 1  
24 non-archeological site, and 1 potential historic district (Royal College Hill neighborhood) constructed in  
25 1958 or earlier within the project's APE. An intensive-level historic resources survey of the Royal College  
26 Hill neighborhood was conducted in 2006 to determine if the neighborhood met the criteria for NRHP  
27 listing for its associations with a former freedman's community. However, research and survey yielded  
28 no evidence of a freedmen's community and the neighborhood was determined not eligible for NRHP  
29 listing. No other historic-age resources were recommended eligible for NRHP listing.

30 Pursuant to Stipulation VI "Undertakings with Potential to Cause Effects" of the First Amended Statewide  
31 PA for Cultural Resources between the FHWA, the SHPO, the Advisory Council on Historic Preservation,  
32 and TxDOT and the MOU, TxDOT historians determined in 2007 that there are no historic properties  
33 located within the APE of the proposed project. Therefore, individual project coordination with the  
34 SHPO was not required. In 2015, TxDOT historians reassessed the proposed new right-of-way,  
35 easement, and detention pond locations and a 150-foot APE for NRHP-eligible historic resources  
36 constructed in 1971 or earlier due to the passage of time since the previous historic resources survey.  
37 TxDOT historians determined there are no NRHP eligible resources within the APE, and cleared the  
38 project for non-archeological historic resources on July 31, 2015.

1 Archeological Resources

2 **No-Build Alternative**

3 Under the No-Build Alternative, no impacts to archeological sites are anticipated.

4 **Build Alternative**

5 An intensive archeological survey with shovel testing was conducted in October 2015 and included the  
6 proposed detention pond locations. Archival review determined that no recorded archeological  
7 properties were located within the APE for the proposed project. There are no recorded sites within  
8 approximately 3,300 feet of the proposed project APE. Relict deposits were found to be extensively  
9 disturbed from development and previous construction. No cultural materials were recorded and the  
10 APE was found to be extensively disturbed. No further archeological investigation was needed. The  
11 results of the intensive archeological survey are documented in *Report for Archeological Survey, FM*  
12 *2854 Expansion Project: Loop 336 to IH 45, Montgomery County, Texas, Houston District* (SWCA 2015).

13 TxDOT initiated coordination under Section 106 of the NHPA, the Programmatic Agreement with TxDOT,  
14 SHPO, FHWA, ACHP and the Antiquities Code of Texas (MOU between THC and TxDOT) on December  
15 10, 2015. TxDOT recommended that the project be allowed to proceed to construction. The THC/SHPO  
16 concurred with this recommendation on December 18, 2015 (**Appendix D**).

17 No public controversy exists regarding the project's potential impacts on archeological sites or  
18 cemeteries. In the event that unanticipated archeological deposits are encountered during construction,  
19 work in the immediate area would cease, and TxDOT archeological staff would be contacted to initiate  
20 post-review discovery procedures.

21 **6.2.10 Section 4(f) and Section 6(f)**

22 No-Build Alternative

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

25 Build Alternative

26 The proposed project would not require the use of, nor substantially impair the purposes of, any publicly  
27 owned land from a public park recreational area, wildlife or waterfowl refuge, or historic site of  
28 national, state, or local significance protected by Section 4(f) of the U.S. Department of Transportation  
29 Act of 1966. The proposed project would not require the acquisition of any land within park areas  
30 subject to Section 6(f).

31 **6.2.11 Hazardous Materials**

32 No-Build Alternative

33 Under the No-Build Alternative, no impacts from hazardous materials are anticipated.

34 Build Alternative

35 Twenty-one hazardous materials sites were identified by means of a database search through Banks  
36 Environmental Data, and of those 21 sites of concern, nine sites were identified in the Initial Site  
37 Assessment (ISA). The database search was conducted for the proposed project on April 28, 2015 (see

1 **Table 10).** Banks Environmental Data provides a unique identifier for each site found in their database  
2 searches.

<b>Table 10: Hazardous Materials Database Search Results</b>			
<b>Database Abbreviation</b>	<b>Database</b>	<b>Distance Searched (miles)</b>	<b># of Sites Found</b>
NPL	National Priorities List Facilities	1.0	0
Federal Delisted NPL	Delisted National Priorities List Facilities	0.5	0
Federal CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System	0.5	0
Federal CERCLIS NFRAP	CERCLIS No Further Remedial Action Planned	0.5	0 1 unmapped
Federal RCRA CORRACTS	Resource Conservation and Recovery Information System – Corrective Action	1.0	0
Federal RCRA TSD	RCRA – Non-CORRACTS Treatment Storage or Disposal	0.5	0
FED IC	Federal Institutional Control	0.5	0
Federal RCRA – GEN	RCRA – Generators	Property and adjoining properties	2
Federal ERNS	Emergency Response Notification System List	Property only	0
IHW	Industrial Hazardous Waste	One mile	9 All sites are inactive
TCEQ Superfund	Superfund sites	One mile	0
SWLF	State/Tribal Disposal or Landfill	One-half mile	0
LPST	State/Tribal Leaking Storage Tank	One-half mile	2
PST	State/Tribal Storage Tank	Property and adjoining properties	4
VCP	State/Tribal VCP	One-half mile	0
TCEQ IOP	Innocent Owner/Operator sites	One-half mile	0
DRYC	Dry Cleaners	One-half mile	0
FED BWN	Federal Brownfield	0.5	0
<b>Miscellaneous Databases</b>			
FED EC	Federal Engineering Control	0.5	0
ST NPL	State/Tribal Equivalent NPL	One mile	0
ST CER	State/Tribal Equivalent CERCLIS	One-half mile	0
ST IC	State/Tribal Institutional Control	One-quarter mile	0
ST EC	State/Tribal Engineering Control	One-half mile	0
ST BWN	State/Tribal Brownfield	One-half mile	0
HW	State/Tribal Hazardous Waste	One-quarter mile	0

3 Source: Banks Environmental Data, November 10, 2014

1 Seventeen potential hazardous material sites were identified in the project area. Mustang Cat (Banks  
2 ID 2) and Western Waste Facilities (Banks ID 8) are located adjacent to the project area, but are listed  
3 as “Not a Generator.” There is no active Notice of Registration in the TCEQ database for these facilities.  
4 Due to these factors, these sites are not considered an environmental concern. Two leaking petroleum  
5 storage tank (LPST) sites were identified: Gas N Stuff (Banks ID 1), that documented minor soil  
6 contamination, is in final concurrence issues, case closed; and, Ernest Butler (Mustang Rental)(Banks ID 2),  
7 that documented soil contamination only, is in final concurrence issues, case closed.

8 Four registered petroleum storage tank (PST) facilities were identified in the project area:

- 9 • Gas N Stuff (mentioned above) has three 6,000-gallon underground storage tanks (UST) in use.  
10 Three other tanks were removed in 1993.
- 11 • Mustang Rental (mentioned above) has one 2,000-gallon aboveground storage tank. In 1987,  
12 one 900-gallon underground storage tank was removed.
- 13 • Express Access (Chevron) has one 22,000-gallon and one 12,000-gallon underground storage  
14 tank in use.
- 15 • Stripes has two 30,000-gallon underground storage tanks in use.

16  
17 Several unmapped sites were noted on the regulatory report: one CERCLIS NFRAP site was identified  
18 within the search radius and five TCEQ IHW unmapped sites were identified on the database as being  
19 inactive. None of these sites were observed in the site survey.

20 All records (including maps) from the database search are included in the ISA. Incorrect or incomplete  
21 addresses may result in some facilities being listed as un-mappable due to discrepancies in the location  
22 of some facilities.

23 Several gas stations are adjacent to the property with PSTs, along with inactive LPSTs present. These  
24 LPST and tank systems are not within the area being proposed for right-of-way acquisition and should  
25 not be affected by construction. Coordination with property owners, tank owners, operators, and the  
26 TCEQ on these sites would be an ongoing process up to and during construction. It is not anticipated that  
27 contaminated groundwater would be encountered during construction.

28 The proposed project includes the demolition of bridges and building structures within the right-of-way  
29 during construction. These structures have the potential for the release of asbestos containing materials  
30 and lead-based paints. Asbestos and lead based paint inspections, specification, license, accreditation,  
31 abatement and disposal, as applicable, would comply with federal and state regulations. Asbestos and  
32 lead-based paint issues would be addressed during the right-of-way process prior to construction.

33 At this time, utility adjustment requirements have not been determined. There is a potential for  
34 contamination to be encountered during utility adjustments. Coordination with utility companies  
35 concerning this contamination would be addressed during the right-of-way stage of project  
36 development. It is anticipated that all utility adjustments or relocation would be completed prior to  
37 construction.

38 The contractor would take appropriate measures to prevent, minimize, and control the spill of hazardous  
39 materials in the construction staging areas. The use of construction equipment within sensitive areas would

1 be minimized or eliminated entirely. All construction materials used for this project would be removed  
2 as soon as work schedules permit.

### 3 **6.2.12 Construction Impacts**

#### 4 No-Build Alternative

5 The No-Build Alternative would not result in construction impacts.

#### 6 Build Alternative

7 Although temporary congestion may occur as a result of project construction, access to parcels in the  
8 project vicinity would be maintained during all phases of construction. All practicable steps would be  
9 taken to minimize the inconvenience to drivers using the intersecting roadways during the construction  
10 phase. People living and working in the immediate area of the proposed project may experience noise  
11 and dust due to the construction activities. Temporary detours would also be required in the project  
12 area to assist with diverting traffic through surrounding areas while certain areas are under construction.

### 13 **6.2.13 Encroachment-Alteration Effects**

14 Encroachment-alteration effects are those that affect the functions of the natural and socioeconomic  
15 environments due to proposed project features but are removed in time or distance from the direct  
16 effects.

#### 17 Ecological Encroachment-Alteration Impacts

18 Potential encroachment-alteration impacts on waters of the U.S. (including wetlands) from roadway  
19 projects include the fill and degradation of waters of the U.S. from induced development. Potential  
20 encroachment-alteration impacts on floodplains from roadway projects include increases in stormwater  
21 runoff due to changes in land use and increased development that may be accelerated by improved  
22 mobility to the transportation system in the surrounding area. Anticipated fill impacts to waters and  
23 floodplain impacts would generally be limited to the project footprint. With regard to erosion of soil  
24 from construction sites, erosion and sedimentation would be minor and temporary (BMPs would be in  
25 place), and would cease upon establishing permanent vegetation cover after construction.

26 Potential encroachment-alteration impacts could occur with respect to vegetation removal for any  
27 induced development. As described in **Section 6.2.5**, the project has the potential to impact five state-  
28 listed threatened species and three SGCNs. The conversion of vegetation to transportation use would  
29 contribute to habitat fragmentation, alteration, or loss. The proposed project would not alter the hydric  
30 regime or reduce diversity within the ecosystem. Indirect effects to vegetation and wildlife habitat are  
31 discussed further in **Section 7.0**.

#### 32 Socioeconomic Encroachment-Alteration Impacts

33 Encroachment-alteration effects to socioeconomic resources are anticipated due to the improved mobility  
34 that would occur as a direct result of the proposed project. Two broad forms of socioeconomic impacts  
35 include: 1) changes in travel patterns and access, and 2) direct relocation of homes and businesses.  
36 These direct impacts may lead to indirect effects on neighborhood cohesion, neighborhood stability  
37 (maintained residential and commercial ownership rates, safety, etc.), travel patterns, changes in the  
38 local economy, changes in access to specific services, recreation patterns at public facilities (public use  
39 of facilities such as parks and school yards), pedestrian dependency and mobility, and perceived quality

1 of the natural environment, among others. Changes in access can include driveway changes, relocations  
2 of ramps, alterations of intersections that restrict or increase access to local streets, or the introduction  
3 of bicycle and pedestrian facilities. These may result in changes in travel patterns and the economics of  
4 travel patterns and corresponding land uses. Changes in access could result in beneficial impacts to  
5 public services and facilities; therefore, encroachment impacts to the socioeconomic environment are  
6 discussed in further detail below.

### 7 ***Changes in Traffic Patterns and Access***

8 In terms of traffic operations, the improvements are expected to increase mobility by improving traffic  
9 flow along FM 2854 and providing multi-modal travel options in the form of a sidewalk and shared-  
10 use lanes. The roadway mobility improvements are expected to have a positive impact on emergency  
11 vehicles and other public services. Improved access to these services is a benefit to all populations.

### 12 ***Other Socioeconomic Impacts***

13 With respect to encroachment-alteration effects to socioeconomic resources, indirect impacts would be  
14 driven by changes in travel patterns and access associated with the proposed project. The potential  
15 indirect impacts would include improved vehicular access to employment opportunities, markets, goods,  
16 or services, residential uses, and public facilities due to increased vehicular mobility. Other factors, such  
17 as real estate market conditions, local government development codes and plans, city financing  
18 opportunities (for various public facility improvements), anticipated growth, public facility and amenities  
19 siting (schools, health care facilities, greenspace, etc.), changes in energy costs, and other local and  
20 regional roadway improvements play a role in nearby land development investment decisions.  
21 However, real estate investment decisions are typically made with regard to factors such as  
22 transportation access and mobility. Although not the sole factor in inducing these development projects,  
23 the proposed project may introduce a potential acceleration in these land development decisions. In  
24 summary, it is anticipated that the proposed improvements would have a beneficial effect on overall  
25 socioeconomic conditions in the project area.

### 26 **6.2.14 Visual/Aesthetic Impacts**

27 The visual quality assessment is used to determine if the proposed project would be compatible with the  
28 visual character of the setting into which it would be introduced. The impact assessment also takes into  
29 consideration that existing transportation uses traverse the proposed right-of-way. Visual impacts are  
30 discussed in terms of the effect that the new physical elements associated with the proposed project  
31 would have on landform quality (i.e., the existing natural or man-made landform) and visual resources  
32 (i.e., the physical resources, including native vegetation, introduced landscaping, and the built  
33 environment that make up the character of the area).

#### 34 No-Build Alternative

35 The No-Build Alternative would not result in visual or aesthetic impacts.

#### 36 Build Alternative

37 The visual landscape near the project area is characterized by a combination of land uses including  
38 existing roadways, residential and commercial development, as well as vacant land. Because the  
39 proposed project consists of improvements to an existing roadway, the aesthetic character of the project  
40 area is not anticipated to noticeably change as a result of the construction of the Build Alternative. Plans,

1 Specifications, and Estimates, and stakeholder input will be considered during the public involvement  
2 process to minimize the potential for aesthetic impacts.

### 3 **6.2.15 Utilities/Emergency Services**

#### 4 No Build Alternative

5 The No-Build Alternative would have no impacts to existing utilities and emergency services within the  
6 project limits.

#### 7 Build Alternative

8 The Build Alternative may affect utilities, i.e. water, sewer, electric, and natural gas lines, during  
9 construction. The contractor would contact the appropriate local officials to identify and locate all utility  
10 lines within the right-of-way and construction staging areas. The contractor would also coordinate a  
11 work schedule that would avoid and minimize any disruption to utility services during construction.

12 The Build Alternative is not anticipated to adversely affect emergency services and responders within  
13 the project limits. Temporary effects during construction are anticipated through proposed detours;  
14 however, traffic will be maintained in both directions during construction. Emergency service providers,  
15 i.e. police, fire, and emergency medical services, would receive notification and be provided  
16 accommodations prior to construction. With applicable information, emergency responders can plan in  
17 advance of an emergency. After construction is complete, the proposed project is anticipated to reduce  
18 congestion and should improve response times for emergency responders utilizing the roadway.

### 19 **6.2.16 Bicycle and Pedestrian Accommodations**

20 The U.S. Department of Transportation's March 11, 2010, policy statement on bicycle and pedestrian  
21 accommodations states that safe and convenient walking and bicycling facilities must be incorporated  
22 into transportation projects. Therefore, with stronger emphasis for multimodal transportation facilities,  
23 TxDOT is committed to proactively plan, design, and construct facilities to safely accommodate bicyclists  
24 and pedestrians.

#### 25 No Build Alternative

26 The No-Build Alternative would not result in any improvements for bicyclists and pedestrians. The  
27 existing facility does not include any sidewalks for pedestrians or accommodations for bicyclists.

#### 28 Build Alternative

29 To accommodate bicyclists, the proposed project would include a 15-foot-wide shared use lane in each  
30 direction. This configuration is in compliance with TxDOT's "Guidelines Emphasizing Bicycle and  
31 Pedestrian Accommodations" (March 2011) by providing adequate space to allow motorists and  
32 bicyclists to share the pavement.

33 To accommodate pedestrians, a 6-foot-wide sidewalk would be constructed on the north side of the  
34 right-of-way. Crosswalks would be provided at signalized intersections to allow safe travel for  
35 pedestrians at these locations. The proposed project includes a flush median; therefore, the raised  
36 median requirements for pedestrian refuge would not apply.

## 7.0 INDIRECT IMPACTS

The following sections summarize the results of the 2016 *Indirect Impacts Technical Report* prepared for this project. The risk assessment checklist for indirect induced growth provided in TxDOT's Environmental Compliance Toolkit confirmed the need to conduct an induced growth analysis, as the project is adding capacity, there is land available for development/redevelopment, the project would increase mobility, and the area is experiencing growth.

### 7.1 AREA OF INFLUENCE

An area of influence (AOI) was established as the first step in evaluating the potential for induced growth. The AOI encompasses an area of approximately 6,289 acres. It is bounded on the west by Sapp Road, on the north by SH 105, on the east by IH 45 and Old Magnolia Road, and on the south by a combination of the BNSF rail line, the West Fork of the San Jacinto River, and a transmission line corridor. These borders are natural boundaries or dominant local/interstate roadways that surround the limits of the proposed project and are most likely to contain potential induced growth resulting from the proposed project. The AOI boundary is illustrated on **Figure 11**. The analysis considered indirect induced growth impacts that may occur between the time of project construction (2017) and 2040, the planning horizon for the H-GAC's current RTP.

### 7.2 POTENTIAL FOR INDUCED GROWTH

Undeveloped land and potential sites for redevelopment are present within the AOI. The H-GAC has prepared estimates of land use by parcel for the year 2014. Based on this information, approximately 1,206 acres are considered "vacant developable" (e.g., land located outside of the 100-year floodplain, roadways, etc.), representing approximately 19 percent of the land within the AOI.

According to the decennial Census, the population of Conroe in 2010 was 56,207, up 52.7 percent from 36,811 in 2000. H-GAC develops a Regional Growth Forecast, including population, employment, and land use for an eight-county area. According to the H-GAC projections, the Census tracts within the AOI are anticipated to see strong growth between 2010 and 2040. Census Tracts 6933.00, 6937.00, and 6944.00 are projected to see particularly strong growth, and rank high for Census Tracts in Montgomery County for household growth between 2010 and 2040. The H-GAC forecast also suggests strong employment trends for the Census tracts within the AOI. Census Tract 6944.00 is projected to see substantial gains in employment during the 2010 to 2040 time period. Based on these demographic and land use trends, it can be concluded that there is a strong potential for continued and future growth in the AOI.

### 7.3 LIKELIHOOD OF INDUCED GROWTH

Project-induced land use change can include project-induced development, the redevelopment of previously developed land, or a change in the rate of development/redevelopment. The "planning judgment" forecasting tool was used as the framework for the analysis. To this end, input from the Development Coordinator from the City of Conroe was consulted in the fall of 2015 in an effort to assess the potential for project-induced land use impacts.

The interview with Mr. France confirmed that two large tracts of undeveloped land (approximately 219 total acres) are likely to develop as a result of the proposed FM 2854 improvements. According to the interview results, Mr. France identified a general area that is experiencing development pressure and noted that the proposed improvements to FM 2854 would complement and likely increase the rate of

1 land development. The general area of potential induced growth, as a result of “increased rate of  
2 development,” is located north of FM 2854, south of SH 105, east of LP 336, and west of Sgt. Ed  
3 Holcomb Boulevard (see **Figure 12**).

#### 4 **7.4 IDENTIFY RESOURCES SUBJECT TO INDUCED GROWTH IMPACTS**

5 Through an interview and cartographic assessment, the analysis revealed that approximately 219 acres  
6 of land has indirect induced growth potential within the AOI. The EMST was used to determine which  
7 resources are present in the two areas identified for potential development; **Table 11** summarizes the  
8 characteristics of resources present. As previously stated, the connection between implementation of the  
9 proposed FM 2854 improvements and development is most apparent for undeveloped land located  
10 north of FM 2854 between LP 336 and Sgt. Ed Holcomb Boulevard. It is assumed that the provision of  
11 increased mobility and access would enhance development potential for the two areas illustrated on  
12 **Figure 12**.

1

<b>Table 11: Resource Characteristics in Areas of Potential Development</b>		
<b>EMST Vegetation Type</b>	<b>Area 1 (Proposed Single Family)</b>	<b>Area 2 (Proposed Single Family, Multi-Family, Commercial)</b>
Pineywoods: Disturbance or Tame Grassland	0	0.2
Pineywoods: Pine – Hardwood Forest or Plantation	1.3	45.8
Pineywoods: Pine Forest or Plantation	0	13.6
Pineywoods: Upland Hardwood Forest	50.3	100.5
Urban High Intensity	0	1.9
Urban Low Intensity	2.9	0.9
Open Water	1.8	0
<b>Total</b>	<b>56.3 acres</b>	<b>162.9 acres</b>

2 Source: CMEC 2015.

3 **Table 12** includes a description of resources present in the two general areas that could be developed  
4 and the potential for indirect impacts from induced development.

5

<b>Table 12: Resources Analyzed for Induced Growth Impacts</b>		
<b>Resource</b>	<b>Could the resource be indirectly impacted by potential induced growth?</b>	<b>Is this resource at risk?</b>
Waters of the U.S., including Wetlands	No formal wetland delineations have been conducted within these two areas for this project; however, if it was determined that the wetlands and waters were Waters of the U.S., then they would be protected by Section 404 of the CWA.	The USACE regulates the discharge of dredged and fill material into waters of the U.S., including wetlands, under Section 404 of the CWA.
Vegetation and Wildlife Habitat	Yes; the two areas of potential induced development are vegetated and provide wildlife habitat.	Public and private development would be regulated by the City of Conroe's development and tree canopy ordinances.
Threatened/Endangered Species	No; the proposed project area does not contain habitat for Federally-listed threatened/ endangered species. Potential impacts to State-listed species would be possible, but the potential for encountering these species during construction is low.	The ESA affords protection for federally listed threatened/ endangered species and their habitats; the USFWS and TPWD maintain lists of potential occurrence for listed species in each Texas county. State regulations prohibit harm to individuals of state-listed species.
Community Resources (includes businesses and residences)	Yes; property values could be influenced by future development. Additional tax revenue would be generated by potential induced development.	No.

Table 12: Resources Analyzed for Induced Growth Impacts		
Resource	Could the resource be indirectly impacted by potential induced growth?	Is this resource at risk?
Historic-Age Properties	No formal surveys have been conducted to date throughout the two areas for this project.	Resources that are 50 years of age are potentially historic. NRHP listed or eligible historic resources are protected by State and Federal regulations for publicly funded projects.
Archeological Resources	No formal surveys have been conducted to date throughout the two areas for this project.	The Antiquities Code of Texas requires notification (to THC) if public agencies sponsor ground-disturbing activity on public land. NRHP-listed or eligible archeological resources are protected by State and Federal regulations for publicly funded projects.

Source: CMEC 2015.

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### 7.5 IDENTIFY MITIGATION, IF APPLICABLE

In summary, the overall consensus is that the proposed project would influence future land use within the AOI; however, such project-induced land use change is not only accounted for by the City of Conroe's future planning documents and corresponding objectives, but is also considered positive for the future of Conroe.

8 This step of the indirect impacts analysis assesses the consequences of the expected induced growth  
9 impacts and considers/develops strategies or mitigation measures available as part of the existing  
10 regulation regimes that would apply to potential development projects. Virtually all of the readily  
11 identifiable indirect induced growth impacts involve an improvement to general traffic operations along  
12 FM 2854 and project-induced land use change within the AOI. The potential areas of indirect induced  
13 growth (approximately 219 acres) account for approximately 3.5 percent of the AOI (6,289 acres).  
14 Land development activities would generally be private ventures regulated by City of Conroe's land  
15 development and tree canopy ordinances. Such regulation addresses environmental and social impacts  
16 by requiring mitigation as part of site design and construction such that development is in accordance  
17 with overall city objectives. In addition, much of the discussion of agencies and programs that would  
18 guide any development influenced by a potential project would be similar to typical mitigation and  
19 permitting measures required of TxDOT. For example, all development (public or private developers)  
20 must comply with flood control regulations under FEMA and the local floodplain administration, the ESA,  
21 the CWA, Section 401 CWA Water Quality Certification requirements, Section 404 permits for projects  
22 impacting waters of the U.S., and other regulations requiring mitigation if there are effects on species  
23 habitat.

24 Ultimately, because the proposed project is not anticipated to conflict with study area development  
25 goals or cause substantial negative indirect induced growth impacts, the requirement for mitigation of  
26 environmental impacts would be limited to mitigating only the direct impacts associated with this  
27 proposed project. Any mitigation for project-induced land development impacts that may arise after  
28 construction of the proposed project would be overseen by the City of Conroe and would be the

1 responsibility of the land developer. Mitigation for indirect induced growth impacts would not be  
2 required of the proposed project sponsors based on the foregoing analysis.

### 3 **8.0 CUMULATIVE IMPACTS**

4 The evaluation of cumulative impacts summarized below is detailed in the *2015 Draft Cumulative Impacts*  
5 *Technical Report* and follows TxDOT's March 2014 "Cumulative Impacts Analysis Guidelines."

#### 6 **8.1 STEP 1 - RISK ASSESSMENT: IS THE ANALYSIS NECESSARY?**

7 Based on the answers to the questions in the Cumulative Impacts Risk Assessment, a Cumulative Impacts  
8 Analysis was undertaken for the proposed project. The following discussion summarizes the questions  
9 and answers from the TxDOT's Cumulative Impacts Risk Assessment (TxDOT 2014).

10

11 *Question 1: Will the project have substantial direct or indirect impacts on any resource?* No substantial  
12 direct or indirect impacts are anticipated. Technical reports have been prepared for the following  
13 environmental resources/issues: biological resources, water resources, air quality, traffic noise,  
14 community impacts, cultural resources, hazardous materials, and indirect impacts. Although potential  
15 induced development could occur in approximately 219.2 acres of the area of influence, no substantial  
16 impacts to remnant vegetation or protected species habitat are anticipated (see Indirect Impacts  
17 Technical Report).

18

19 *Question 2: Are any resources in the project area in poor or declining health?* Yes. State-listed threatened  
20 species may occur within the project area due to the existence of potentially suitable habitat. No effects  
21 to federally listed species are anticipated. Refer to the *Biological Evaluation Form* (under separate  
22 cover) for detailed information regarding state-listed species and habitat.

23

24 *Question 3: Will the project have any impact on a resource that is in poor or declining health?* Yes;  
25 however, any impact to a state-listed threatened species would be a result of incidental occurrence of  
26 individuals within the project area. No significant impacts to these resources are anticipated. Although  
27 no individuals were observed during site visits of areas directly impacted by the proposed roadway  
28 improvements, the project area contains potentially suitable habitat for the state-threatened creek  
29 chubsucker, southern crawfish frog, and Texas emerald dragonfly within Alligator Creek adjacent to the  
30 FM 2854 crossing. Potentially suitable habitat for the timber rattlesnake and the plains spotted skunk  
31 exists within the undeveloped portions of the project area. Although the proposed project may result in  
32 the removal of small tracts of suitable habitat or temporary disturbance of individuals of these species,  
33 the project is not anticipated to cause a significant impact to any species or rare habitat communities.  
34 The magnitude of direct impacts (approximately 2.6 acres of vegetation along approximately 2.1  
35 miles) represents a small portion of available habitat when compared to the geographic extent of these  
36 species' ranges. Additionally, FM 2854 is classified as an urban minor arterial roadway and lies within  
37 an already fragmented landscape caused by the urbanization around the city of Conroe and the BNSF  
38 railroad. Several large tracts of contiguous habitat (primarily to the south and southwest of the project  
39 area) would not be impacted by the proposed improvements to FM 2854 and impacts to Alligator  
40 Creek would be minimized during construction activities with best management practices (BMPs) to  
41 control soil erosion by limiting the amount of disturbed earth, preserving existing vegetation, and limiting

1 vegetation removal. Per the 2013 TxDOT-Texas Parks and Wildlife Department (TPWD) Memorandum  
2 of Agreement, BMPs would be implemented for relevant species. In summary, this project is not expected  
3 to have a significant impact on any state-listed threatened species.

4  
5 The proposed project is expected to directly impact approximately 0.9 acre of riparian and 1.7 acres  
6 of pine hardwood forest within the new right-of-way; neither vegetation type is considered rare or  
7 “important remnant vegetation” as mapped by the Texas Conservation Action Plan (TCAP). These  
8 vegetation types are not considered in poor or declining health due to the presence of adjacent  
9 undeveloped tracts of land and due to the proximity of similar habitats within the Sam Houston National  
10 Forest, W.G. State Forest, and the Spring Creek Greenway Initiative lands that are protected, or in  
11 process of being protected, in perpetuity for conservation.

12  
13 The proposed project would not result in significant incremental loss of additional suitable habitat  
14 through direct or indirect impacts for the above mentioned species and is not expected to cause  
15 significant degradation to a resource in poor or declining health; therefore, neither protected species  
16 nor remnant vegetation will be carried forward for cumulative impacts analysis.

17  
18 **Table 13** below provides additional information about the direct and indirect impacts on each resource  
19 and the health of each resource.  
20

<b>Table 13: Resource/Issues Considered for Cumulative Impacts Analysis</b>				
<b>Subject Considered for Direct and Indirect Impacts</b>	<b>TxDOT/CEQ Criteria <sup>1</sup></b>		<b>Included for Cumulative Impacts Analysis?</b>	<b>Explanation for Including or Excluding the Subject from Cumulative Impacts Analysis</b>
	<b>Would Proposed Project or Induced Growth Result in Substantial Adverse Impacts?</b>	<b>Is Subject a Scarce Resource or in Poor or Declining Health?</b>		
<b>NATURAL RESOURCES</b>				
<b>Waters of the U.S., including Wetlands</b>	No	No	No	Excluded. The proposed project is anticipated to be permitted by Nationwide Permit 14 with a Preconstruction Notification. Future development would not likely affect full compliance with water quality protection regulations. Potential induced growth not anticipated to adversely impact waters of the U.S., including wetlands.
<b>Floodplains</b>	No	No	No	Excluded. Although a portion of the proposed project would lie within the 100-year floodplain, the hydraulic design of the project would permit conveyance of the 100-year flood, and potential inundation of the highway would not cause substantial damage to it, the streams, or other property. Potential induced growth not anticipated to adversely impact floodplains.

**Table 13: Resource/Issues Considered for Cumulative Impacts Analysis**

Subject Considered for Direct and Indirect Impacts	TxDOT/CEQ Criteria <sup>1</sup>		Included for Cumulative Impacts Analysis?	Explanation for Including or Excluding the Subject from Cumulative Impacts Analysis
	Would Proposed Project or Induced Growth Result in Substantial Adverse Impacts?	Is Subject a Scarce Resource or in Poor or Declining Health?		
<b>Water Quality</b>	No	No	No	Excluded. No permanent water quality impacts are expected from the proposed project or potential induced growth, and required permits to control erosion during construction are expected to result in minimal temporary degradation of water quality.
<b>Vegetation and Wildlife Habitat (including habitat for state-listed species)</b>	No	Yes	No	<p>Excluded. The construction of the proposed project is expected to impact a total of 0.9 acre of riparian vegetation and 1.7 acres of pine hardwood forest located within proposed right-of-way. These habitat types are not considered rare or important remnant vegetation as mapped by the TCAP. Suitable habitat for state-listed species is fragmented throughout the project limits and general project area. Due to the fragmentation, any impact to these species would be localized to individuals of the population. These impacts would not be expected to be significant to these species throughout their range.</p> <p>Impacts associated with the proposed project and subsequent induced growth are not anticipated to result in any effects to state-listed species. Anticipated induced growth (private development) would be regulated by the City of Conroe's development and tree canopy ordinances.</p>
<b>Federally listed Threatened/Endangered Species</b>	No	Yes	No	Excluded. No suitable habitat for federally listed threatened or endangered species are located in the project area. No federally listed species were observed during field observations. A review of TPWD's Natural Diversity Database did not indicate any federally-listed species present within the project area.
<b>Air Quality</b>	No	No	No	Excluded. Any increased air pollutant or MSAT emissions resulting from the potential development or redevelopment of the area must meet regulatory emissions limits established by the TCEQ and the EPA. In addition, with cleaner fuels, improved emission technologies, alternative modes of transportation, and regional clean air initiatives, the air quality in the area should continue to improve over time.

**Table 13: Resource/Issues Considered for Cumulative Impacts Analysis**

Subject Considered for Direct and Indirect Impacts	TxDOT/CEQ Criteria <sup>1</sup>		Included for Cumulative Impacts Analysis?	Explanation for Including or Excluding the Subject from Cumulative Impacts Analysis
	Would Proposed Project or Induced Growth Result in Substantial Adverse Impacts?	Is Subject a Scarce Resource or in Poor or Declining Health?		
<b>COMMUNITY IMPACTS</b>				
Community Impacts	No	No	No	Excluded. The proposed project would not significantly adversely affect, separate, or isolate any distinct neighborhoods, ethnic groups, or vulnerable populations within the project area. Access and travel patterns would not change substantially because FM 2854 is an existing facility. Tolling is not proposed. Beneficial effects include increased capacity, improved traffic operations, improved drainage, and enhanced safety.
Section 4(f) and 6(f) Properties	No	No	No	Excluded because no impacts are anticipated to local parks or recreation areas; no adverse effects are anticipated to occur to resources eligible for the NRHP.
Limited English Proficiency	No	No	No	Excluded because adequate steps are planned to assist the LEP population within the project area throughout the public involvement process for the proposed project.
Environmental Justice	No	No	No	Excluded. No disproportionately high or adverse impacts on minority or low-income populations are anticipated as a result of the proposed project. Displacements are not anticipated. Regional economic effects associated with the proposed project would be beneficial for the overall community.
Public Facilities/ Services/ Utilities	No	No	No	Excluded. The proposed project would not displace any public facilities/services, and improved mobility would provide a benefit to the public.
<b>CULTURAL RESOURCES</b>				
Historic-Age Properties	No	No	No	Excluded. No adverse effects are anticipated to occur to resources eligible for NRHP listing. Potential induced growth is not anticipated to adversely impact historic-age properties.
Archeological Resources	No	No	No	Excluded. No adverse effects are anticipated to occur to resources eligible for NRHP listing. Potential induced growth is not anticipated to adversely impact archeological resources.
<b>Notes:</b>				
1. In accordance with TxDOT and CEQ selection criteria for limiting the scope of cumulative impacts analyses.				

1  
2 Based on the results of the risk assessment, supported by the information presented in **Table 13** and in  
3 the technical reports prepared for the proposed project, further Cumulative Impacts Analysis is not  
4 required.

## 5 **9.0 ENVIRONMENTAL PERMITS, ISSUES AND COMMITMENTS**

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

11 This section summarizes the elements that constitute the Environmental Permits, Issues, and Commitments  
12 (EPIC) sheet. The EPIC sheet, found in the Environmental Compliance Oversight System, documents and  
13 communicates permit issues and environmental commitments that must be incorporated into the Plans,  
14 Specifications, and Estimates design for the proposed project. The permits, impacts and commitments  
15 relevant to the proposed project are as follows:

- 16 • Designs for this project are preliminary, and specific structures for the crossings are not finalized.  
17 The actual amount of impacts to USACE-jurisdictional waters would be confirmed during the  
18 final design phase, based on acquisition of complete right-of-entry and detailed construction  
19 plans. It is anticipated that any impacts to waters of the U.S. would be authorized through  
20 NWP 14 with a PCN because of impacts to one wetland adjacent to Alligator Creek. If any  
21 impacts to an individual waters of the U.S. exceed 0.5 acre, or the thresholds of the general  
22 conditions of the NWP are exceeded, an IP would be required.
- 23 • TxDOT would comply with TCEQ's TPDES CGP. A SW3P would be implemented, and a  
24 construction site notice would be posted on the construction site. A NOI would be required.
- 25 • The Section 401 Certification requirements for NWP 14 would be met by implementing  
26 approved erosion control, sedimentation control, and post-construction TSS control BMPs from  
27 the TCEQ's 401 Water Quality Certification Conditions for NWPs. The implementation of BMPs  
28 would prevent water quality impacts from occurring during and after construction.
- 29 • In accordance with the *Best Management Practices Programmatic Agreement between TxDOT and*  
30 *TPWD Under the 2013 MOU*, BMPs have been defined to be implemented by TxDOT in order  
31 to minimize impacts to state-listed species and SGCNs. **Table 7** lists those BMPs related to  
32 species that may be impacted by the proposed project.
- 33 • Permanent soil erosion control features would be constructed as soon as feasible during the  
34 early stages of construction through proper sodding and/or seeding techniques. Disturbed areas  
35 would be restored and stabilized as soon as the construction schedule permits and temporary  
36 sodding would be considered where large areas of disturbed ground would be left bare for a  
37 considerable length of time.
- 38 • In accordance with EO 13112 on Invasive Species and the Executive Memorandum on Beneficial  
39 Landscaping, seeding and replanting with TxDOT approved seeding specifications that is in  
40 compliance with EO 13112 would be done where possible. Moreover, abutting turf grasses

1 within the right-of-way are expected to re-establish throughout the project length. Soil  
2 disturbance would be minimized to ensure that invasive species would not establish in the right-  
3 of-way.

- 4 • In the event that migratory birds are encountered on-site during project construction, adverse  
5 impacts on protected birds, active nests, eggs, and/or young would be avoided. The contractor  
6 would remove all old migratory bird nests from October 1 to February 15 from any structure  
7 where work will be done. In addition, the contractor would be prepared to prevent migratory  
8 birds from building nests between February 15 and October 1, per the EPIC plans.
- 9 • In the event that unanticipated archeological deposits are encountered during construction, work  
10 in the immediate area will cease, and TxDOT archeological staff will be contacted to initiate  
11 post-review discovery procedures.
- 12 • Any unanticipated hazardous materials and/or petroleum contamination encountered during  
13 construction would be handled according to applicable federal and state regulations per  
14 TxDOT Standard Specifications. No unresolved hazardous materials situations for which TxDOT  
15 would be responsible are anticipated with respect to the project. Any adjustments to pipelines  
16 or potential utilities would use standard techniques. The contractor would take appropriate  
17 measures to prevent, minimize, and control the spill of hazardous materials in the construction  
18 staging area. The use of construction equipment within sensitive areas would be minimized or  
19 eliminated entirely. All construction materials used for this project would be removed as soon as  
20 work schedules permit.

## 21 **10.0 COMMENTS AND COORDINATION**

22 A public meeting for the proposed project was held on October 1, 2015, from 5:30 to 7:30 pm in the  
23 cafeteria of Conroe 9<sup>th</sup> Grade School Campus, which is located adjacent to the proposed project area.  
24 The public meeting was conducted in an open-house format; no formal presentation was given. The  
25 meeting was intended to provide attendees with an opportunity to view detailed plans and  
26 environmental constraints, discuss the project with TxDOT staff, and to receive an update on the project  
27 status and schedule. The meeting was also intended to gather public comment and input on the project.  
28 No requests for special accommodations were received by the District in advance of the meeting.  
29 Spanish-speaking staff were present and conducted some conversations in Spanish with members of the  
30 public, when requested.

31 Notices were sent to approximately 71 land owners with property adjacent to the project area,  
32 providing information on the project and the date and time of the meeting. Letters were sent to the  
33 relevant elected officials and representatives for the project area. Notice of the meeting was also  
34 provided to the Artesian Oaks and Pinewood Forest Homeowners Associations.

35 A notice was published in English in the *Conroe Courier* and in Spanish in *La Subasta*, running on Monday,  
36 August 31, 2015 and Wednesday, September 2, 2015. The public media notice included the location,  
37 time, and date of the meeting with a brief description of the project.

38 The majority of commenters provided general support of the project. Additional comments received  
39 included concerns for traffic lights, driveway access from home/business to FM 2854, historic  
40 preservation, elevational variations, and drainage.

1 A Notice Affording Opportunity for a Public Hearing (NAOPH) and Draft Environmental Assessment  
2 Availability was published in English in the *Houston Chronicle* and the *The Courier* (local newspaper in  
3 Conroe) on June 3, 2016, and in Spanish in *La Subasta* on June 8, 2016. The NAOPH included a detailed  
4 project description, including additional proposed right-of-way and temporary construction easements,  
5 proposed crossings of floodplains, potential impacts to wetlands, Section 404 of the Clean Water Act  
6 permitting information, and availability of the approved Draft Environmental Assessment. No requests  
7 were made for a public hearing.

8 In accordance with the MOU between TxDOT and TCEQ addressing environmental reviews, codified in  
9 Chapter 43, Subchapter I of the Texas Administrative Code (TAC) and 30 TAC § 7.119, TxDOT  
10 coordinated with the TCEQ regarding the proposed project. The TCEQ determined that a general  
11 conformity analysis was not required and the Office of Water had no comment. A copy of this  
12 correspondence is included in **Appendix D**.

### 13 **11.0 DETERMINATION OF ASSESSMENT**

14 The No-Build Alternative would avoid the direct impacts associated with the Build Alternative; however,  
15 it would not address the need and purpose for the proposed project as summarized below.

16 The Build Alternative is the preferred alternative, as it is responsive to the needs for the transportation  
17 improvement project based on projected increases in population, congestion and traffic demand. If  
18 constructed, the proposed Build Alternative would fulfill the public's need for a safe and efficient  
19 transportation system in the project area. The construction of the roadway improvements would improve  
20 mobility by providing additional capacity along FM 2854. The conversion to a divided roadway would  
21 also provide a safe facility for the traveling public, along with a signalized intersection at Pinewood  
22 Drive. The construction of the roadway improvements would be consistent with FHWA and TxDOT  
23 guidelines and policies for providing bicycle and pedestrian accommodations within the project limits.  
24 This would be accomplished by the shared travel lane and sidewalk construction proposed.

25 The proposed Build Alternative is compatible with local and regional planning. The Build Alternative has  
26 been incorporated into the regional planning documents of the project area. The project was included  
27 in the TIP on January 22, 2016.

28 The proposed Build Alternative is the result of close examination of the No-Build Alternative. Through  
29 active participation among public officials and citizens in the consideration of potential impacts as well  
30 as avoiding/minimizing impacts where practicable, the Build Alternative design described herein is the  
31 result of efforts to avoid or minimize social, economic, and environmental impacts.

32 The engineering, social, economic, and environmental investigations conducted thus far indicate that the  
33 proposed project would result in no significant impacts to the quality of the human or natural environment  
34 and a Finding of No Significant Impact (FONSI) is anticipated for this project.

35

1 **12.0 REFERENCES**

- 2 American Association of State Highway and Transportation Officials. 2011. Practitioner's Handbook -  
3 12: *Assessing Indirect Effects and Cumulative Impacts under NEPA*.
- 4 Banks Environmental Data. 2015. ASTM E1527-13/AAI Compliant. FM 2854, PO # 091-001-008,  
5 Report ES-115200, April 28.
- 6 Center for Plant Conservation. 2015. *CPC National Collection Plant Profile – Physotegia correllii*.  
7 [http://www.centerforplantconservation.org/Collection/CPC\\_ViewProfile.asp?CPCNum=3448](http://www.centerforplantconservation.org/Collection/CPC_ViewProfile.asp?CPCNum=3448),  
8 accessed October 26, 2015.
- 9 City of Conroe. 2007. City of Conroe Comprehensive Plan. Chapter 5 – Transportation.  
10 [http://www.cityofconroe.org/departemnts/public-works-home-page/planning/comprehensive-](http://www.cityofconroe.org/departemnts/public-works-home-page/planning/comprehensive-plan)  
11 [plan](http://www.cityofconroe.org/departemnts/public-works-home-page/planning/comprehensive-plan).
- 12 ———. 2010. 2035 Thoroughfare Plan of the City of Conroe. Community Development. Amendment  
13 to 2007 Comprehensive Plan.
- 14 ———. 2014. Update of 2035 Thoroughfare Plan of the City of Conroe. Community Development.  
15 Amendment to 2007 Comprehensive Plan.
- 16 France, Adam. 2015. City of Conroe Development Coordinator. Personal communication, October 7,  
17 2015.
- 18 Houston-Galveston Area Council (H-GAC). 2015. 2040 Regional Transportation Plan. [http://www.h-](http://www.h-gac.com/taq/plan/2040)  
19 [gac.com/taq/plan/2040](http://www.h-gac.com/taq/plan/2040).
- 20 ———. 2015. 2015 TIP Call for Projects Application Viewer. Accessed from  
21 <http://www.h-gac.com/taq/tip/call-for-projects-application-view.aspx?id=300222>. Accessed  
22 on November 20, 2015.
- 23 ———. Houston-Galveston Area Council 2040 Regional Forecast, 4Q 2014. [http://www.h-](http://www.h-gac.com/community/socioeconomic/2040-regional-growth-forecast/default.aspx)  
24 [gac.com/community/socioeconomic/2040-regional-growth-forecast/default.aspx](http://www.h-gac.com/community/socioeconomic/2040-regional-growth-forecast/default.aspx), accessed  
25 January 14, 2015.
- 26 Missouri Resource Assessment Partnership (MoRAP). 2013. MoRAP Project: Texas Ecological Systems  
27 Classification <http://morap.missouri.edu/Projects.aspx?ProjectId=57>, also known as Ecological  
28 Mapping System of Texas (EMST), prepared for Texas Parks and Wildlife Department;  
29 ongoing 1998-2014, accessed January 21, 2013.
- 30 National Cooperative Highway Research Program (NCHRP). 2002. Report 466: Desk Reference for  
31 Estimating the Indirect Effects of Proposed Transportation Projects.
- 32 NCHRP, National Research Council, Transportation Research Board. 2007. NCHRP Project 25-25, Task  
33 22: Forecasting Indirect Land Use Effects of Transportation Projects.
- 34 Pierce Goodwin Alexander and Linville, Inc. (PGAL). 2015a. State of Texas. Department of  
35 Transportation. Plans of Proposed State Highway Improvement. 60% Submittal. Pinewood Drive  
36 Detour Plan.

- 1 ———. 2015b. State of Texas. Department of Transportation. Plans of Proposed State Highway  
2 Improvement. 60% Submittal. Royal College Hill Detour Plan.
- 3 SWCA. 2015. *Report for Archeological Survey, FM 2854 Expansion Project: Loop 336 to IH 45,*  
4 *Montgomery County, Texas, Houston District.*
- 5 Texas Commission on Environmental Quality (TCEQ). 2012 Section 303(d) list. [http://www.tceq.state.  
6 tx.us/assets/public/waterquality/swqm/assess/12twqi/2012\\_imp\\_index.pdf](http://www.tceq.state.tx.us/assets/public/waterquality/swqm/assess/12twqi/2012_imp_index.pdf)
- 7 ———. 2013. San Jacinto River Basin Narrative Summary.  
8 [http://www.tceq.state.tx.us/assets/public/comm\\_exec/pubs/sfr/050\\_00/vol2\\_basin10.pdf](http://www.tceq.state.tx.us/assets/public/comm_exec/pubs/sfr/050_00/vol2_basin10.pdf)
- 9 Texas Department of Transportation (TxDOT). August 2014. Environmental Handbook for Air Quality.
- 10 ———. 2014. Statewide Crash Statistics.[http://ftp.dot.state.tx.us/pub/txdot/trf/crash-  
11 statistics/2014/02.pdf](http://ftp.dot.state.tx.us/pub/txdot/trf/crash-statistics/2014/02.pdf). Accessed on November 2, 2015.
- 12 ———. 2015. TxDOT Statewide Planning Map. [http://www.txdot.gov/apps/statewide\\_mapping/  
13 StatewidePlanningMap.html](http://www.txdot.gov/apps/statewide_mapping/StatewidePlanningMap.html). Accessed on November 20, 2015.
- 14 ———. 2011. Guidelines for Analysis and Abatement of Roadway Traffic Noise.
- 15 ———. 2011. Guidelines Emphasizing Bicycle and Pedestrian Accommodations.
- 16 ———. January 2015. *TxDOT Environmental Handbook: Community Impacts, Environmental Justice, and  
17 Title VI Compliance*. Retrieved from: [http://ftp.dot.state.tx.us/pub/txdot-info/env/toolkit/710-  
18 01-gui.pdf](http://ftp.dot.state.tx.us/pub/txdot-info/env/toolkit/710-01-gui.pdf)
- 19 ———. TxDOT – Environmental Affairs Division. 2014. Environmental Handbook: Indirect and  
20 Cumulative Impacts.
- 21 ———. Indirect Impacts Analysis Guidance. 2015. [http://ftp.dot.state.tx.us/pub/txdot-  
22 info/env/toolkit/720-02-gui.pdf](http://ftp.dot.state.tx.us/pub/txdot-info/env/toolkit/720-02-gui.pdf).
- 23 ———. Risk Assessment for Indirect Impacts. 2014. [http://ftp.dot.state.tx.us/pub/txdot-  
24 info/env/toolkit/720-01-ra.docx](http://ftp.dot.state.tx.us/pub/txdot-info/env/toolkit/720-01-ra.docx).
- 25 ———. TxDOT – Environmental Affairs Division. 2014. Cumulative Impacts Analysis Guidelines.
- 26 ———. Risk Assessment for Cumulative Impacts. 2014. [http://ftp.dot.state.tx.us/pub/txdot-  
27 info/env/toolkit/720-02-ra.docx](http://ftp.dot.state.tx.us/pub/txdot-info/env/toolkit/720-02-ra.docx)
- 28 ———. TxDOT Traffic Engineering. 2015. Email from James Keener to Kimlinh Nguyen and Hamid  
29 Youssefi. FM 2854 – SL 336 to IH 45.xlsx. December 16, 2015.
- 30 Texas Parks and Wildlife Department (TPWD). 2011. Texas Conservation Action Plan Rare Piney  
31 Woods Ecoregion Handbook.  
32 [http://www.tpwd.state.tx.us/landwater/land/tcap/documents/gcpm\\_tcap\\_2012.pdf](http://www.tpwd.state.tx.us/landwater/land/tcap/documents/gcpm_tcap_2012.pdf), accessed  
33 August 28, 2015.

- 1 ———. 2015. Texas Natural Diversity Database, live version. Data obtained for the Conroe, Conroe  
2 *Northeast, Cowl Spur, Cut and Shoot, Keenan, Magnolia East, Montgomery, Oklahoma, Outlaw*  
3 *Pond, Shepard Hill, Tamina, and Willis* quadrangles; September 3, 2015.
- 4 ———. 2015. Wildlife Division, Diversity and Habitat Assessment Programs. TPWD *Annotated County*  
5 *Lists of Rare Species*. Montgomery County 03/23/2015. Accessed September 3, 2015.
- 6 U.S. Census Bureau. 2010. *Decennial Census – Census 2010 Summary File 1 (SF 1) 100-Percent Data –*  
7 *Profile of General Demographic Characteristics: 2010*.
- 8 ———. 2014. *American Community Survey 2009-2013 5-year Estimates*. Tables B16004, B11001, and  
9 B19013.
- 10 U.S. Fish and Wildlife Service (USFWS). 2015. *IPaC Report for Project Area*. <http://ecos.fws.gov/ipac/>,  
11 accessed September 9, 2015.

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## **Appendix A**

### **Figures**



**Figure 1**  
**Project Location (Aerial Base)**  
 FM 2854 from Loop 336 to IH-45

 Project Location

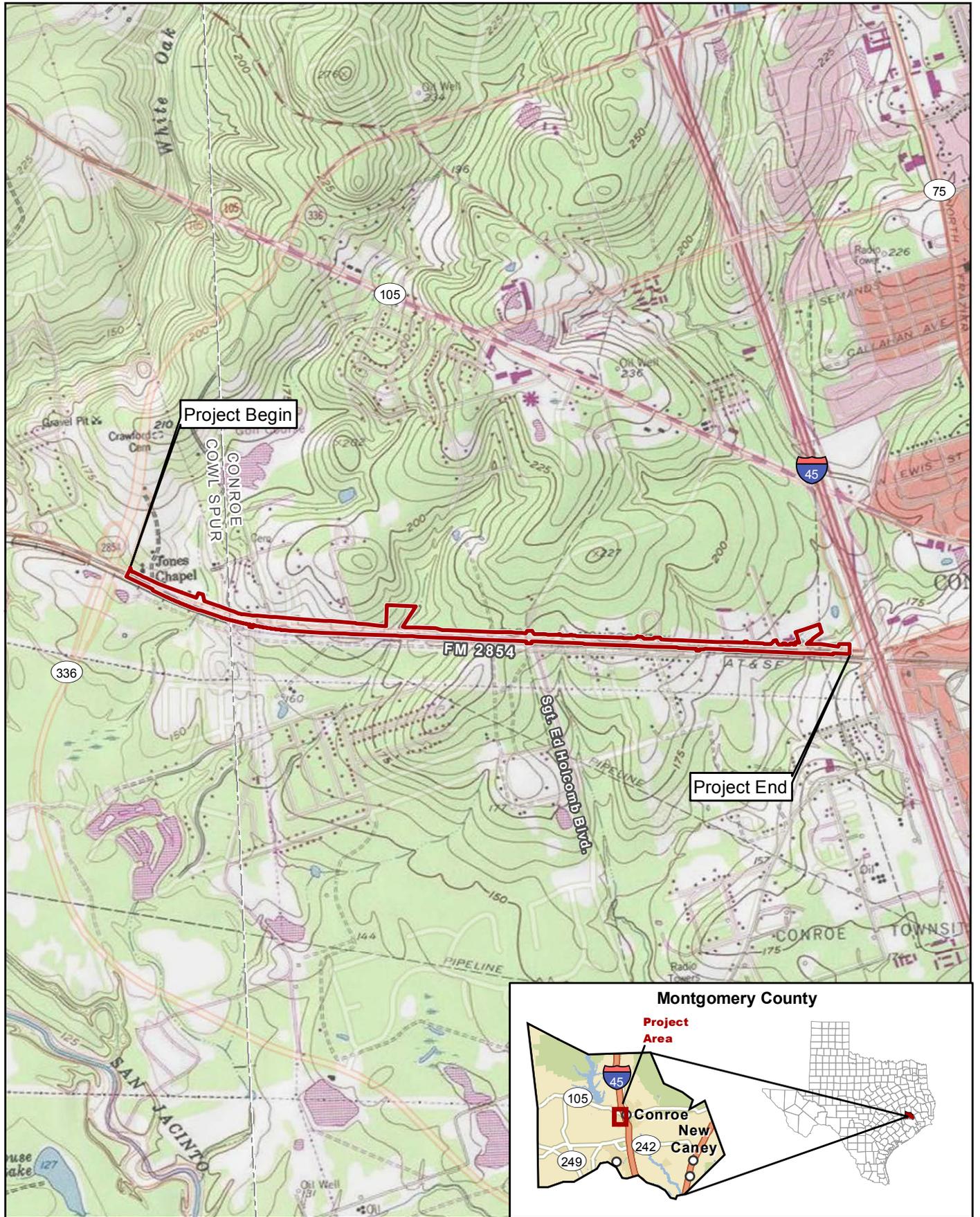


0 2,000 Feet  
 0 600 Meters

Prepared for: TxDOT	1 in = 2,000 feet
	Scale: 1:24,000
	Date: 6/20/2016

Aerial Source: TNRIS (2015)

CSJ: 2744-01-011



**Figure 2**  
**Project Location (Topographic Base)**  
 FM 2854 from Loop 336 to IH-45

 Project Location



0 2,000 Feet  
 0 600 Meters

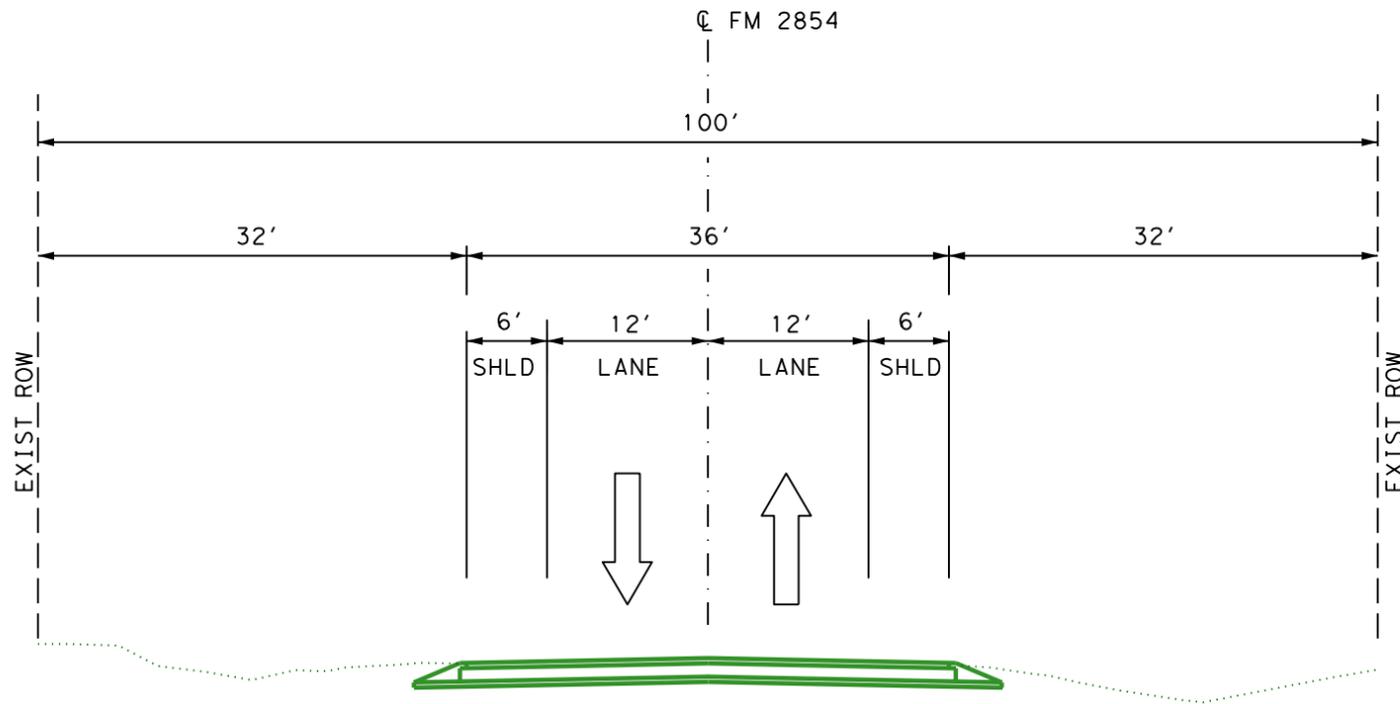
Prepared for: TxDOT

1 in = 2,000 feet

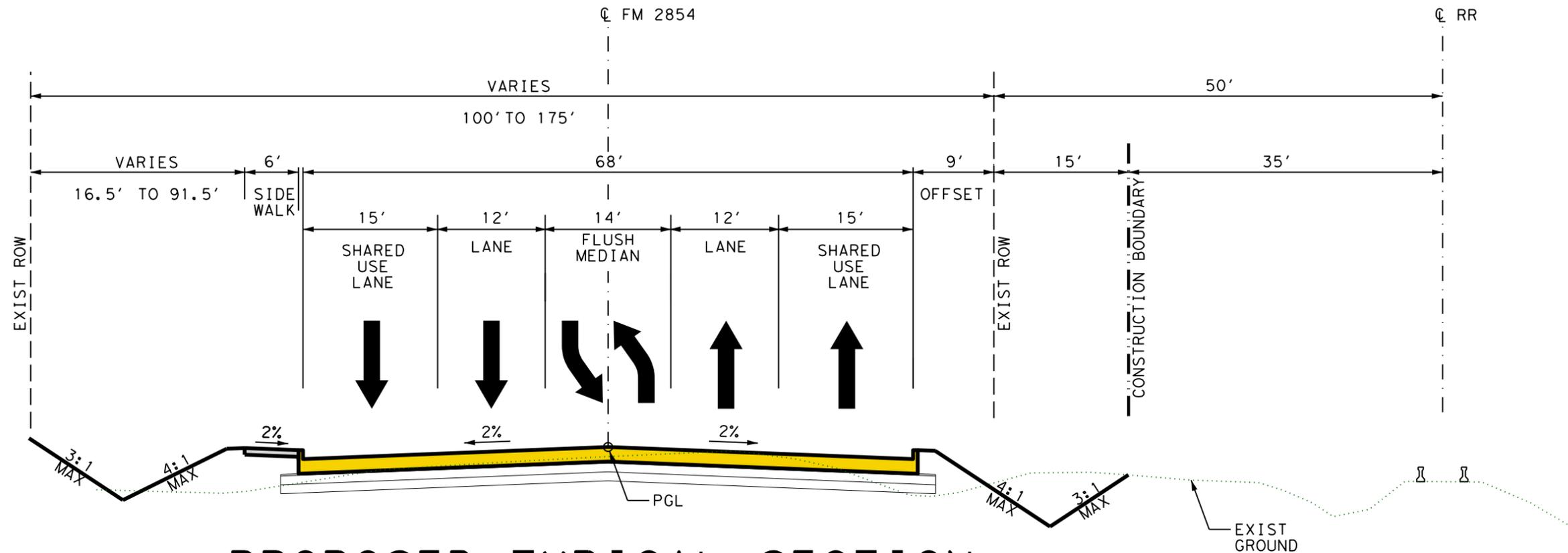
Scale: 1:24,000

CSJ: 2744-01-011

Date: 6/20/2016

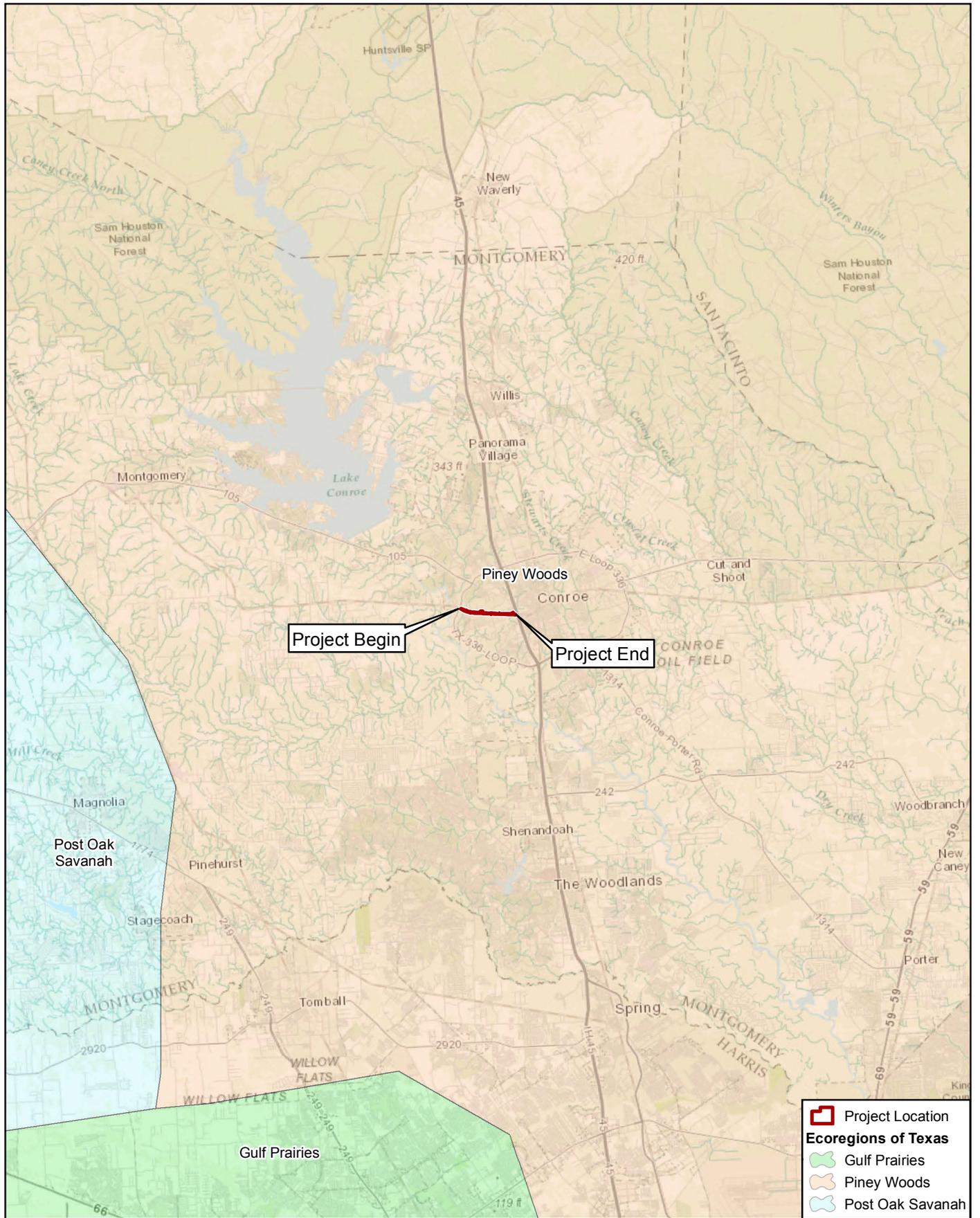


EXISTING TYPICAL SECTION



PROPOSED TYPICAL SECTION





**Project Location**

**Ecoregions of Texas**

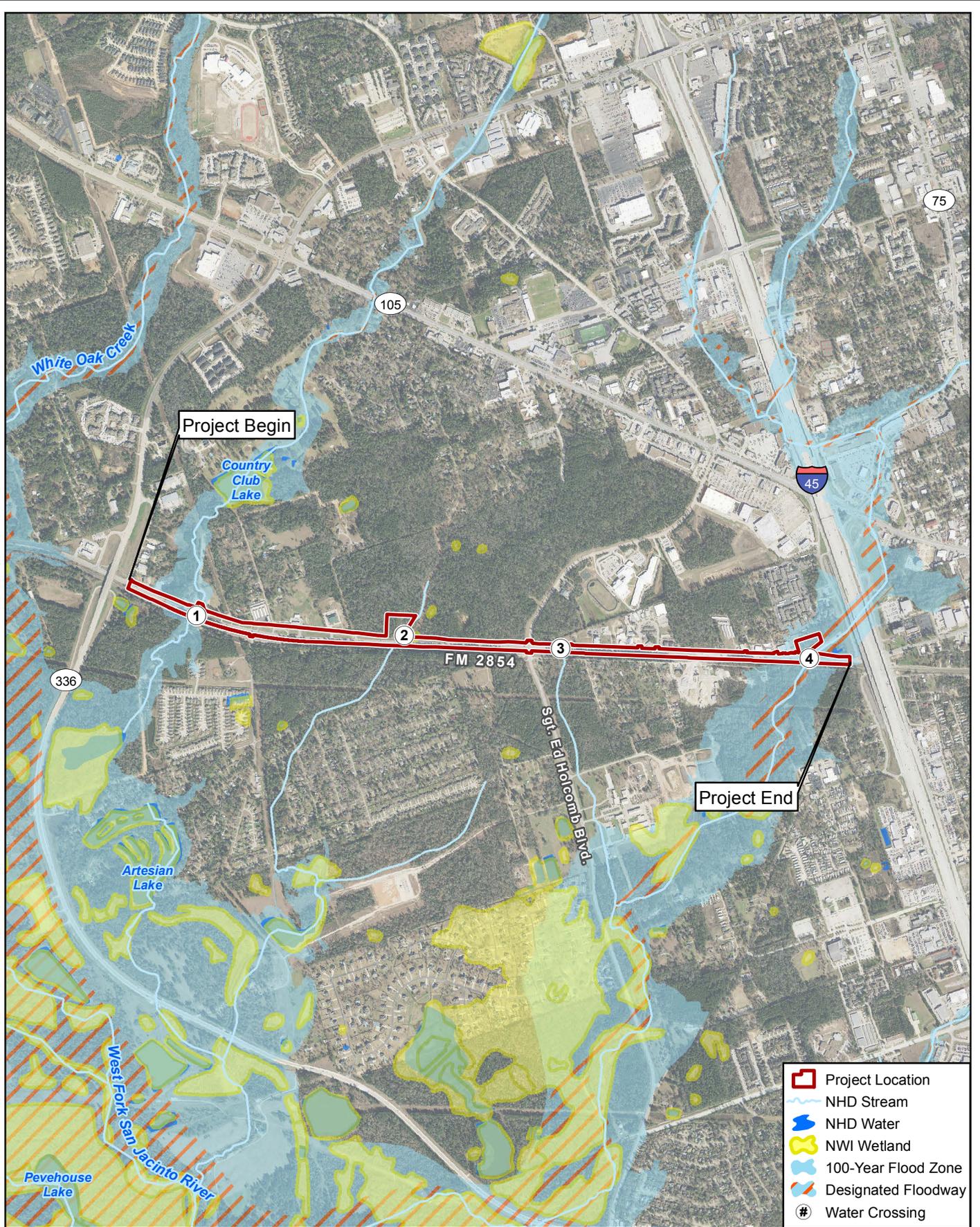
- Gulf Prairies
- Piney Woods
- Post Oak Savannah

**Figure 5**  
Ecoregions

FM 2854 from Loop 336 to IH-45

0 5 Miles  
0 8 Kilometers

Prepared for: TxDOT	1 in = 5 miles
Basemap Source: ESRI (2016)	Scale: 1:316,800
CSJ: 2744-01-011	Date: 6/28/2016



**Figure 6**  
**Floodplains**

FM 2854 from Loop 336 to IH-45

Data Sources: NHD (2014), NWI (2014),  
 FEMA NFHL (2014), CMEC (2015, 2016)  
 Aerial Source: TNRIS (2015)

Prepared for: TxDOT  
 CSJ: 2744-01-011

1 in = 2,000 feet  
 Scale: 1:24,000  
 Date: 6/28/2016



**Figure 7a**  
**EMST Mapped Vegetation Types**  
**FM 2854 from Loop 336 to IH-45**

Project Location	Pinewoods: Disturbance or Tame Grassland	Urban Low Intensity
Proposed Impacts	Pinewoods: Upland Hardwood Forest	Urban High Intensity
Sheet Limits		

Data Source: TxDOT/TPWD  
 EMST/MoRAP (2013)  
 Aerial Source: TNRIS (2015)

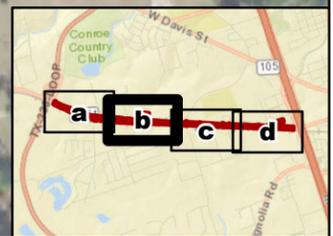
Prepared for: TxDOT  
 CSJ: 2744-01-011

1 in = 200 feet  
 Scale: 1:2,400  
 Date: 6/30/2016

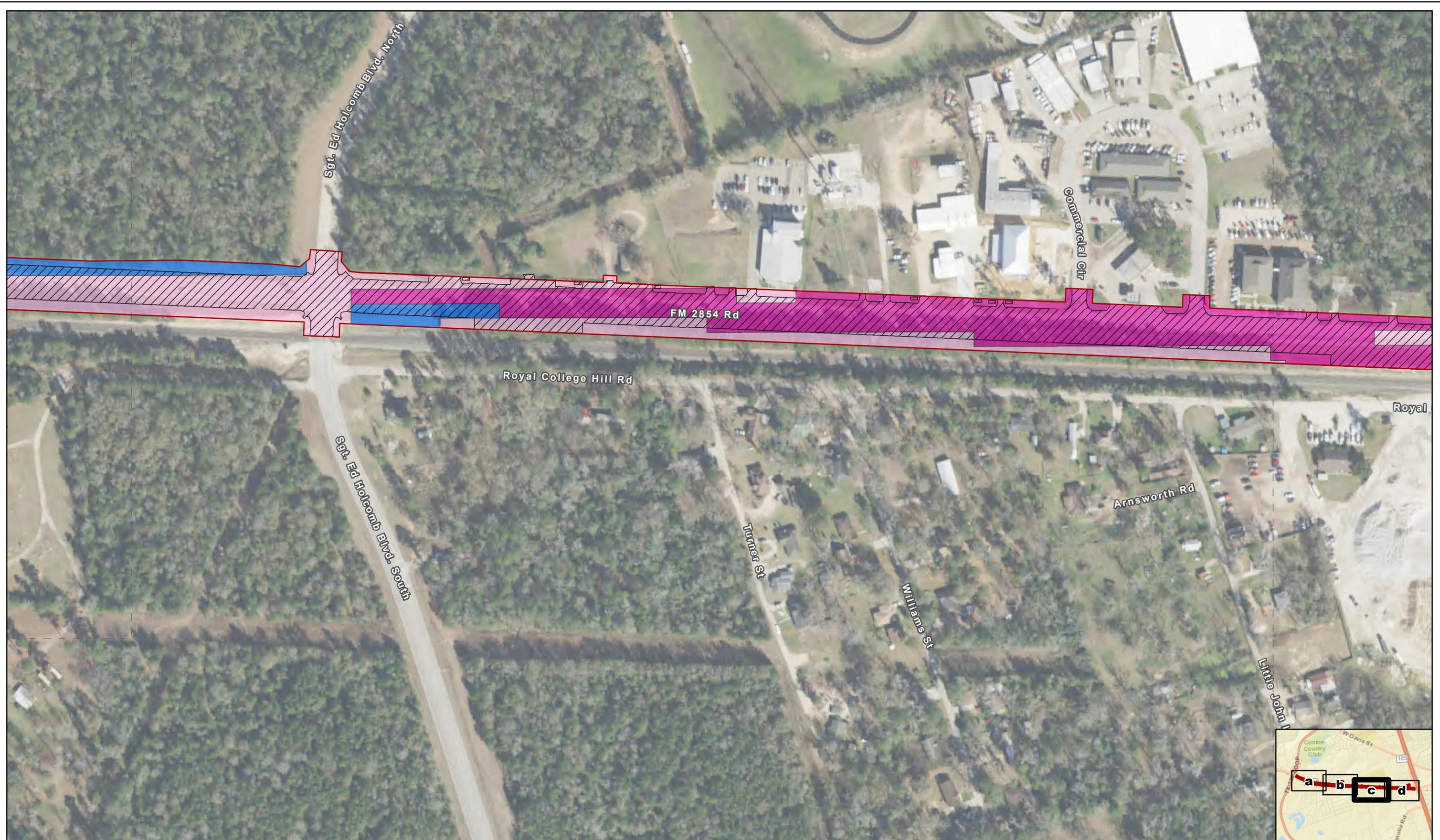


**Figure 7b**  
**EMST Mapped Vegetation Types**  
**FM 2854 from Loop 336 to IH-45**

Project Location	Barren	Pineywoods: Pine Forest or Plantation	Urban Low Intensity
Proposed Impacts	Pineywoods: Disturbance or Tame Grassland	Pineywoods: Upland Hardwood Forest	
Sheet Limits	Pineywoods: Pine - Hardwood Forest or Plantation	Urban High Intensity	



	0	200 Feet
	0	60 Meters
Data Source: TxDOT/TPWD	Prepared for: TxDOT	1 in = 200 feet
EMST/MoRAP (2013)		Scale: 1:2,400
Aerial Source: TNRIS (2015)	CSJ: 2744-01-011	Date: 6/30/2016

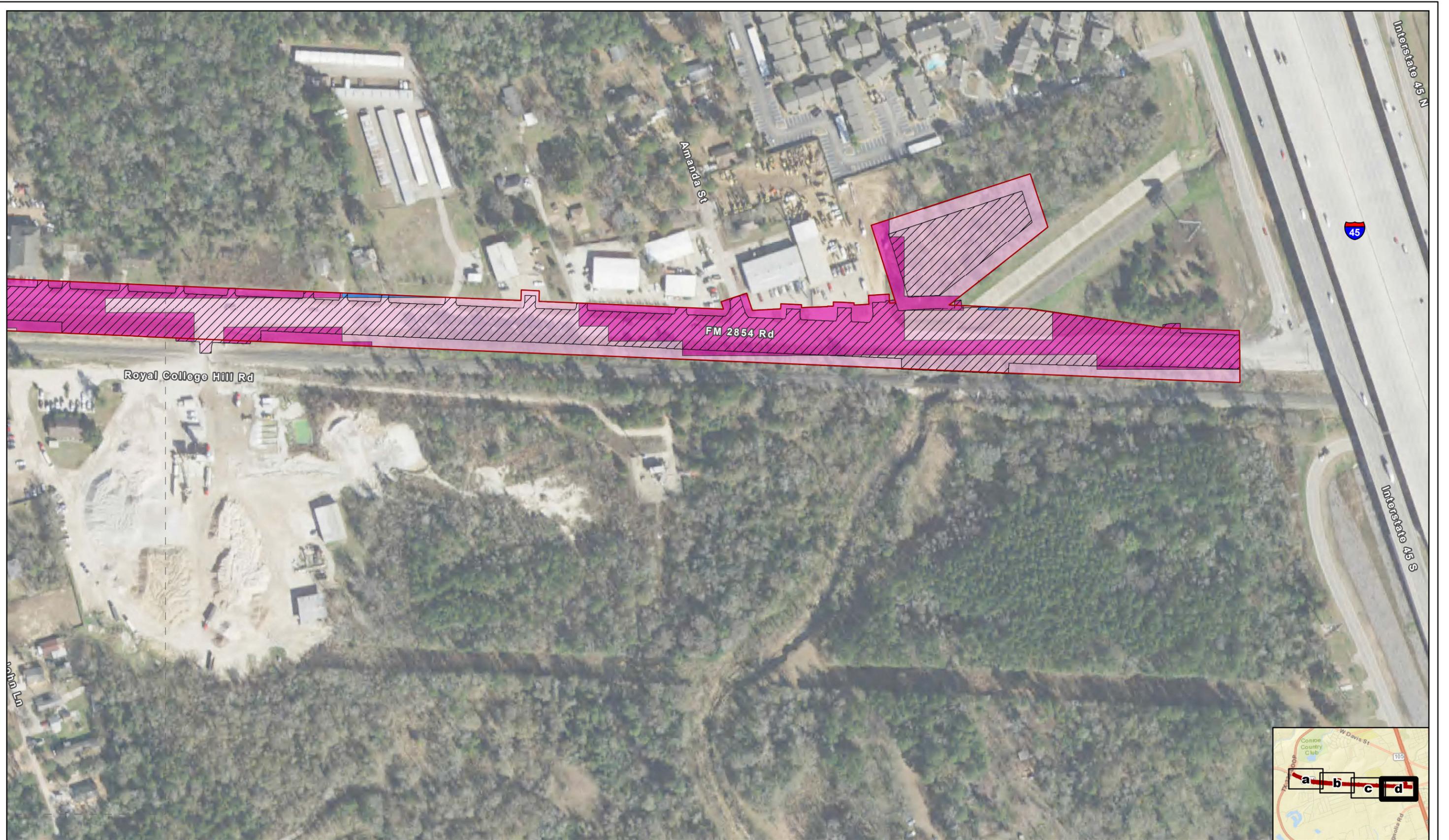


**Figure 7c**  
**EMST Mapped Vegetation Types**  
**FM 2854 from Loop 336 to IH-45**

	Project Location		Pineywoods: Upland Hardwood Forest
	Proposed Impacts		Urban High Intensity
	Sheet Limits		Urban Low Intensity



	0	200 Feet
	0	60 Meters
Data Source: TxDOT/TPWD	Prepared for: TxDOT	1 in = 200 feet
EMST/MoRAP (2013)		Scale: 1:2,400
Aerial Source: TNRIS (2015)	CSJ: 2744-01-011	Date: 6/30/2016



**Figure 7d**  
**EMST Mapped Vegetation Types**  
**FM 2854 from Loop 336 to IH-45**

- |                  |                                   |
|------------------|-----------------------------------|
| Project Location | Pinewoods: Upland Hardwood Forest |
| Proposed Impacts | Urban High Intensity              |
| Sheet Limits     | Urban Low Intensity               |

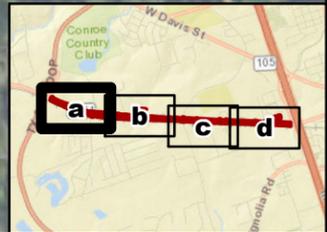
Data Source: TxDOT/TPWD	Prepared for: TxDOT	1 in = 200 feet
EMST/MoRAP (2013)	CSJ: 2744-01-011	Scale: 1:2,400
Aerial Source: TNRIS (2015)		Date: 6/30/2016

G:\Projects\TXDOT\FM2854\EA\_Figure 7\_EMST\_20160630.mxd



**Figure 8a**  
**Observed Vegetation Types**  
**FM 2854 from Loop 336 to IH-45**

- Project Location
- Proposed Impacts
- Sheet Limits
- Riparian Woodland
- Urban High Intensity
- Urban Low Intensity



		1 in = 200 feet
		Scale: 1:2,400
Prepared for: TxDOT	CSJ: 2744-01-011	
Date: 6/30/2016		

Data Source: CMEC (2015, 2016)  
 Aerial Source: TNRS (2015)

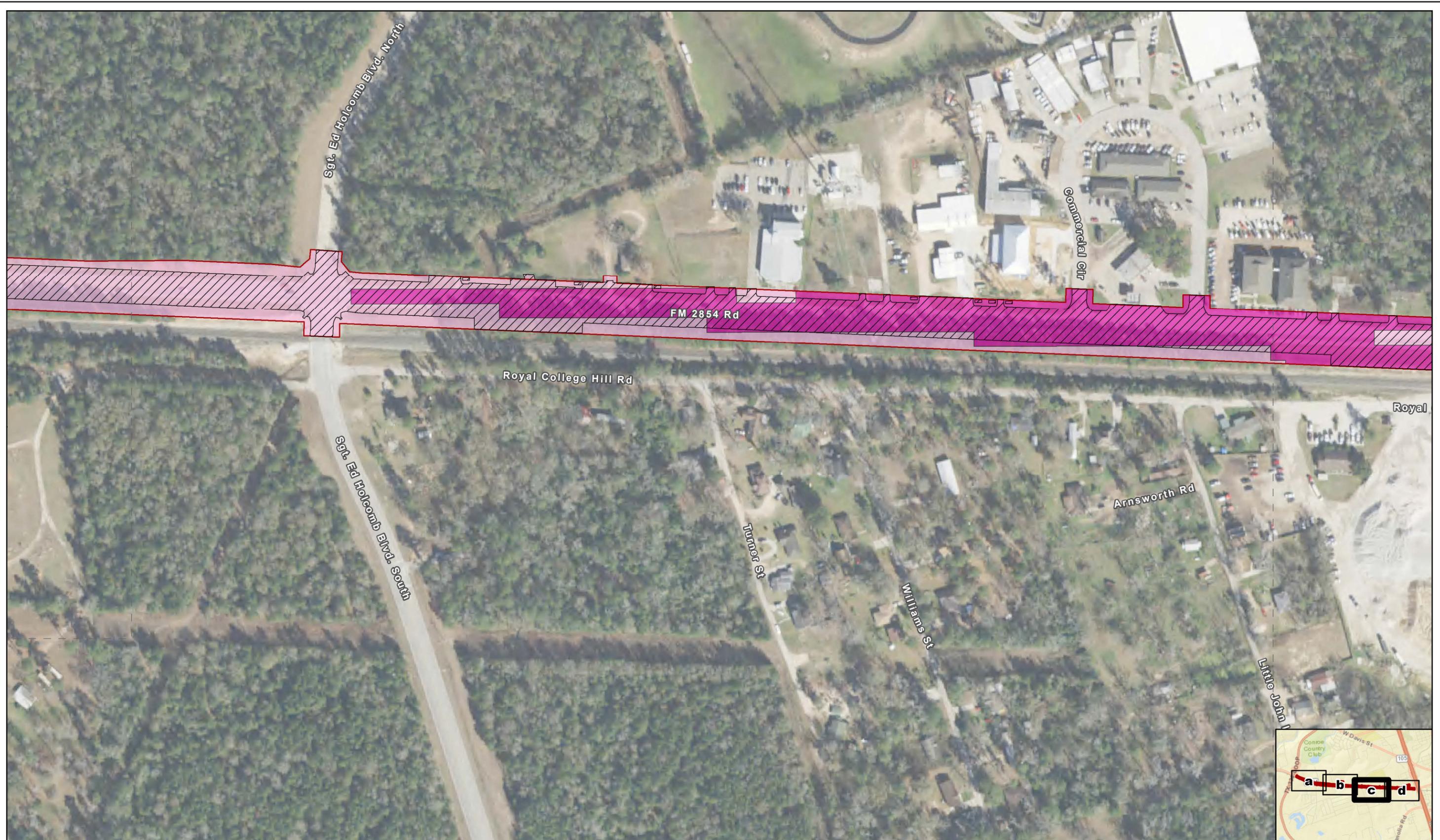


**Figure 8b**  
**Observed Vegetation Types**  
 FM 2854 from Loop 336 to IH-45

Project Location	Pineywoods: Upland Hardwood Forest
Proposed Impacts	Urban High Intensity
Sheet Limits	Urban Low Intensity

	0 200 Feet
	0 60 Meters
Prepared for: TxDOT	1 in = 200 feet
CSJ: 2744-01-011	Scale: 1:2,400
	Date: 6/30/2016

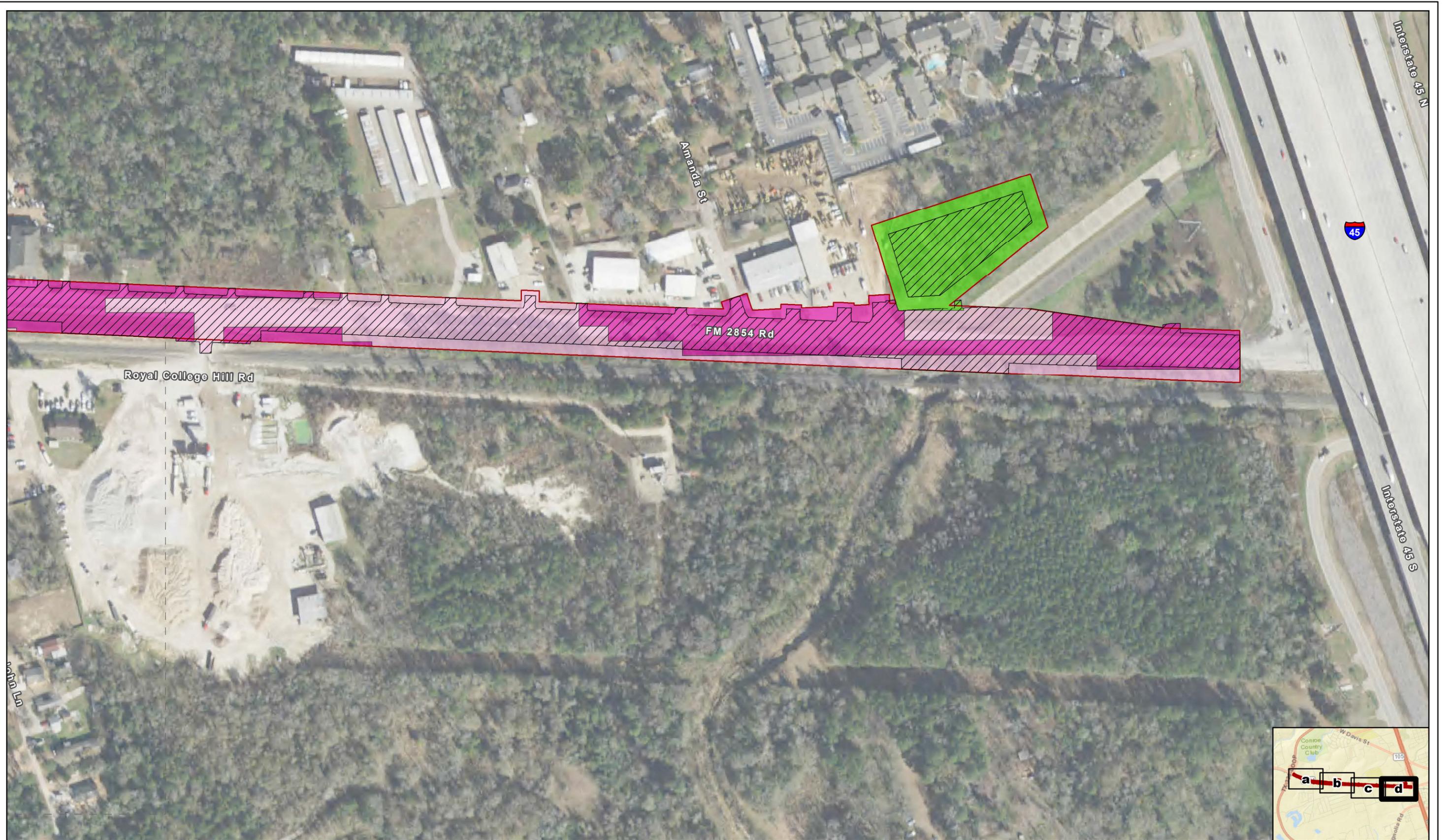
Data Source: CMEC (2015, 2016)  
 Aerial Source: TNRIS (2015)



**Figure 8c**  
**Observed Vegetation Types**  
 FM 2854 from Loop 336 to IH-45

- Project Location
- Urban High Intensity
- Proposed Impacts
- Urban Low Intensity
- Sheet Limits

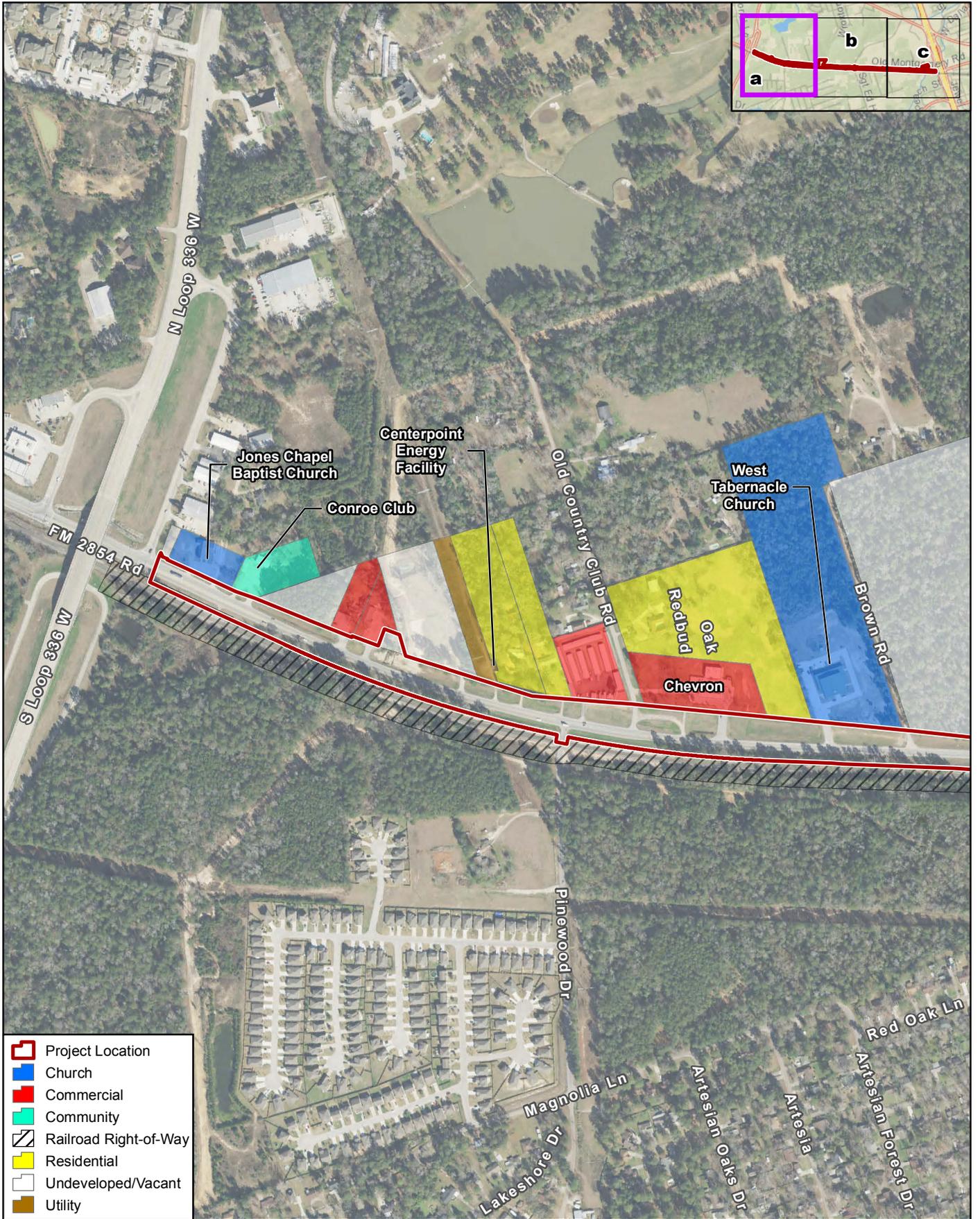
		1 in = 200 feet
		Scale: 1:2,400
Prepared for: TxDOT		Date: 6/30/2016
Data Source: CMEC (2015, 2016) Aerial Source: TNRIS (2015)		CSJ: 2744-01-011



**Figure 8d**  
**Observed Vegetation Types**  
**FM 2854 from Loop 336 to IH-45**

- Project Location
- Riparian Woodland
- Proposed Impacts
- Urban High Intensity
- Sheet Limits
- Urban Low Intensity

	Prepared for: TxDOT Date: 6/30/2016
Data Source: CMEC (2015, 2016) Aerial Source: TNRIS (2015)	CSJ: 2744-01-011 Scale: 1:2,400 Date: 6/30/2016

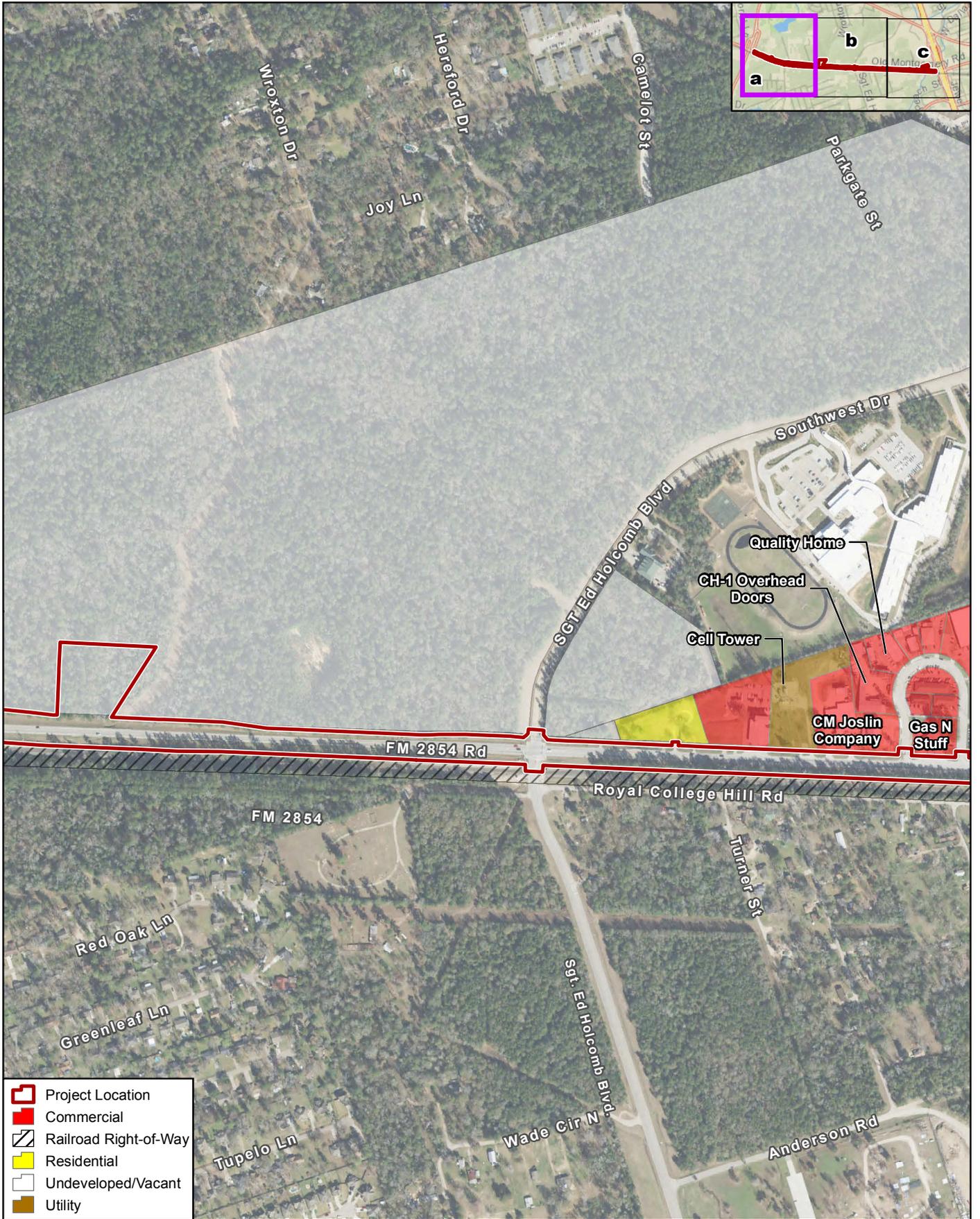


-  Project Location
-  Church
-  Commercial
-  Community
-  Railroad Right-of-Way
-  Residential
-  Undeveloped/Vacant
-  Utility

**Figure 9a**  
**Project Area Land Use**  
**FM 2854 from Loop 336 to IH-45**

Data Sources: MCAD (2014), CMEC (2015)  
 Aerial Source: TNRIS (2015)

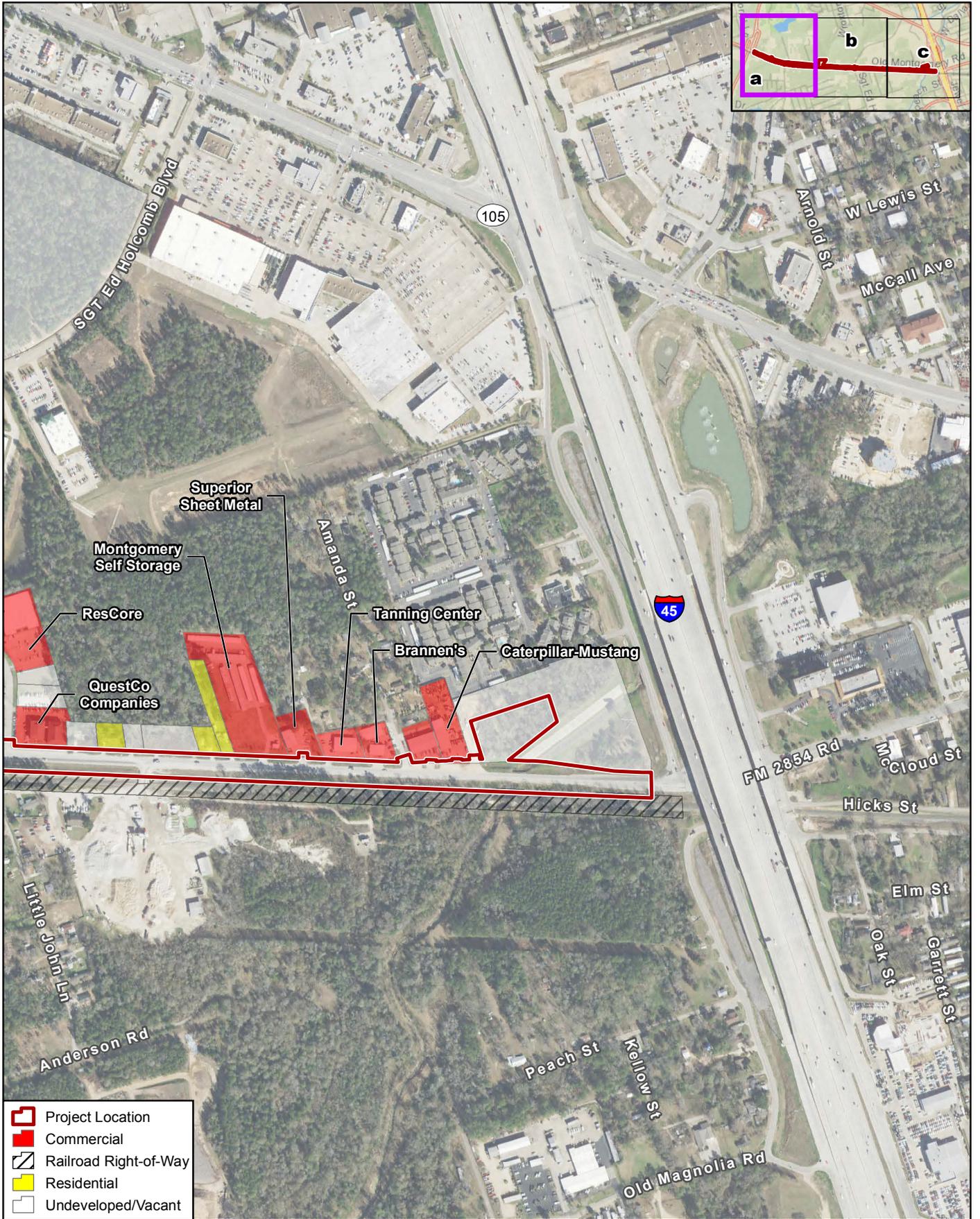
	 0 600 Feet
	 0 150 Meters
Prepared for: TxDOT	1 in = 600 feet
CSJ: 2744-01-011	Scale: 1:7,200
	Date: 6/30/2016



**Figure 9b**  
**Project Area Land Use**  
**FM 2854 from Loop 336 to IH-45**

	0	600 Feet
	0	150 Meters
Prepared for: TxDOT	1 in = 600 feet	
CSJ: 2744-01-011	Scale: 1:7,200	
	Date: 6/30/2016	

Data Sources: MCAD (2014), CMEC (2015)  
 Aerial Source: TNRIS (2015)

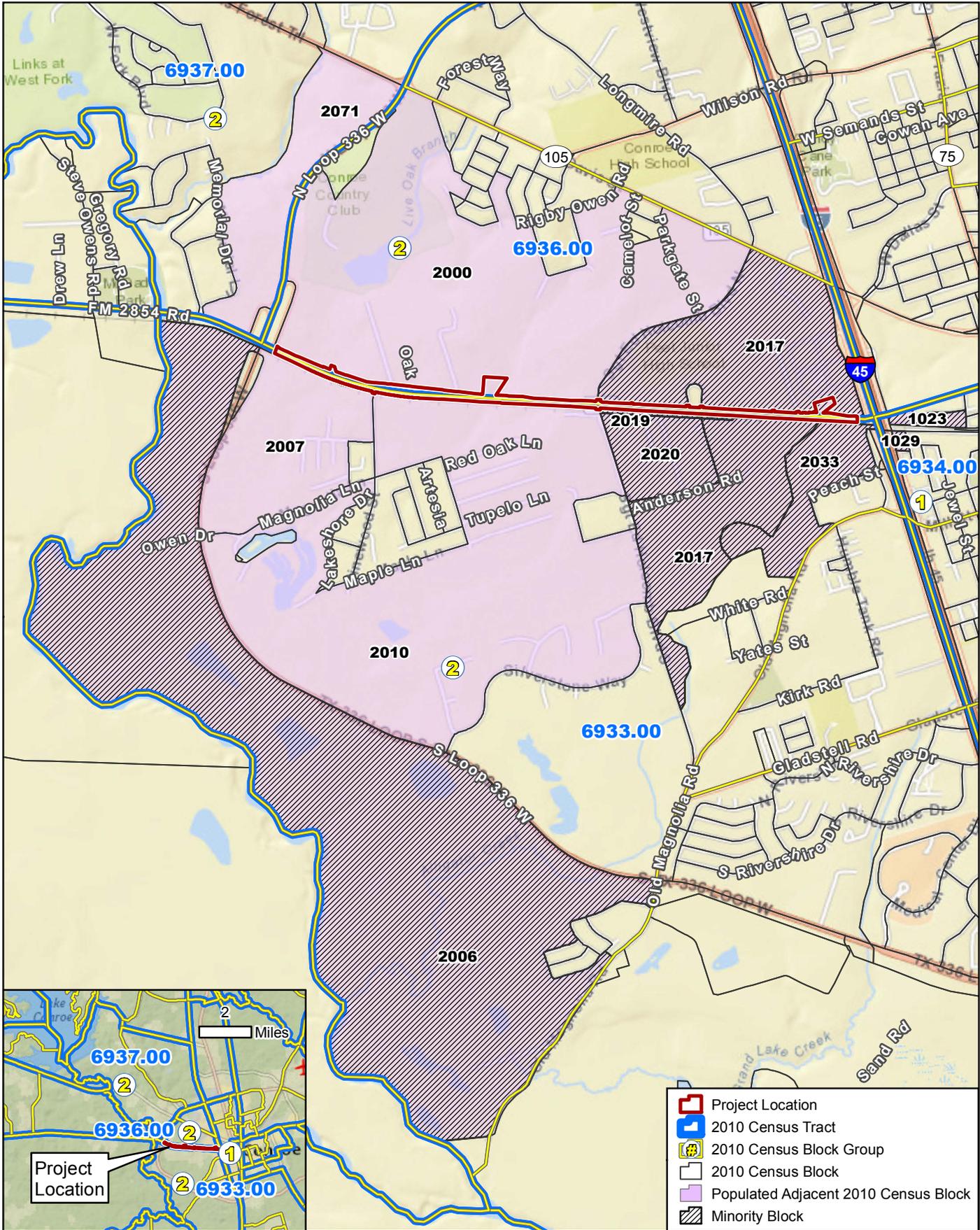


- Project Location
- Commercial
- Railroad Right-of-Way
- Residential
- Undeveloped/Vacant

**Figure 9c**  
**Project Area Land Use**  
**FM 2854 from Loop 336 to IH-45**

Data Sources: MCAD (2014), CMEC (2015)  
 Aerial Source: TNRIS (2015)

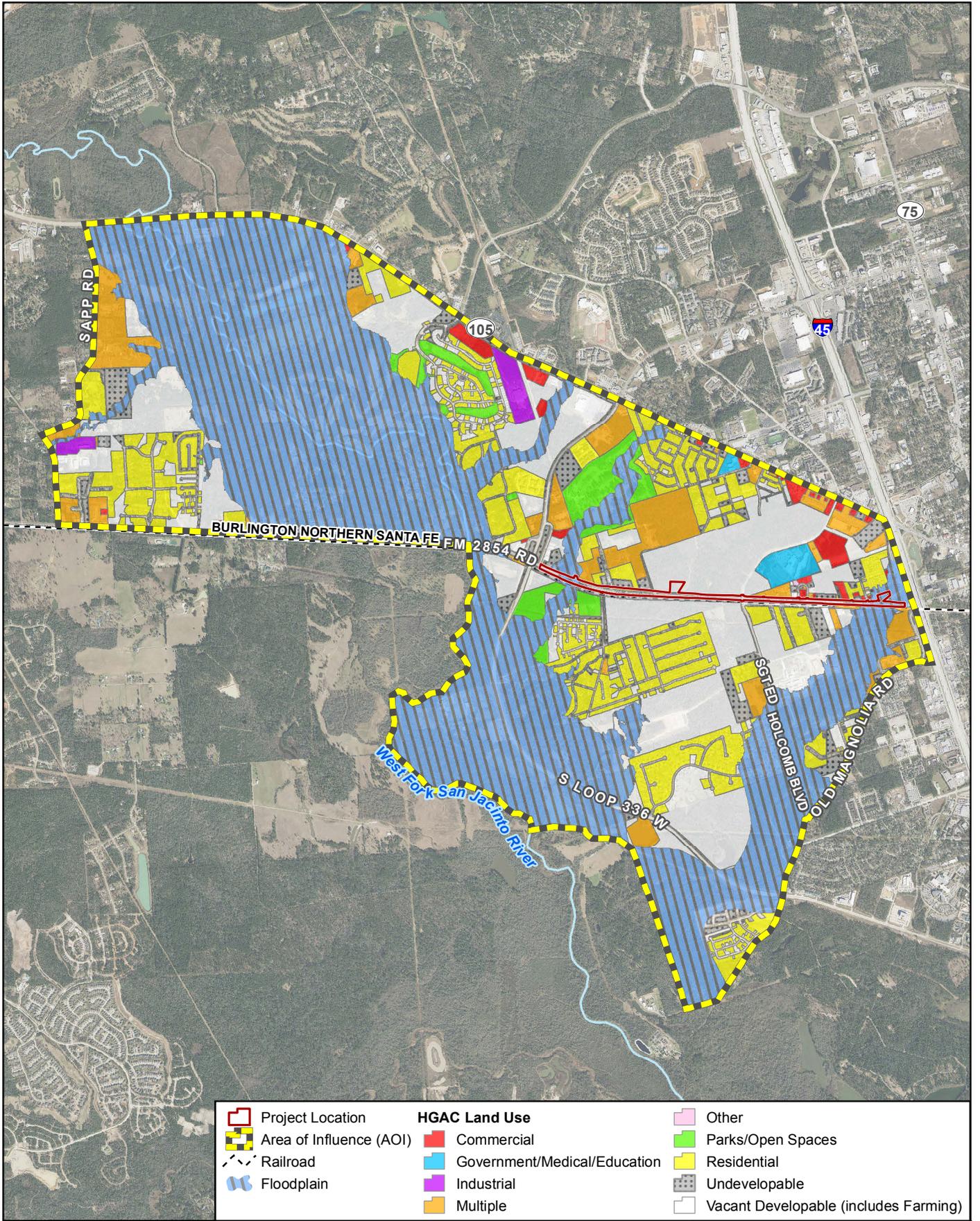
	0                      600 Feet
	0                      150 Meters
Prepared for: TxDOT	1 in = 600 feet
CSJ: 2744-01-011	Scale: 1:7,200
	Date: 6/30/2016



- Project Location
- 2010 Census Tract
- 2010 Census Block Group
- 2010 Census Block
- Populated Adjacent 2010 Census Block
- Minority Block

**Figure 10**  
**Census Geographies**  
 FM 2854 from Loop 336 to IH-45

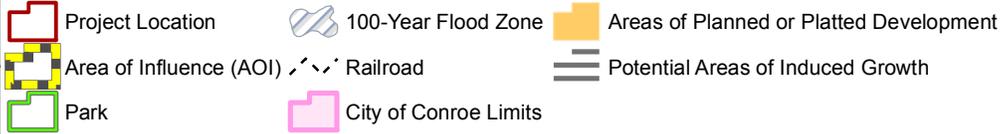
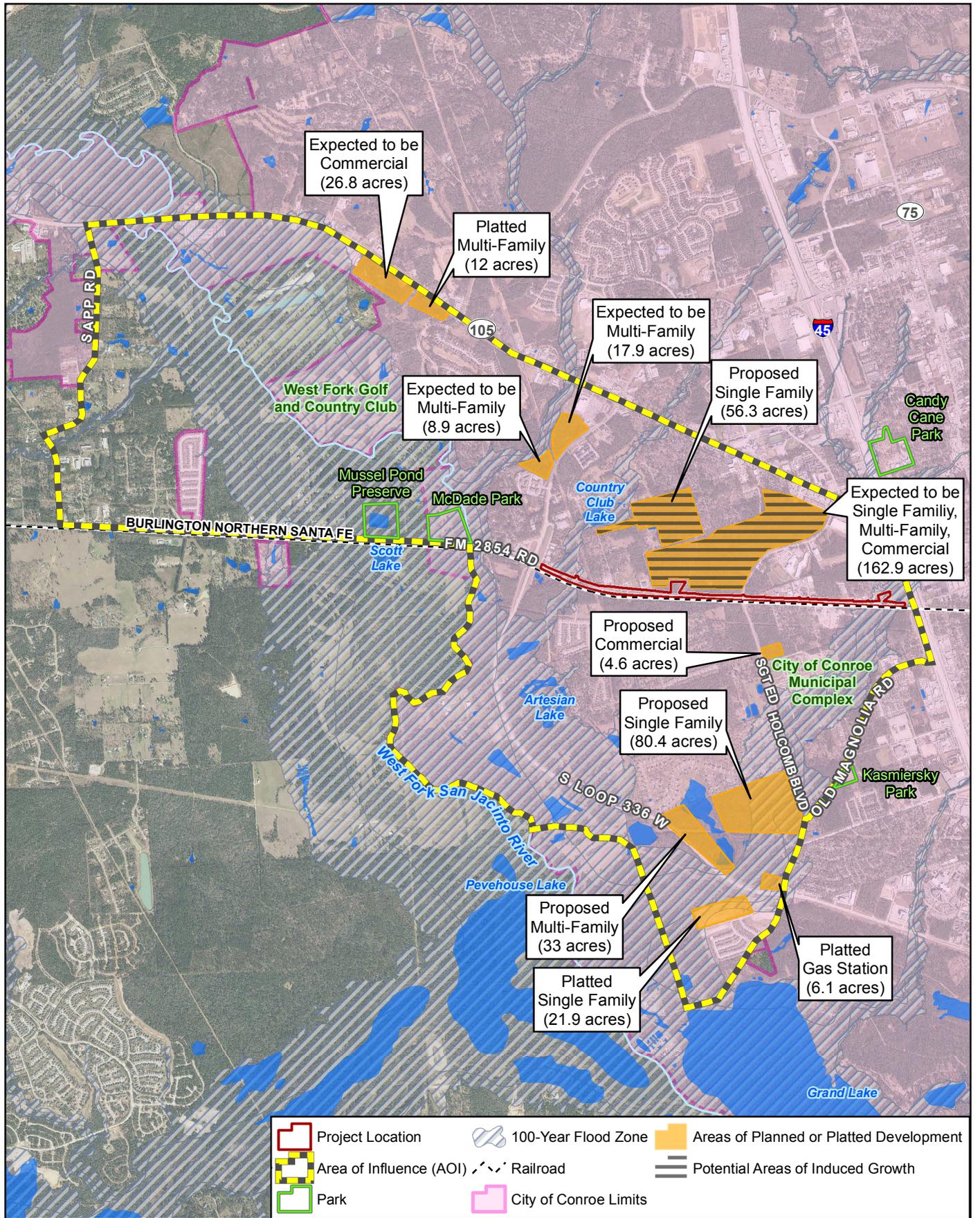
	0	2,500 Feet
	0	600 Meters
Prepared for: TxDOT	1 in = 2,500 feet	
Data Source: US Census Bureau (2010)	Scale: 1:30,000	
Basemap Source: ESRI (2016)	Date: 6/29/2016	
CSJ: 2744-01-011		



**Figure 11**  
**Land Use within the Area of Influence**  
**FM 2854 from Loop 336 to IH-45**

Data Sources: HGAC (2015), CMEC (2015),  
 NHD (2014), FEMA NFHL (2015)  
 Aerial Source: TNRIS (2015)

	0	0.75 Miles
	0	1 Kilometers
Prepared for: TxDOT	1 in = 0.75 miles	
CSJ: 2744-01-011	Scale: 1:47,520	
	Date: 6/28/2016	



**Figure 12**  
**Areas of Potential Development within the Area of Influence**  
**FM 2854 from Loop 336 to IH-45**

	0	0.75 Miles
	0	1 Kilometers
Prepared for: TxDOT	1 in = 0.75 miles	
CSJ: 2744-01-011	Scale: 1:47,520	
	Date: 6/28/2016	

Data Sources: CMEC (2015), FEMA NFHL (2015), NHD (2014), MCAD (2015), City of Conroe (2015); Aerial Source: TNRIS (2015)

**Appendix B**  
**Project Area Photographs**



**Photo 1:** Project terminus at IH 45 (facing east)



**Photo 2:** Proposed detention pond adjacent to Alligator Creek (facing east)



**Photo 3:** Yancy Cement Batch Plant (facing southeast)



**Photo 4:** Existing residence outside of proposed right-of-way (facing northwest)



**Photo 5:** Commercial Circle area north of project right-of-way (facing west)



**Photo 6:** Existing land uses east of Sgt. Holcomb Boulevard (facing east)



**Photo 7:** Existing land uses east of Sgt. Holcomb Boulevard (facing west)



**Photo 8:** West Tabernacle Church (facing north)



**Photo 9:** Existing land uses west of Sgt. Holcomb Boulevard (facing west)



**Photo 10:** Jones Chapel Baptist Church (facing north)



**Photo 11:** LP 336 and FM 2854 intersection (facing west)



**Photo 12:** Representative residence along Royal College Hill Road (facing south)

**Appendix C**  
**TIP/RTP Pages**

STATEWIDE TRANSPORTATION IMPROVEMENT PROGRAM  
HOUSTON-GALVESTON MPO - HIGHWAY PROJECTS  
FY 2017

2015-2018 STIP		09/2015 Revision: Approved 12/03/2015							
DISTRICT	MPO	COUNTY	CSJ	HWY	PHASE	CITY	YOE COST		
HOUSTON	HOUSTON-GALVESTON	MONTGOMERY	0000-00-000	CS	C,E,R	CONROE	\$ 6,800,000		
<b>LIMITS FROM</b> WEDGEWOOD BLVD		<b>PROJECT SPONSOR</b> CITY OF CONROE							
<b>LIMITS TO</b> FM 3083		<b>REVISION DATE</b> 09/2015							
<b>PROJECT</b> WIDEN TO 4-LANES		<b>MPO PROJ NUM</b> 7587							
<b>DESCR</b>		<b>FUNDING CAT(S)</b> 3LC							
<b>REMARKS</b> Facility: LONGMIRE RD		<b>PROJECT HISTORY</b> Amendment #28 - 9/25/15 - Add to TIP.							
<b>P7</b>									
<b>TOTAL PROJECT COST INFORMATION</b>			<b>AUTHORIZED FUNDING BY CATEGORY/SHARE</b>						
PREL ENG \$	222,163	<b>COST OF APPROVED PHASES</b> \$ 6,800,000	<b>CATEGORY</b>	<b>FEDERAL</b>	<b>STATE</b>	<b>REGIONAL</b>	<b>LOCAL</b>	<b>LC</b>	<b>TOTAL</b>
ROW PURCH \$	1,133,484		3LC	\$ 0	\$ 0	\$ 0	\$ 0	\$ 6,800,000	\$ 6,800,000
CONSTR \$	4,533,938		TOTAL	\$ 0	\$ 0	\$ 0	\$ 0	\$ 6,800,000	\$ 6,800,000
CONST ENG \$	226,697								
CONTING \$	453,394								
INDIRECT \$	230,324								
BOND FIN \$	0								
PT CHG ORD \$	0								
<b>TOTAL CST \$</b>	<b>6,800,000</b>								

2015-2018 STIP		09/2015 Revision: Approved 12/03/2015							
DISTRICT	MPO	COUNTY	CSJ	HWY	PHASE	CITY	YOE COST		
HOUSTON	HOUSTON-GALVESTON	BRAZORIA	0000-00-000		C,E,R	PEARLAND	\$ 22,321,000		
<b>LIMITS FROM</b> SMITH RANCH RD		<b>PROJECT SPONSOR</b> Pearland							
<b>LIMITS TO</b> CULLEN BLVD		<b>REVISION DATE</b> 09/2015							
<b>PROJECT</b> WIDEN 2-LANES TO 4-LANES, ADD MEDIAN & SHOULDERS, ADD SIDEWALKS		<b>MPO PROJ NUM</b> 671							
<b>DESCR</b>		<b>FUNDING CAT(S)</b> 3LC							
<b>REMARKS</b> Facility: HUGHES RANCH RD		<b>PROJECT HISTORY</b> Amendment #15 - 9/25/15 - Add to TIP.							
<b>P7</b>									
<b>TOTAL PROJECT COST INFORMATION</b>			<b>AUTHORIZED FUNDING BY CATEGORY/SHARE</b>						
PREL ENG \$	729,250	<b>COST OF APPROVED PHASES</b> \$ 22,321,000	<b>CATEGORY</b>	<b>FEDERAL</b>	<b>STATE</b>	<b>REGIONAL</b>	<b>LOCAL</b>	<b>LC</b>	<b>TOTAL</b>
ROW PURCH \$	3,720,663		3LC	\$ 0	\$ 0	\$ 0	\$ 0	\$ 22,321,000	\$ 22,321,000
CONSTR \$	14,882,651		TOTAL	\$ 0	\$ 0	\$ 0	\$ 0	\$ 22,321,000	\$ 22,321,000
CONST ENG \$	744,133								
CONTING \$	1,488,265								
INDIRECT \$	756,039								
BOND FIN \$	0								
PT CHG ORD \$	0								
<b>TOTAL CST \$</b>	<b>22,321,000</b>								

2015-2018 STIP		11/2015 Revision: Approved 01/22/2016							
DISTRICT	MPO	COUNTY	CSJ	HWY	PHASE	CITY	YOE COST		
HOUSTON	HOUSTON-GALVESTON	MONTGOMERY	2744-01-011	FM 2854	C	CONROE	\$ 13,647,000		
<b>LIMITS FROM</b> LP 336		<b>PROJECT SPONSOR</b> TXDOT							
<b>LIMITS TO</b> IH 45		<b>REVISION DATE</b> 11/2015							
<b>PROJECT</b> RECONSTRUCT TO 4-LANE DIVIDED CURB & GUTTER		<b>MPO PROJ NUM</b> 503							
<b>DESCR</b>		<b>FUNDING CAT(S)</b> 7							
<b>REMARKS</b> P7		<b>PROJECT HISTORY</b> Amendment #37 - 11/20/15 - Modify description and funding Amendment #15 - 9/25/15 - Add to TIP. District program authority (SPA) project. Commitment of implementation funding pending results of TIP Call for Projects.							
<b>TOTAL PROJECT COST INFORMATION</b>			<b>AUTHORIZED FUNDING BY CATEGORY/SHARE</b>						
PREL ENG \$	668,703	<b>COST OF APPROVED PHASES</b> \$ 13,647,000	<b>CATEGORY</b>	<b>FEDERAL</b>	<b>STATE</b>	<b>REGIONAL</b>	<b>LOCAL</b>	<b>LC</b>	<b>TOTAL</b>
ROW PURCH \$	0		7	\$ 10,917,600	\$ 2,729,400	\$ 0	\$ 0	\$ 0	\$ 13,647,000
CONSTR \$	13,647,000		TOTAL	\$ 10,917,600	\$ 2,729,400	\$ 0	\$ 0	\$ 0	\$ 13,647,000
CONST ENG \$	682,350								
CONTING \$	1,364,700								
INDIRECT \$	693,268								
BOND FIN \$	0								
PT CHG ORD \$	0								
<b>TOTAL CST \$</b>	<b>17,056,021</b>								

**REGIONAL INVESTMENT PROGRAMS, EXEMPT PROJECTS IN FIRST TEN YEARS (FY 2015-2024)**

MPOID	CSJ	County	Sponsor	Facility	From	To	Description	Fiscal Year	Total Project Cost (M, YOY)
<b>THOROUGHFARE DEVELOPMENT (CONT'D)</b>									
10033		Harris	CITY OF HOUSTON	YORK ST	NAVIGATION BLVD	POLK ST	RECONSTRUCT EXISTING CONCRETE RDWY: INCL ENGR & CONSTRUCT FOR 4 LANE CONCRETE RDWY W/PARKING, CURBS, SIDEWALKS, STREET LIGHTING & NECESSARY UNDERGROUND UTILITIES	2020	\$ 5.05
15470		Montgomery	CITY OF CONROE	AIRPORT GATEWAY BLVD	FM 830/SEVEN COVES RD	LEAGUE LINE RD EXTENSION	CONSTRUCT 4-LANE DIVIDED	2023	\$ 11.97
15471		Montgomery	CITY OF CONROE	AIRPORT RD	FM 3083	SH 105	WIDEN TO 4-LANES	2016	\$ 5.40
474		Montgomery	CITY OF CONROE	CRIGHTON RD	IH 45	STEWART CREEK BRIDGE	WIDEN TO 3-LANES	2015	\$ 3.00
15485		Montgomery	CITY OF CONROE	CRIGHTON RD	STEWART CREEK BRIDGE	FM 1314	4-LANE WIDENING: PHASE 3	2016	\$ 1.50
7589		Montgomery	MONTGOMERY COUNTY	CROCKETT MARTIN RD	SH 105	FM 2090	REBUILD	2023	\$ 7.26
15474		Montgomery	CITY OF CONROE	DRENNAN RDE	PROPOSED PLANTATION DR	N. FRAZIER RD	CONSTRUCT 4-LANE DIVIDED, RAISED MEDIAN	2016	\$ 2.26
10159	1400-04-021	Montgomery	TXDOT HOUSTON DISTRICT	FM 1774	WALLER C/L	0.109 MI N OF FM 1488	WIDEN TO 4-LANE DIVIDED RURAL WITH RAILROAD GRADE SEPARATION	2017	\$ 49.60
15570	1400-04-033	Montgomery	TXDOT HOUSTON DISTRICT	FM 1774	0.027 MI N OF FM 1488	0.045 MI S OF W LOST CREEK BLVD	RESTRIPE TO WIDEN TO 4-LANE DIVIDED RURAL	2017	\$ 0.20
503	2744-01-011	Montgomery	TXDOT HOUSTON DISTRICT	FM 2854	LP 336	IH 45	WIDEN TO 4-LANE DIVIDED CURB & GUTTER	2017	\$ 17.45
906	3050-02-024	Montgomery	TXDOT HOUSTON DISTRICT	FM 2978	FM 1488	S OF DRY CREEK	WIDEN FROM 2 TO 4-LANES	2015	\$ 15.60
15462	3050-02-025	Montgomery	TXDOT HOUSTON DISTRICT	FM 2978	S OF DRY CREEK	CONROE HUFFSMITH RD	WIDEN FROM 2 TO 4-LANES	2019	\$ 5.35
3054		Montgomery	MONTGOMERY COUNTY	FORD RD	US 59	W LAKE HOUSTON PKWY	RECONSTRUCT 2-LANE UNDIVIDED	2023	\$ 3.00

Projects shaded in GRAY are exempt from or are not considered regionally significant under H-GAC regional emissions analysis.

**Appendix D**  
**Agency Coordination**

**From:** [Shannon Stoker](#)  
**To:** [Michelle Lueck](#)  
**Subject:** RE: EA Review - FM 2854 - Montgomery County (CSJ: 2744-01-011)  
**Date:** Wednesday, April 13, 2016 9:59:02 AM

---

The Texas commission on Environmental Quality (TCEQ) received a request from Texas Department of Transportation (TxDOT) regarding the following project: FM **2854 – (CSJ: 2744-01-011); between Loop (LP) 336 and Interstate Highway (IH) 45, in Montgomery County, Texas; TxDOT 15-33.**

In accordance with the Memorandum of Understanding between TxDOT and TCEQ addressing environmental reviews, which is codified in Chapter 43, Subchapter I of the Texas Administrative Code (TAC) and 30 TAC § 7.119, TCEQ is responding to your request for review by providing the below comments.

A review of the project for General Conformity impact in accordance with 40 CFR Part 93 indicates that the proposed project is located in Montgomery County, which is currently classified by the United States Environmental Protection Agency as marginal nonattainment for the 2008 ozone National Ambient Air Quality Standard. Therefore, general conformity rules apply.

The two primary precursors to ozone formation are volatile organic compounds (VOCs) and nitrogen oxides (NO<sub>x</sub>). A general conformity analysis may be required when a project results in an emissions increase of 100 tons per year or greater for either VOCs or NO<sub>x</sub>. Because the emissions from this proposed project are expected to be below these thresholds it is not anticipated to impact the state implementation plan; therefore a general conformity analysis is not required.

The Office of Water has no comment on this project.

TxDOT will still need to follow all other applicable laws related to this project, including applying for applicable permits.

If you have any questions, please feel free to contact the NEPA Coordinator at (512) 239-3900 or [NEPA@tceq.texas.gov](mailto:NEPA@tceq.texas.gov).

NEPA Coordinator  
TCEQ, MC-119  
[NEPA@tceq.texas.gov](mailto:NEPA@tceq.texas.gov)  
512-239-3500

## Tunisia Hardy

---

**From:** Sue Reilly <Sue.Reilly@tpwd.texas.gov>  
**Sent:** Tuesday, December 22, 2015 3:38 PM  
**To:** Tunisia Hardy  
**Subject:** RE: FM 2854 widening, CSJ 2744-01-011

Tunisia,

Thank you for sending the material. The only comment I have is on formatting in the EA and it's really not much of a comment. I think it would make the EMST information easier to understand if Tables 2 and 3 were merged. Then you could just have Mapped and Observed EMST acreage contrasted right there in one place.

Thank you for submitting the following project for early coordination: FM 2854 widening between Loop 336 and IH-45 in Conroe (CSJ 2744-01-011). TPWD appreciates TxDOT's commitment to implement the practices listed in the Biological Evaluation form submitted on 12/3/2015. 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 fish and wildlife.

Thank you,

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

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**From:** Tunisia Hardy [<mailto:Tunisia.Hardy@txdot.gov>]  
**Sent:** Wednesday, December 16, 2015 3:54 PM  
**To:** Sue Reilly  
**Subject:** RE: FM 2854 widening, CSJ 2744-01-011

Sue,

Per your request, below is the drop-off summary of the FM 2854 draft EA. It bounced back when I attempted to send via email so I sent via DropBox.

FROM	<b>Claim ID:</b>	YF46o4arsJR3aWF6
	<b>Claim Passcode:</b>	8b3kpkAJussJeZKh
	<b>Name:</b>	Tunisia Hardy
	<b>Organization:</b>	TxDOT
	<b>Email:</b>	<a href="mailto:tunisia.hardy@txdot.gov">tunisia.hardy@txdot.gov</a>
	<b>Sent From:</b>	hou-742607-1.dot.state.tx.us

		16 Dec 2015 03:51:43 PM
	<b>Confirm Delivery:</b>	yes
T O	<b>Name &amp; Email:</b>	Sue Reilly ( <a href="mailto:sue.reilly@tpwd.texas.gov">sue.reilly@tpwd.texas.gov</a> )

Best,

Tunisia

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**From:** Tunisia Hardy  
**Sent:** Wednesday, December 16, 2015 2:46 PM  
**To:** 'Sue Reilly'  
**Subject:** RE: FM 2854 widening, CSJ 2744-01-011

Sue,

Per your request, attached is the draft of the EA to supplement your review of the BEF form. Should you need something else, please do not hesitate to ask.

Best,

Tunisia

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**From:** Sue Reilly [<mailto:Sue.Reilly@tpwd.texas.gov>]  
**Sent:** Thursday, December 10, 2015 3:51 PM  
**To:** Tunisia Hardy  
**Subject:** FM 2854 widening, CSJ 2744-01-011

Tunisia,

I am also the reviewer for this project. Please send me the additional material or let me know file names in ECOS.

Thanks!

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





December 10, 2015

Section 106/Antiquities Code of Texas: Archeological Review (Permit #7419)  
Farm-to-Market Road (FM) 2854: Loop 336 – Interstate Highway 45: Road Expansion  
Houston District; Montgomery County (2744-01-011)

Ms. Patricia A. Mercado-Allinger  
Division Director/State Archeologist  
Archeology Division  
Texas Historical Commission  
PO Box 12276  
Austin, TX 78711-2276

Dear Ms. Mercado-Allinger:

The proposed project will be undertaken with Federal funding. In accordance with Section 106 (and the First Amended Programmatic Agreement among the Texas Department of Transportation [TxDOT], the Texas State Historical Preservation Officer [TSHPO], the Federal Highway Administration [FHWA], and the Advisory Council on Historic Preservation) and the Antiquities Code of Texas (and the Memorandum of Understanding between the Texas Historical Commission [THC] and TxDOT), this letter continues consultation for the proposed undertaking.

The following proposed project would improve FM 2854 in TxDOT's Houston District. The proposed 2.1 miles long project would widen FM 2854 in Montgomery County, west of Conroe, Texas. The proposed project would widen the current roadway from the existing two-lane, undivided facility to a four-lane, flush median, divided facility, between Loop 336 and IH 45. The proposed improvements total approximately 37.5 acres, and the project would require approximately 3.3 acres of new right of way (ROW) and 3.5 acres of temporary construction easements (TCE). The majority of new ROW is for the locations of two detention ponds. The existing ROW is 110 – 190 feet in width. The depth of construction impacts are generally no more than 3.0 feet in depth of most of the project length; however, the detention ponds would extend to a depth of approximately 10 feet below the ground surface (Exhibits C and D). The area of potential effect (APE) is defined as the project length, the existing and proposed ROW and the TCE, and the depth of impacts.

An SWCA archeological crew conducted an intensive survey on behalf of TxDOT of the above proposed project in October 2015. Archival review determined that no recorded archeological properties were located within the APE for the proposed projects. There are no recorded sites

**OUR GOALS**

MAINTAIN A SAFE SYSTEM • ADDRESS CONGESTION • CONNECT TEXAS COMMUNITIES • BEST IN CLASS STATE AGENCY

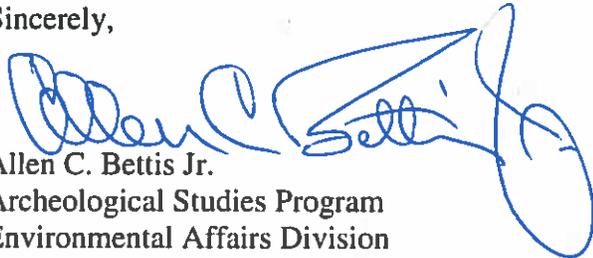
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within 1,000 meters (approximately 3,300 feet) of the proposed project APE. There is one archeological survey located within the APE, the 2006 TxDOT/Federal Highway Administration survey of the existing FM 2854 ROW. There are numerous other archeological surveys located within 2,000 meters (6,600 feet) of the APE. SWCA conducted intensive survey and shovel-testing of the proposed detention pond locations. No mechanical trenching was needed due to the lack of deeply buried alluvial soils. The relict deposits were found to be extensively disturbed from development and previous construction. SWCA recommended that no further archeological investigation was needed. Based on the above information, TxDOT recommends that the archeological inventory is adequate and complete. TxDOT further recommends that since no cultural materials were recorded and the APE was found to be extensively disturbed, the proposed project should be allowed to proceed to construction.

Please find attached for your review and comments the TxDOT draft survey report; *Report for Archeological Survey, FM 2854 Expansion Project: Loop 336 to IH 45, Montgomery County, Texas, Houston District*. If you have no objections to the recommendations made or any comments on this report and find it acceptable, please sign below to indicate your concurrence and stamp the draft cover as acceptable.

Thank you for your consideration in this matter. If you have any questions or further need of assistance, please contact Allen Bettis of the TxDOT Archeological Studies Program at (512) 416-2747.

Sincerely,



Allen C. Bettis Jr.  
Archeological Studies Program  
Environmental Affairs Division

Attachment

cc w/o attachments:

Tunisia Hardy, Houston District Office  
ACB JVL PA File



Concurrence by:  
for Mark S. Wolfe, State Historic Preservation Officer

12-18-15

Date:

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried-out by TxDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated December 16, 2014, and executed by FHWA and TxDOT.



# Report for Archeological Survey

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FM 2854 Expansion Project: Loop 336 to IH 45  
Montgomery County, Texas.

## Houston District

Allen Bettis Principal Investigator, Antiquities Permit No. 7419

CSJ: 2744-01-11

November 25, 2015

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried-out by TxDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated 12-16-14, and executed by FHWA and TxDOT.

## Project Identification

Date: 11/25/2015

Date(s) of Survey: 10/20/2015

Archeological Survey Type: Reconnaissance  Intensive

Report Version: Draft  Final

Jurisdiction: Federal  State

Texas Antiquities Permit Number: 7419

District: Houston

County or Counties: Montgomery

USGS Quadrangle(s): Cowl Spur (3095-241), Conroe (3095-132)

Highway: Farm-to-Market Road (FM) 2854

CSJ: 2744-01-011

Report Author(s): Daniel Rodriguez and Matt Carter

Principal Investigator: Allen Bettis

## Texas Historical Commission Approval

<b>DRAFT REPORT ACCEPTABLE</b>
by <u><i>Mark Wolfe</i></u>
for Mark Wolfe Executive Director, THC
Date <u>12-18-15</u>
Track# _____

Signature

Date