Final Environmental Assessment

FM 518, TxDOT Houston District

Project Limits from SH 288 to SH 35

CSJ Numbers 0976-02-086 and 3416-01-012

Brazoria County, Texas

February 14, 2020

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried-out by TxDOT pursuant to 23 U.S.C. 327 and a memorandum of understanding dated December 9, 209, and executed by FHWA and TxDOT.

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LIST OF ACRONYMS

A list of common acronyms used throughout this document and their definitions are provided below:

AADT	Annual Average Daily Traffic
APE	Area of Potential Effects
AOI	Area of Influence
BMP	Best Management Practice
CGP	Construction General Permit
CLTL	Center left-turn lane
CMAQ	Congestion Mitigation and Air Quality
CO	Carbon monoxide
CMP	Congestion Management Process
CR	County Road
C.R.I.S.	Crash Records Information System
CT	Census Tract
CWA	Clean Water Act
DOT	Department of Transportation
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
EPIC	Environmental Permits, Issues, and Commitments
EO	Executive Order
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
FM	Farm-to-Market Road
FPPA	Farmland Protection Policy Act
FTA	Federal Transit Administration
FWCA	Fish and Wildlife Coordination Act
H-GAC	Houston-Galveston Area Council
HGB	Houston-Galveston-Brazoria
IP	Individual Permit
ISA	Initial Site Assessment
LOS	Level of Service
LEP	Limited English Proficiency
LPST	Leaking Petroleum Storage Tank
LWCF	Land and Water Conservation Fund
MBTA	Migratory Bird Treaty Act

MMPA	Marine Mammal Protection Act
MOU	Memorandum of Understanding
MS4	Municipal Separate Storm Sewer System
MSAT	Mobile Source Air Toxics
MSFCMA	Magnuson-Stevens Fishery Conservation and Management Act
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NOI	Notice of Intent
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWP	Nationwide Permit
PA	Programmatic Agreement
PALM	Potential Archeological Liability Map
PCB	Polychlorinated biphenyl
PCN	Pre-construction Notification
PJD	Preliminary Jurisdictional Determination
PM	Particulate Matter
PST	Petroleum Storage Tank
PWC	Parks and Wildlife Code
ROE	Right-of-Entry
RTP	Regional Transportation Plan
SGCN	Species of Greatest Conservation Need
SH	State Highway
SIP	State Implementation Plan
SOV	Single Occupancy Vehicle
SWP3	Storm Water Pollution Prevention Plan
TAQA	Traffic Air Quality Analysis
TCAP	Texas Conservation Action Plan
TCEQ	Texas Commission on Environmental Quality
TERP	Texas Emissions Reduction Plan
THC	Texas Historical Commission
TIP	Transportation Improvement Program
TPDES	Texas Pollution Discharge Elimination System
TPWD	Texas Parks and Wildlife Department
TSS	Total Suspended Solids
TWDB	Texas Water Development Board
TxDOT	Texas Department of Transportation
TXNDD	Texas Natural Diversity Database
Uniform Act	Uniform Relocation Assistance and Real Property Acquisition for Federal and Federally-Assisted Programs

U.S.	United States
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
vpd	vehicles per day

1.0 INTRODUCTION

The Texas Department of Transportation (TxDOT) Houston District Office proposes to widen Farm-to-Market (FM) Road 518 from a four-lane facility to a six-lane divided facility with curb and gutter between State Highway (SH) 288 and SH 35 in Brazoria County, Texas. The proposed project is approximately 6.0 miles in length. **Appendix A** depicts the project location.

This Environmental Assessment (EA) will evaluate the social, economic, and environmental impacts for the proposed project and determine whether such impacts warrant preparation of an Environmental Impact Statement (EIS). The planning process for this project follows TxDOT and Federal Highway Administration (FHWA) environmental policies and procedures in compliance with the National Environmental Policy Act (NEPA). The EA was made available for public review during the public comment period; TxDOT considered comments submitted. No design changes were made after the public hearing; however, the construction limits may be shortened in the future as a result of funding availability and public comment. If TxDOT determines there are no significant adverse effects, it will prepare and sign a Finding of No Significant Impact (FONSI), which will be made available to the public.

2.0 PROJECT DESCRIPTION

2.1 Existing Facility

The existing FM 518 from SH 288 to FM 865 (Cullen Boulevard) consists of one 11-foot-wide outside travel lane and one 12-foot-wide inside travel lane (in each direction) with center turn lanes and a 13-foot-wide raised median, 4-foot-wide outside shoulders, and open vegetated ditches or swales in non-developed areas. The existing right-of-way is approximately 120 feet in width in this section.

The existing FM 518 from FM 865 (Cullen Boulevard) to SH 35 consists of one 11-foot-wide outside travel lane and one 12-foot-wide inside travel lane (in each direction) with center turn lanes and a 13-foot-wide flush median, 4-foot-wide outside shoulders, and open vegetated ditches or swales in non-developed areas. The existing right-of-way is approximately 100 feet in width in this section.

The existing median is raised (with left-turn lanes or openings in various parts of the project area) within the following sections of roadway: between SH 288 to approximately 650 feet east of Sunrise Boulevard; 900 feet west of FM 865 (Cullen Boulevard) to east of County Road (CR) 89 (Freedom Drive); Max Road to CR 801 (Piper Road); Morenci Street to 250 feet west of Lazy Bend Street; the intersection with Harkey/Oday Road; the intersection with Hatfield Road; and the intersection of Woody Road/Corrigan Drive.

The existing project area includes sidewalks in non-contiguous portions of both sides of the existing roadway; the sidewalks are generally abutting or outside of the existing right-of-way. There are some sidewalks that have been constructed within the existing right-of-way, e.g.

near Silverlake Parkway. These sidewalks appear to be affiliated with accommodating pedestrian movements between commercial businesses and shopping facilities adjacent to the project.

Appendix B includes project area photographs. The design schematic including the typical sections can be found in **Appendices C** and **D**, respectively.

2.2 Proposed Project

The preferred alternative would reconstruct and widen the existing roadway from two lanes in each direction to three lanes in each direction. The typical section would include two 12-foot-wide travel lanes and one 15-foot-wide outside travel lane (in each direction), a typical 18-foot raised median, and 5-foot-wide sidewalks on both sides of the roadway. The project would convert the open ditches to a curb-and-gutter drainage system. The preferred alternative would require approximately 25 acres of additional right-of-way. The proposed right-of-way within this section would be approximately 150 feet. The lane configurations (e.g. number of lanes) vary along the project limits to accommodate turning movements at various intersections and driveways. Improvements to cross streets (Walnut Street, Halbert Drive, and McLean Road) at the eastern project terminus are also proposed and were assessed in the technical reports that support this EA. The proposed improvements are shown in detail in **Appendices C** and **D**.

The logical termini for the project are SH 288 and SH 35. SH 35 is a principal arterial linking the city of Alvin with communities such as Pearland and Houston to the north and Angleton to the south. SH 288 is a major freeway/expressway that is also designated as a hurricane evacuation route starting in Freeport and ending in Houston. The proposed improvements transition into the intersection of FM 518 and SH 288 to facilitate enhanced mobility with SH 288. SH 35 is a rational end point for review of environmental impacts given its influence on the FM 518 corridor as a principal arterial. The proposed project has independent utility and would not preclude other foreseeable transportation improvements within the project area.

The construction limits extend from SH 288 to approximately 0.75 mile west of SH 35 between McLean Road and Johnston Street. This construction limit was chosen in order to avoid potential significant historic impacts through downtown Pearland.

The estimated total project cost is approximately $116.93 million. The proposed project is consistent with the *Pearland 2015 Comprehensive Plan* (City of Pearland [Pearland] 2015), *Pearland Trail Master Plan* (Pearland 2007), and *Pearland Economic Development Corporation 20/20 Community Strategic Plan* (Pearland Economic Development Corporation [PEDC] 2015). The proposed action is consistent with the Houston-Galveston Area Council (H-GAC's) financially constrained 2045 Regional Transportation Plan (RTP) and the 2019-2022 Transportation Improvement Program (TIP), as amended, which were initially found to conform to the Texas Commission on Environmental Quality (TCEQ) State

Implementation Plan (SIP) by the FHWA and Federal Transit Administration (FTA) on August 2, 2019 (H-GAC 2019). Copies of the RTP and TIP pages are included in **Appendix E**.

3.0 PURPOSE AND NEED

3.1 Need

The existing and future traffic demands for the project area exceed capacity of the existing roadway. Current and anticipated future population and economic growth within the City of Pearland and Brazoria County, in conjunction with traffic demands, result in increased congestion on the roadway. The existing access management system, two-way left-turn lanes, and lack of consistent raised medians throughout the project limits have resulted in high crash numbers at intersections and other conflict points. Without reconstructing and widening the existing roadway, mobility and safety cannot be improved.

The proposed roadway would provide additional capacity for traffic traversing this quickly growing part of the county. The project area is projected to see strong growth, particularly within the Brazoria County and the City of Pearland, along with one census tract affected by the proposed project per the H-GAC's regional forecast from 2015 to 2040. Three census tracts affected by the proposed project show slow to moderate growth during the 2015–2040 period. Job growth within the City of Pearland and all census tracts affected by the project would have virtually no cumulative change over the 2015–2040 period. **Table 1** provides a summary of the anticipated growth in the region.

Table 1: 2015–2040 Projected Household and Job Growth

Place	2015 Households	2040 Households	Percent Growth Households 2015–2040	2015 Jobs	2040 Jobs	Percent Growth Jobs 2015–2040
Brazoria County	126,078	214,860	**70.4%**	91,673	145,759	**59.0%**
City of Pearland	43,956	69,850	**58.9%**	27,101	43,080	**59.0%**
CT 6605	3,638	9,444	**159.6%**	4,317	4,123	**-4.5%**
CT 6606	5,796	7,252	**25.1%**	4,142	4,172	**0.7%**
CT 6607	6,534	8,144	**24.6%**	3,000	3,068	**2.3%**
CT 6608	2,916	3,700	**26.9%**	1,624	1,613	**-0.7%**

Source: H-GAC 2016 Release of Regional Growth Forecast. (H-GAC 2016)

CT = Census Tract (US Census Bureau)

The existing facility accommodated between 32,250 and 43,550 vehicles per day (vpd) in 2016, and is expected to grow to between 49,350 and 66,550 by 2040 (an increase of approximately 53 percent) (TxDOT 2016a). This increased growth is anticipated to result in increased traffic demand.

3.2 Supporting Facts and/or Data

Statewide crash rates through 2014 (the most current data available) are presented in **Table 2**. This data conveys that there is generally a decrease in crashes, for both rural and urban roadways, with a divided roadway that has four or more lanes (TxDOT 2015a). The proposed improvements would be widening FM 518 from a four-lane to a six-lane divided roadway. Currently protected movements occur between SH 288 to approximately 650 feet east of Sunrise Boulevard; 900 feet west of FM Road 865 (Cullen Boulevard) to east of CR 89 (Freedom Drive); Max Road to CR 801 (Piper Road); Morenci Street to 600 feet east of Harkey Road; the intersection with Hatfield Road; and the intersection of Woody Road/Corrigan Drive. A center left-turn lane (CLTL) is present in multiple areas and provides unprotected turning movements.

Section 3 of the *Pearland 2015 Comprehensive Plan* identified that the majority of the FM 518 corridor between SH 288 and SH 35 was operating at a Level of Service (LOS) F and was anticipated, based on the modeling performed, to be operating at a LOS F in 2035. LOS is an indicator of congestion on a roadway and of the ease of driving conditions that a driver is subject to. A LOS F means that the roadway is severely congested, there are unacceptable delays, extremely unstable flow, traffic exceeds roadway capacity, and there are stop-and-go conditions (Pearland 2015).

Crash data available for the project area (2010–2017) are presented in **Table 3**. Crashes have increased by as much as 30.7 percent between 2010 and 2017, with the highest single-year increase occurring between 2013 and 2014 (17.9 percent) (TxDOT 2017a). The period with the greatest number of crashes was between 2014 and 2016. Three fatal crashes occurred between 2010 and 2017. Between 42.0 and 53.8 percent of the crashes typically occurred at intersections. A graphic depiction of the "hot spot" locations of crashes, which are highest in density at intersections from 2012–2014, is depicted in **Exhibit 1** (TxDOT 2015a).

Table 2: 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: TxDOT 2015a.

Table 3: Crashes within the Proposed Project Area (2010–2017)					
Year*	Number of Crashes	Non-Fatal Crashes	Number of Intersection-Related and Intersection Crashes	Percent of Intersection-Related and Intersection Crashes	Number of Fatal Crashes
2010	273	273	147	53.8%	0
2011	246	245	127	51.6%	1
2012	277	277	134	48.4%	0
2013	238	236	100	42.0%	2
2014	290	290	130	44.8%	0
2015	311	311	145	46.6%	0
2016	297	297	121	40.7%	0
2017*	36	36	16	44.4%	0

Source: TxDOT C.R.I.S. (Crash Records Information System) Query, TxDOT 2017a.

* Crash data is through March 14, 2017

Exhibit 1: FM 518 - Crash "Hot Spots" (2012–2014)

Source: TxDOT 2015a.

The project area does not provide bicycle and pedestrian accommodations with the exception of a few, discontinuous locations within the project limits. Crosswalks are provided at several intersections: Smith Ranch Road, a mall complex south of FM 518 east of Smith Ranch Road, CR 94, Silverlake Parkway, Sunrise Boulevard, Freedom Drive/CR 89, CR 1128 (Reid Boulevard), CR 109 (Suburban Garden Road), Harkey/Oday Road, and Woody Road/Corrigan Drive. 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 5-foot-wide sidewalks for pedestrians along both sides of the proposed ROW.

3.3 Purpose

The purpose of the proposed project is to accommodate future anticipated traffic demand and growth in the region, as well as to improve safety and mobility by constructing a divided roadway with raised medians. Congestion is anticipated to improve due to access changes to adjacent residences and businesses through the creation of openings in the raised medians at select locations and intersections. The roadway improvements would accommodate anticipated future growth in the region by adding necessary additional capacity, while providing accommodations for bicyclists and pedestrians through the construction of sidewalks, in accordance with FHWA and TxDOT guidelines and policies.

4.0 ALTERNATIVES

4.1 Build Alternative

The Build Alternative is described in **Section 2.2**. The project layout and typical sections are shown in **Appendices C** and **D**, respectively. The Build Alternative is the preferred alternative, as it would best fulfill the purpose and need of the project.

4.2 No-Build Alternative

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

The No-Build Alternative would not improve mobility or safety in the project area and would not provide pedestrian and bicyclist movements within the corridor. For these reasons, the No-Build Alternative would not satisfy the need and purpose of the proposed project. The No-Build Alternative is carried forward throughout the document as a baseline comparison to the Build Alternative.

4.3 Preliminary Alternatives Considered but Eliminated from Further Consideration

The following preliminary alternatives were considered but have been eliminated from further consideration. Please refer to **Appendix H** for a comparison of the alternatives in an alternatives matrix.

Preliminary Build Alternative 1 (North): The improvements include widening the existing four 11-foot-wide lanes to 12 feet wide, adding one 15-foot-wide shared-use lane in each direction, constructing an 18-foot-wide raised median, and adding a 5-foot-wide sidewalk in both

directions. The proposed 30 feet wide right-of-way acquisition would occur on the north side of the existing right-of-way. The roadway would be converted to a curb and gutter system.

Preliminary Build Alternative 2 (South): The improvements include widening the existing four 11-foot-wide lanes to 12 feet wide, adding one 15-foot-wide shared-use lane in each direction, constructing an 18-foot-wide raised median, and adding a 5-foot-wide sidewalk in both directions. The proposed 30 feet wide right-of-way acquisition would occur on the south side of the existing right-of-way. The roadway would be converted to a curb and gutter system.

Preliminary Build Alternative 3 (Middle): The improvements include widening the existing four 11-foot-wide lanes to 12 feet wide, adding one 15-foot-wide shared-use lane in each direction, constructing an 18-foot-wide raised median, and adding a 5-foot-wide sidewalk in both directions. The proposed right-of-way acquisition would occur on the north and south sides of the existing right-of-way, 15 feet wide in either direction for a total of 30 feet. The roadway would be converted to a curb and gutter system.

These alternatives were eliminated from further study because, compared to the preferred alternative, they would have greater residential, business, and other displacement or relocation impacts, greater impacts to waters of the U.S., and result in higher right-of-way acquisitions throughout the project area.

5.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

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

- Public Meeting Summary Report, 2015
- Archeological Background Study, 2016
- Historic Resources Survey Report, 2016
- Wetlands/Waters of the U.S. Delineation Report, 2016
- Hazardous Materials Initial Site Assessment, 2016
- Community Impacts Analysis Technical Report, 2016
- Biological Evaluation Form, 2017
- Biological Resources Survey Report, 2017
- Indirect Impacts Technical Report, 2017
- Cumulative Impacts Technical Report, 2017
- Air Quality Technical Report, 2018
- Traffic Noise Technical Report, 2018
- Technical Report Amendment, 2018

The technical reports may be inspected and copied upon request at the TxDOT Houston District headquarters.

5.1 Right-of-Way/Displacements

The proposed Build Alternative would require displacements and additional right-of-way. Approximately 24.5 acres of new right-of-way would be required. There are potentially 14 displacements as a result of the Build Alternative – 1 single-family residence, 3 single-family mobile homes, and 10 commercial facilities.

The potential commercial displacements consist of various types of businesses including automotive repair shops, storage facilities, gas stations and convenience stores, insurance agents, and plumbing repair. Please refer to the *Community Impacts Analysis Technical Report* and the *Technical Report Amendment* for more information regarding right-of-way and displacements (TxDOT 2016b, 2018a). **Figure 1 – Appendix F** provides a graphical depiction of potential displacements for the Build Alternative.

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

Both the United States and Texas Constitution provide that no private land may be taken for public purposes without adequate compensation being paid thereof. The TxDOT Right-of-Way Acquisition and Relocation Program would be conducted in accordance with the Uniform Act, and relocation resources are available to all residential and business relocatees without discrimination. Relocation assistance is available to all individuals, families, businesses, farmers, and nonprofit organizations displaced as a result of a state highway or other transportation project. This assistance applies to tenants as well as owners occupying the property needed for the project. Replacement structures must be located in the same type of neighborhood and be equally accessible to public services and places of employment. The proposed project would proceed to construction only when all displaced persons have been provided the opportunity to be relocated to adequate replacement sites. The available structures must also be open to persons regardless of race, color, religion, or nationality and be within the financial means of those individuals affected.

With respect to displacements, encroachment-alteration impacts would be driven by the relocations of the buildings that would be displaced by the proposed project. Examples of encroachment-alteration impacts due to relocations and displacements include a minor reduction in the supply of affordable housing, changes in residential and commercial property values due to the proposed increase in access and mobility, changes in the local tax base due to the potential displacements, and impacts to the residents (such as potential increased commuting time) who could be displaced by the proposed improvements to FM 518.

Residential and commercial properties located near FM 518 that are not physically impacted by the proposed project may experience a change in market value, either positive or negative.

Under the No-Build Alternative, the existing FM 518 would remain as-is and normal, routine maintenance would be conducted. No right-of-way acquisition would be required and no displacements or relocations would occur.

5.2 Land Use

The project area is located within the City of Pearland, Texas. Surrounding land uses include a range of residential and mixed use (commercial and light industrial) along the western side of the project area near the Pearland Town Center shopping plaza to increasingly urbanized along the eastern side of the project area near the city's downtown. Portions of the project area consist of undevelopable and developable vacant parcels, generally south of FM 518 towards the western side of the project area. Please refer to the *Community Impacts Analysis Technical Report* and the *Technical Report Amendment* for additional information regarding existing land uses within the project area (TxDOT 2016b, 2018a).

The Build Alternative would result in the change of approximately 24.5 acres of existing land uses to transportation use. The proposed project is not anticipated to substantially alter the existing land use in the area.

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

5.3 Farmlands

Under the Build and No-Build Alternatives, coordination with the Natural Resources Conservation Service (NRCS) for Farmland Protection Policy Act (FFPA) would not be required because the project is not located in areas mapped as prime, unique, statewide, or locally important, nor is it located in an "non-urbanized" area identified by the NRCS Web Soil Survey or Census Bureau. Please refer to the *Biological Resources Survey Report* and the *Biological Evaluation Form* (TxDOT 2017b, 2017c) for more information regarding farmland impacts.

5.4 Utilities/Emergency Services

The Build Alternative would require approximately 24.5 acres of new right-of-way. Implementation of the Build Alternative may require the relocation of the City of Pearland lift station (refer to **Figure 1 – Appendix F**) and adjustment of utilities such as water lines, sewer lines, gas lines, fiber optic lines, overhead electrical and telephone lines, and other subterranean and aerial utilities. The need for relocation and adjustment of any utilities would be determined during the detailed design phase and coordinated with the affected utility provider to ensure that no substantial interruption of service would take place.

Construction activities are not expected to cause any delays or access issues for emergency service vehicles. Construction of the Build Alternative would improve mobility for emergency

vehicles and reduce delays. The City of Pearland's Public Safety Building and Fire Station No. 4 are located north of Freedom Drive and east of FM 865 (Cullen Parkway), approximately 750 feet north of FM 518. The intersection of FM 518 and FM 865 would be improved by the Build Alternative by providing an additional through lane south from the complex to FM 518. The existing two left-turn lanes and one right-turn lane would remain. Notification of local officials and emergency response organizations would be conducted prior to construction.

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

5.5 Bicycle and Pedestrian Facilities

Currently, there are no designated bicycle lanes within the project area. The project area does contain disconnected sidewalks within the existing right-of-way located east of Smith Ranch Road (north side only), near CR 94 (south side only), west and east of Silverlake Parkway, across from the CVS pharmacy at the southwest corner of CR 90 and FM 518, and across from the Sprouts Market at the southwest corner of Old Chocolate Bayou Road and FM 518. There are numerous locations that contain sidewalks abutting, but outside of the existing right-of-way, that may serve adjacent businesses and movements between them. At several intersections, crosswalks provide access to bicyclists and pedestrians in those areas.

The Build Alternative proposes to construct 5-foot-wide sidewalks on both sides of the roadway that can accommodate pedestrians and bicyclists traveling throughout the project limits. The construction of the sidewalks to accommodate bicyclists conforms with TxDOT's "Guidelines Emphasizing Bicycle and Pedestrian Accommodations" by providing adequate space to allow motorists and bicyclists to share the pavement.

Under the No-Build Alternative, pedestrians and bicyclists would continue to use the transportation infrastructure along FM 518 as it currently exists.

5.6 Community Impacts

As previously described in **Section 5.2**, the communities surrounding the project area range from rural residential and mixed use (commercial and light industrial) along the west side of the project area near the Pearland Town Center shopping plaza to increasingly urbanized along the eastern side of the project area near downtown Pearland. Portions of the project area consist of vacant parcels, generally south of FM 518 towards the western side of the project area. There are multiple types of community facilities present within the project area, including: veterinary clinics, medical facilities, day care, preschool and learning center facilities, a middle school, churches, government facilities, Fire Station No. 4, U.S. Post Office, and a funeral home. Please refer to the *Community Impacts Analysis Technical Report* and the *Technical Report Amendment* for additional information regarding communities and potential impacts from the Build Alternative (TxDOT 2016b, 2018a). **Figure 1 – Appendix F** provides a graphical depiction of land use, community facilities, and potential displacements for the Build Alternative.

The proposed added capacity would improve mobility for emergency vehicles and reduce delays. The Build Alternative is intended to enhance the operational efficiency of the corridor by limiting turning movements to specific locations along the project limits while increasing mobility for all vehicles, including emergency vehicles. The population living or working along the local roadways, where potential changes in access may occur, could experience slight increases in response times because of restricted turning movements. The First Choice Emergency Room located immediately adjacent to FM 518 provides the only emergency service within the project limits. The Memorial Hermann medical complex, located approximately 0.5-mile from the western end of the project limits, also provides emergency medical services.

The overall impact of the Build Alternative is anticipated to result in both negative and positive impacts to access and travel patterns for the immediate communities. Several neighborhoods would be impacted by access changes; alternative access points or U-turn areas have been identified for these neighborhoods in the *Community Impacts Analysis Technical Report* and *Technical Report Amendment* (TxDOT 2016b, 2018a). Businesses along the FM 518 corridor that rely on 18-wheelers for their operation could experience negative effects related to traffic operations due to the proposed raised medians. The potential changes in access and travel patterns could result in slightly longer travel times for residents, employers, or commercial customers along FM 518. Mobility and safety would be enhanced for most users of FM 518 due to the added capacity and raised medians proposed. The proposed improvements, specifically the raised medians, are proposed to reduce traffic conflicts and increase safety for the length of the project. The Build Alternative would enhance pedestrian and bicycle movement in the project area due to the inclusion of sidewalks throughout the project limits.

Additionally, the overall impact of the FM 518 improvements is anticipated to result in both negative and positive impacts to community cohesion. The potential residential displacements could result in community members moving some distance from their present community. Business displacements could have an adverse impact to the community in terms of reduction of services and tax revenues. These impacts could be recaptured in the community if displaced businesses are able to relocate nearby. The potential permanent changes in access would affect travel patterns for several subdivisions, businesses, and community facilities along FM 518. The Build Alternative would not affect, separate, or isolate any distinct neighborhoods, ethnic groups, or other specific groups as FM 518 is an existing roadway.

With respect to encroachment-alteration effects to socio-economic resources, indirect impacts would be driven by changes in travel patterns and access associated with the proposed project. The potential indirect impacts would include improved vehicular access to employment opportunities, markets, goods, services, residential uses, and public facilities due to increased vehicular mobility.

The No-Build Alternative would not result in any improvements to congestion, mobility, efficiency of access, or provide enhanced bicycle and pedestrian movements within the project area.

5.6.1 Environmental Justice

The Build Alternative is anticipated to improve mobility, add capacity, and enhance safety for existing and future residences and businesses within the project vicinity. Environmental justice populations occur in 28 of the 51 populated census blocks adjacent to the proposed project, with the largest minority population being Hispanic (see **Figure 2 – Appendix F**). Approximately 8 (4 commercial and 4 residential) of the 14 displacements are located within census blocks that contain predominantly minority populations. Review of the census data for low-income populations at the census block group level did not indicate a presence of predominantly low-income populations along the Build Alternative corridor (see **Figure 2 – Appendix F**). Raised medians and restricted access affiliated with the Build Alternative are not solely located within predominantly minority census geographies, and changes in access are also located throughout the project limits. No existing neighborhoods would be divided, and permanent disruptions to normal daily activities are not expected. No disproportionally high and adverse impacts to minority or low-income populations are anticipated as a result of the proposed project. The requirements of Executive Order (EO) 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, are satisfied. Please refer to the *Community Impacts Analysis Technical Report* and the *Technical Report Amendment* for additional information regarding minority and low-income populations within the project area (TxDOT 2016b, 2018a).

The No-Build Alternative would not result in any impacts to low-income or minority populations. Beneficial impacts from improved mobility and enhanced safety would not be experienced by the entire community, including minorities and low-income individuals. Increased congestion and reduced mobility is anticipated to occur under the No-Build Alternative.

5.6.2 Limited English Proficiency

The project area does contain the presence of persons who speak English "less than very well," or Limited English Proficiency (LEP) populations. The LEP populations present within the project area range from 2.6 to 27.8 percent. Of the 45,851 people over five years of age, approximately 10.2 percent speak English "less than very well." The largest LEP population speaks Spanish (4.7 percent). The next prevalent language spoken is Asian/Pacific Islander (4.1 percent). Please refer to the *Community Impacts Analysis Technical Report* and the *Technical Report Amendment* for additional information regarding LEP populations within the project area (TxDOT 2016b, 2018a).

A public meeting was held on May 14, 2015, (see **Section 7.0**) and LEP populations were afforded the opportunity to participate in the decision-making process. Notices for the public meetings were published in English and Spanish.

Reasonable steps will continue to be taken to ensure all persons have meaningful access to the programs, services, and information TxDOT provides. Any public involvement information and/or materials would continue to be made available in English and Spanish, and translation services would be provided upon request. Therefore, the requirements of EO 13166, pertaining to LEP, would be satisfied.

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

5.7 Visual/Aesthetics Impacts

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

The visual landscape near the project area is characterized by a combination of land uses including existing roadways, residential and mixed use (commercial and light industrial), as well as vacant parcels generally south of FM 518 towards the western side of the project area. Because the proposed project consists of improvements to an existing roadway, the aesthetic character of the project area is not anticipated to noticeably change due to the construction of the Build Alternative. Plans, Specifications, and Estimates, and stakeholder input will be considered during the public involvement process to minimize the potential for aesthetic impacts.

The No-Build Alternative would not result in visual or aesthetic impacts as no changes to area would occur.

5.8 Cultural Resources

5.8.1 Archeology

An archeological background study meeting TxDOT requirements was completed in 2016 to evaluate archeological resources within the area of potential effects (APE), consisting of the preliminary build alternatives, which cumulatively cover approximately 131.7 acres. Although the APE had not been previously surveyed, the area has undergone extensive development. Approximately two-thirds of the APE falls within TxDOT's Potential Archeological Liability Maps

(PALM) Map Unit 4, where no survey is recommended. Much of the remaining one-third of the APE has been developed and falls within Map Unit 2A (upon which surface survey is recommended). The background study recommended archeological survey for areas of proposed new right-of-way in PALM Unit 2A. Areas meeting these two criteria total approximately 5.53 acres. TxDOT archeologists concurred with this recommendation on January 24, 2017, and an archeological survey will be performed on these parcels when sufficient right-of-entry (ROE) is available or acquisition is complete. Please refer to **Figure 7: Archeology High Probability Areas** and the *Archeological Background Report* and the *Technical Report Amendment* for additional details regarding the research performed (TxDOT 2016c, 2018a).

The design of the Build Alternative, which is largely comprised of PALM zones not recommended for survey, does not materially change this recommendation. At this time, the area meeting the requirements for survey (new right-of-way in PALM Unit 2A) is understood to cover approximately 5.53 acres. As of mid-2017, only 0.4 acres was accessible, rendering mobilization for survey an ineffective use of state funds. According to coordination with TxDOT ENV and the Houston District in July 2017, the project will be treated per ROE denial provisions of the Programmatic Agreement (PA) between TxDOT and FHWA. The archeological survey will be conducted when ROE to the remaining acreage is available or the right-of-way is acquired (**Appendix G – Agency Coordination**).

Tribal consultation with federally recognized Native American tribes with demonstrated historic interest in the area was concluded on October 10, 2016. No objections or expressions of concern were received within the comment period.

The Build Alternative is not anticipated to result in impacts to archeological resources, but construction may not begin until the recommended survey is completed and the corresponding report is accepted by the Texas Historical Commission (THC) and TxDOT ENV. In the event that unanticipated archeological deposits are encountered during construction, work in the immediate area would cease, and TxDOT archeological staff would be contacted to initiate post-review discovery procedures.

The No-Build Alternative is not anticipated to result in impacts to archeological resources.

5.8.2 Historic Properties

A reconnaissance survey was conducted within a 150-foot-wide APE within the project limits for the preliminary build alternatives in 2016. It was determined that 44 historic-age (constructed before 1974) resources were located on 32 parcels. Additionally, 14 non-historic-age resources associated with historic-age resources were also documented. Most of the resources observed consisted of domestic/single dwellings, with or without secondary structures. None of the documented resources were recommended eligible for the National Register of Historic Places (NRHP) because of the survey.

The design of the Build Alternative resulted in the addition of 3 parcels to the APE that were not previously surveyed. The two additional historic-age resources not previously documented were not found to embody distinctive characteristics of a type, period, or method of construction, represent the work of a master, or possess high artistic value. Additionally, no associations were identified linking them to events or persons of historic importance, and they do not have potential to reveal important information. Therefore, they are recommended not eligible for listing in the NRHP.

Pursuant to Stipulation IX, Appendix 6 "Undertakings with the Potential to Cause Effects per 36 CFR 800.16 (i)" of the Section 106 PA and the MOU, TxDOT historians determined that there are no historic, non-archeological properties within the APE, and cleared the project for non-archeological historic resources on September 20, 2016 and August 1, 2017 (**Appendix G – Agency Coordination**). Please refer to the *Historic Resources Survey Report* and the *Technical Report Amendment* for additional details regarding historic resources in the project area (TxDOT 2016d, 2018a).

The Build and No-Build Alternatives are not anticipated to affect historic properties eligible for the NRHP.

5.9 DOT Act Section 4(f), LWCF Act Section 6(f), and PWC Chapter 26

Based on a project scoping analysis, it was determined that neither the Build or the No-Build Alternative would have an impact on this resource category or subject matter. There are no DOT Section 4(f), Land and Water Conservation Fund (LWCF) Section 6(f), or Parks and Wildlife Code (PWC) Chapter 26 properties present within the project corridor.

Approximately 0.22 acre of proposed right-of-way would be required from the Sam Jamison Middle School athletic field; however, this athletic field is not considered a Section 4(f) resource because it is gated and not readily available for public use without consent from Pearland Independent School District. Refer to **Appendix B: Photograph 12** and **Appendix F: Figure 1g**.

5.10 Water Resources

The project area includes five intermittent stream crossings. No special aquatic sites are in the project area. Verification of U.S. Army Corps of Engineers (USACE) jurisdiction for these areas has not been performed to date; however, it is anticipated all crossings would be considered potentially jurisdictional waters of the United States. **Figure 3 – Appendix F** provides the locations of water resources within the project area. Please refer to the *Wetlands/Waters of the U.S. Delineation Report* and the *Technical Report Amendment* for additional details regarding the five water features identified within the project area (TxDOT 2016e, 2018a).

If a Preliminary Jurisdictional Determination (PJD) is requested, and all features are assumed to be jurisdictional, it is anticipated that impacts would be authorized under Nationwide Permit

(NWP) 14 without Pre-construction Notification (PCN) because impacts are anticipated to be under 0.10 acre and 200 linear feet for each crossing and no special aquatic sites are within the project area. The actual impacts would be confirmed during the final design phase, based on acquisition of complete ROE and detailed construction plans. If any impacts to waters of the U.S. including wetlands, exceed 0.5 acre, or the thresholds of the general and regional general conditions of the NWP are exceeded, an Individual Permit (IP) would be required.

Encroachment-alteration effects to water quality occur primarily due to increased impervious surface area which could result in increased runoff and decrease water quality downstream. Construction of the proposed improvements would directly contribute to increases in impervious cover. Effects would also occur in areas where vegetation in the proposed project area is cleared during construction, which could accelerate off-site erosion due to runoff. Use of Best Management Practices (BMPs) within the proposed project area would minimize water quality effects downstream.

The No-Build Alternative would have no impacts to waters of the U.S., including wetlands. Existing drainage structures would remain and normal maintenance would be performed as needed.

5.10.1 Clean Water Act Section 404

Impacts from the Build Alternative to potential waters of the U.S., including wetlands, would require authorization from the USACE pursuant to Section 404 of the Clean Water Act (CWA). Based on preliminary design, it is anticipated that approximately 0.29 acre of intermittent streams would be impacted by the Build Alternative. If a PJD is requested and it is determined that all delineated features are jurisdictional, a NWP 14 without PCN would be required. Refinement of potential impacts to waters of the U.S., including wetlands, would be made during the final design process and after verification of the jurisdictional delineation performed. Impacts to waters of the U.S., including wetlands, would be minimized to the greatest extent practicable under the Build Alternative.

The No-Build Alternative would not impact to waters of the U.S., including wetlands, and authorization from the USACE would not be required.

5.10.2 Clean Water Act Section 401

The Build Alternative is anticipated to be authorized under Section 401 of the CWA as a Tier I project, because impacts are anticipated to be under 1,500 linear feet of streams and/or 3.0 acres of waters of the U.S., including wetlands. The TCEQ 401 Water Quality Certification Conditions for NWPs requires that at least one BMP from each of the following three categories of on-site water quality management must be used: erosion control, post-construction Total Suspended Solids (TSS) control, and sedimentation control. The BMPs anticipated to be used for the Build Alternative would include temporary vegetation for erosion

control, silt fences for sedimentation control, and vegetative filter strips for post-construction TSS control.

The No-Build Alternative would not impact waters of the U.S., including wetlands, and a Section 401 CWA water quality certification would not be required.

5.10.3 Executive Order 11990 Wetlands

EO 11990, Protection of Wetlands (issued in 1977), requires federal agencies to minimize the destruction or modification of wetlands. EO 11990 prohibits new construction in wetlands unless there is no practicable alternative to such construction and the project includes all practicable measures to minimize harm to wetlands. Based on field investigations, there were no wetlands identified within the project area, and EO 11990 would not apply.

In the event wetlands may develop within the project area between approval of the EA and construction, the Build-Alternative would be designed in a manner to avoid or minimize impacts to wetlands to the greatest extent practicable, while still meeting the need and purpose of the project. Designs for the Build Alternative are preliminary and the actual amount of impacts to USACE-jurisdictional areas will be confirmed during the final design phase, based on acquisition of complete ROE, verification by the USACE, and detailed construction plans.

The No-Build Alternative would result in no impacts to wetlands; therefore, EO 11990 would not apply.

5.10.4 Rivers and Harbors Act

Based on a project scoping analysis, it was determined that neither the Build nor the No-Build Alternative would have an impact on this resource category or subject matter.

5.10.5 Clean Water Act Section 303(d)

The project area is within five miles and would discharge runoff to several designated stream sections: Segment 1102 (Clear Creek Above Tidal), Segment 1102B (Mary's Creek/North Fork Mary's Creek), Segment 1102F (Mary's Creek Bypass), and Segment 1102G (Unnamed tributary of Mary's Creek). All stream segments are listed as threatened or impaired for bacteria (recreational use) or polychlorinated biphenyls (PCB) in edible tissue (Clear Creek Above Tidal only) in the TCEQ 2018 Texas Integrated Report of Surface Water Quality list (TCEQ 2018). The Houston District would utilize BMPs to minimize water quality impacts. The proposed project is not expected to contribute to the constituents of concern to the impaired waterbodies. Coordination with TCEQ would be required.

No impacts to impaired/threatened water segments would occur as a result of the No-Build Alternative. Coordination with the TCEQ would not be required.

5.10.6 Clean Water Act Section 402

The Build Alternative would disturb more than five acres of land. TxDOT would be required to comply with the TCEQ Texas Pollution Discharge Elimination System (TPDES) General Permit for Construction Storm Water Discharges (CGP). A Notice of Intent (NOI) stating that a Storm Water Pollution Prevention Plan (SWP3) has been developed and would be filed with the TCEQ prior to the commencement of construction. Permanent soil erosion features would be constructed as soon as feasible during the early stages of construction. Disturbed areas would be restored and stabilized as soon as the construction schedule permits and temporary sodding would be considered where large areas of disturbed ground would be left bare for a considerable length of time. TxDOT would also submit the NOI to the City of Pearland in compliance with their Municipal Separate Storm Sewer System (MS4), if drainage studies determine any discharge of stormwater would occur within the city's system.

The No-Build Alternative would not result in any ground disturbance and compliance with the TPDES CGP would not be required.

5.10.7 Floodplains

EO 11988, Floodplain Management, requires federal agencies to avoid activities which directly or indirectly result in the development of floodplain areas. Brazoria County, along with the City of Pearland, participate in the Federal Emergency Management Agency (FEMA) National Flood Insurance Program (NFIP). According to Flood Insurance Rate Maps (FIRM) Panel Numbers 48039C0020H, 48039C0040I, 48039C0045J, and 48039C0035I available within the project area, approximately 10.44 acres of floodplains would be impacted by the Build Alternative. Due to the extent and location of floodplains present, there are no practicable routes that would avoid floodplain encroachments.

The hydraulic design for this project would be in accordance with current FHWA and TxDOT design policies. The facility would permit the conveyance of the 100-year floodplain, inundation of the roadway being acceptable, without causing significant damage to the facility, stream, or other property. The proposed project would not increase the base flood elevation to a level that would violate applicable floodplain regulations and ordinances. The design of the roadway would maintain floodplain connectivity and would minimize impacts to natural and beneficial floodplain values. Any proposed development actions by others would be subject to the permitting and coordination requirements of local floodplain ordinances. Efforts would be made to minimize permanent impacts to the floodplain to the extent practicable during detailed design. As natural and beneficial floodplain values are not anticipated to be affected, no specific measures to restore and preserve these values are proposed. However, construction in this floodplain is regulated by the Brazoria County Floodplain Administrator. Therefore, coordination with the Administrator would be required before construction.

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

5.10.8 Wild and Scenic Rivers

Based on a project scoping analysis, it was determined that neither the Build or No-Build Alternative would have an impact on this resource category or subject matter.

5.10.9 Coastal Barrier Resources

While the project occurs in Brazoria County, where the Coastal Barrier Resources Act (CBRA) is applicable, the project area is outside the Coastal Barrier Resource System and therefore CBRA does not apply. Based on a project scoping analysis, it was determined that neither the Build or No-Build Alternative would have an impact on this resource category or subject matter.

5.10.10 Coastal Zone Management

While the project occurs in Brazoria County, which is included under the Coastal Zone Management Program, the project area is outside the Coastal Zone Management Boundary and therefore the program does not apply. Based on a project scoping analysis, it was determined that neither the Build or No-Build Alternative would have an impact on this resource category or subject matter.

5.10.11 Edwards Aquifer

Based on a project scoping analysis, it was determined that neither the Build or No-Build Alternative would have an impact on this resource category or subject matter.

5.10.12 International Boundary and Water Commission

Based on a project scoping analysis, it was determined that neither the Build or No-Build Alternative would have an impact on this resource category or subject matter.

5.10.13 Drinking Water Systems

Based on information from the Texas Water Development Board's (TWDB) databases, approximately 25 domestic water wells are located within 0.25 mile of the project area (TWDB 2017), including 8 public supply water wells, owned by various parties. There are also approximately eight unused wells and one irrigation well. The City of Pearland is not a participant in the source water protection plan administered by the TCEQ (TCEQ 2008).

The Build Alternative would impact several water wells:

- Market Square Food Mart #1 (public supply well) – east of the intersection of Old Chocolate Bayou Road and FM 518;
- Back to Basics Christian Day Care (public supply well) – near the intersection of Rodriguez Road and FM 518;
- Montessori School/DCC of Pearland (unused well) – west of the intersection of FM 518 and Manvel Road/Reid Boulevard;

- Bob's Blue Store (unused well) – at the intersection of Piper Road and FM 518;
- Reggie Finch (domestic well) – near the intersection of Morenci Street and FM 518;
- Leon Payne (domestic well) – near the intersection of Oday/Harkey Road and FM 518; and,
- W. B. Blair (domestic well) – west of the intersection of Jasper Road and FM 518.

Please refer to **Appendix C** for the schematic stationing and **Figure 3** – **Appendix F** for the locations of these wells within the proposed right-of-way.

In accordance with TxDOT's *Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges*, these seven wells would need to be properly removed, sealed, and plugged during construction of the proposed project. Continued coordination with the City of Pearland regarding their public water supply well would be needed to ensure supplies to potentially affected individuals are not adversely affected during construction.

The No-Build Alternative would have no effect on drinking water systems.

5.11 Biological Resources

5.11.1 Texas Parks and Wildlife Coordination

The proposed project is within range of and with suitable habitat present for one plant SGCN, the sharpstem umbrella-sedge (*Cyperus cephalanthus*), without designated BMPs that would eliminate the requirement to coordinate under the TxDOT/TPWD 2013 MOU. Coordination with TPWD was conducted and completed on May 26, 2017 (**Appendix G – Agency Coordination**).

Under the No Build Alternative, no coordination with TPWD would be required.

5.11.2 Impacts to Vegetation

The Build Alternative could potentially impact 42.4 acres of Urban Low Intensity vegetation, 0.77 acres of Tallgrass Prairie/Grasslands, and 2.61 acres of Disturbed Prairie (see **Figure 4 - Appendix F**). These habitat types are not considered rare or important remnant vegetation as mapped by the Texas Conservation Action Plan (TCAP). There are no special habitat features within the proposed project area. Tallgrass Prairie/Grasslands and Disturbed Prairie (unmaintained vegetation) are considered unusual vegetation features. Please refer to the *Biological Evaluation Form, Biological Resources Survey Report,* and the *Technical Report Amendment* for more details regarding vegetation communities within the project area (TxDOT 2017b, 2017c, 2018a).

Vegetation impacts would not exceed the thresholds determined in the 2013 TxDOT and Texas Parks and Wildlife Department (TPWD) MOU. Impacts to vegetation proposed by the Build Alternative would be minimized to the greatest extent practicable.

5.11.3 Executive Order 13112 on Invasive Species

In accordance with EO 13112 on Invasive Species, the Executive Memorandum on Beneficial Landscaping, and the 1999 FHWA guidance on invasive species, all revegetation will, to the extent practicable, use only native species. Upon completion of earthwork activities, disturbed areas would be reseeded according to TXDOT specifications and in compliance with EO 13112, where applicable.

5.11.4 Executive Memorandum on Environmentally and Economically Beneficial Landscaping

In accordance with the Executive Memorandum of August 10, 1995, all agencies shall comply with NEPA as it relates to vegetation management and landscape practices for all federally assisted projects. The Executive Memorandum directs that where cost-effective and to the extent practicable, agencies would (1) use regionally native plants for landscaping; (2) design, use, or promote construction practices that minimize adverse effects on the natural habitat; (3) seed to prevent pollution by, among other things, reducing fertilizer and pesticide use; (4) implement water-efficient and runoff-reduction practices; and (5) create demonstration projects employing these practices. Landscaping included with this project would be in compliance with the Executive Memorandum and the guidelines for environmentally and economically beneficial landscape practices.

The No-Build Alternative would not result in impacts to vegetation communities within the existing right-of-way, except for routine maintenance activities to maintain roadway safety. The No-Build Alternative would not require any conversion of vegetation to transportation facility or impact unusual vegetation or special habitat features.

5.11.5 Impacts to Wildlife

The vegetation of the Western Gulf Coastal Plain ecoregion provides habitat for a wide range of reptilian, mammalian, and avian species that are common to the Gulf Coast environment. Common species include the marsh rice rat (*Orzomys palustris*), coyote (*Canis latrins*), river otter (*Lontra canadensis*), American alligator (*Alligator mississippiensis*), bullfrog (*Lithobates catesbeianus*), Roseate spoonbill (*Platalea ajaja*), terns (*Sternidae spp.*), and pelicans (*Pelecanus spp.*) which have the potential to occur within the project area and adjacent undeveloped land. Please refer to the *Biological Evaluation Form, Biological Resources Survey Report,* and the *Technical Report Amendment* for more details regarding vegetation communities within the project area (TxDOT 2017b, 2017c, 2018a).

There is potential for some wildlife species to be present within undeveloped portions of the existing right-of-way. Required clearing or other construction-related activities may directly or indirectly affect animals that reside on or adjacent to the project right-of-way. Heavy machinery could kill small, low-mobility animals, or could cause soil compaction, impacting animals that live underground. Larger, more mobile species will typically avoid construction activities and move into adjacent areas. In order to minimize disturbance to inert microhabitats (e.g., snags,

brush piles), clearing within the right-of-way would be minimized to the extent practicable. Bird BMPs, terrestrial reptile BMPs, and plains spotted skunk BMPs, as further detailed in Section 5.11.11, would be implemented.

With regard to encroachment-alteration effects under the Build Alternative, the effects of removing important wildlife habitat areas would not extend beyond the riparian vegetation, unmaintained vegetation, and five water features present within the project construction. Accordingly, impacts to habitat would be limited to the area of direct impacts and no encroachment impacts are expected. The limited direct impacts on wildlife habitat are not expected to affect the populations of any rare species in the area, and no indirect impacts to such species elsewhere are expected as a result of habitat removal. Furthermore, the existing habitats are already fragmented by the original construction of FM 518, as well as the construction of surrounding commercial and residential properties. Indirect effects to vegetation and wildlife habitat as a result of the proposed improvements are anticipated to be minimal.

The No-Build Alternative would not result in impacts to wildlife species or their habitats.

5.11.6 Migratory Bird Treaty Act

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

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

5.11.7 Fish and Wildlife Coordination Act

Five potentially jurisdictional, unnamed, intermittent streams were identified within the project limits. Based on the Build Alternative schematic design, the proposed improvements are anticipated to be authorized under NWP 14 without PCN. Compliance with the NWP 14 satisfies FWCA coordination requirements. If an USACE IP was necessary for the construction of the Build Alternative, additional coordination with the U.S. Fish and Wildlife Service (USFWS) would be required for compliance with this Act. All proposed roadway and drainage improvements should be designed in a manner to avoid or minimize impacts to jurisdictional crossings.

5.11.8 Bald and Golden Eagle Protection Act of 2007

No Bald or Golden Eagles or their habitats were identified within the project area during field investigations. The project may be used as flyover or stopover habitat for the species. Nesting has been documented in recent years in the Cypress Village subdivision 1.5 miles south of the project area; however, no rivers, large lakes, or tall trees suitable for nesting occur within the project action area. A review of TPWD's Texas Natural Diversity Database (TXNDD) did not record any eagle occurrences within 1.5 miles of the project area. The Build Alternative does not have the potential to impact Bald or Golden Eagles.

Under the No-Build Alternative, no impacts to Bald or Golden Eagles would occur.

5.11.9 Magnuson-Stevens Fishery Conservation and Management Act

Based on a project scoping analysis, it was determined that neither the Build nor the No-Build Alternative would have an impact on this resource category or subject matter.

5.11.10 Marine Mammal Protection Act

Based on a project scoping analysis, it was determined that neither the Build nor the No-Build Alternative would have an impact on this resource category or subject matter.

5.11.11 Threatened and Endangered Species

The Wood Stork (*Mycteria americana*), a federal and state-listed threatened species, is a potential migrant to the project area and may use the project area as stopover habitat. No nesting habitat occurs in the project area and any use of the project area would be incidental. No individuals of this species were observed during field visits. The USFWS does not recognize this species as occurring within Brazoria County. The Build Alternative would have no effect on federally listed species.

The project is within range with suitable habitat present for the following Species of Greatest Conservation Need (SGCNs): giant sharpstem umbrella-sedge (*Cyperus cephalanthus*), plains spotted skunk (*Spilogale putorius interrupta*); and for the state-threatened timber rattlesnake (*Crotalus horridus*). Although the Build Alternative may result in removal of potentially suitable habitat or the temporary disturbance of individuals of these species, the Build Alternative is not anticipated to cause a substantial impact to any state-listed species. The flowing BMPs would be implemented in an effort to avoid impacts to the state-listed and SGCN species:

- Timber rattlesnake:
    - Apply hydromulching and/or hydroseeding in areas for soil stabilization and/or revegetation of disturbed areas where feasible. If hydromulching and/or hydroseeding are not feasible due to site conditions, utilize erosion control blankets or mats that contain no netting or contain loosely woven, natural fiber netting. Plastic netting should be avoided to the extent practicable.

- For open trenches and excavated pits, install escape ramps at an angle of less than 45 degrees (1: 1) in areas left uncovered. Visually inspect excavation areas for trapped wildlife prior to backfilling.
- Inform contractors that if reptiles are found on project site allow species to safely leave the project area.
- Avoid or minimize disturbing or removing downed trees, rotting stumps, and leaf litter where feasible.
- Contractors will be advised of potential occurrence in the project area, and to avoid harming the species if encountered.

- Plains spotted skunk:
  - 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.
- Wood Stork:
  - Prior to construction, perform daytime surveys for nests including under bridges and in culverts to determine if they are active before removal. Nests that are active should not be disturbed.
  - Do not disturb, destroy, or remove active nests, including ground nesting birds, during the nesting season.
  - Avoid the removal of unoccupied, inactive nests, as practicable.
  - Prevent the establishment of active nests during the nesting season on TxDOT owned and operated facilities and structures proposed for replacement or repair.
  - Do not collect, capture, relocate, or transport birds, eggs, young, or active nests without a permit.

With regard to encroachment-alteration effects under the Build Alternative, other than potential impacts to the previously discussed species, the proposed project would have no effect on any of the remaining listed species that may occur in Brazoria County, their habitats, or designated critical habitats. The proposed project would not alter the hydric regime or reduce diversity within the ecosystem.

Please refer to the *Biological Evaluation Form, Biological Resources Survey Report,* and the *Technical Report Amendment* for more details regarding vegetation communities within the project area (TxDOT 2017b, 2017c, 2018a).

The No-Build Alternative would have no impacts to federal or state threatened, endangered, or candidate species, as well as SGCNs or their habitats. Coordination with the USFWS and the TPWD would not be required.

5.12 Air Quality

Air quality elements evaluated for this project included: (1) transportation conformity; (2) carbon monoxide (CO) traffic air quality analysis (CO TAQA); (3) mobile source air toxics (MSAT); (4) Congestion Management Process (CMP); and (5) construction air emissions. A

qualitative analysis for MSAT was prepared for this project. Please refer to the *Air Quality Technical Report* for more details regarding the qualitative analysis performed (TxDOT 2018b).

Several changes have occurred since the Air Quality Technical Report was approved in 2018:

1) The U.S. Environmental Protection Agency (EPA) re-designated the 2008 ozone designation from moderate to serious nonattainment, effective September 23, 2019;

2) The new 2045 RTP became effective on August 2, 2019, replacing the older RTP; and

3) Conformity for the 2015 ozone National Ambient Air Quality Standards (NAAQS) became a requirement as of August 3, 2019.

This project is located within Brazoria County, part of the Houston-Galveston-Brazoria (HGB) area that has been designated by the EPA as a serious nonattainment area for the 2008 and 2015 ozone NAAQS, respectively; therefore, transportation conformity rules apply. Conformity for older standards is satisfied by conformity to the more stringent 2008 and 2015 ozone NAAQS.

The proposed action is consistent with the H-GAC's financially constrained 2045 RTP and the 2019-2022 TIP, as amended, which were initially found to conform to the TCEQ SIP by the FHWA and FTA on August 2, 2019. Copies of the RTP and TIP pages are included in **Appendix E**.

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

The annual average daily traffic (AADT) projections for the project between SH 288 and Silverlake Parkway for the design year (2040) is 66,550 vpd. Between Silverlake Parkway and SH 35, the AADT is 49,350 vpd for the design year (2040). A prior TxDOT modeling study and previous analyses of similar projects demonstrated that it is unlikely that the CO standard would even be exceeded as a result of any project with an AADT below 140,000. The AADT projections for the project do not exceed 140,000 vpd; therefore, a TAQA was not required.

A qualitative analysis provides a basis for identifying and comparing the potential differences among MSAT emissions, if any, from the various alternatives. The qualitative assessment, as documented in the *Air Quality Technical Report* is derived from a study conducted by FHWA. When a highway is widened, the localized level of MSAT emissions for the Build Alternative could be higher relative to the No-Build Alternative, but this could be offset due to increases in speeds and reductions in congestion (which are associated with lower MSAT emissions). Also, MSAT will be lower in other locations when traffic shifts away from them. However, on a regional basis, EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions that, in almost all cases, will cause region-wide MSAT levels to be significantly lower than today.

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

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 RTP, 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 types of strategy, implementing responsibilities, schedules, and expected costs. At the project's programming stage, travel demand reduction strategies, and commitments will be added to the regional TIP or included in the construction plans. The regional TIP provides for programming of these projects at the appropriate time with respect to the single occupancy vehicle (SOV) facility implementation and project-specific elements.

Committed congestion reduction strategies and operational improvements within the study boundary will consist of the addition of shared use lanes, sidewalks, and intersection improvements.

In an effort to reduce congestion and the need for single occupancy vehicle (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) Improvement Program, the CMP, and the 2045 RTP. The congestion reduction strategies considered for this project would help alleviate congestion in the SOV study boundary, but would not eliminate it. The CMP analysis for SOV capacity projects is on file and available for review at the H-GAC.

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

The potential impacts of particulate matter emissions will be minimalized by using fugitive dust control measures contained in standard specifications, as appropriate. The Texas Emissions Reduction Plan (TERP) provides financial incentives to reduce emissions from vehicles and equipment. TxDOT encourages construction contractors to use this and other local and federal incentive programs to the fullest extent possible to minimize diesel emissions.

However, considering the temporary and transient nature of construction-related emissions, the use of fugitive dust control measures, the encouragement of the use of TERP, and

compliance with applicable regulatory requirements; it is not anticipated that emissions from construction of this project will have any significant impact on air quality in the area.

Because the proposed project is located within a nonattainment area for ozone and adds capacity, coordination with the TCEQ would be required.

The No-Build Alternative would not have any affects to air quality in the project area as no improvements are proposed.

5.13 Hazardous Materials

A Hazardous Materials Initial Site Assessment (ISA) was completed for the proposed project to identify known and possibly unknown hazardous material contamination within the proposed project limits. The assessment was conducted along the proposed project area, from publicly accessible locations on existing rights-of-way and where ROE was granted by the landowners. Please refer to the *Hazardous Materials Initial Site Assessment* for more information regarding the results of these investigations (TxDOT 2016f).

The ISA identified several hazardous materials sites of concern. These sites include areas adjacent to the Build Alternative right-of-way including 5 dry cleaning facilities and 16 active petroleum storage tank (PST) locations, of which 6 are of concern and adjacent to the project area. There are 10 leaking petroleum storage tank (LPST) sites of which 8 are of concern. Further investigation was recommended due to the proximity of the LPST sites to the project and potential for contamination.

TCEQ file information for the 8 LPST sites identified as potential concerns was reviewed by TxDOT ENV personnel. Summaries of the file reviews are maintained in the project file. Soil and groundwater contamination information contained in the TCEQ files was compared with project excavation and right-of-way acquisition requirements from project design schematics. Based on the available information, impacts to project construction from petroleum releases would not be anticipated, and no further investigation would be required. However, it does appear that portions of existing tank systems from two of the LPST sites (LPST 97909 at 5304 W. Broadway Street and LPST 113715 at 7218 Broadway Street) may encroach into the proposed right-of-way. Any tank system removal work would be addressed during the right-of-way acquisition phase. Should testing associated with tank removal activities reveal additional contamination, the need for mitigation would be re-assessed and addressed prior to construction.

Several pipelines intersect the project area. There are two pipelines near the intersection of FM 518 and Hatfield Road, two pipelines near the intersection of FM 518 and Wagon Trail Road, one pipeline west of the intersection of FM 518 and Oday Road, two pipelines east of FM 518 and Roy Road, and one pipeline west of the intersection of Smith Road and FM 518. Any potential pipeline conflicts would be addressed during the utility coordination phase, in accordance with established procedures.

The Build Alternative may include the demolition of 4 residential structures, 10 commercial business or their affiliated parking lots, and 1 utility facility (lift station) within the proposed right-of-way for the Build Alternative. Asbestos inspections, specification, license, accreditation, abatement, and disposal, as applicable, would comply with federal and state regulations. Asbestos issues would be addressed during the right-of-way process prior to construction.

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

The No-Build Alternative would have no impacts to pipelines or ground disturbance that may expose any potentially known or unknown contaminated sites. No additional investigations would be needed or required.

5.14 Traffic Noise

A traffic noise analysis was conducted for the Build Alternative. Existing and predicted traffic noise levels were modeled at receiver locations (**Figure 5 – Appendix F)** that represent the land use activity areas adjacent to the project area that may be impacted by traffic noise and potentially benefit from feasible and reasonable noise abatement. Measures to reduce noise impacts were considered and evaluated.

Existing and predicted traffic noise levels were modeled at receiver locations (see **Table 4** and **Figure 5 – Appendix F**) that represent the land use activity areas adjacent to the Build Alternative that might be impacted by traffic noise and might potentially benefit from feasible and reasonable noise abatement.

Table 4: Traffic Noise Levels dB(A) Leq (Build Alternative)							
Representative Receiver	Receiver Type	NAC Category	NAC Level	Existing (2019)	Predicted (2039)	Change (+/-)	Noise Impact
R1	Multi-Family Residential	B	67	67	72	+5	Y
R2	Multi-Family Residential	B	67	67	72	+5	Y
R3	Multi-Family Residential	B	67	67	72	+5	Y
R4	Multi-Family Residential	B	67	67	72	+5	Y
R5	Multi-Family Residential	B	67	67	68	+1	Y
R6*	Medical Center	D	52	40	42	+2	N
R7	Hotel Pool	E	72	65	69	+4	N
R8*	Medical Center	D	52	36	36	+0	N
R9*	Hospital	D	52	36	36	+0	N
R10*	Medical Center	D	52	37	40	+3	N
R11*	Church	D	52	33	35	+2	N
R12	Residential	B	67	59	61	+2	N
R13	Residential	B	67	60	62	+2	N
R14	Day Care	C	67	62	65	+3	N
R15	Day Care	C	67	63	66	+3	Y
R16	Day Care	C	67	59	62	+3	N
R17*	Church	D	52	37	41	+4	N
R18	Church	C	67	61	64	+3	N
R19	Hotel Pool	E	72	62	65	+3	N
R20	Restaurant Patio	E	72	65	66	+1	N
R21	Day Care	C	67	60	62	+2	N
R22	Day Care	C	67	59	61	+2	N
R23*	Church	D	52	40	42	+2	N
R24*	Government Building	D	52	40	42	+2	N
R25	Day Care	C	67	59	61	+2	N

Table 4: Traffic Noise Levels dB(A) Leq (Build Alternative)							
Representative Receiver	Receiver Type	NAC Category	NAC Level	Existing (2019)	Predicted (2039)	Change (+/-)	Noise Impact
R26	Residential	B	67	64	66	+2	Y
R27	Residential	B	67	61	62	+1	N
R28*	Church	D	52	33	35	+2	N
R29B**	Residential	B	67	63	65	+2	N
R30	Residential	B	67	65	67	+2	Y
R31*	Funeral Home	D	52	41	44	+3	N
R32	Church	C	67	55	57	+2	N
R33*	Church	D	52	34	35	+1	N
R34	School	C	67	63	64	+1	N
R35	Residential	B	67	63	65	+2	N
R36	Residential	B	67	65	66	+1	Y
R37	Private Baseball Diamonds	C	67	61	62	+1	N

Source: TxDOT 2018c.
**Interior noise levels reduced by 25 dB(A), in accordance with TxDOT's "Guidelines for Analysis and Abatement of Roadway Traffic Noise".*
***An alternative location (R29B) was given to this receiver for the Build Alternative due to the potential displacement of the original R29.*

As indicated in **Table 4**, the analysis determined that the implementation of the Build Alternative would result in traffic noise impacts to several receivers. Noise abatement measures were considered that included traffic management, alteration of horizontal and/or vertical alignments, acquisition of undeveloped property to act as a buffer zone, and the construction of noise barriers. Traffic management, alternation of horizontal and/or vertical alignments, and buffer zones were determined to not be either cost effective, unreasonable, or not feasible.

Noise barriers were evaluated to determine if they would be reasonable and feasible. It was determined that noise barriers were reasonable and feasible at the St. Andrews and Southwind at Silverlake apartment complexes. **Table 5** summarizes the proposed noise barriers.

Table 5: Proposed Noise Barriers						
Barrier	Representative Receivers	Total # Benefited	Length (feet)	Height (feet)	Total Cost	$/Benefited Receiver
St. Andrews	R1, R2, R3, R4	33	946	14	$238,392	$7,224
Southwind at Silverlake	R5	8	401	14	$101,052	$12,632

Source: TxDOT 2018c.

As indicated in **Table 4**, noise barriers were found to not be feasible and reasonable for impacted receivers representing a day care facility playground (R15) and three standalone single-family residences (R26, R30, and R36) along FM 518. For all four of these representative receivers, the modeled noise barrier that would achieve the minimum feasible reduction of five dB(A) at greater than 50% of first row receivers and reduce the noise level at one or more receivers by at least seven dB(A) would exceed the reasonable, cost-effectiveness criterion of $25,000. Therefore, noise barriers are not proposed for incorporation into the Preferred Alternative at these four locations.

Any subsequent project design changes may require a re-evaluation of the preliminary noise barrier proposal. The final decision to construct the proposed noise barriers would not be made until completion of the project design, utility evaluation, and polling of adjacent property owners. Please refer to the *Traffic Noise Technical Report* for more information regarding the traffic noise analysis performed (TxDOT 2018c).

Provisions would be included in the plans and specification that require the contractor to make every reasonable effort to minimize construction noise through abatement measures such as work-hour controls and proper maintenance of muffler systems. On the date of approval of this document (Date of Public Knowledge), FHWA and TxDOT are no longer responsible for providing noise abatement for new development adjacent to the project.

To avoid noise impacts that may result from future development of properties adjacent to the Build Alternative, local officials responsible for land use control programs must ensure, to the maximum extent possible, no new activities are planned or constructed along or within the following predicted (2039) noise impact contours presented in **Table 6**.

Table 6: Proposed Contours (2039)		
Location	Distance from Right-of-Way	
	NAC Category B & C 66 dB(A)	NAC Category E 71 dB(A)
Silverlake Pkwy to Cullen Blvd (south of FM 518)	100 ft	20 ft
Cullen Blvd to Manvel Rd (north of FM 518)	120 ft	40 ft
Cullen Blvd to Manvel Rd (south of FM 518)	60 ft	0 ft

Source: TxDOT 2018c.

The No-Build Alternative may maintain existing noise levels or noise levels may change as traffic volumes increase with time.

5.15 Induced Growth

An *Indirect Impacts Technical Report* was prepared for the proposed project in accordance with TxDOT's Indirect Impacts Analysis Guidance (TxDOT 2017d).

The Build Alternative would provide an improved connection for the traveling public and to those who live in Pearland and Brazoria County. The Build Alternative would accommodate future anticipated traffic demand and growth in the region, and improve safety by providing raised medians with dedicated turn lanes at select locations and intersections. Because the project is not a new-location roadway, it is not anticipated to substantially change access or establish new development potential for undeveloped areas.

Based on demographic and land use trends, there is a strong potential for growth in the Area of Influence (AOI) (**Figure 6 – Appendix F).** The AOI was identified as approximately 1,115 acres in size. Based on an interview with city staff and a cartographic assessment, approximately 440 acres of land have indirect induced growth potential within the AOI (39.5 percent of AOI). The 440-acre area of potential induced growth consists of many types of future land uses including commercial businesses and business parks; high, medium, and low density residential development; offices; the Garden/O'Day Mixed Use District; and others. The exact type, location, timing, and density of future developments are unknown at this time. It is assumed that the majority of induced development is likely to be retail, offices, and services, followed by low-density residential.

As described in the *Indirect Impacts Technical Report*, the resources that could be indirectly impacted by potential induced growth include threatened and endangered species, historic-age properties, and archeological resources (TxDOT 2017d). Regarding threatened and endangered species, the Endangered Species Act affords protection for federally-listed threatened species and their habitats. State regulations prohibit harm to individuals of state-listed species. All development, whether public or privately funded, is subject to State and Federal regulations. Regarding historic-age properties, there appear to be a limited number of standing structures existing on the parcels associated with the potential induced growth. 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. However, no State or Federal regulations protect cultural resources for privately-funded projects. Regarding archeological resources, preliminary consultation with TxDOT-developed PALM data indicates generally low to limited areas of medium potential for archeological impacts for the areas associated with potential induced growth. The Antiquities Code of Texas requires notification (to the 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. However, these State and Federal regulations do not apply to privately-funded projects.

Project-induced growth is accounted for in the City of Pearland's future planning documents and corresponding objectives. The potential induced growth is considered positive for the future of Pearland in terms of increased tax base and overall community enhancement. Future land development activities would be generally private ventures regulated by the City of Pearland's Unified Development Code.

Ultimately, because the Build Alternative is not anticipated to conflict with the development goals of the project area or cause substantial negative induced growth impacts, the requirement for mitigation of environmental impacts would be limited to mitigating only the direct impacts associated with the Build Alternative. Please refer to the *Indirect Impacts Technical Report* for additional information regarding induced growth impacts from the Build Alternative (TxDOT 2017d).

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

5.16 Cumulative Impacts

A *Cumulative Impacts Technical Report* was prepared for the proposed project in accordance with TxDOT's Cumulative Impacts Analysis Guidelines (TxDOT 2017e).

The responses to questions provided in the TxDOT cumulative impacts risk assessment revealed that no substantial direct or indirect impacts are anticipated based on findings from recent evaluations provided in technical reports that were prepared for the current EA.

While the project area contains potentially suitable habitat for the state-threatened timber rattlesnake and Wood Stork and the SGCN plains spotted skunk and giant sharpstem umbrella-sedge, BMPs would be implemented in an effort to avoid impacts to these species. No individuals of these species were observed during site visits. Any impact to individuals would be incidental in nature. Thus, no substantial impact to this resource is anticipated. Although the proposed project may result in the removal of potentially suitable habitat or the temporary disturbance of individuals of these species, the project is not anticipated to cause a substantial impact to any species or rare habitat communities. The magnitude of direct impacts to these species' habitat represents a small portion of available habitat when compared to the geographic extent of the range of these species. Per the 2013 TxDOT-TPWD Memorandum of Agreement, species specific BMPs would be implemented for the timber rattlesnake, Wood Stork, and plains spotted skunk. Vegetation BMPS would be implemented for the giant sharpstem umbrella-sedge. In summary, this project is not expected to have a substantial impact on any state-listed threatened species or SGCNs.

The construction of the proposed project is anticipated to impact approximately 42.4 acres of Urban Low Intensity vegetation, 0.77 acre of Tallgrass Prairie/Grasslands, and 2.61 acres of

Disturbed Prairie. None of these general habitat types are considered rare or important remnant vegetation as mapped by the TCAP and no important remnant communities were identified during field investigation. These vegetation types are not considered in poor or declining health due to the presence of adjacent undeveloped tracts of land with similar vegetation and due to the proximity of similar habitats throughout Brazoria County.

The proposed project would not result in significant incremental loss of additional suitable habitat through direct or indirect impacts for the abovementioned species and is not expected to cause significant degradation to a resource in poor or declining health. Therefore, neither protected species nor remnant vegetation were carried forward for cumulative impacts analysis.

Based on the results of the TxDOT cumulative impacts risk assessment, supported by the information presented in the technical reports prepared for the proposed project, further Cumulative Impacts Analysis is not required.

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

5.17 Construction Phase Impacts

The Build Alternative may result in temporary congestion during construction as there may be some lane closures. Access to adjacent parcels would be maintained during all phases of construction. All practicable steps would be taken to minimize the inconvenience to drivers using the intersecting roadways during the construction phase. People living and working in the immediate area of the proposed project may experience an increase in noise and dust due to construction activities. Please refer to Section 5.12 for the discussion of construction-related air emissions. The following construction phase BMPs would be utilized:

- Vegetation BMPs
    - Minimize the amount of vegetation cleared. Removal of native vegetation, particularly mature native trees and shrubs, should be avoided to the greatest extent practicable.
    - The use of any non-native vegetation in landscaping and revegetation is discouraged. Locally adapted native species should be used.
    - Avoid vegetation clearing activities during the general bird nesting season, March through August, to minimize adverse impacts to birds.
- Water Quality BMPs
    - Once construction is complete and disturbed areas have been revegetated, remove silt fencing and accumulated sediment to reduce wildlife barriers and hazards.
    - Minimize the use of equipment in streams and riparian areas during construction. When possible, equipment access should be from banks, bridge decks, or barges.

- When temporary stream crossings are unavoidable, remove stream crossings once they are no longer needed and stabilize banks and soils around the crossing.

- Invasive Species BMPs
  - Care should be taken to avoid the spread of aquatic invasive plans (such as giant salvinia, hydrilla, hyacinth, watermilfoil, water lettuce, and alligatorweed) from infested water bodies into areas not currently infested. All machinery/equipment/vehicles coming in contact with waters containing aquatic invasive plant species should follow clean/drain/dry protocols to prevent the potential spread of invasive plants.

The No-Build Alternative would not involve any construction phase impacts.

6.0 AGENCY COORDINATION

TxDOT concluded tribal consultation on October 10, 2016. TxDOT also completed coordination with TPWD on May 26, 2017. TxDOT is coordinating with the TCEQ regarding air quality pursuant to the MOU (**Appendix G – Agency Coordination**).

It is anticipated that impacts to waters of the U.S. would be authorized under NWP 14 without a PCN because impacts are anticipated to be under 0.10 acre and 200 linear feet for each crossing. The actual impacts would be confirmed during the final design phase, based on acquisition of complete ROE and detailed construction plans. If any impacts to waters of the U.S. including wetlands, exceed 0.5 acre, or the thresholds of the general and regional general conditions of the NWP are exceeded, an IP would be required.

7.0 PUBLIC INVOLVEMENT

A public meeting was held on May 14, 2015, at Sam Jamison Junior High School in Pearland, Texas. The public meeting was conducted in an open-house format; no formal presentation was given. The meeting was intended to provide attendees an opportunity to view detailed plans and environmental constraints, allow discussion of the project with TxDOT staff, and update attendees on the project status and schedule. The meeting was also intended to gather public comment and input on the project, including three preliminary schematic designs (north, middle, and south alternatives).

The majority of the comments received from the public meeting were related to a specific alternative and the potential effects to businesses, residences, churches, mature trees and shrubs, and children, along with access to a business or residence, and adding sidewalks throughout the project area. Thirteen commenters provided their preference on a preliminary schematic design alternative: seven for the north alternative, zero for the middle alternative, and six for the south alternative. Please refer to the *Public Meeting Summary Report* for more information regarding the results of the public meeting conducted in May 2015. The *Public*

Meeting Summary Report may be inspected and copied upon request at the TxDOT Houston District Office (TxDOT 2015b).

A public hearing was held on March 26, 2019 at Berry Miller Junior High School in Pearland, Texas. The hearing began with an open house format with exhibit boards and schematics available for review, followed by a presentation. The public was invited to provide input using several participation methods, including providing formal public comment to a court reporter. Comments received as a result of the public hearing concerned business access, proposed right-of-way width, bike lanes, and potential impacts between Cullen Parkway and SH 35. No design changes have occurred following the public hearing. The portion of the project from SH 288 to Cullen Parkway is currently funded and would be constructed as proposed. TxDOT will reevaluate the proposed design from Cullen Parkway to SH 35. Additional public involvement would occur if there are any changes to the proposed design for that portion of the project. The Public Hearing Documentation will be available to be inspected and copied upon request of the TxDOT Houston District.

Because the project involves construction of a highway that will add at least one travel lane, a notice of impending construction will be provided to owners of adjoining property and affected local governments and public officials. The notice may be provided via a sign or signs posted in the right-of-way, mailed notice, printed notice distributed by hand, or notice via website when the recipient has previously been informed of the relevant website address. This notice must be provided after the environmental decision (i.e., FONSI or recommendation to prepare an EIS), but before earthmoving or other activities requiring the use of heavy equipment begin.

8.0 ENVIRONMENTAL PERMITS, ISSUES, AND COMMITMENTS

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

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

1. USACE Section 404 permit (anticipated NWP 14 without PCN)
2. TPDES, includes:
    a. CGP
    b. SWP3
    c. Site Notice
    d. NOI

3. Implementation of erosion control, sedimentation control, and post-construction TSS control BMPs for the TCEQ's 401 Water Quality Certification Conditions for NWPs to prevent water quality impacts from occurring during and after construction.
4. Implementation of BMPs for state-listed species and SGCNs (including the timber rattlesnake, plains spotted skunk, and Wood Stork)
5. EO 13122 on Invasive Species
6. Implementation of Invasive Species BMPs
7. Executive Memorandum on Beneficial Landscaping
8. MBTA
9. An archeological survey for areas of proposed new right-of-way in PALM Unit 2A, totaling approximately 5.53 acres, will be conducted when ROE is available or the right-of-way is acquired. In the event that unanticipated archeological deposits are encountered during construction, work in the immediate area will cease, and TxDOT archeological staff will be contacted to initiate post-review discovery procedures
10. Any unanticipated hazardous materials and/or petroleum contamination encountered during construction would be handled according to applicable federal and state regulations per TxDOT Standard Specifications.
11. Implementation of fugitive dust control measures.
12. The traffic noise analysis and qualitative air quality analysis will be made available to local officials.

9.0 CONCLUSION

The engineering, social, economic, and environmental investigations performed indicate that the implementation of the proposed project would result in no significant impact on the human or natural environment. A FONSI is recommended.

10.0 REFERENCES

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_____. 2018c FM 518 (SH 288 to SH 35) Traffic Noise Technical Report.

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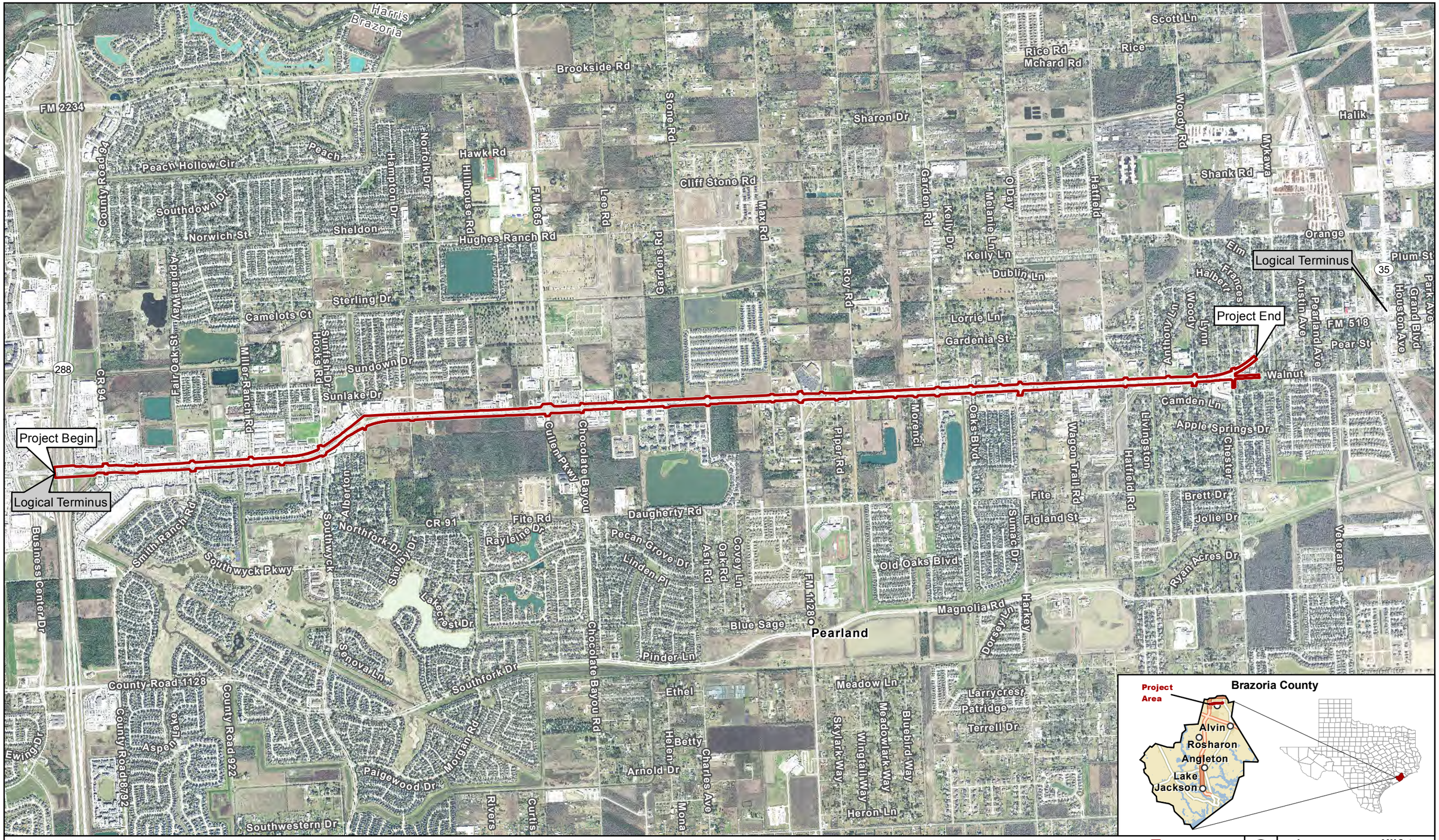
Appendix A – Project Location Map



Appendix A

Project Location (Aerial Base)

FM 518 from SH 288 to SH 35

Project Location

0 2,200 Feet
0 600 Meters

Prepared for: TxDOT	1 in = 2,200 feet
	Scale: 1:26,400
CSJ: 0976-02-086, 3416-01-012	Date: 3/16/2017

Aerial Source: TNRIS (2015)

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Appendix B – Project Photographs

Photo 1: View of FM 518 project begin at SH 288, facing east.

Phot 2: View of FM 518 project begin at SH 288, facing west.

Photo 3: Example of a place of worship (St. James Baptist Church) located in a commercial center, facing south.

Photo 4: View of a Brazoria County Municipal Utility District (MUD) sign, near the City of Pearland's proposed Conditional Use Permit (CUP) site, facing south from FM 518.

Photo 5: View of commercial facility (Jack's Carpet and Hertz), facing east.
FM 518 is in the background.

Photo 6: Example of community facility (Methodist Comprehensive Care Center) located south of FM 518, facing east.

Photo 7: View of commercial facility (Public Storage) along FM 518, facing east. FM 518 and an existing sidewalk is in the background.

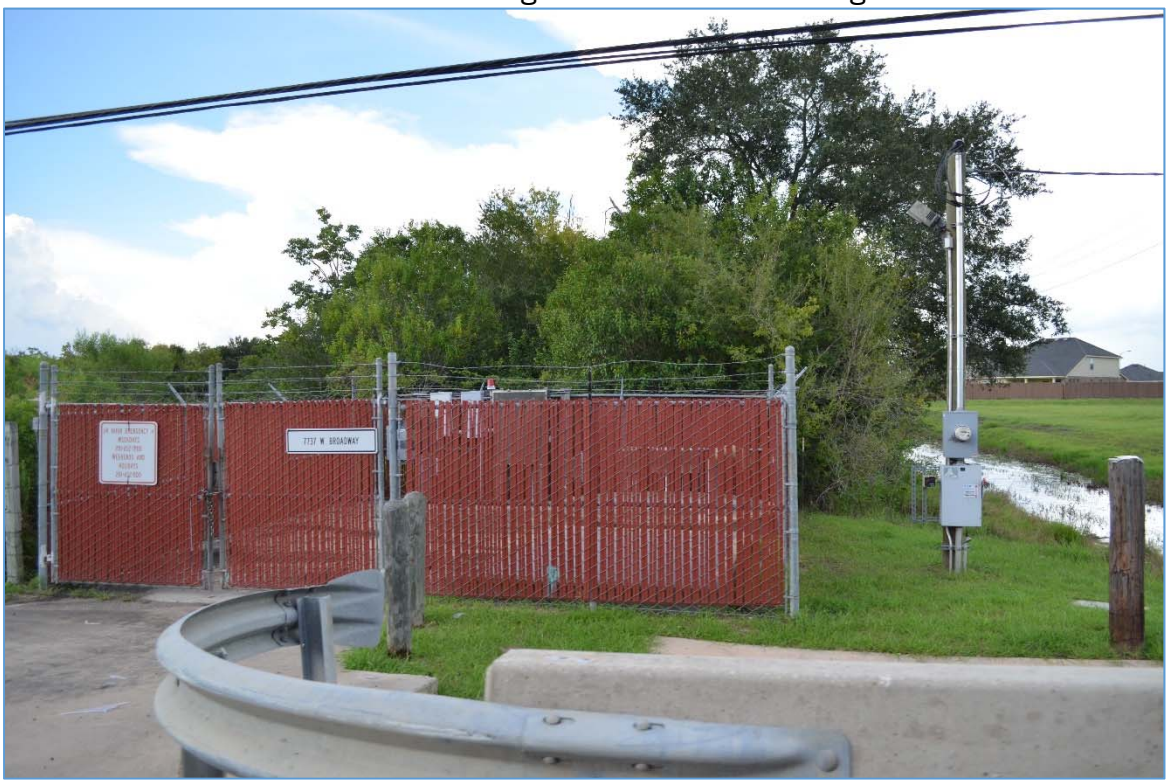


Photo 8: City of Pearland lift station (potential displacement), facing north from FM 518. Avalon Terrace subdivision is located directly north of the lift station.

Photo 9: Examples of Spanish signage (La Moreliana #12 and Paleteria) in retail center located south of FM 518, facing southwest.

Photo 10: Natural gas compressor site located south of the intersection at CR 555/Wagon Trail Road and FM 518 facing west.

Photo 11: General streetscape view along FM 518 at CR 555/Wagon Trail Road, facing west.

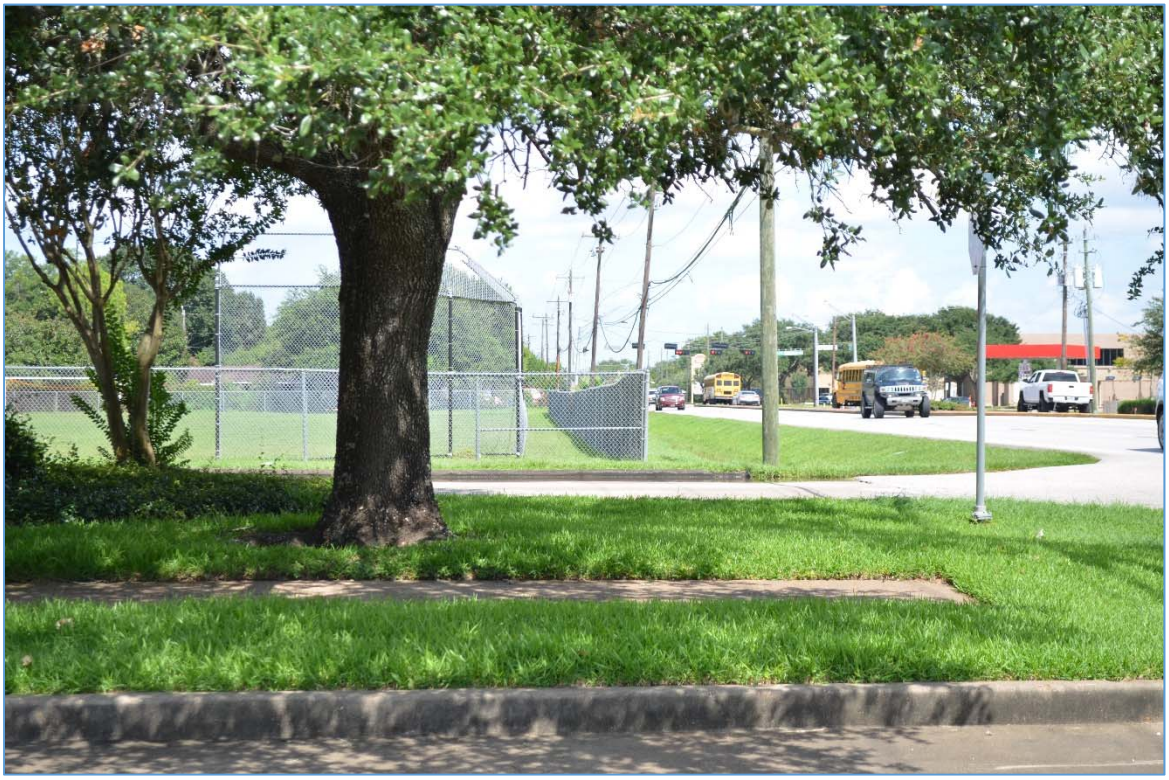
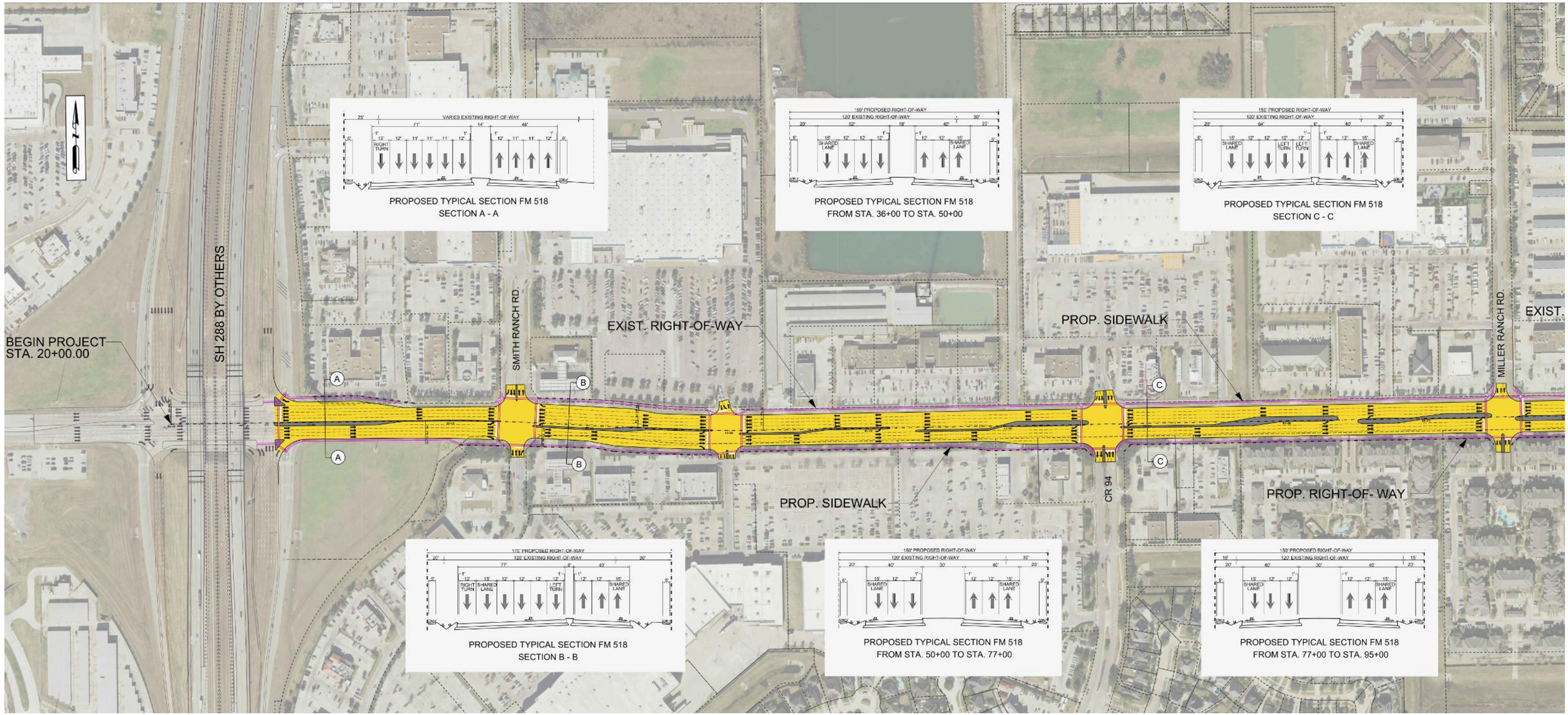


Photo 12: View of athletic field at Sam Jamison Middle School located north of FM 518, facing east.

Photo 13: View of FM 518 project end and Walnut Street, facing east.

Photo 14: Example of existing medians located near the eastern end of the project area, facing west.

Appendix C - Schematics



DESCRIPTION	SYMBOLOGY
PROPOSED MAIN LANES	
PROPOSED SIDEWALKS	
PROPOSED STRIPING	
PROPOSED DIRECT CONNECTOR	
PROPOSED RIGHT-OF-WAY	
EXISTING RIGHT-OF-WAY	

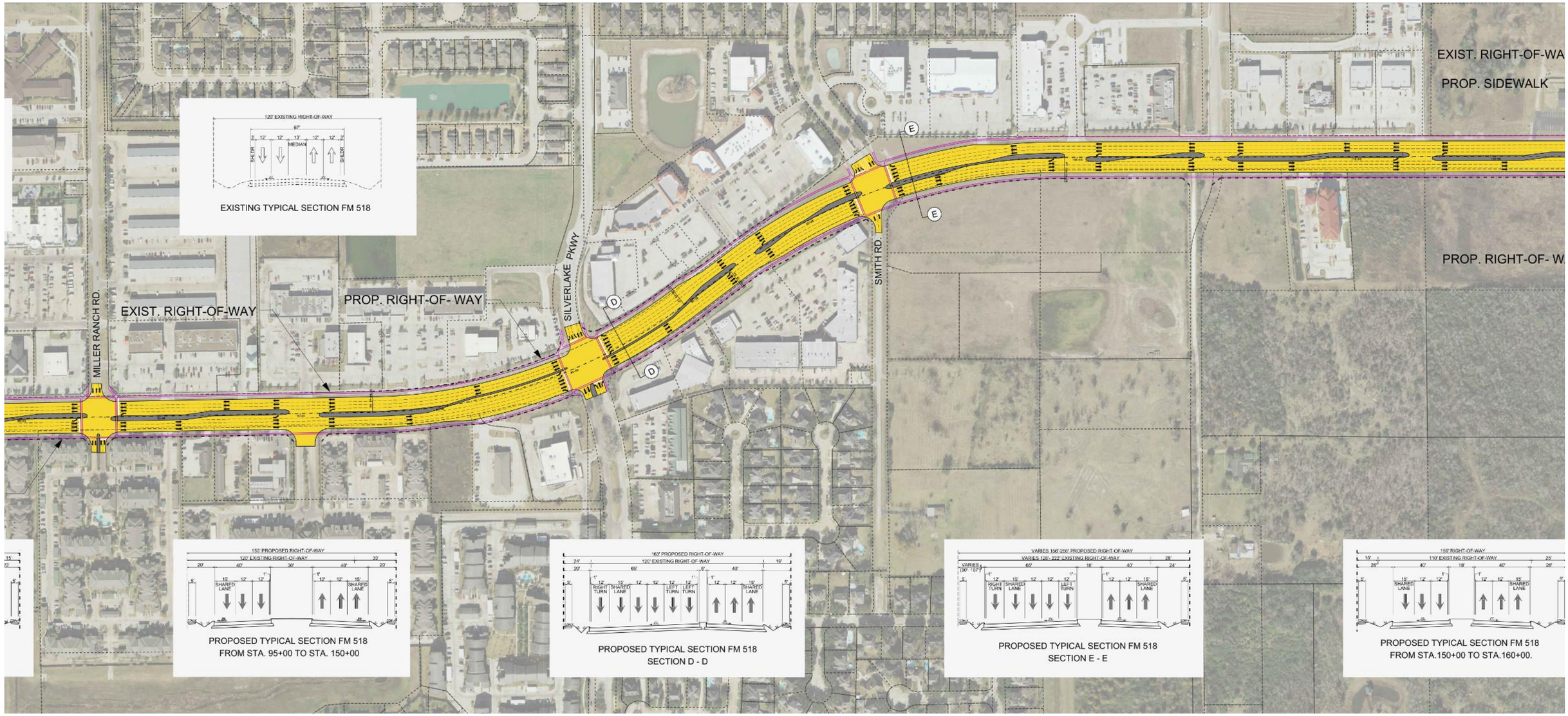
MAIN LANES
RAISED MEDIAN

0 100 200 300 400

Appendix C – Sheet 1 of 6

Schematic

FM 518 from SH 288 to SH 35
CSJ: 0976-02-086, 3416-01-012



DESCRIPTION	SYMBOLOGY
PROPOSED MAIN LANES	
PROPOSED SIDEWALKS	
PROPOSED STRIPING	
PROPOSED DIRECT CONNECTOR	
PROPOSED RIGHT-OF-WAY	
EXISTING RIGHT-OF-WAY	

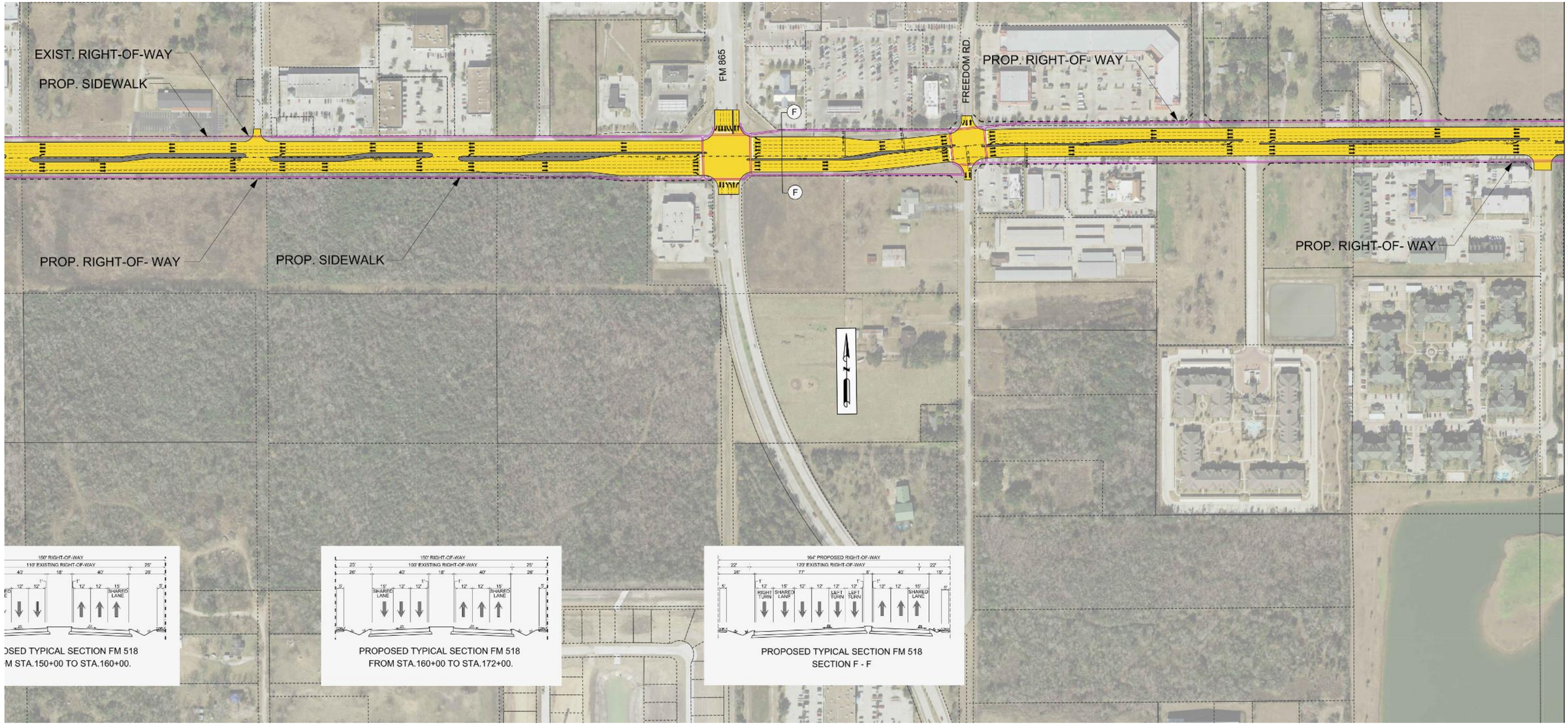
MAIN LANES
RAISED MEDIAN

0 100 200 300 400

Appendix C – Sheet 2 of 6

Schematic

FM 518 from SH 288 to SH 35
CSJ: 0976-02-086, 3416-01-012



DESCRIPTION	SYMBOLOGY
PROPOSED MAIN LANES	
PROPOSED SIDEWALKS	
PROPOSED STRIPING	
PROPOSED DIRECT CONNECTOR	
PROPOSED RIGHT-OF-WAY	
EXISTING RIGHT-OF-WAY	

MAIN LANES
RAISED MEDIAN

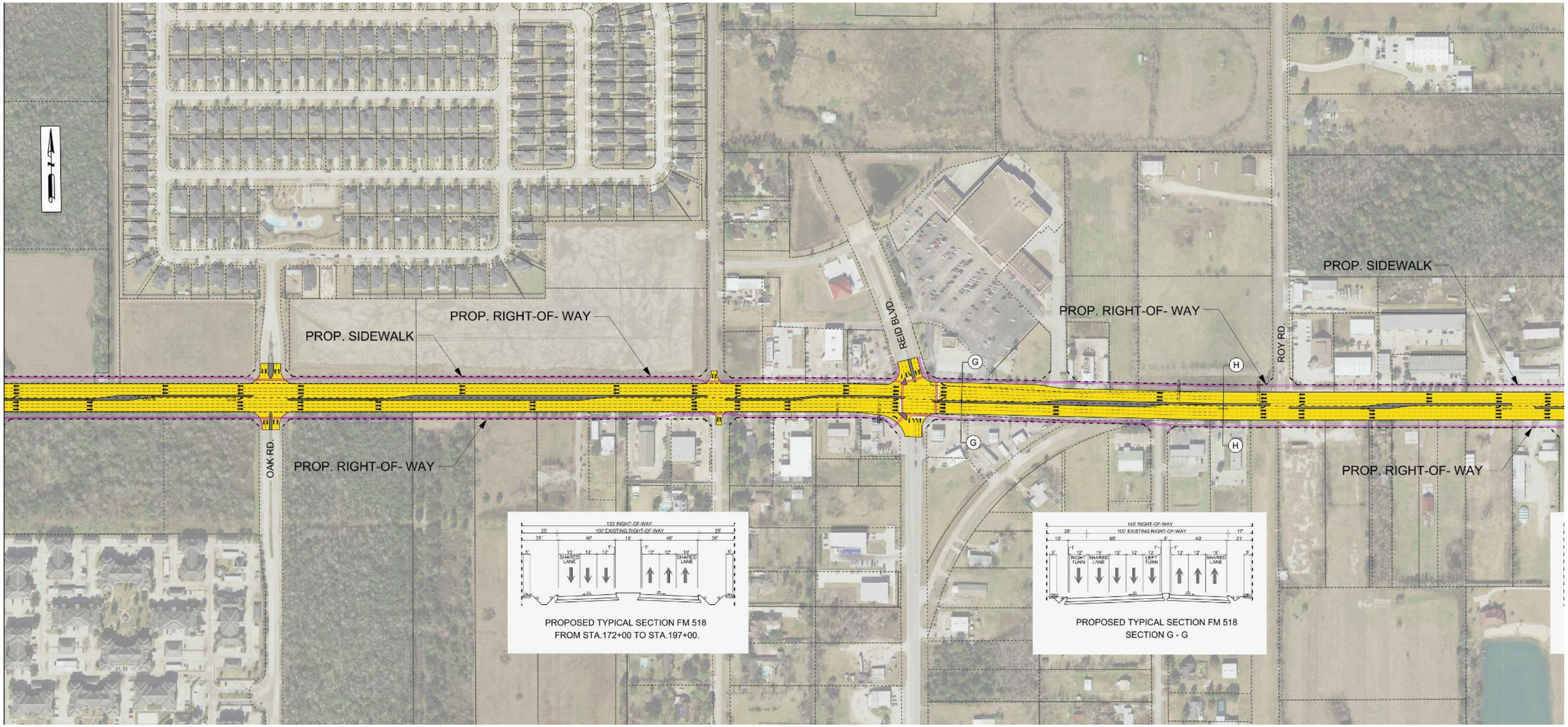
0 100 200 300 400

Appendix C – Sheet 3 of 6

Schematic

FM 518 from SH 288 to SH 35
CSJ: 0976-02-086, 3416-01-012

MATCH LINE STA 172+00.00



DESCRIPTION	SYMBOLOGY
PROPOSED MAIN LANES	
PROPOSED SIDEWALKS	
PROPOSED STRIPING	
PROPOSED DIRECT CONNECTOR	
PROPOSED RIGHT-OF-WAY	
EXISTING RIGHT-OF-WAY	

MAIN LANES

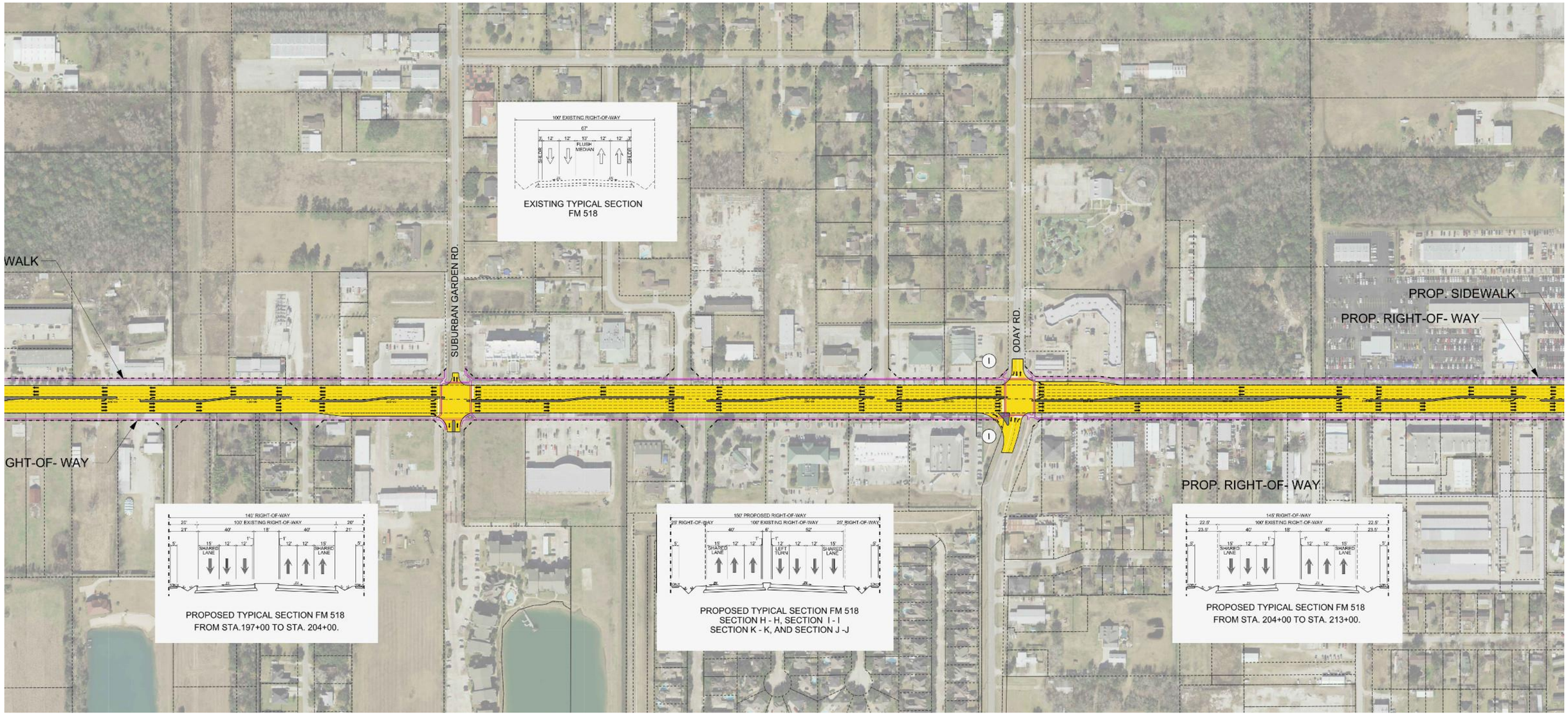
RAISED MEDIAN

0 100 200 300 400

Appendix C – Sheet 4 of 6

Schematic

FM 518 from SH 288 to SH 35
CSJ: 0976-02-086, 3416-01-012



DESCRIPTION	SYMBOLOGY
PROPOSED MAIN LANES	
PROPOSED SIDEWALKS	
PROPOSED STRIPING	
PROPOSED DIRECT CONNECTOR	
PROPOSED RIGHT-OF-WAY	
EXISTING RIGHT-OF-WAY	

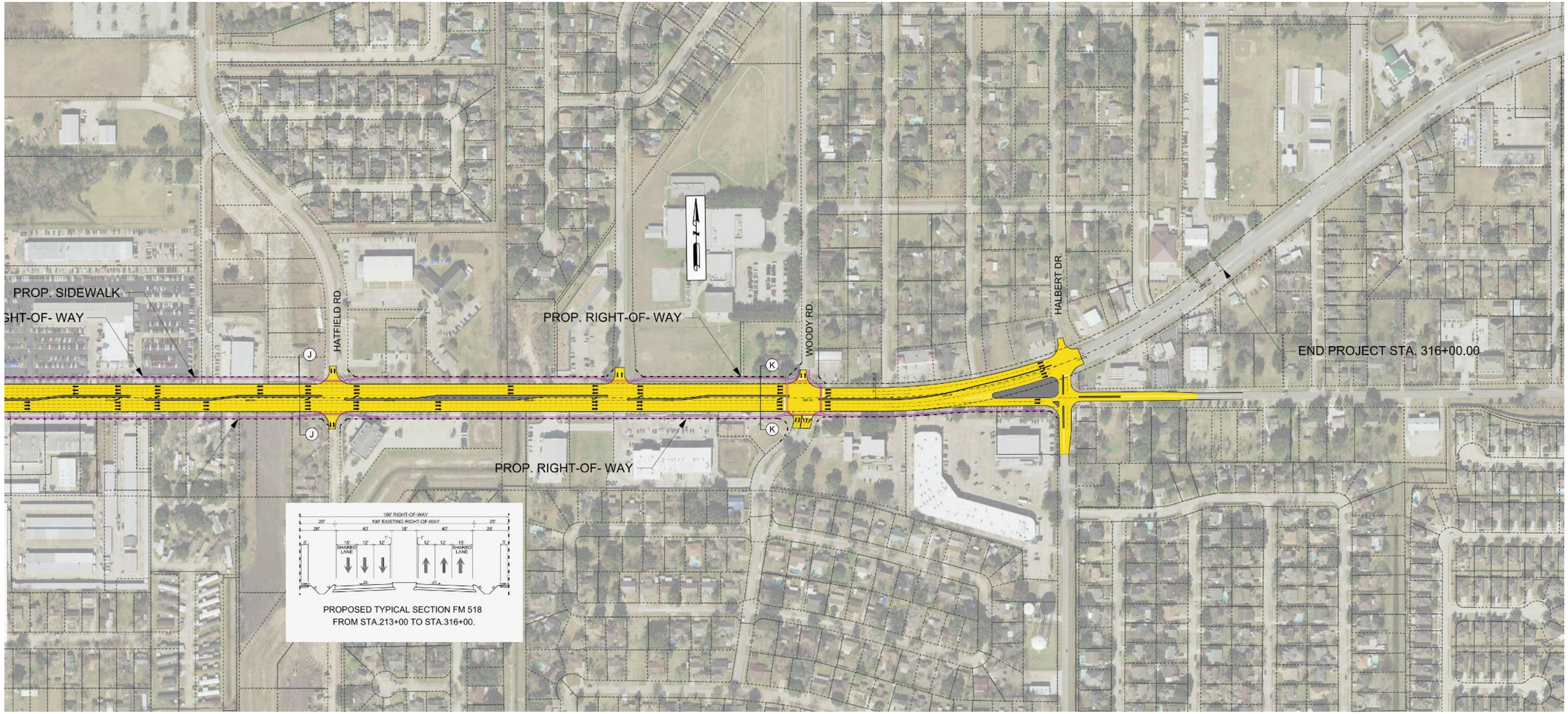
MAIN LANES
RAISED MEDIAN

0 100 200 300 400

Appendix C – Sheet 5 of 6

Schematic

FM 518 from SH 288 to SH 35
CSJ: 0976-02-086, 3416-01-012



DESCRIPTION	SYMBOLOGY
PROPOSED MAIN LANES	
PROPOSED SIDEWALKS	
PROPOSED STRIPING	
PROPOSED DIRECT CONNECTOR	
PROPOSED RIGHT-OF-WAY	
EXISTING RIGHT-OF-WAY	

MAIN LANES
RAISED MEDIAN

0 100 200 300 400

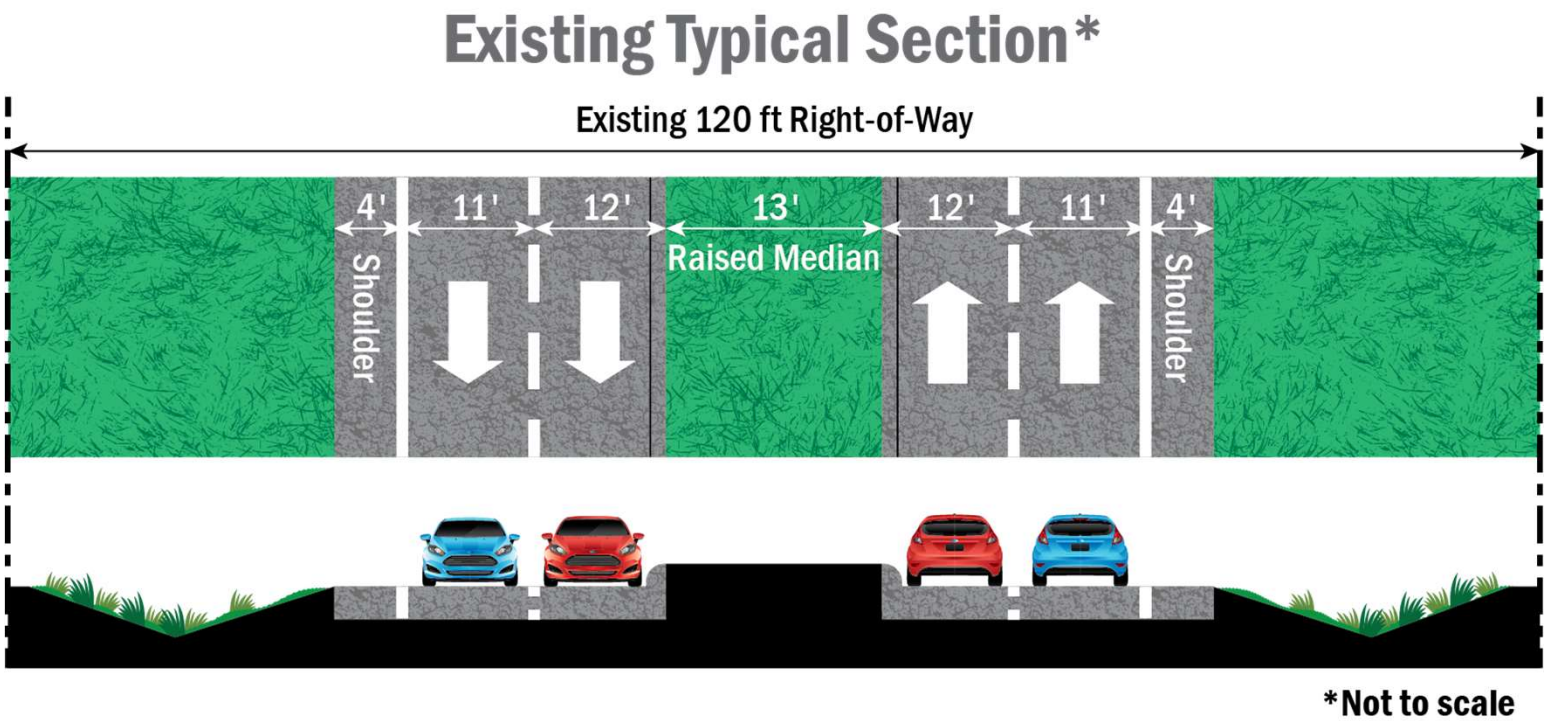
Appendix C – Sheet 6 of 6

Schematic

FM 518 from SH 288 to SH 35
CSJ: 0976-02-086, 3416-01-012

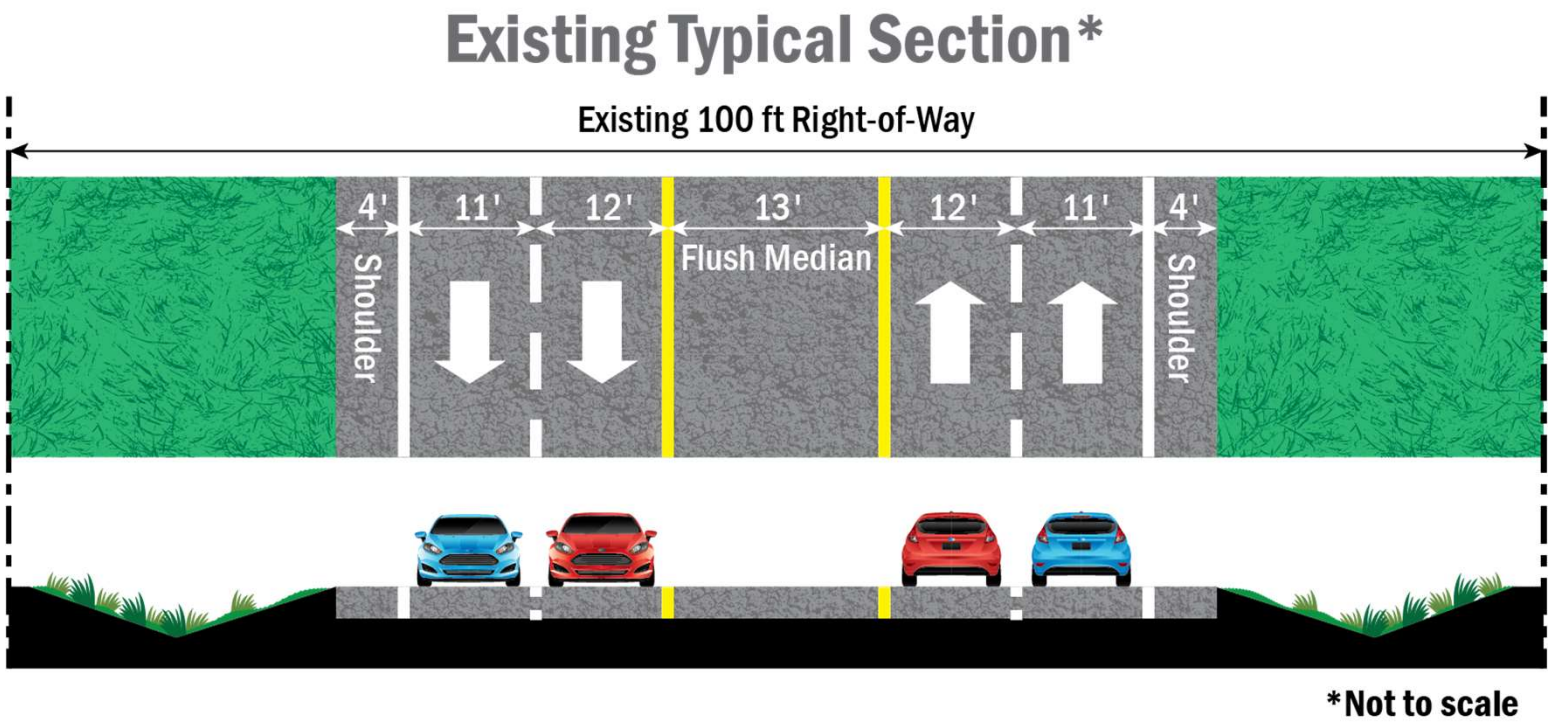
Appendix D – Typical Sections

Existing Typical Section from SH 288 to FM 865



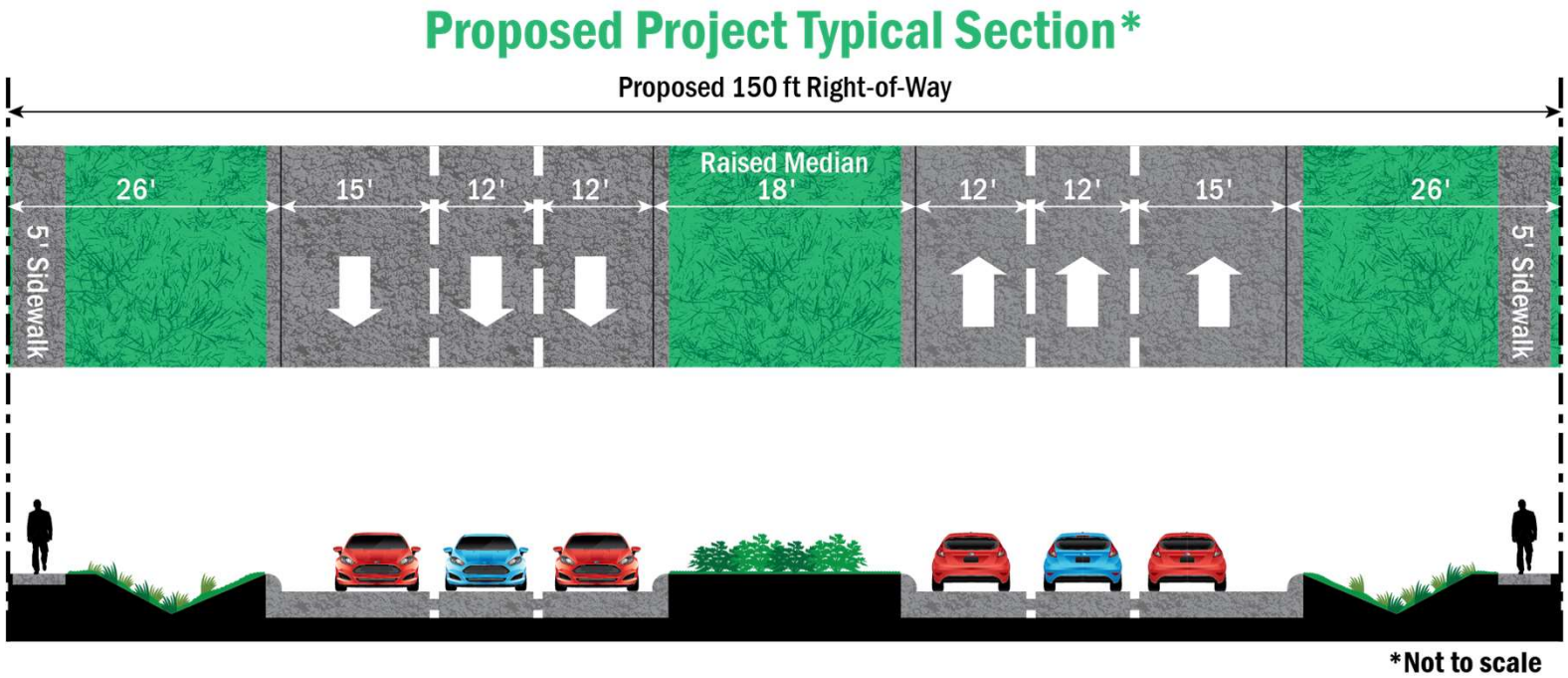
- Four travel lanes, two lanes in each direction
- 13-foot raised median
- 4-foot outside shoulders
- Open ditches
- 120-foot existing right-of-way

Existing Typical Section from FM 865 to SH 35



- Four travel lanes, two lanes in each direction
- 13-foot flush median
- 4-foot outside shoulders
- Open ditches
- 100-foot existing right-of-way

Proposed Typical Section



- Six travel lanes (three lanes in each direction)
- 18-foot raised median
- 5-foot sidewalks on both sides of the roadway
- Curb and gutter drainage system

Appendix E – Plan and Program Excerpts

2045 RTP PROJECTS LIST BY COUNTY

Updated 10/25/2019

MPOID/ CSJ	County	Sponsor*	Facility	From	To	Description	Length (mi)	Main Lanes	Frontage Lanes	Fiscal Year	Analysis Year*	Total Project Cost (M, YOE)
17086 0912-31-310	Brazoria	TXDOT HOUSTON DISTRICT	FM 1462, FM 2403, FM 2917, FM 762, SH 332, FM 521, FM 2004, FM 523, FM 528	VA	VA	CONSTRUCT BRAZORIA COUNTY BICYCLE LOOP BY WIDENING SHOULDERS, MODIFYING TRAFFIC SIGNALS AND REMOVING SOME RAISED MEDIANS	80.0	n/a	n/a	2020	EXEMPT	$ 5.10
18505 0587-01-067	Brazoria	TXDOT HOUSTON DISTRICT	FM 1495	FM 523	N OF BRAZOS RIVER BRIDGE	WIDEN FROM 2 TO 4 LANES	1.1	(2,4)	n/a	2026	NRS	$ 10.00
669	Brazoria	BRAZORIA COUNTY	FM 2351	SH 35	GALVESTON C/L	RECONSTRUCT AND WIDEN FROM 2 TO 4-LANES DIVIDED RURAL SECTION	2.3	(2,4)	n/a	2020	NRS	$ 3.30
16320 1002-01-006	Brazoria	TXDOT HOUSTON DISTRICT	FM 517	GALVESTON COUNTY LINE	SH 35	WIDEN FROM 2 TO 4 LANES WITH CURB AND GUTTER. INSTALL ACCESS MANAGEMENT TREATMENTS INCLUDING 18-FOOT-WIDE RAISED MEDIAN WITH TURN LANES. THE FACILITY WOULD ALSO HAVE 14-FOOT-WIDE SHOULDERS AND 5-FOOT-WIDE SIDEWALKS ON BOTH SIDES OF THE ROADWAY.	1.0	(2,4)	n/a	2025	NRS	$ 23.64
10132 3416-01-012	Brazoria	TXDOT HOUSTON DISTRICT	FM 518	SH 288	FM 865	RECONSTRUCT AND WIDEN FROM 4 AND 6 LANES TO 6 LANES DIVIDED	2.2	(4,6)	n/a	2023	2030	$ 40.55
10133 0976-02-086	Brazoria	TXDOT HOUSTON DISTRICT	FM 518	FM 865	SH 35	WIDEN FROM 4 TO 6 LANES	4.0	(4,6)	n/a	2024	2030	$ 76.38

**Analysis Year - NRS, EREA, and EXEMPT are exempt from conformity or are not considered regionally significant under H-GAC regional emissions analysis.*

**Sponsor - HCTTF are projects recommended by High Capacity Transit Task Force and not included in METRONext.*

APPENDIX D -- 2045 RTP, PROJECTS UNDERGOING ENVIRONMENTAL ASSESSMENT

Updated 10/25/2019

MPOID/ CSJ	County	Sponsor*	Facility	From	To	Description	Length (mi)	Fiscal Year
7564 1414-02-016	Brazoria	TXDOT HOUSTON DISTRICT	FM 528	BS 35/GORDON ST	SH 6	CONSTRUCT TWO LANE NEW LOCATION ROADWAY WITH RAILROAD GRADE SEPARATION	1.1	2023
7619 0598-02-119	Brazoria	CITY OF PEARLAND	SH 288	FM 518	CR 59	CONSTRUCT NEW 2-LANES NORTHBOUND FRONTAGE ROAD	1.0	2020
7630	Brazoria	CITY OF PEARLAND	PEARLAND PKWY	DIXIE FARM RD	FM 2351	CONSTRUCT 4-LANES DIVIDED ON NEW LOCATION	1.8	2026
7641 0912-00-560	Brazoria	CITY OF PEARLAND	CLEAR CREEK TRAIL	UH CLEAR LAKE PEARLAND CAMPUS	N OF HUGHES RD	CONSTRUCT 10 FT MULTIUSE TRAIL	2.0	2022
8088 3510-02-003	Brazoria	TXDOT HOUSTON DISTRICT	SH 99	AT SH 35		CONSTRUCT 2 DIRECT CONNECTORS (TOLL) (WB - NB, SB - EB)	0.5	2026
10132 3416-01-012	Brazoria	TXDOT HOUSTON DISTRICT	FM 518	SH 288	FM 865	RECONSTRUCT AND WIDEN FROM 4 AND 6 LANES TO 6 LANES DIVIDED	2.2	2023
10133 0976-02-086	Brazoria	TXDOT HOUSTON DISTRICT	FM 518	FM 865	SH 35	WIDEN FROM 4 TO 6 LANES	4.0	2024
10555	Brazoria	CITY OF ALVIN	FM 528	DAVIS BEND RD	FM 1462	EXTEND 2-LANE ROADWAY ON NEW LOCATION	3.7	2022

**Analysis Year - NRS, EREA, and EXEMPT are exempt from conformity or are not considered regionally significant under H-GAC regional emissions analysis.*

**Sponsor - HCTTF are projects recommended by High Capacity Transit Task Force and not included in METRONext.*

Appendix F – Resource-Specific Maps

Figure 1: Land Use, Community Facilities and Potential Displacements

Figure 2: Census Geographies

Figure 3: Water Resources

Figure 4: Observed Vegetation Types

Figure 5: Noise Analysis Results

Figure 6: Land Use within the Area of Influence

Figure 7: Archeology High Probability Areas

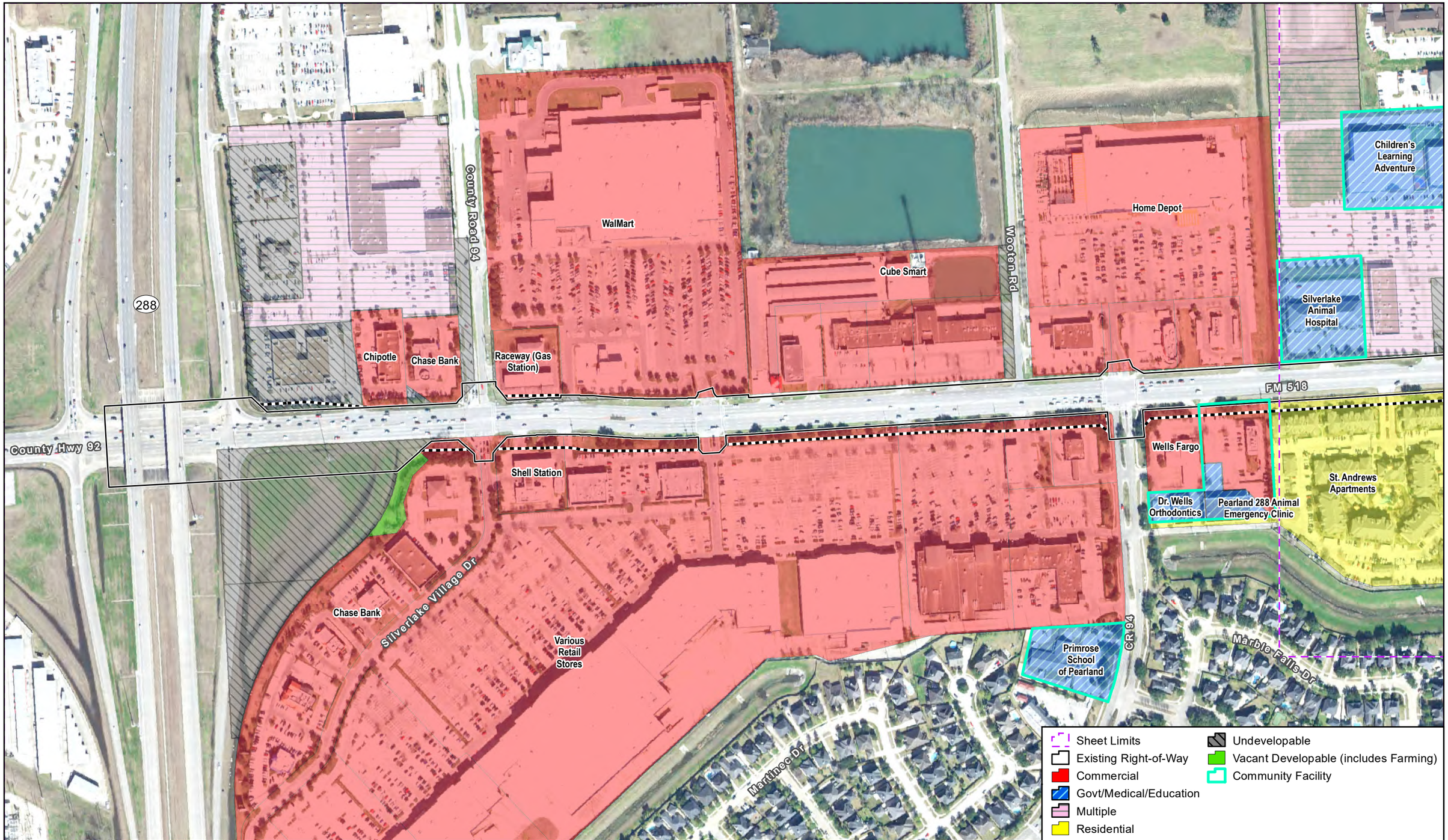


Figure 1a

Land Use, Community Facilities, and Potential Displacements

FM 518 from SH 288 to SH 35

Existing Right-of-Way
Proposed Right-of-Way
Sheet Limits

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

0 300 Feet
0 100 Meters

Prepared for: TxDOT	1 in = 300 feet
	Scale: 1:3,600
CSJ: 0976-02-086, 3416-01-012	Date: 2/28/2018

G:\Projects\TXDOT\FM518\EA_Figure 1_LandUse_Displacements_20180228.mxd

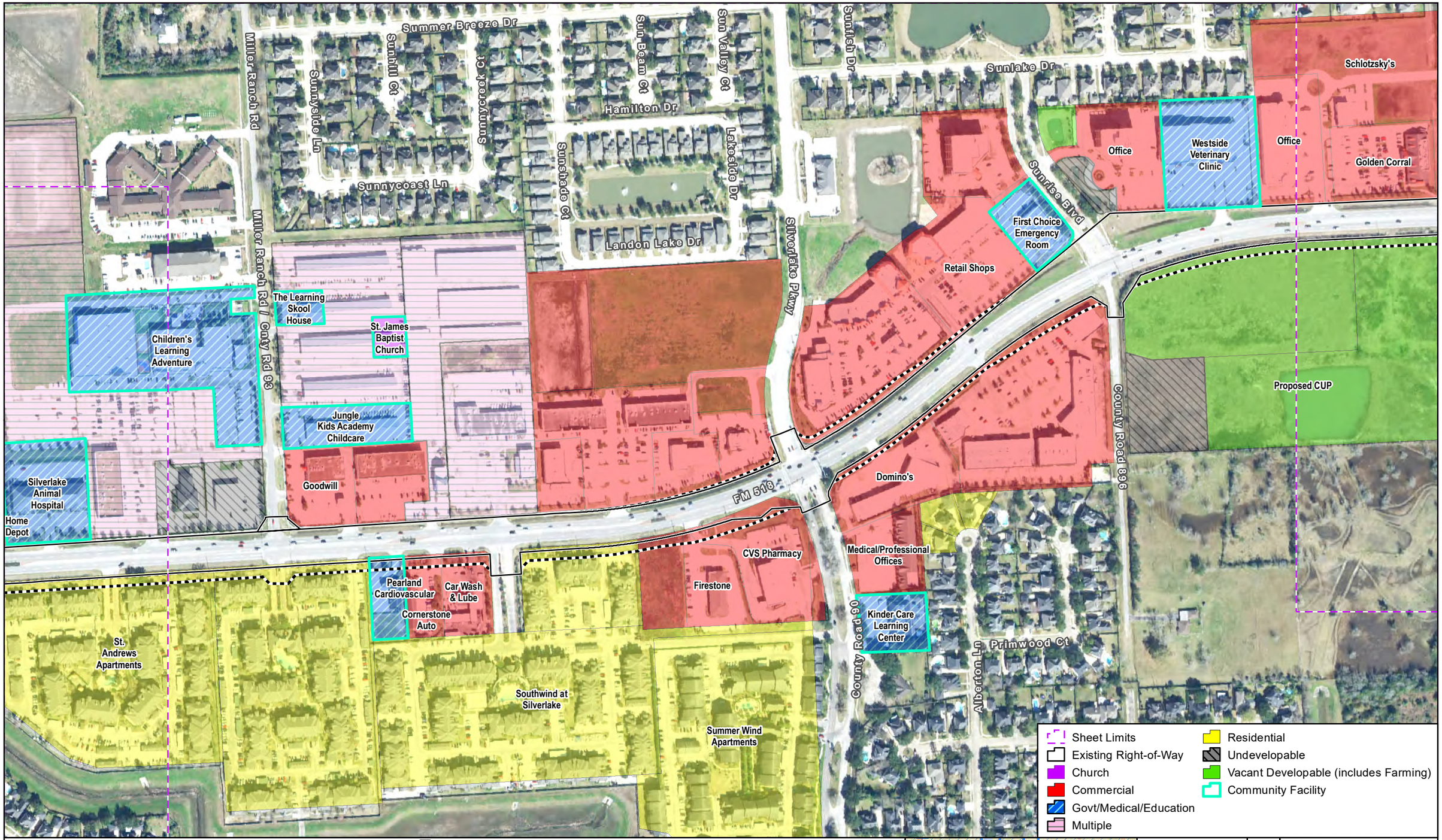


Figure 1b

Land Use, Community Facilities, and Potential Displacements

FM 518 from SH 288 to SH 35

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

Prepared for: TxDOT	1 in = 300 feet
	Scale: 1:3,600
CSJ: 0976-02-086, 3416-01-012	Date: 2/28/2018

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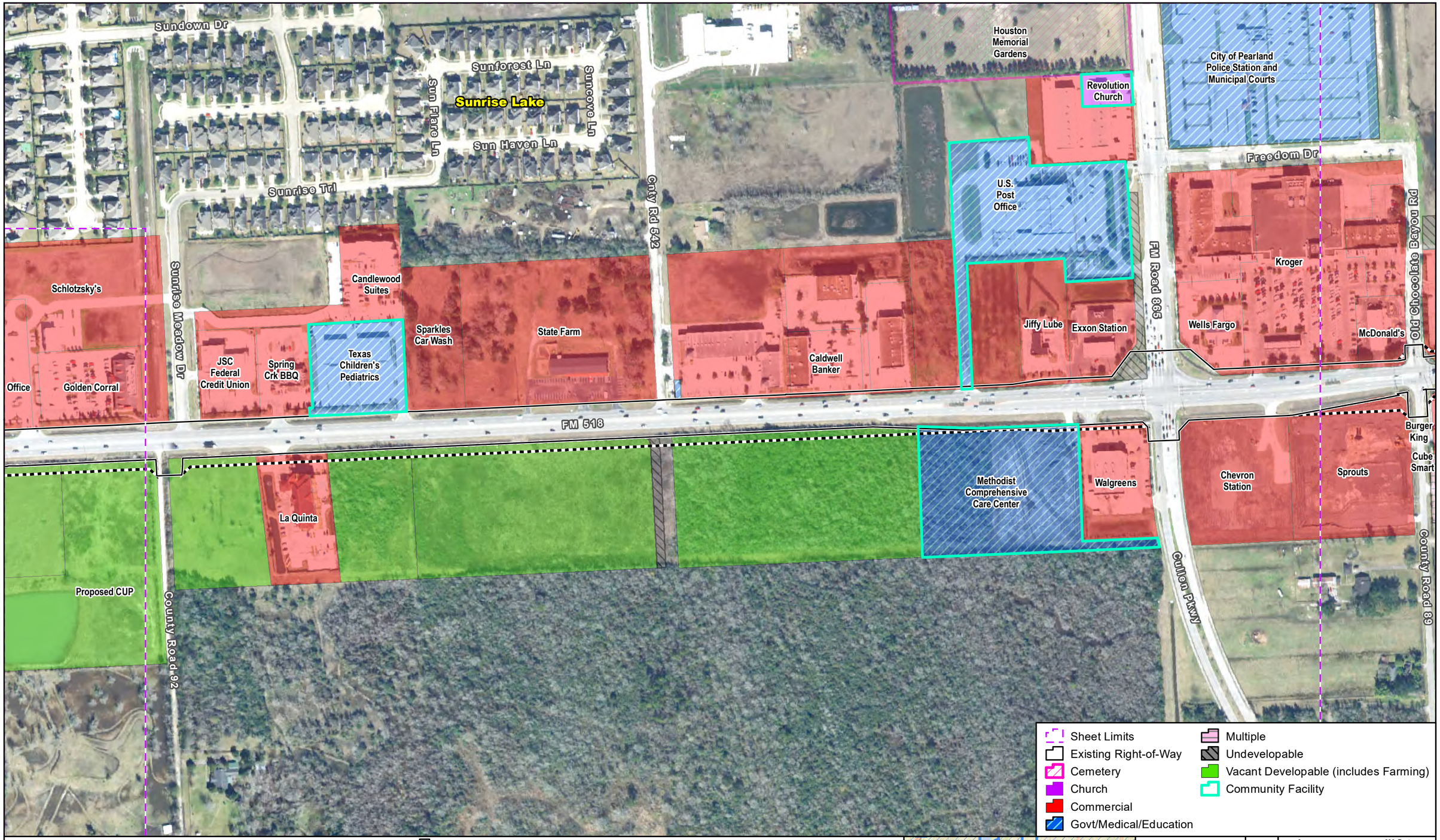

Figure 1c

Land Use, Community Facilities, and Potential Displacements

FM 518 from SH 288 to SH 35

Existing Right-of-Way
Proposed Right-of-Way
Sheet Limits

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

0 300 Feet
0 100 Meters

Prepared for: TxDOT	1 in = 300 feet
	Scale: 1:3,600
CSJ: 0976-02-086, 3416-01-012	Date: 2/28/2018

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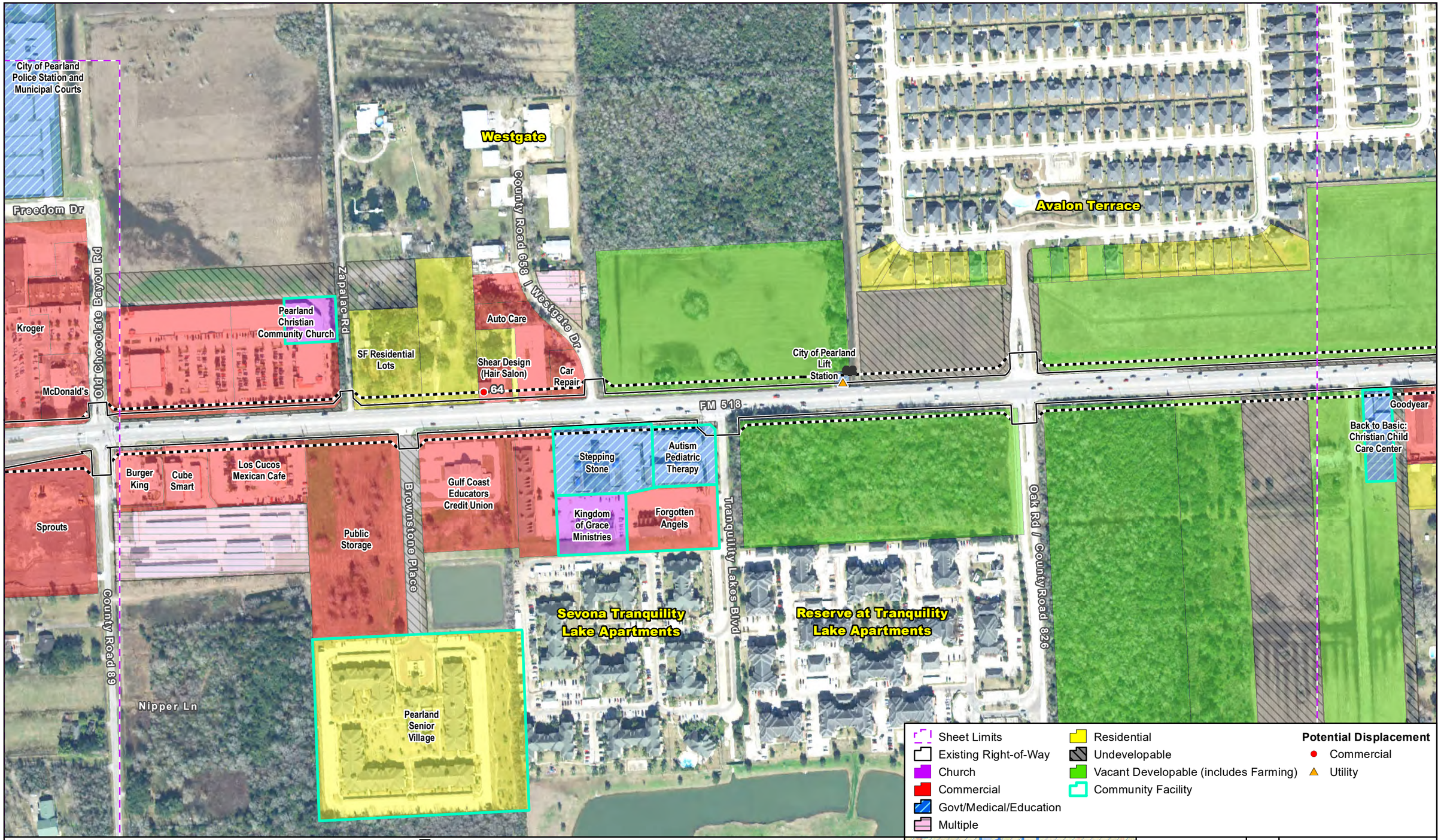

Figure 1d

Land Use, Community Facilities, and Potential Displacements

FM 518 from SH 288 to SH 35

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

Prepared for: TxDOT	1 in = 300 feet
	Scale: 1:3,600
CSJ: 0976-02-086, 3416-01-012	Date: 2/28/2018

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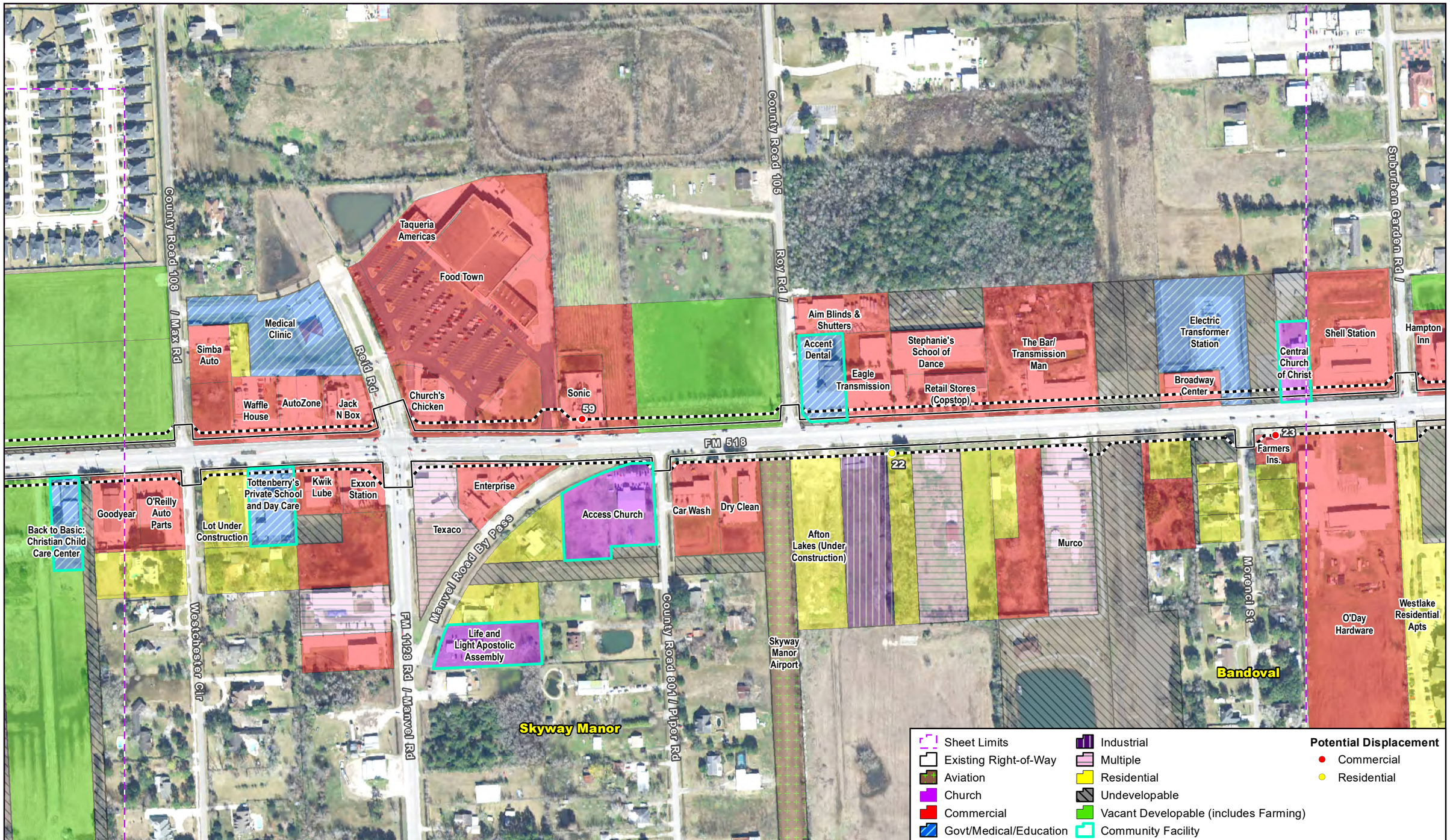

Figure 1e

Land Use, Community Facilities, and Potential Displacements

FM 518 from SH 288 to SH 35

Existing Right-of-Way
Proposed Right-of-Way
Sheet Limits

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

Prepared for: TxDOT	1 in = 300 feet
	Scale: 1:3,600
CSJ: 0976-02-086, 3416-01-012	Date: 2/28/2018

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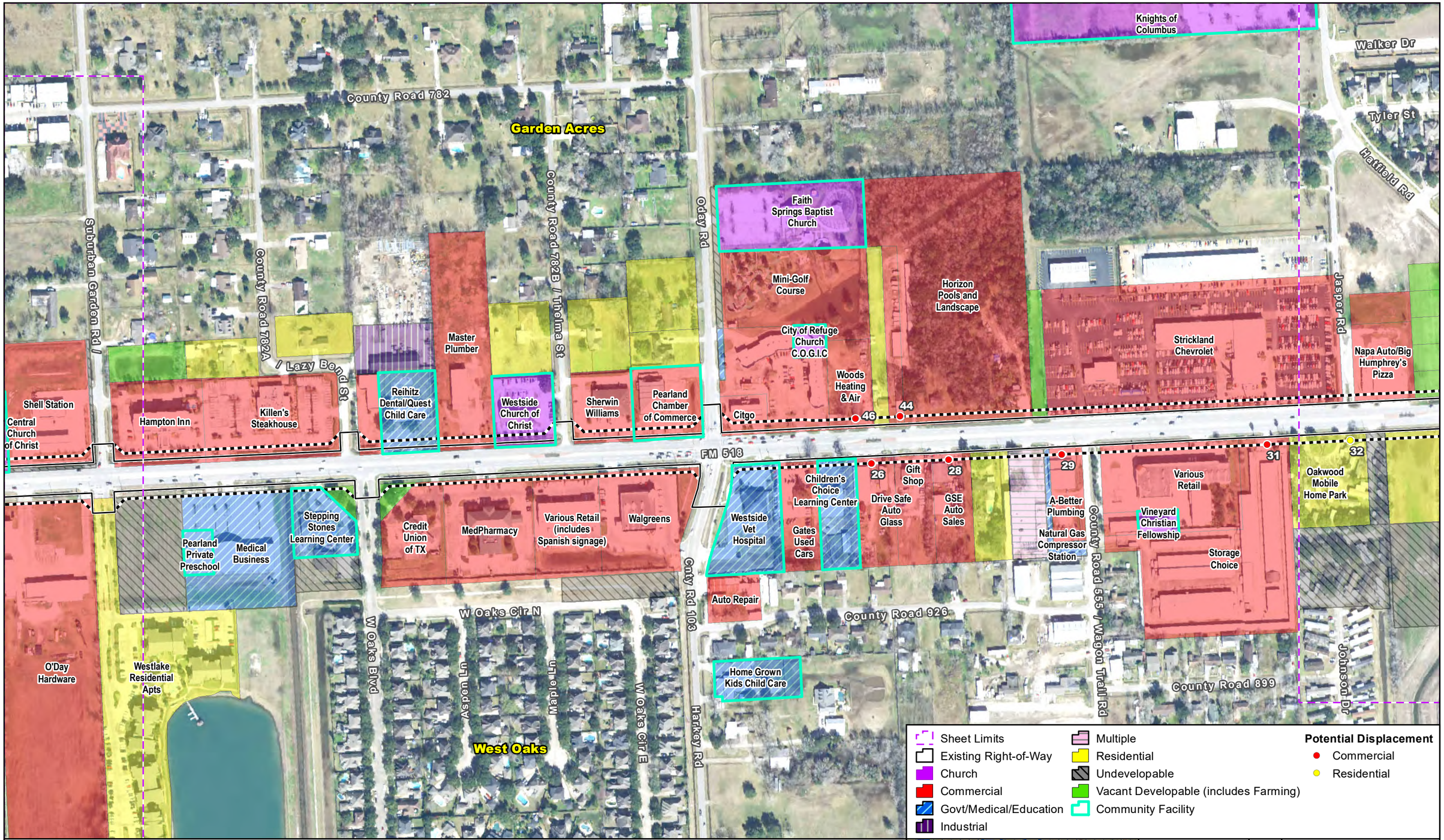

Figure 1f

Land Use, Community Facilities, and Potential Displacements

FM 518 from SH 288 to SH 35

Existing Right-of-Way
Proposed Right-of-Way
Sheet Limits

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

Prepared for: TxDOT	1 in = 300 feet
	Scale: 1:3,600
CSJ: 0976-02-086, 3416-01-012	Date: 2/28/2018

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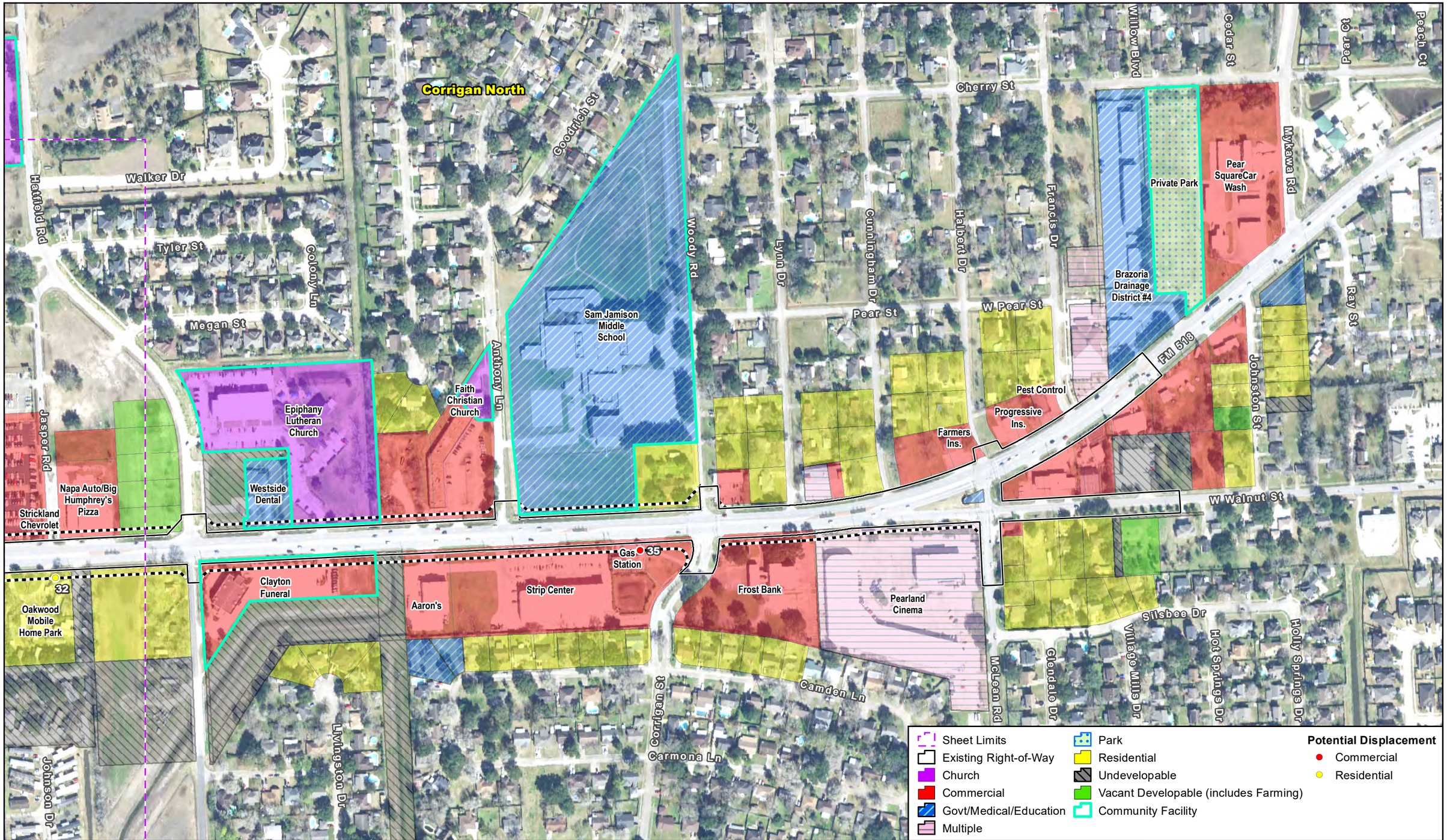

Figure 1g

Land Use, Community Facilities, and Potential Displacements

FM 518 from SH 288 to SH 35

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

Prepared for: TxDOT	1 in = 300 feet
	Scale: 1:3,600
CSJ: 0976-02-086, 3416-01-012	Date: 2/28/2018

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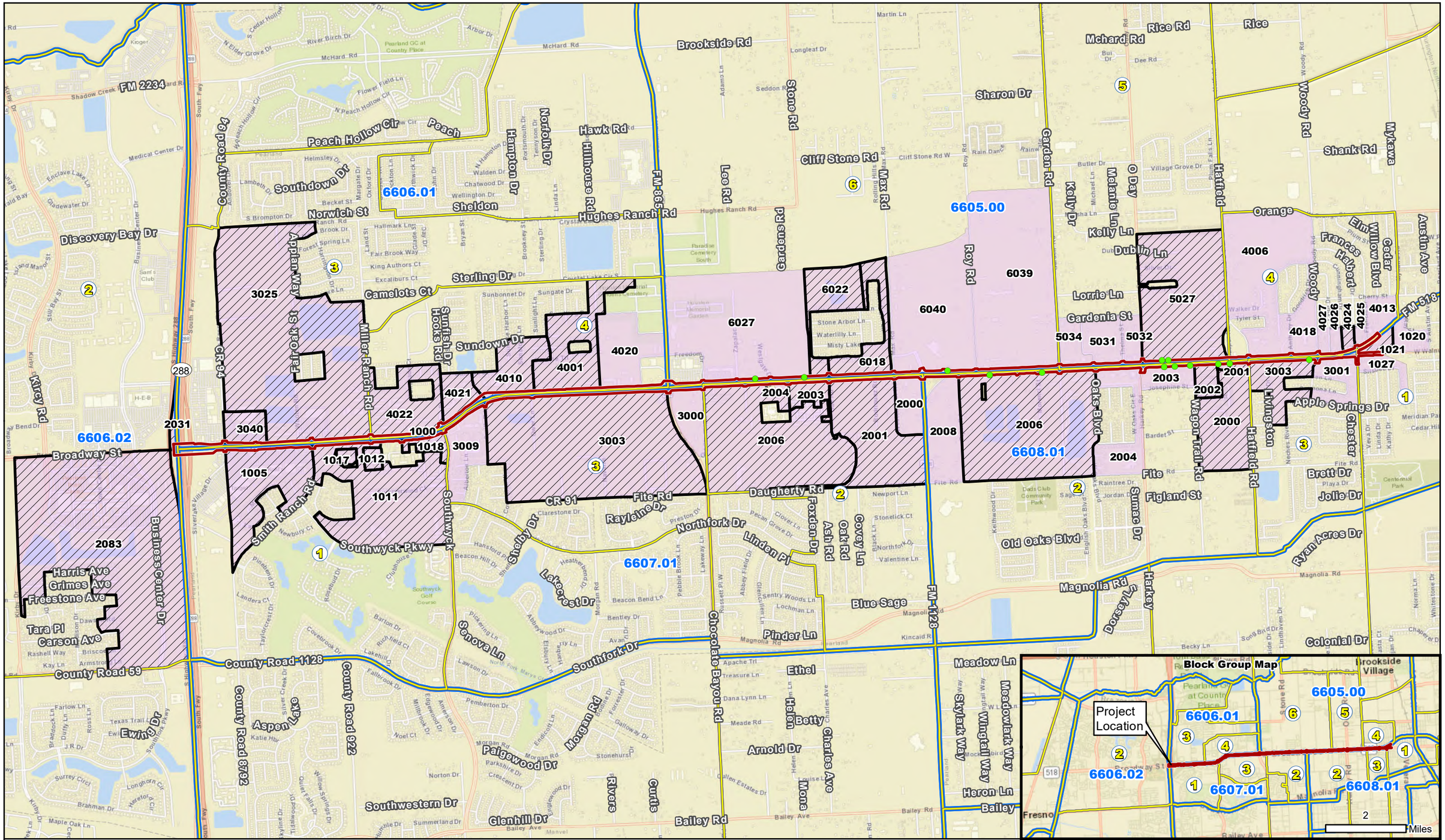

Figure 2

Census Geographies

FM 518 from SH 288 to SH 35

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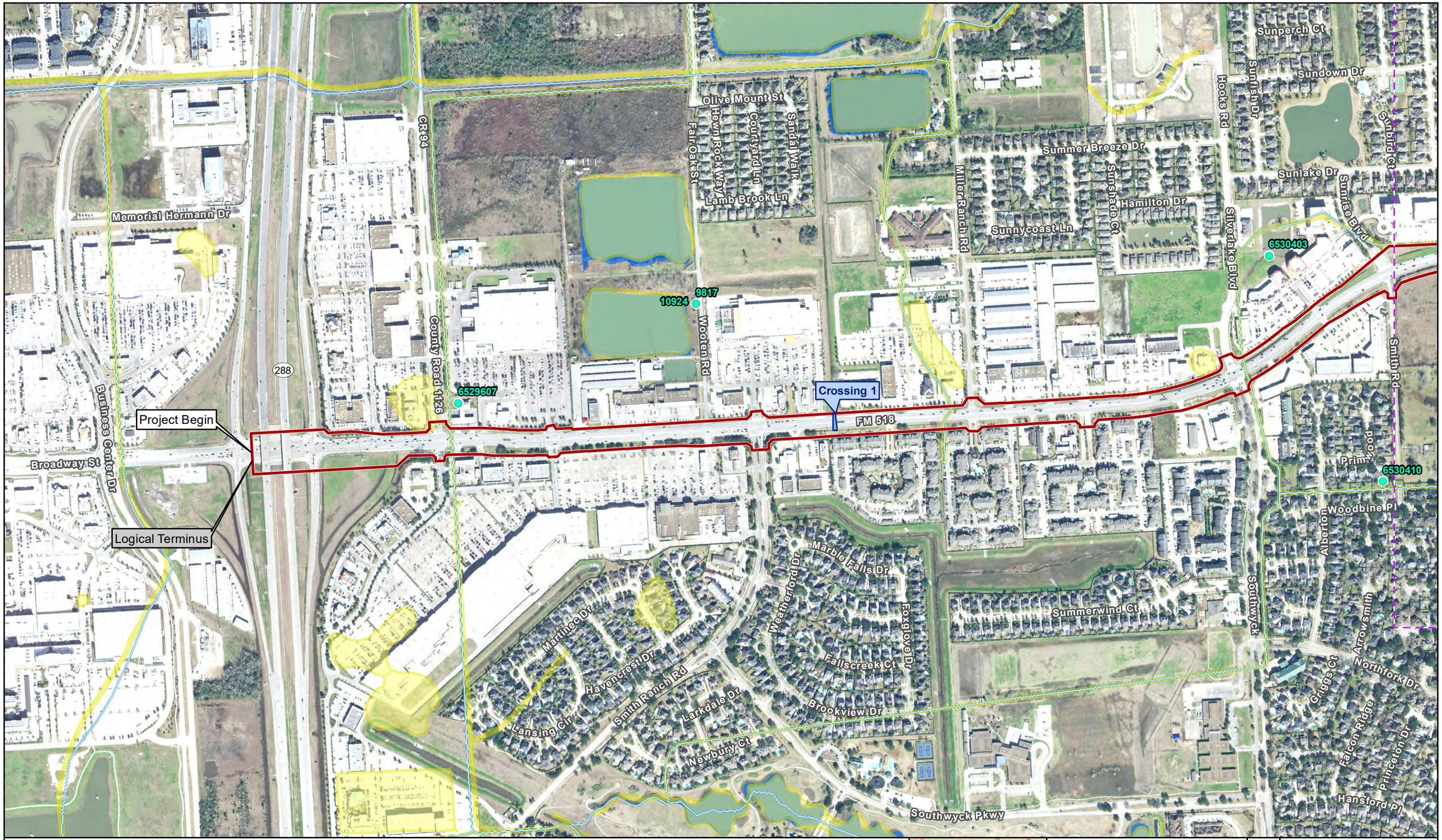

Figure 3a

Water Resources

FM 518 from SH 288 to SH 35

Project Location
NHD Stream
NHD Water
NWI Wetland
Delineated Waters
Water Well within 1/4-mile
Sheet Limits

Data Sources: NHD (2014), NWI (2016), TWDB (2017), HGAC/FEMA DFIRM Q3 (2010), CMEC (2016)
Aerial Source: TNRIS (2015)

0 600 Feet
0 150 Meters

Prepared for: TxDOT	1 in = 600 feet
	Scale: 1:7,200
CSJ: 0976-02-086, 3416-01-012	Date: 7/21/2017

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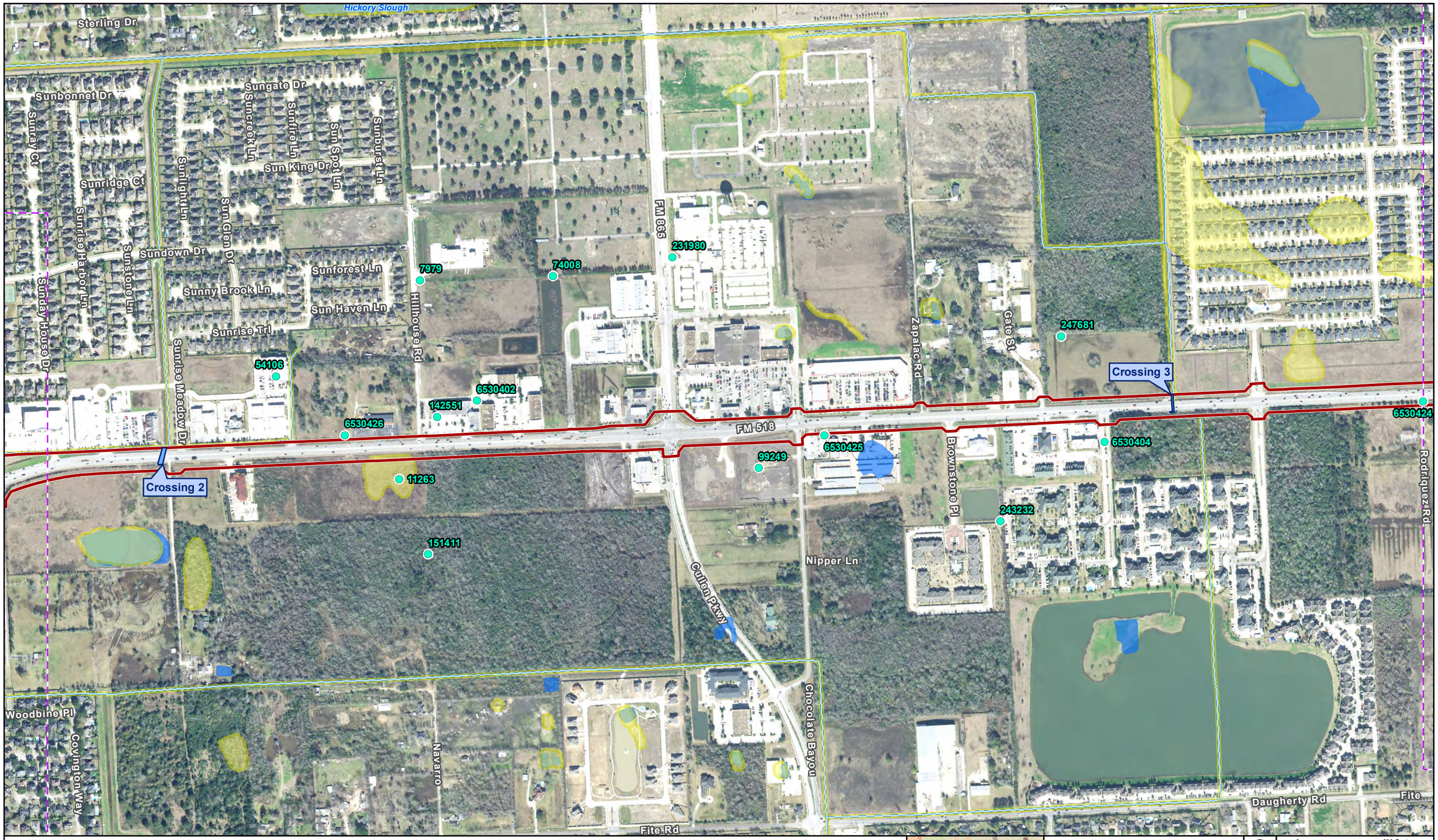

Figure 3b

Water Resources

FM 518 from SH 288 to SH 35

Project Location
NHD Stream
NHD Water
NWI Wetland
Delineated Waters
Water Well within 1/4-mile
Sheet Limits

a b c d

Data Sources: NHD (2014), NWI (2016), TWDB (2017), HGAC/FEMA DFIRM Q3 (2010), CMEC (2016)
Aerial Source: TNRIS (2015)

0 600 Feet
0 150 Meters

Prepared for: TxDOT	1 in = 600 feet
	Scale: 1:7,200
CSJ: 0976-02-086, 3416-01-012	Date: 7/21/2017

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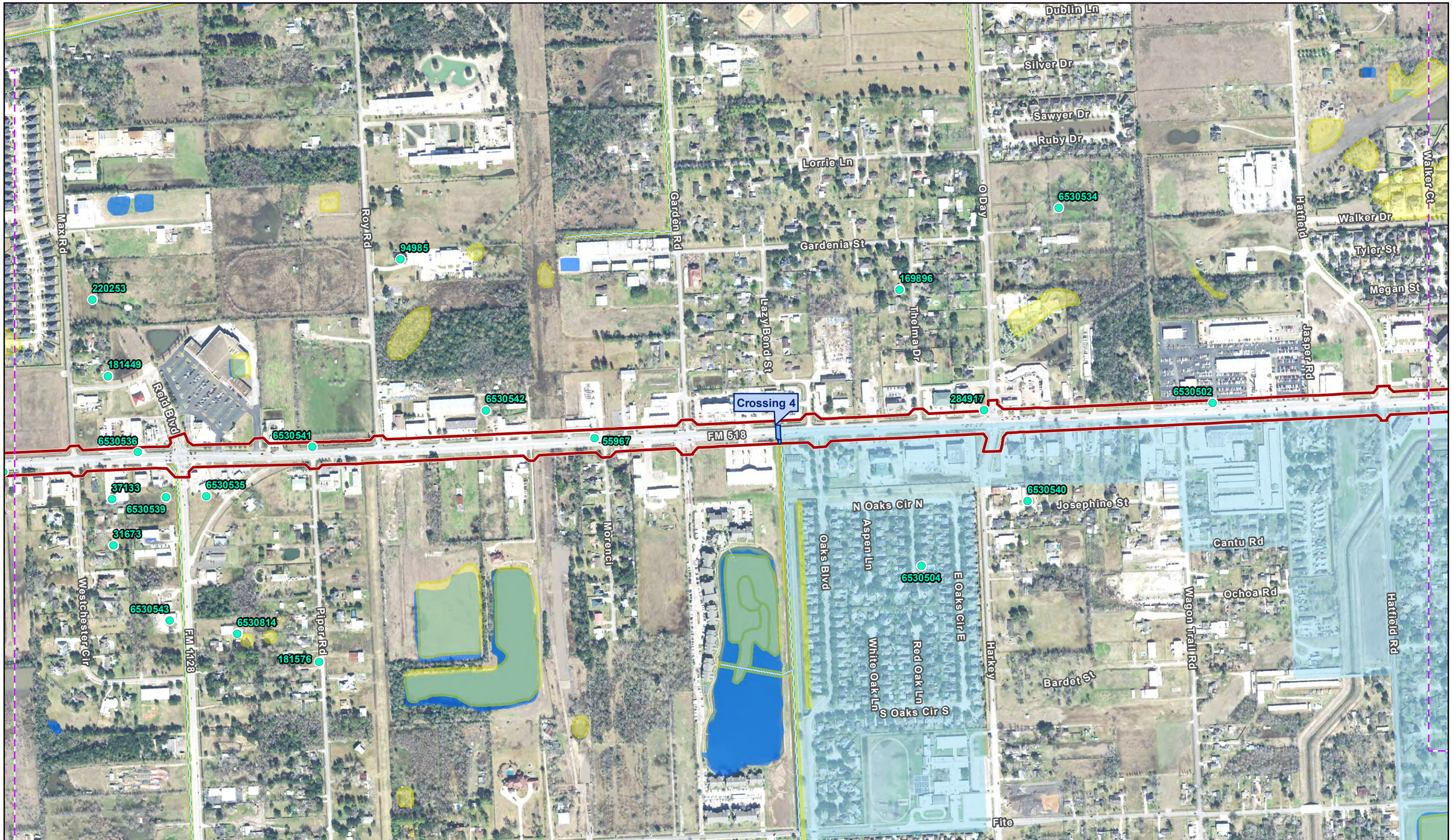
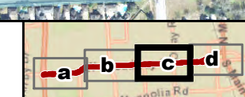


Figure 3c

Water Resources

FM 518 from SH 288 to SH 35

Project Location
NHD Stream
NHD Water
NWI Wetland
100-Year Flood Zone
Delineated Waters
Water Well within 1/4-mile
Sheet Limits



Data Sources: NHD (2014), NWI (2016), TWDB (2017), HGAC/FEMA DFIRM Q3 (2010), CMEC (2016)
Aerial Source: TNRIS (2015)

0 600 Feet
0 150 Meters

Prepared for: TxDOT	1 in = 600 feet
	Scale: 1:7,200
CSJ: 0976-02-086, 3416-01-012	Date: 7/21/2017

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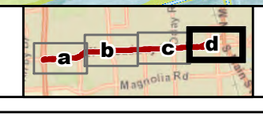
Figure 3d

Water Resources

FM 518 from SH 288 to SH 35

Project Location
NHD Stream
NHD Water
NWI Wetland
100-Year Flood Zone
Delineated Waters
Water Well within 1/4-mile
Sheet Limits



Data Sources: NHD (2014), NWI (2016), TWDB (2017), HGAC/FEMA DFIRM Q3 (2010), CMEC (2016)
Aerial Source: TNRIS (2015)

0 600 Feet
0 150 Meters

Prepared for: TxDOT	1 in = 600 feet
	Scale: 1:7,200
CSJ: 0976-02-086, 3416-01-012	Date: 7/21/2017

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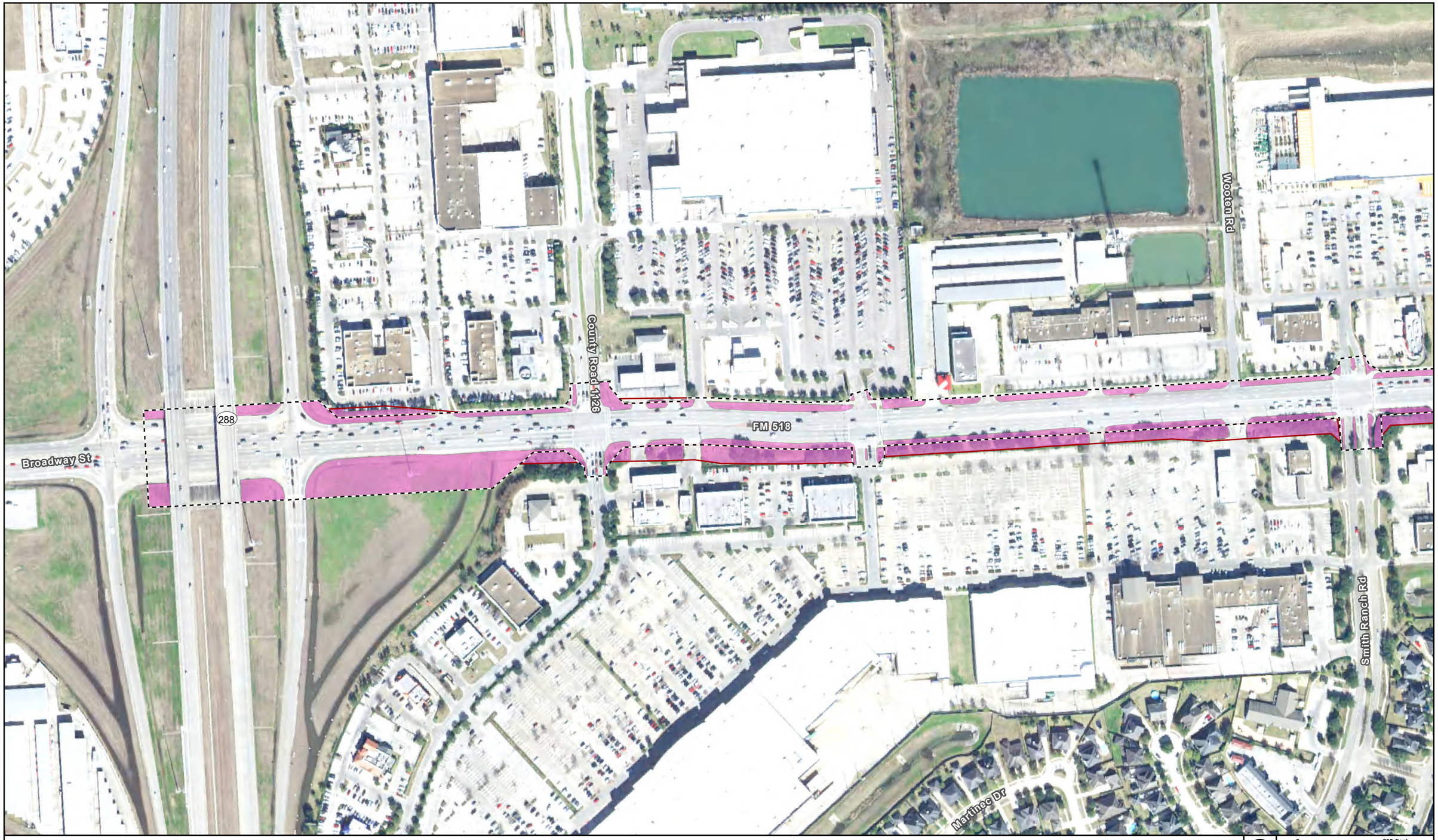

Figure 4a

Observed MOU Habitat Types

FM 518 from SH 288 to SH 35

Existing Right-of-Way
Proposed Right-of-Way

MOU Habitat
Urban

a b c d e f g h i

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

0 250 Feet
0 80 Meters

Prepared for: TxDOT	1 in = 250 feet
	Scale: 1:3,000
CSJ: 0976-02-086, 3416-01-012	Date: 2/28/2018

G:\Projects\TXDOT\FM518\EA_Figure 4_Observed Vegetation_20180228.mxd

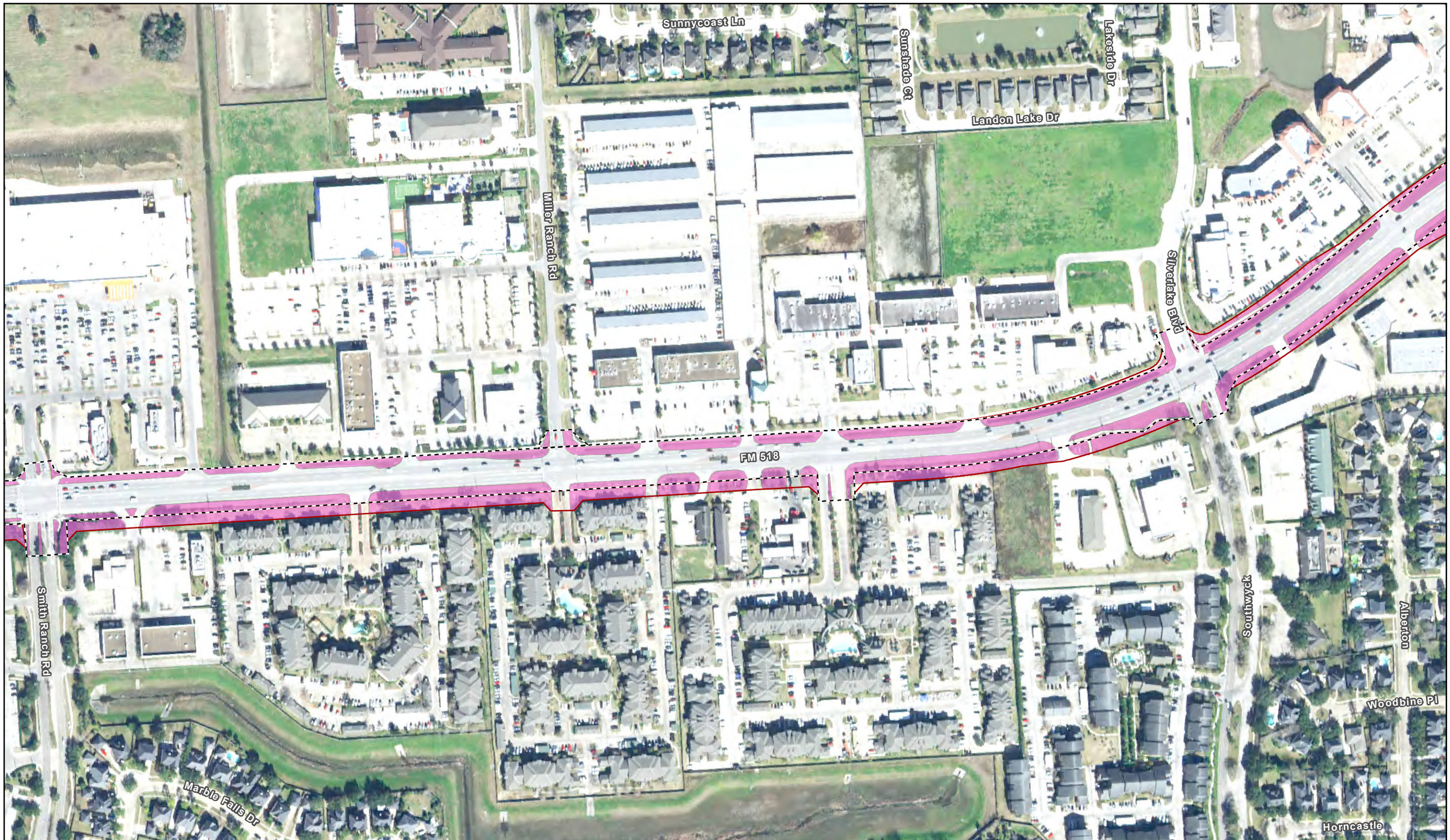

Figure 4b

Observed MOU Habitat Types

FM 518 from SH 288 to SH 35

Existing Right-of-Way
Proposed Right-of-Way

MOU Habitat
Urban

a b c d e f g h i

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

0 250 Feet
0 80 Meters

Prepared for: TxDOT	1 in = 250 feet
	Scale: 1:3,000
CSJ: 0976-02-086, 3416-01-012	Date: 2/28/2018

G:\Projects\TXDOT\FM518\EA_Figure 4_Observed Vegetation_20180228.mxd

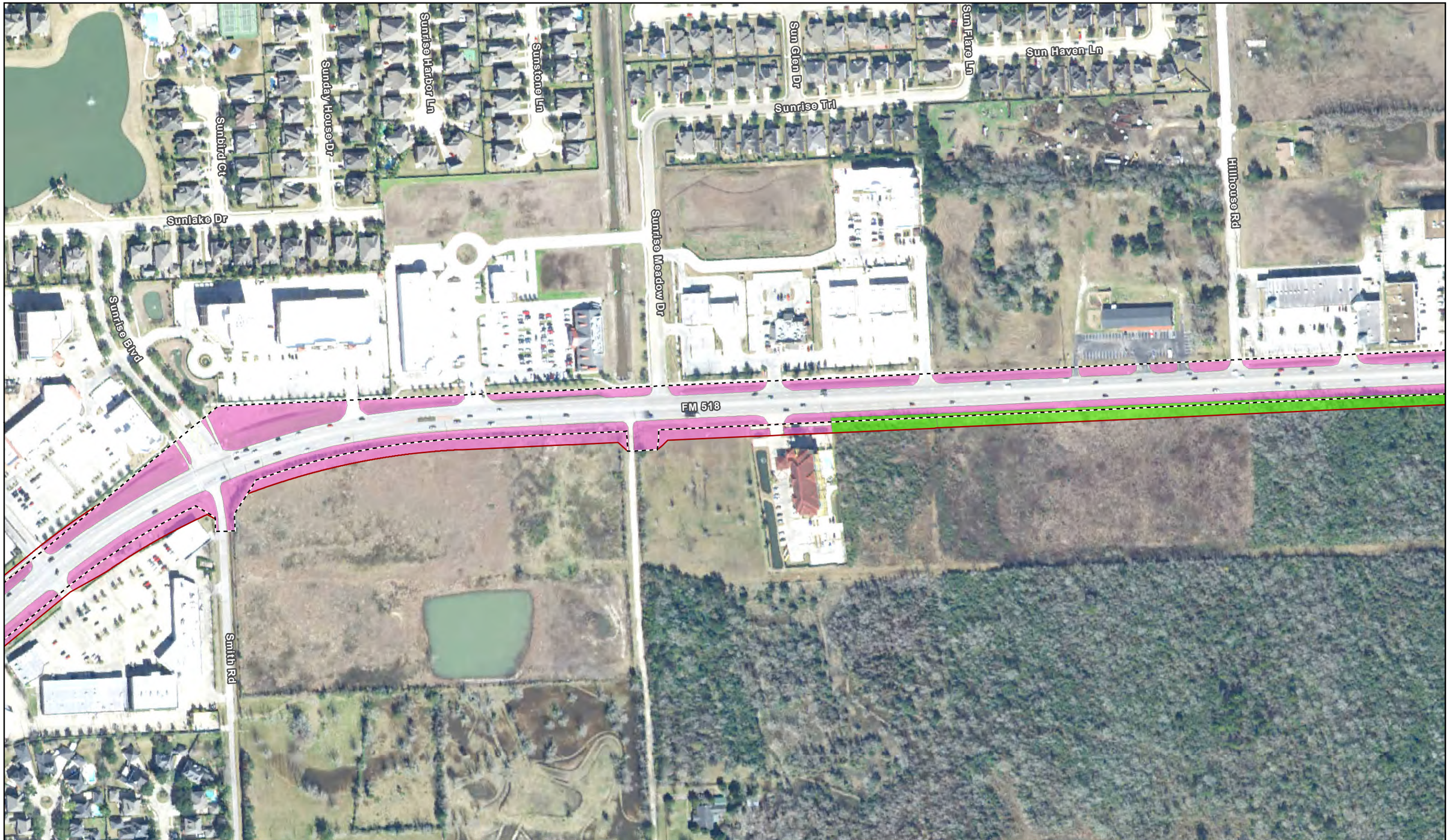

Figure 4c

Observed MOU Habitat Types

FM 518 from SH 288 to SH 35

Existing Right-of-Way
Proposed Right-of-Way

MOU Habitat
Disturbed Prairie
Urban

a b c d e f g h i

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

0 250 Feet
0 80 Meters

Prepared for: TxDOT	1 in = 250 feet
	Scale: 1:3,000
CSJ: 0976-02-086, 3416-01-012	Date: 2/28/2018

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Figure 4d

Observed MOU Habitat Types

FM 518 from SH 288 to SH 35

Existing Right-of-Way
Proposed Right-of-Way

MOU Habitat
Disturbed Prairie
Tallgrass Prairie, Grassland
Urban

a b c d e f g h i

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

0 250 Feet
0 80 Meters

Prepared for: TxDOT	1 in = 250 feet
	Scale: 1:3,000
CSJ: 0976-02-086, 3416-01-012	Date: 2/28/2018

G:\Projects\TXDOT\FM518\EA_Figure 4_Observed Vegetation_20180228.mxd

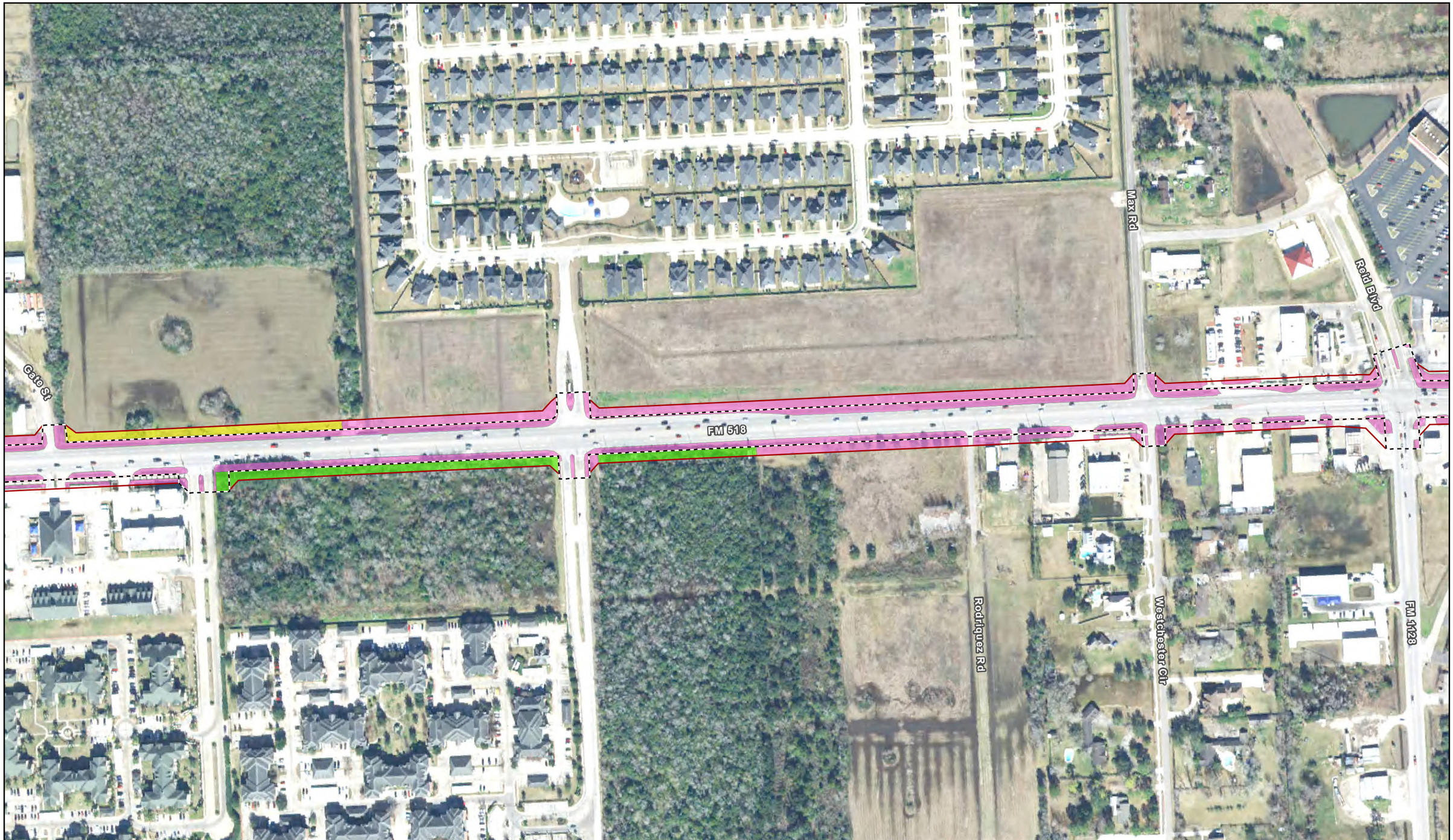

Figure 4e

Observed MOU Habitat Types

FM 518 from SH 288 to SH 35

Existing Right-of-Way
Proposed Right-of-Way

MOU Habitat
Disturbed Prairie
Tallgrass Prairie, Grassland
Urban

a b c d e f g h i

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

0 250 Feet
0 80 Meters

Prepared for: TxDOT	1 in = 250 feet
	Scale: 1:3,000
CSJ: 0976-02-086, 3416-01-012	Date: 2/28/2018

G:\Projects\TXDOT\FM518\EA_Figure 4_Observed Vegetation_20180228.mxd

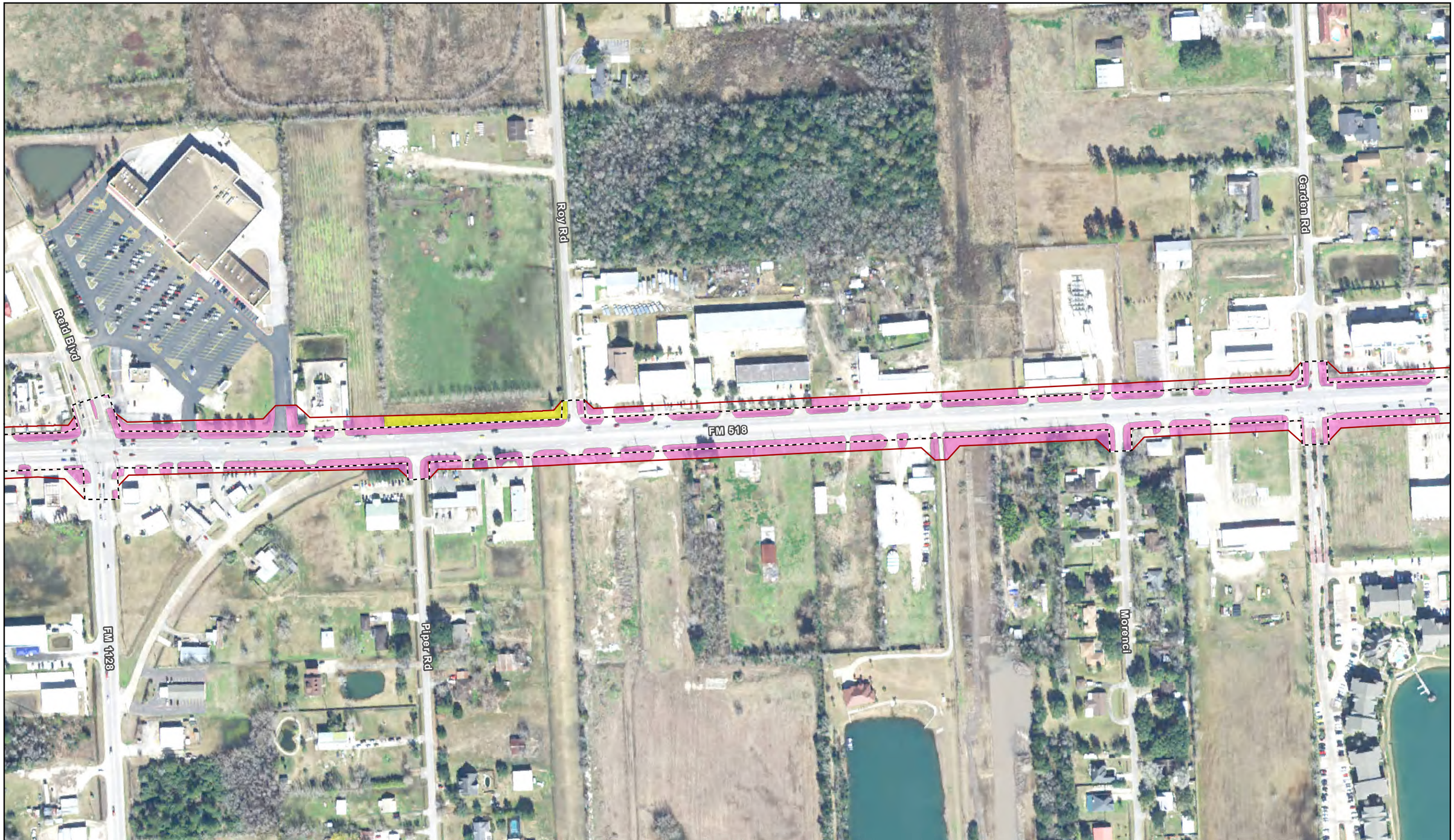

Figure 4f

Observed MOU Habitat Types

FM 518 from SH 288 to SH 35

Existing Right-of-Way
Proposed Right-of-Way

MOU Habitat
Tallgrass Prairie, Grassland
Urban

a b c d e f g h i

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

0 250 Feet
0 80 Meters

Prepared for: TxDOT	1 in = 250 feet
	Scale: 1:3,000
CSJ: 0976-02-086, 3416-01-012	Date: 2/28/2018

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Figure 4g

Observed MOU Habitat Types

FM 518 from SH 288 to SH 35

Existing Right-of-Way
Proposed Right-of-Way

MOU Habitat
Urban

a b c d e f g h i

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

0 250 Feet
0 80 Meters

Prepared for: TxDOT	1 in = 250 feet
	Scale: 1:3,000
CSJ: 0976-02-086, 3416-01-012	Date: 2/28/2018

G:\Projects\TXDOT\FM518\EA_Figure 4_Observed Vegetation_20180228.mxd

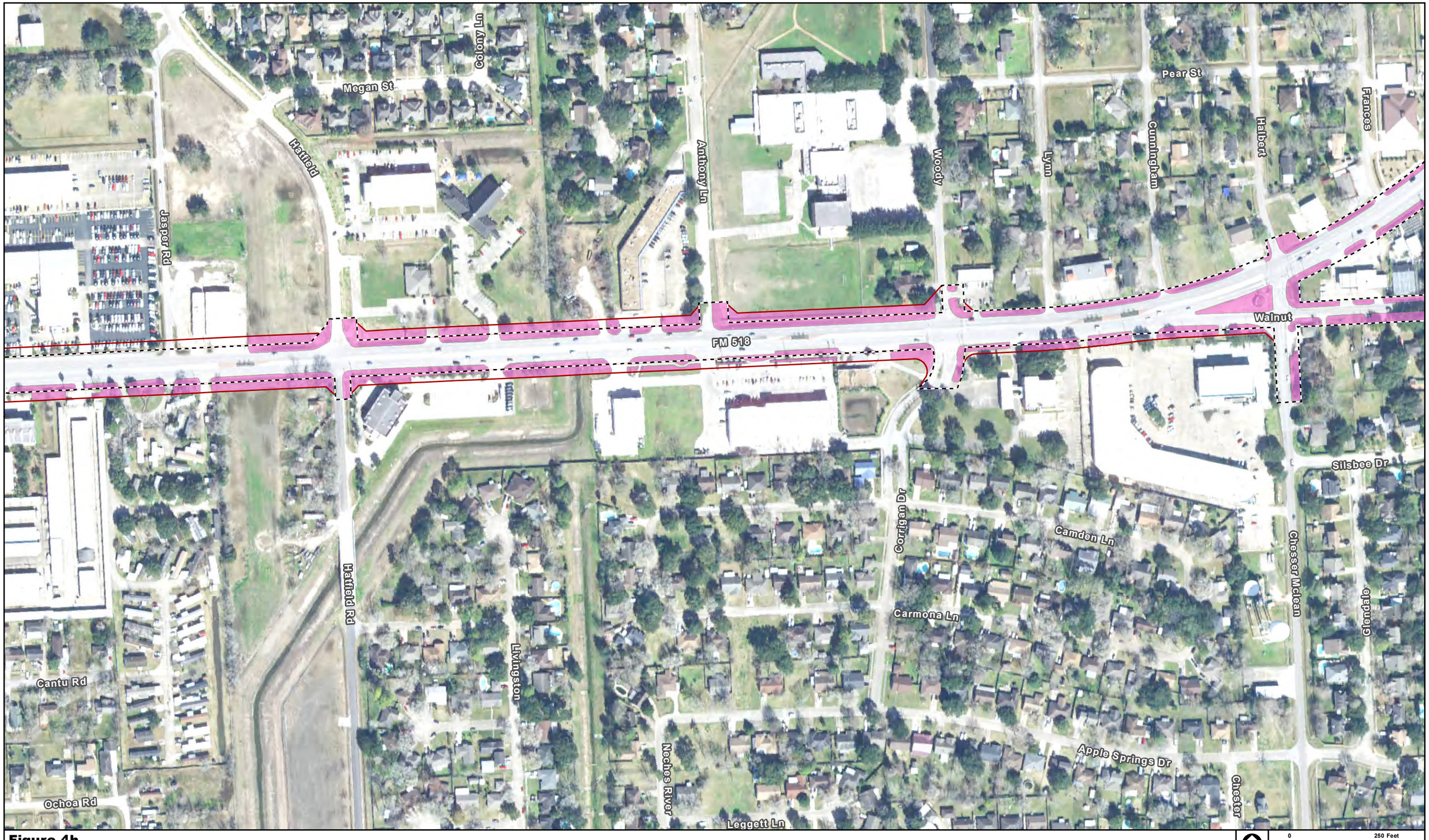

Figure 4h

Observed MOU Habitat Types

FM 518 from SH 288 to SH 35

Existing Right-of-Way
Proposed Right-of-Way

MOU Habitat
Urban

a b c d e f g h i

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

0 250 Feet
0 80 Meters

Prepared for: TxDOT	1 in = 250 feet
	Scale: 1:3,000
CSJ: 0976-02-086, 3416-01-012	Date: 2/28/2018

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Figure 4i

Observed MOU Habitat Types

FM 518 from SH 288 to SH 35

Existing Right-of-Way
Proposed Right-of-Way

MOU Habitat
Urban

a b c d e f g h i

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

0 250 Feet
0 80 Meters

Prepared for: TxDOT	1 in = 250 feet
	Scale: 1:3,000
CSJ: 0976-02-086, 3416-01-012	Date: 2/28/2018

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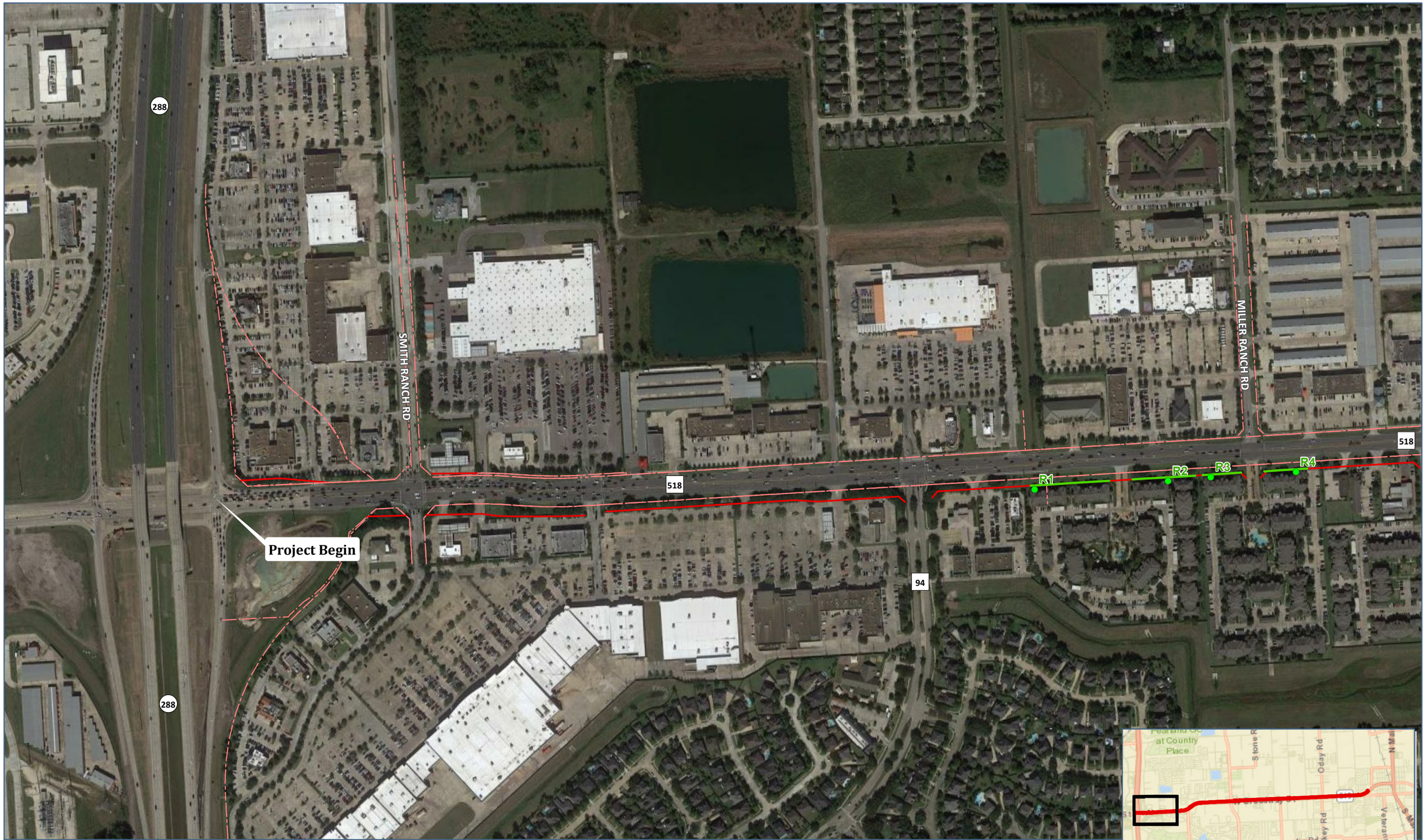
Figure 5: Noise Analysis Results



Representative Receivers

FM 518 from SH 288 to SH 35

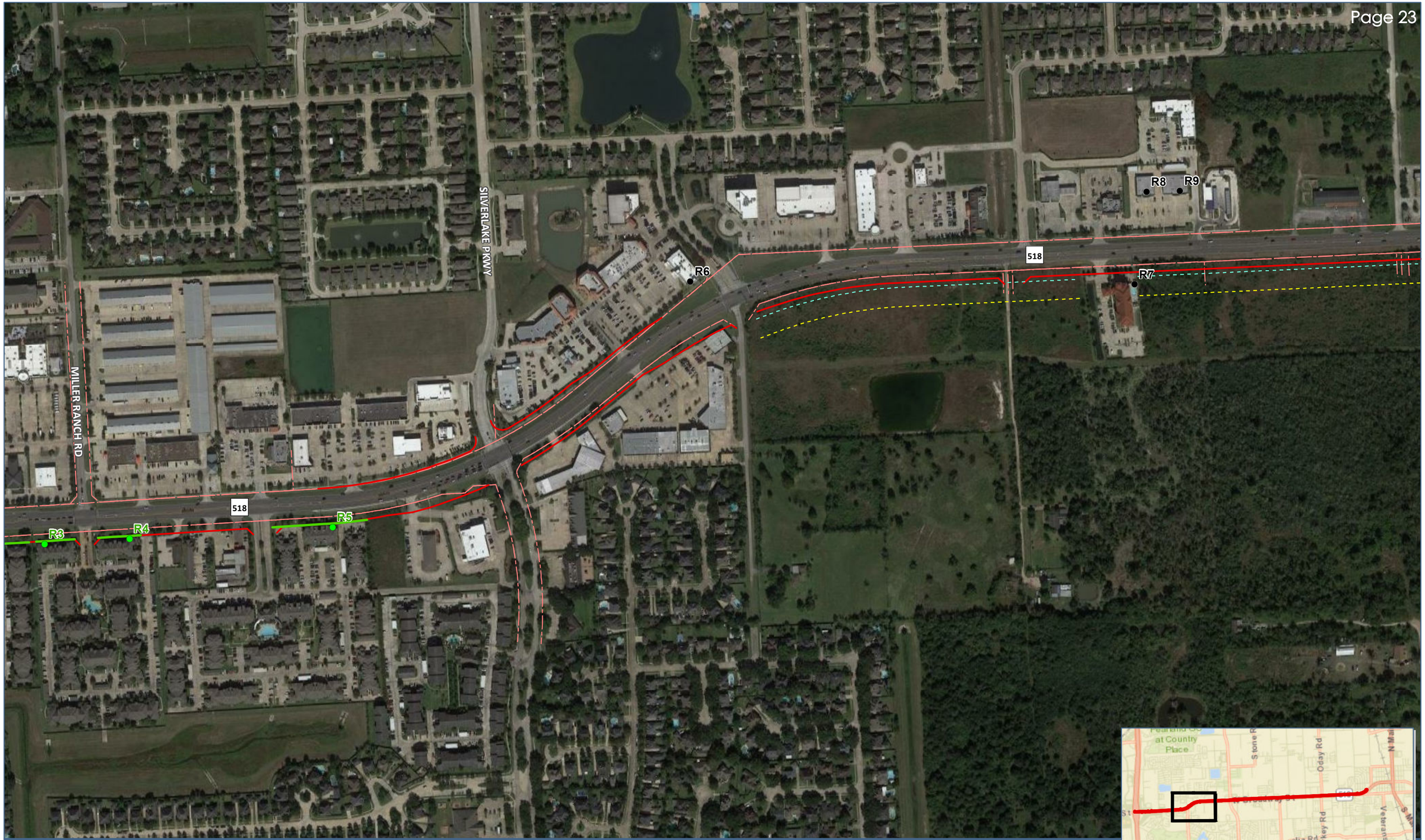
CSJs: 0976-02-086 and 3416-01-012

PREFERRED ALTERNATIVE

- Benefitted Receiver
- Impacted Receiver
- Non-Impacted Receiver
- Proposed Barriers
- Existing ROW
- Proposed ROW
- Noise Contour (Category E)
- Noise Contour (Category B&C)

Feet: 0 125 250 500

NORTH



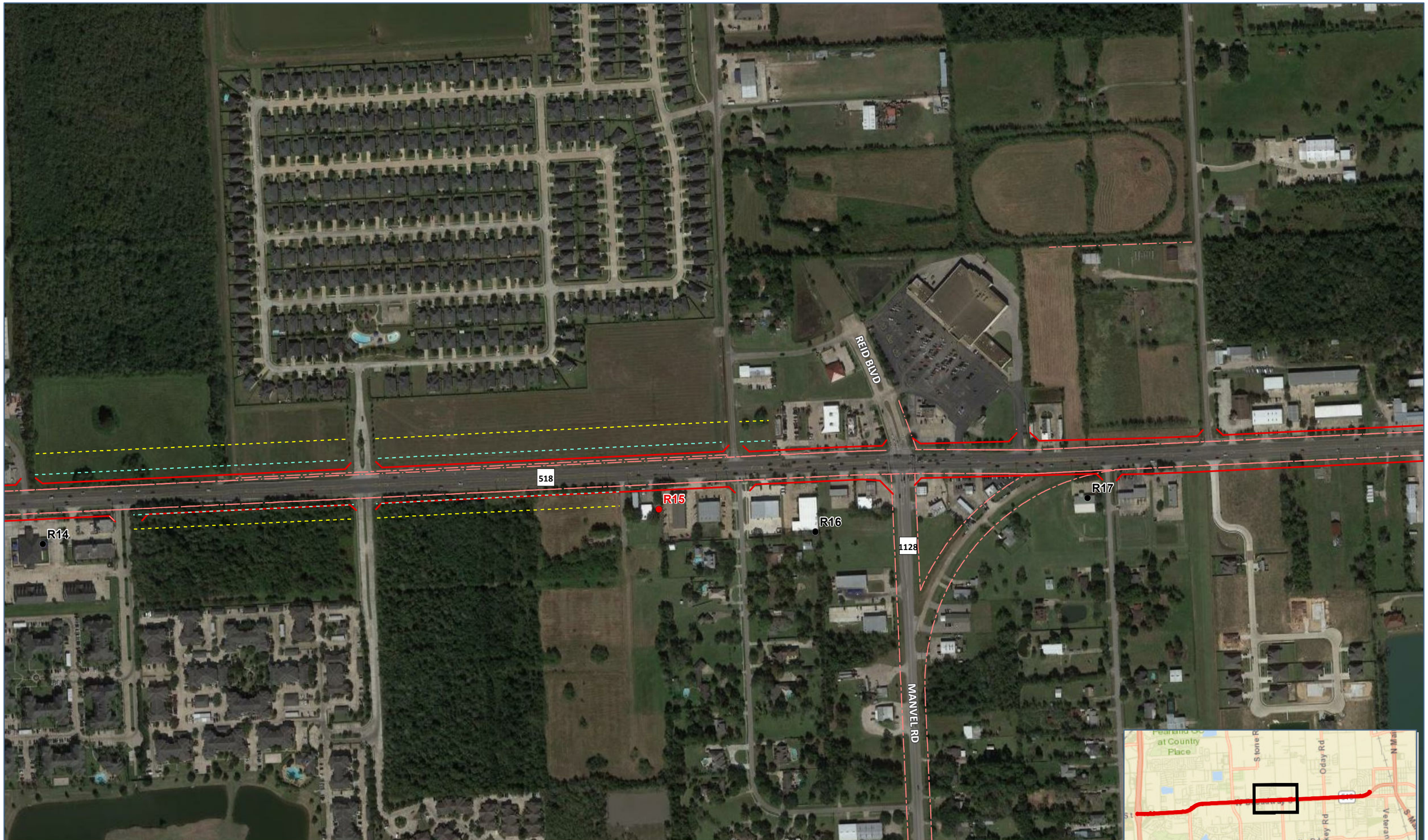
Representative Receivers
FM 518 from SH 288 to SH 35
CSJs: 0976-02-086 and 3416-01-012
PREFERRED ALTERNATIVE

- Benefitted Receiver
- Impacted Receiver
- Non-Impacted Receiver
- Proposed Barriers
- Existing ROW
- Proposed ROW
- Noise Contour (Category E)
- Noise Contour (Category B&C)

Representative Receivers
FM 518 from SH 288 to SH 35
CSJs: 0976-02-086 and 3416-01-012
PREFERRED ALTERNATIVE

- Benefitted Receiver
- Impacted Receiver
- Non-Impacted Receiver
- Proposed Barriers
- Existing ROW
- Proposed ROW
- Noise Contour (Category E)
- Noise Contour (Category B&C)

Feet
0 125 250 500
NORTH



Representative Receivers
FM 518 from SH 288 to SH 35
CSJs: 0976-02-086 and 3416-01-012
PREFERRED ALTERNATIVE

- Benefitted Receiver
- Impacted Receiver
- Non-Impacted Receiver
- Proposed Barriers
- Existing ROW
- Proposed ROW
- Noise Contour (Category E)
- Noise Contour (Category B&C)

Feet
0 125 250 500
NORTH

Representative Receivers

FM 518 from SH 288 to SH 35

CSJs: 0976-02-086 and 3416-01-012

PREFERRED ALTERNATIVE

- Benefitted Receiver
- Impacted Receiver
- Non-Impacted Receiver
- Proposed Barriers
- Existing ROW
- Proposed ROW
- Noise Contour (Category E)
- Noise Contour (Category B&C)

Feet

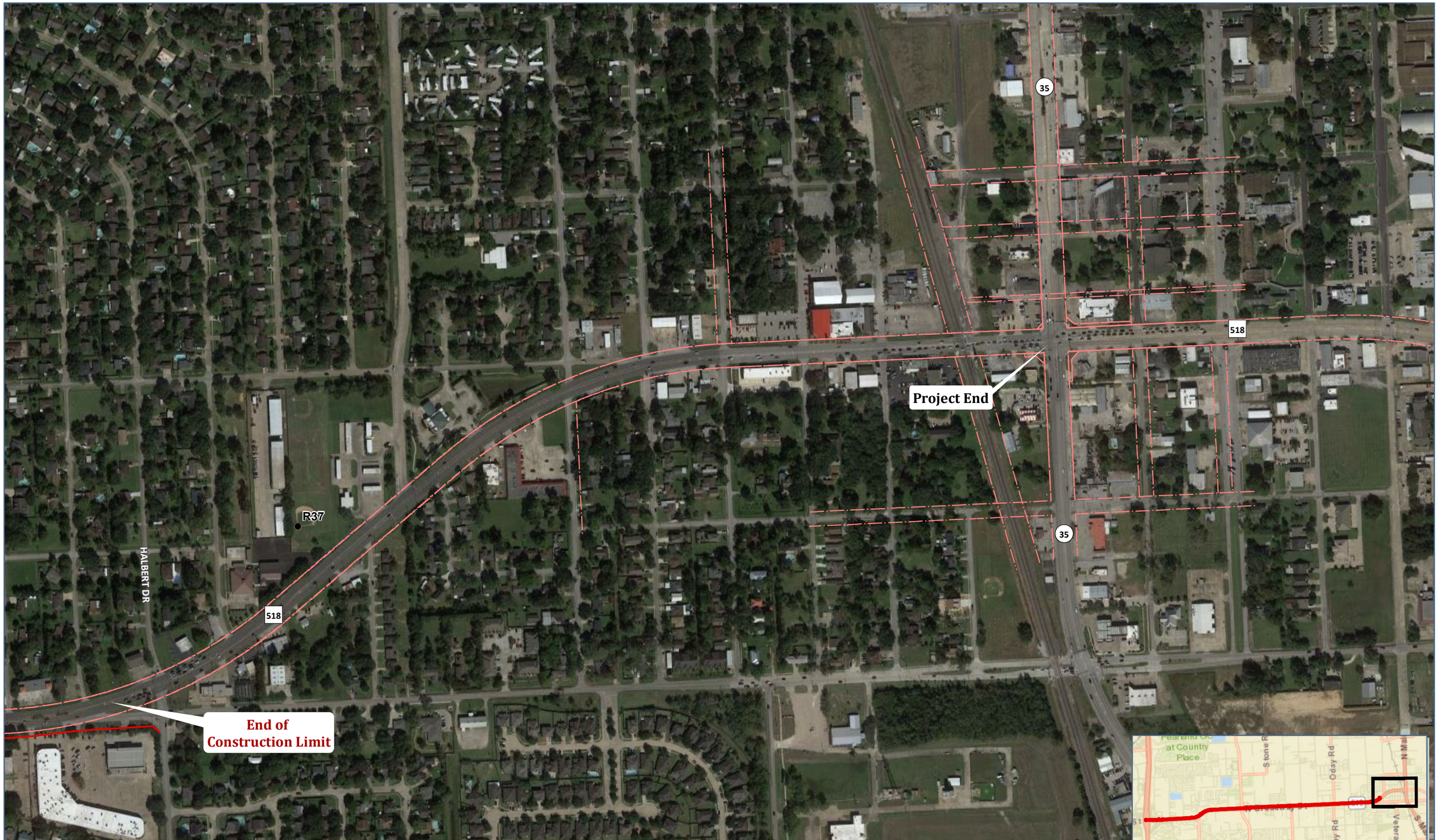
0 125 250 500

NORTH

Representative Receivers
FM 518 from SH 288 to SH 35
CSJs: 0976-02-086 and 3416-01-012
PREFERRED ALTERNATIVE

Benefitted Receiver
Impacted Receiver
Non-Impacted Receiver
Proposed Barriers
Existing ROW
Proposed ROW
Noise Contour (Category E)
Noise Contour (Category B&C)

Feet
0 125 250 500
NORTH



Representative Receivers
FM 518 from SH 288 to SH 35
CSJs: 0976-02-086 and 3416-01-012
PREFERRED ALTERNATIVE

Benefitted Receiver
Impacted Receiver
Non-Impacted Receiver
Proposed Barriers
Existing ROW
Proposed ROW
Noise Contour (Category E)
Noise Contour (Category B&C)

Feet
0 125 250 500
NORTH

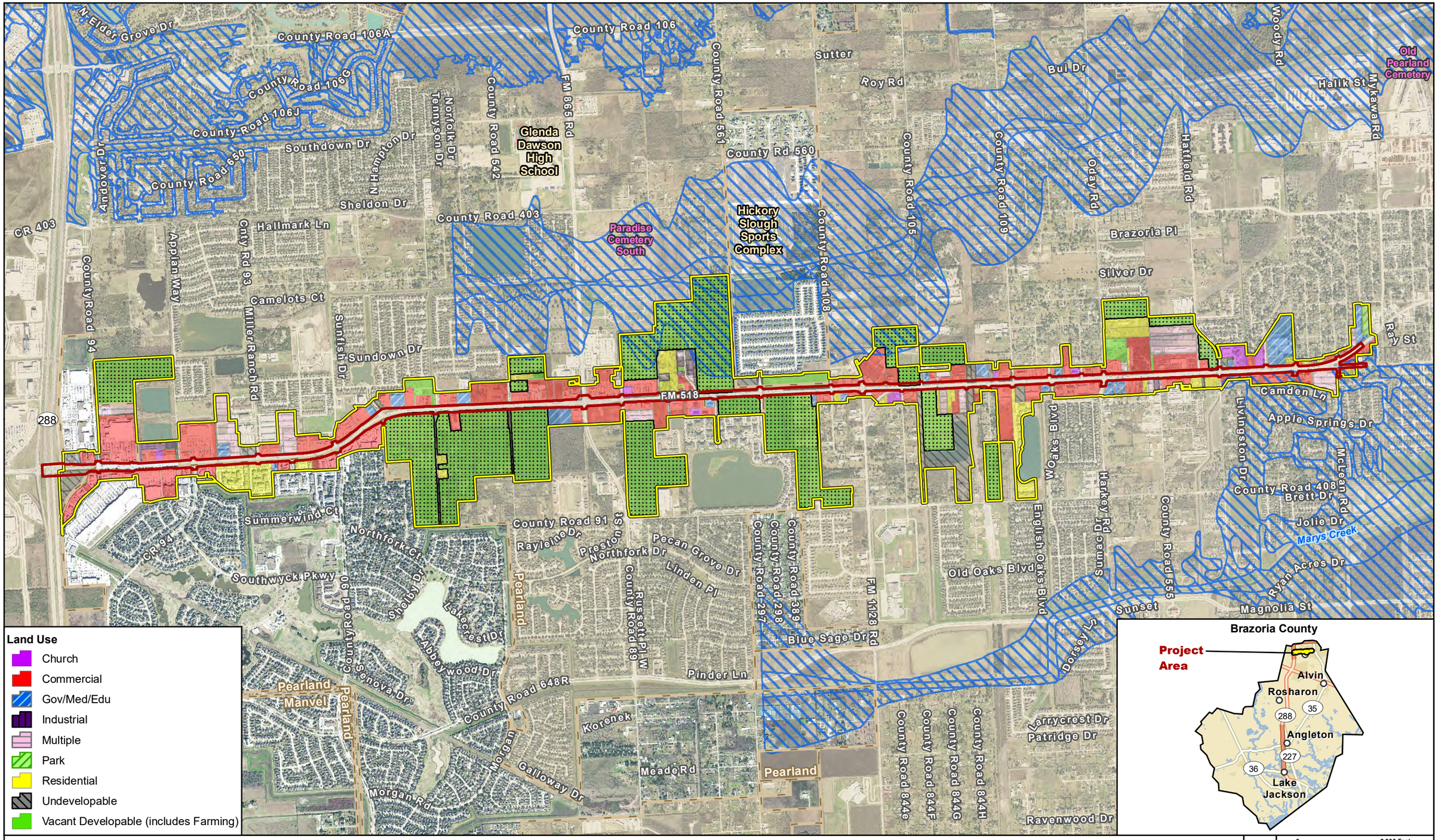


Figure 6

Land Use within the Area of Influence

FM 518 from SH 288 to SH 35

Project Location
Area of Influence (AOI)
City Limits
Pearland
100-Year Flood Zone
Undeveloped Property

Data Sources: HGAC (2015), BCAD (2016), CMEC (2016)
FEMA Preliminary DFIRM - Brazoria County (2013),
City of Pearland (2016),
Aerial Source: TNRIS (2015)

Prepared for: TxDOT	1 in = 2,000 feet
	Scale: 1:24,000
CSJ: 0976-02-086, 3416-01-012	Date: 7/21/2017

G:\Projects\TXDOT\FM518\EA_Figure 6_Land Use within the AOI_20170721.mxd

Figure 7a

Archeology High Probability Areas

FM 518 from SH 288 to SH 35

Existing Right-of-Way
Proposed Right-of-Way

PALM ZONE
0-Water
2a-Surface Survey of Mounds Only. No Deep Reconnaisance Recommended
4-No Survey Recommended

a b c d

Data Source: TxDOT (2001)
Aerial Source: TNRIS (2015)

0 500 Feet
0 150 Meters

Prepared for: TxDOT	1 in = 500 feet
	Scale: 1:6,000
CSJ: 0976-02-086, 3416-01-012	Date: 10/4/2018

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Figure 7b

Archeology High Probability Areas

FM 518 from SH 288 to SH 35

Existing Right-of-Way
Proposed Right-of-Way
High Probability Area (Proposed Right-of-Way within PALM Unit 2a)

PALM ZONE

0-Water
2a-Surface Survey of Mounds Only. No Deep Reconnaisance Recommended
4-No Survey Recommended

a b c d

Data Source: TxDOT (2001)
Aerial Source: TNRIS (2015)

0 500 Feet
0 150 Meters

Prepared for: TxDOT	1 in = 500 feet
	Scale: 1:6,000
CSJ: 0976-02-086, 3416-01-012	Date: 10/4/2018

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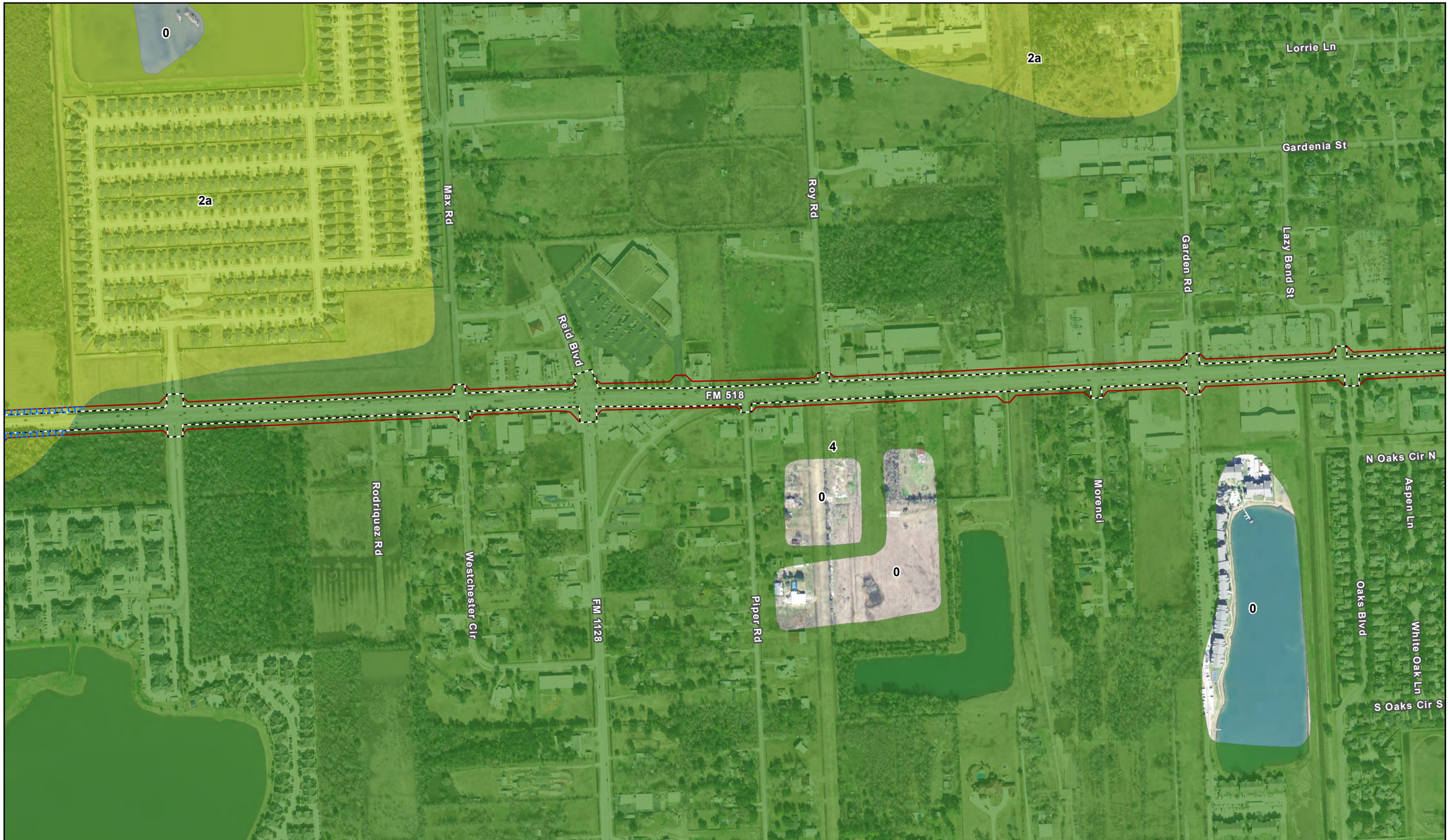

Figure 7c

Archeology High Probability Areas

FM 518 from SH 288 to SH 35

Existing Right-of-Way
Proposed Right-of-Way
High Probability Area (Proposed Right-of-Way within PALM Unit 2a)

PALM ZONE
0-Water
2a-Surface Survey of Mounds Only. No Deep Reconnaisance Recommended
4-No Survey Recommended

a b c d

Data Source: TxDOT (2001)
Aerial Source: TNRIS (2015)

0 500 Feet
0 150 Meters

Prepared for: TxDOT	1 in = 500 feet
	Scale: 1:6,000
CSJ: 0976-02-086, 3416-01-012	Date: 10/4/2018

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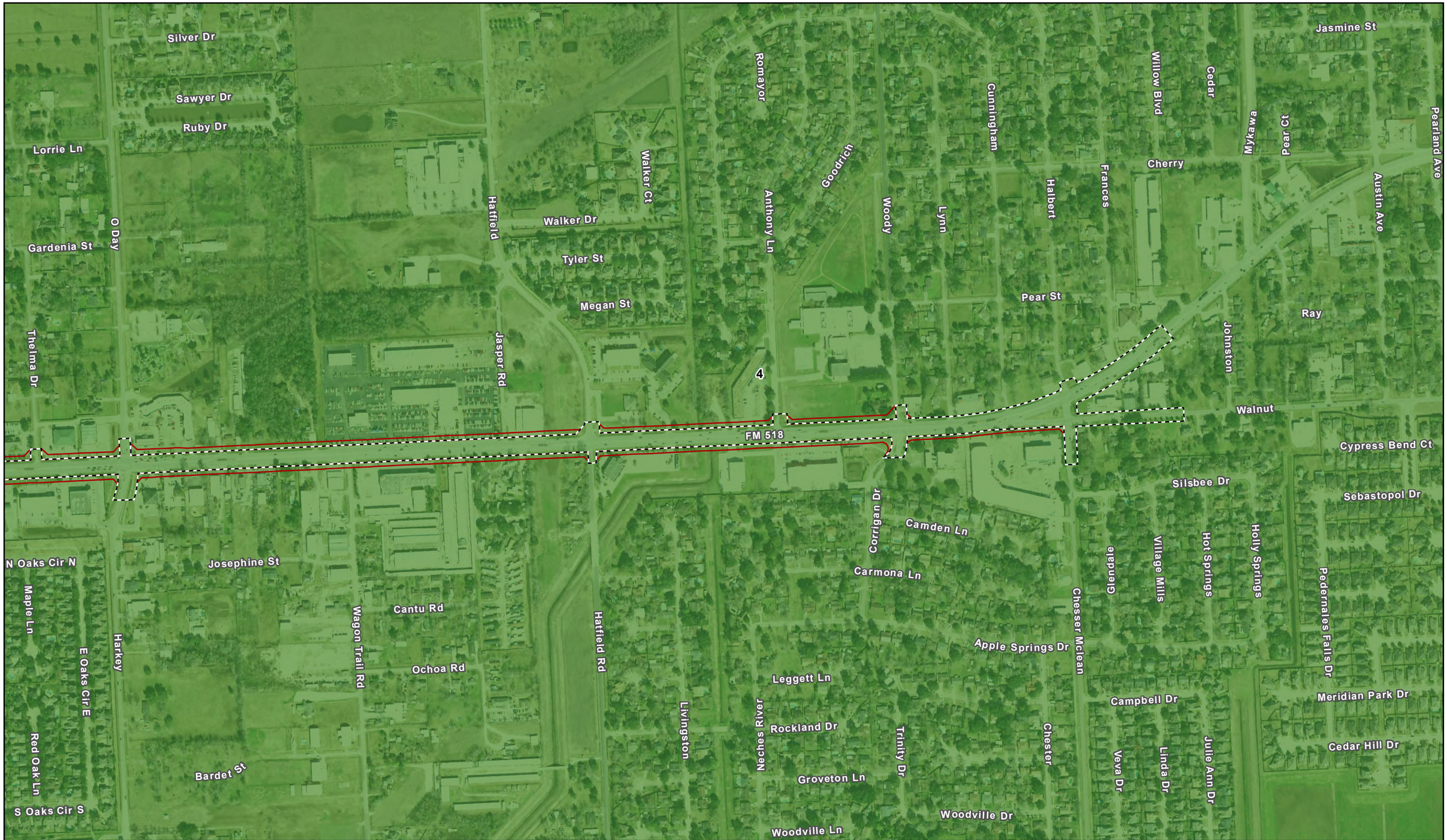

Figure 7d

Archeology High Probability Areas

FM 518 from SH 288 to SH 35

Existing Right-of-Way
Proposed Right-of-Way

PALM ZONE
4-No Survey Recommended

Data Source: TxDOT (2001)
Aerial Source: TNRIS (2015)

0 500 Feet
0 150 Meters

Prepared for: TxDOT	1 in = 500 feet
	Scale: 1:6,000
CSJ: 0976-02-086, 3416-01-012	Date: 10/4/2018

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Appendix G – Resource Agency Coordination

Texas Department of Transportation

MEMO

March 29, 2018

To: ECOS
Project file, CSJ 0976-02-086, FM 518: FM 865 – SH 35, Brazoria County, Houston District

From: Allen Bettis
Archeologist III, Environmental Affairs Division

Subject: Internal review under the Programmatic Agreement (PA) Among the Federal Highway Administration, Texas State Historic Preservation Office, Advisory Council on Historic Preservation, and the Texas Department of Transportation; and the Memorandum of Understanding (MOU) Between the Texas Historical Commission and the Texas Department of Transportation

---

Project Description: The proposed project would widen Farm-to-Market Road (FM) 518 from four lanes to six lanes in Brazoria County.

APE Definition: The APE extends from approximately 5.5 miles from State Highway (SH) 288 to SH 35. The APE encompasses 131.7 acres of existing and new right-of-way. The existing ROW on FM 518 is approximately 120 feet in width. The existing ROW encompasses 81.4 acres along FM 518. A total of 50.3 acres of new ROW is needed from both sides of FM 518. Depth of construction impacts are a maximum of 12 feet for the detention ponds.

Records Search Results: Archival background study by third-party archeological consultant indicates a moderate to high potential for prehistoric-age archeological materials on the south side of FM 518 in the middle of the APE. The Houston Potential Archeological Liability Map (PALM) maps this area as PALM Map Unit #2a. Map Unit #2a recommends a surface survey of intact pimple mounds that may be present in undeveloped areas within the APE. The intensive survey could not be completed due to a lack of right-of-entry (ROE). Archeological consultant recommends intensive survey of those mapped within PALM Unit #2a that were denied ROE.

Justification for Further Work: Moderate to high potential for prehistoric-age archeological materials.

Permission to conduct archeological investigations was denied by at least one landowner. Thus, as provided under Stipulation IX.B.3 of the PA, this undertaking may proceed with further project development, including completion of the environmental process and right of way acquisition without the concurrence of the SHPO. After obtaining access to the proposed right of way, TxDOT will complete the inventory on unsurveyed properties and conclude any additional work that may be required under the terms of the PA and MOU.

Approved by _____ for TxDOT March 29, 2018
Scott Pletka, Ph.D. Date

Attachments (e.g., Property or Parcel Map)

CC: Sarah Wycoff
Project Manager, APD, Houston District

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.

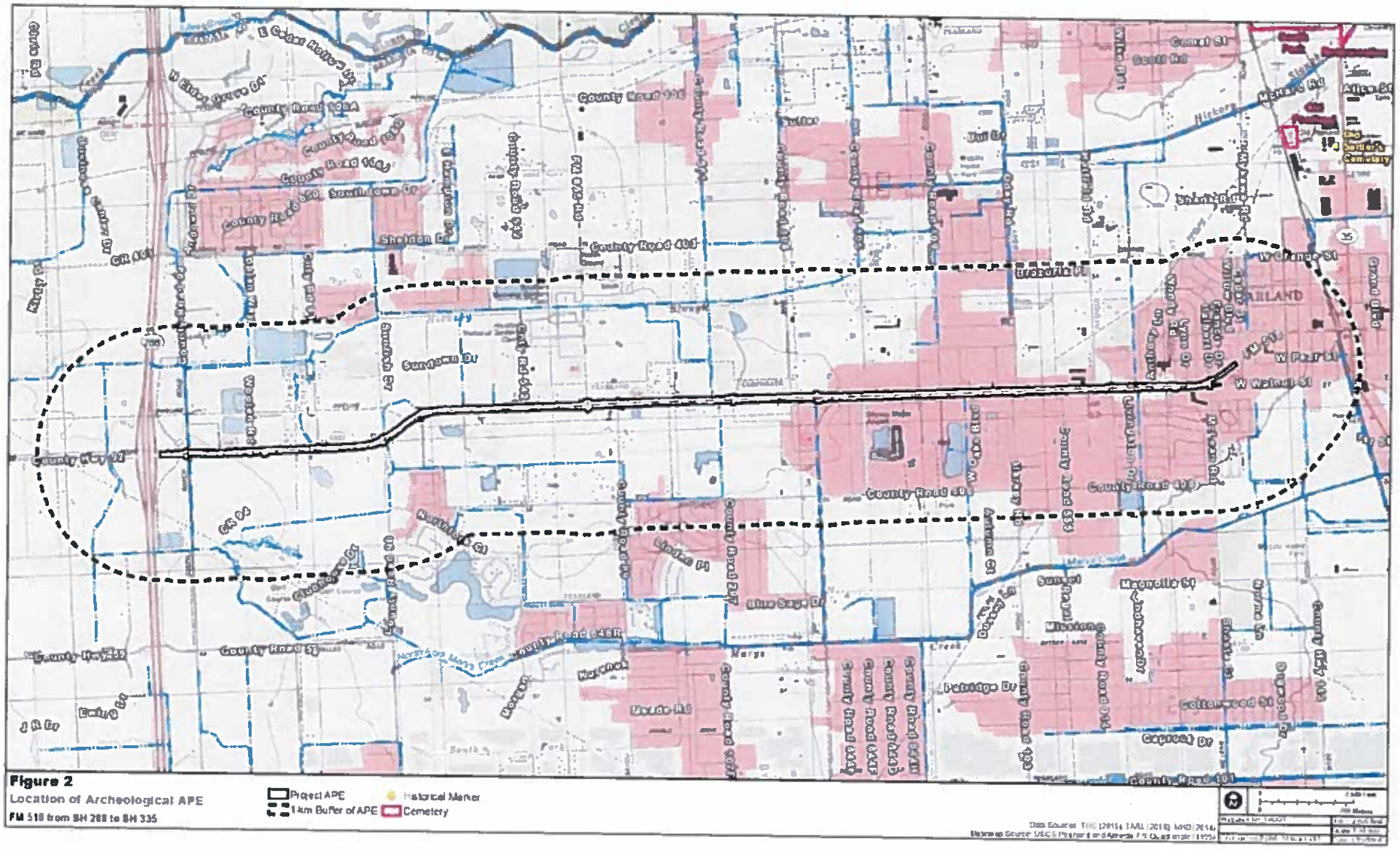
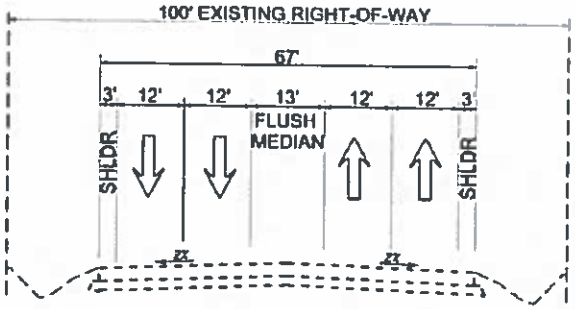
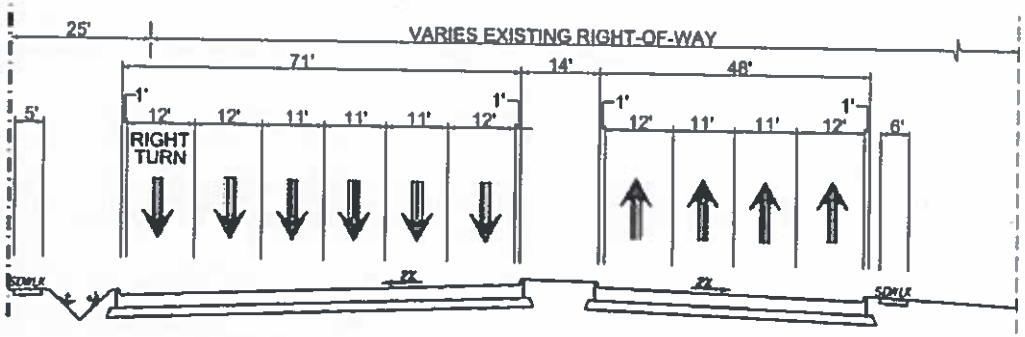


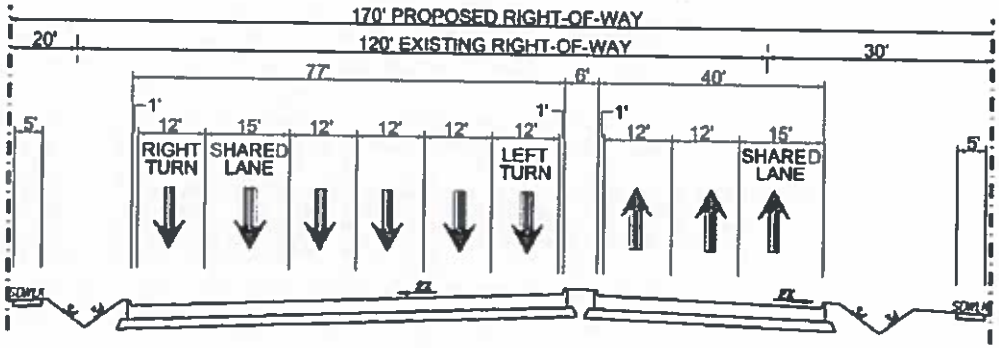
Figure 2
Location of Archeological APE
FM 518 from SH 288 to SH 335



EXISTING TYPICAL SECTION
FM 518

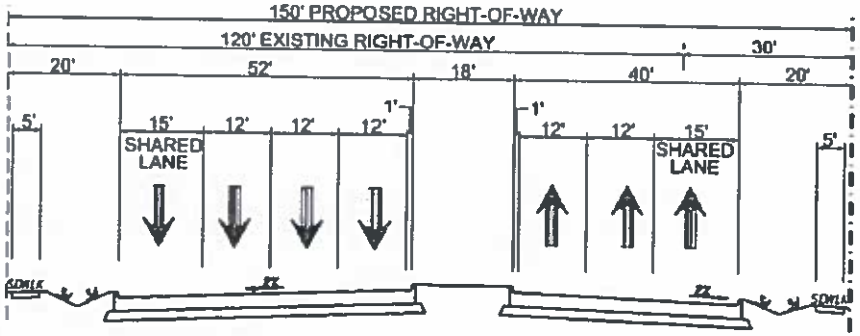


PROPOSED TYPICAL SECTION FM 518
SECTION A - A

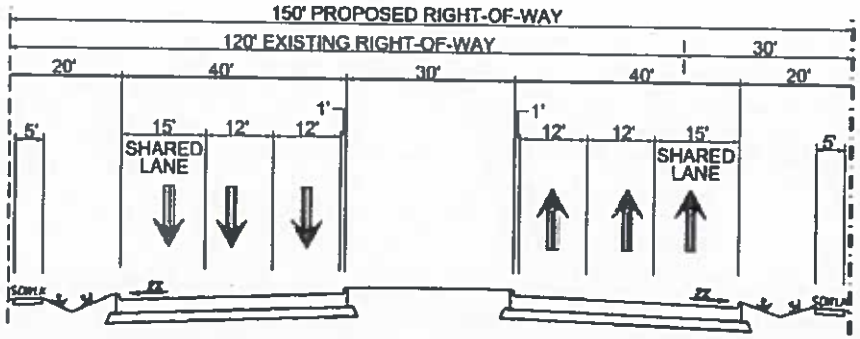


PROPOSED TYPICAL SECTION FM 518
SECTION B - B

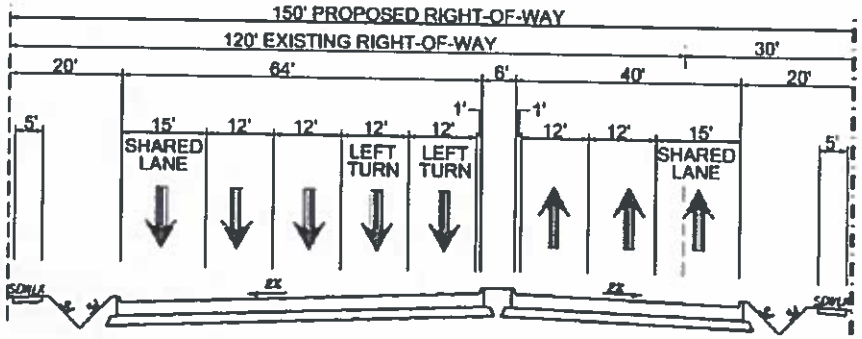
Appendix D – Sheet 1 of 4
Typical Sections
FM 518 from SH 288 to SH 335
CSJ: 0976-02-086, 3416-01-012



PROPOSED TYPICAL SECTION FM 518
FROM STA. 36+00 TO STA. 50+00

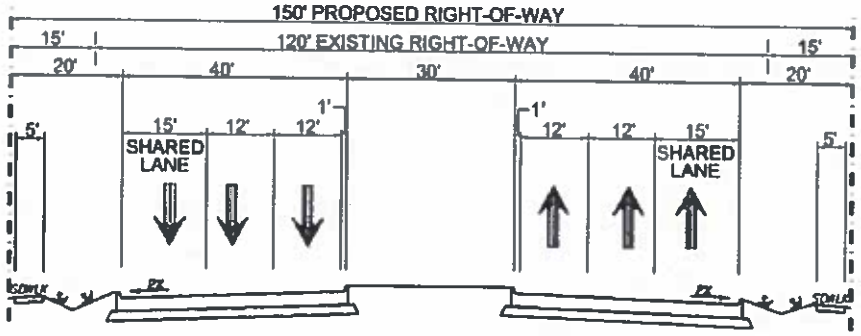


PROPOSED TYPICAL SECTION FM 518
FROM STA. 50+00 TO STA. 77+00

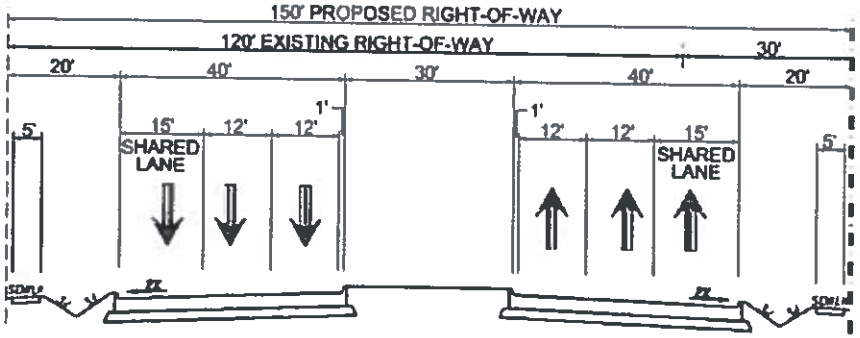


PROPOSED TYPICAL SECTION FM 518
SECTION C - C

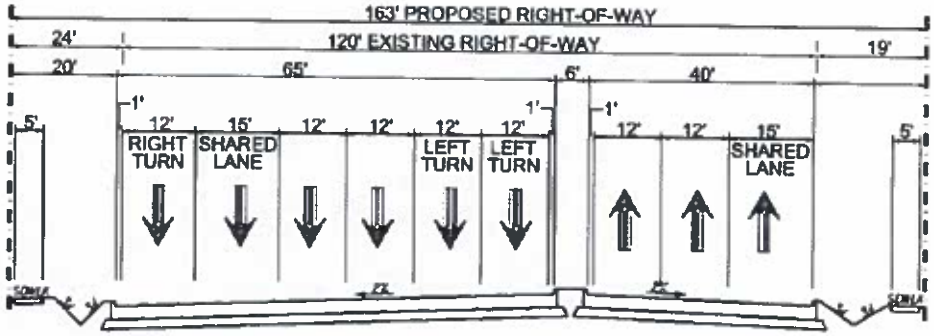
Appendix D – Sheet 2 of 4
Typical Sections
FM 518 from SH 288 to SH 335
C.S.J. 0576-02-086, 3416-01-012



PROPOSED TYPICAL SECTION FM 518
FROM STA. 77+00 TO STA. 95+00

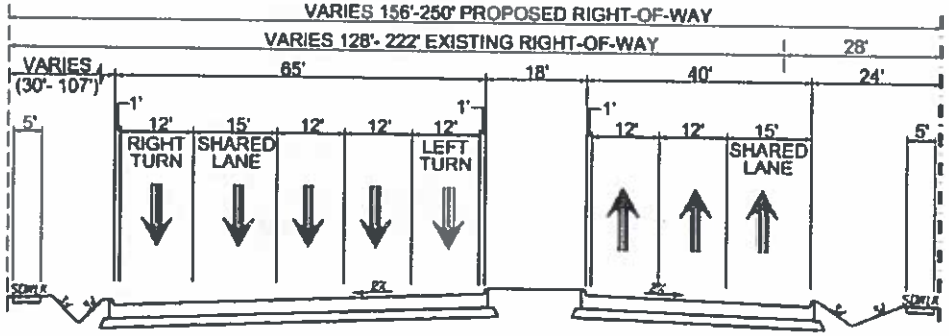


PROPOSED TYPICAL SECTION FM 518
FROM STA. 95+00 TO STA. 150+00

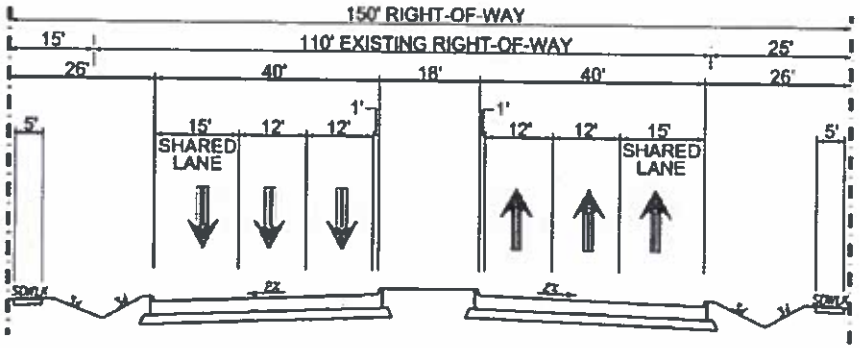


PROPOSED TYPICAL SECTION FM 518
SECTION D - D

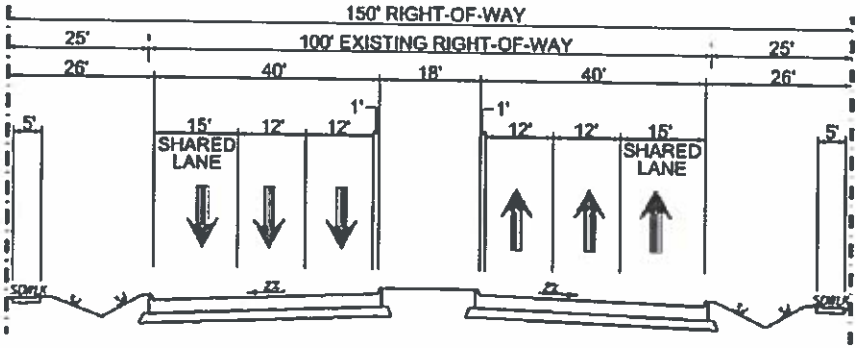
Appendix D – Sheet 3 of 4
Typical Sections
FM 518 from SH 288 to SH 335
CSJ: 0976-02-086, 3416-01-012



PROPOSED TYPICAL SECTION FM 518
SECTION E - E

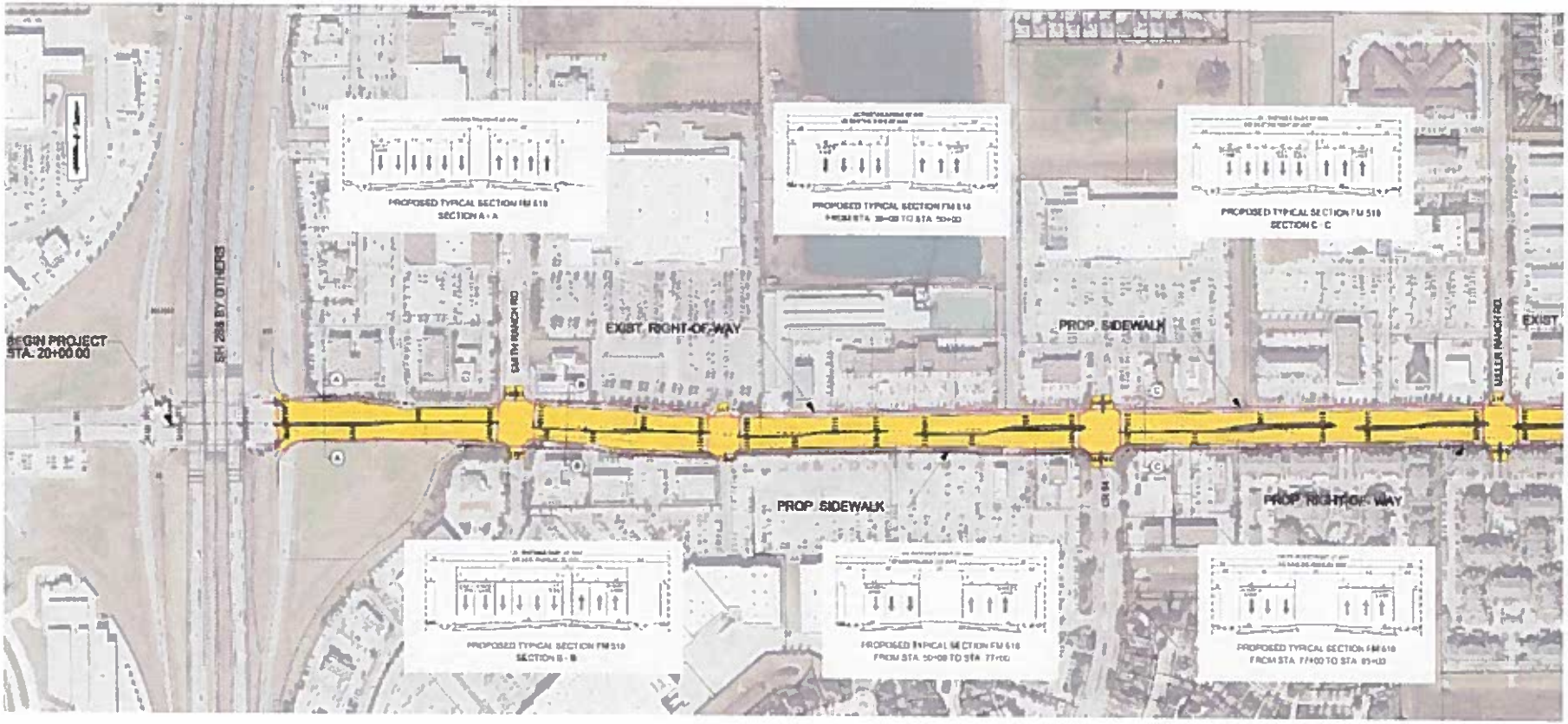


PROPOSED TYPICAL SECTION FM 518
FROM STA.150+00 TO STA.160+00.



PROPOSED TYPICAL SECTION FM 518
FROM STA.160+00 TO STA.172+00.

Appendix D – Sheet 4 of 4
Typical Sections
FM 518 from SH 288 to SH 336
C.S.J. 0376-02-086, 3416-01-012

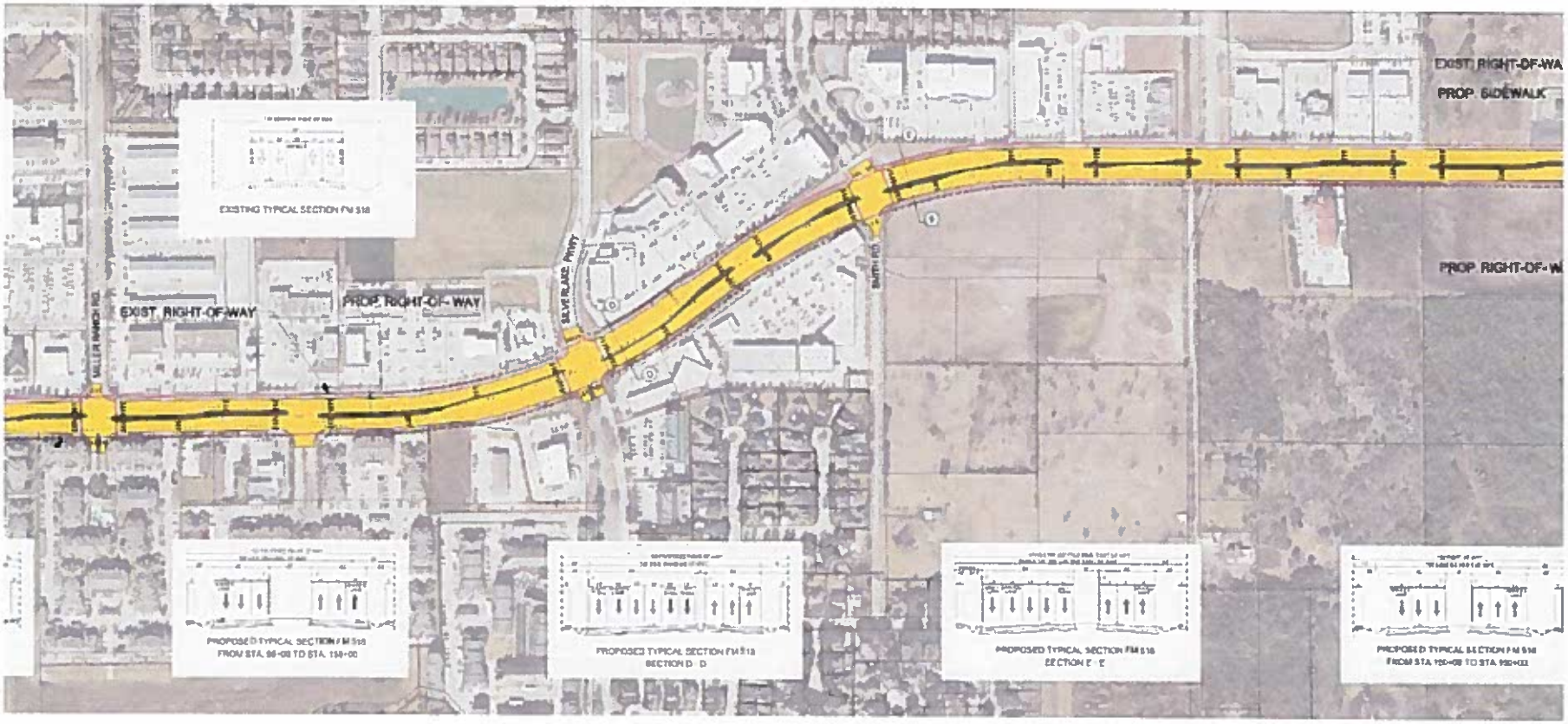


DESCRIPTION	SYMBOLOGY
PROPOSED MAIN LANES	
PROPOSED SIDEWALKS	
PROPOSED STRIPING	
PROPOSED DIRECT CONNECTOR	
PROPOSED RIGHT-OF-WAY	
EXISTING RIGHT-OF-WAY	

MAIN LANES
RAISED MEDIAN

Appendix C – Sheet 1 of 6

Schematic
FM 518 from SH 288 to SH 335
CSJ: 0976-02-086, 3416-01-012

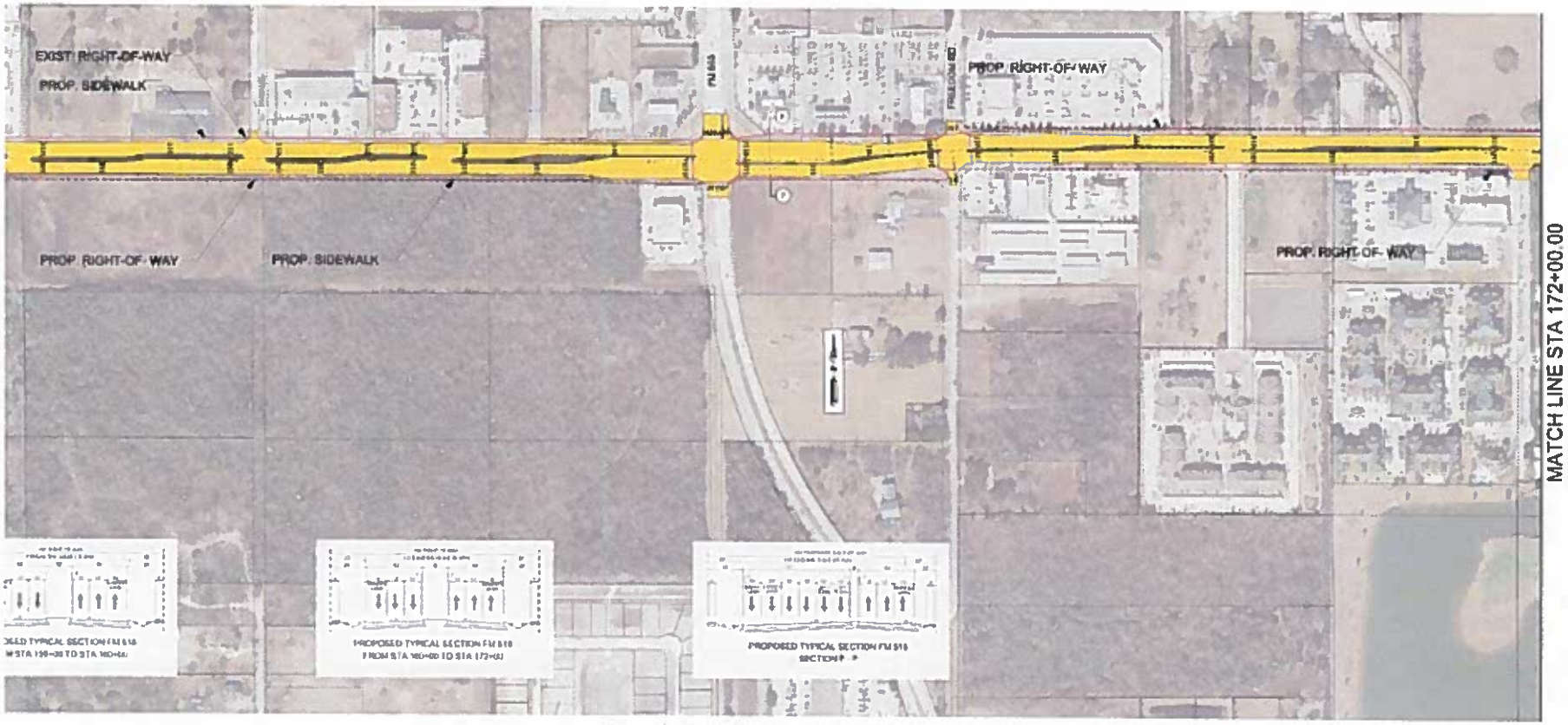


DESCRIPTION	SYMBOLOGY
PROPOSED MAIN LANES	
PROPOSED SIDEWALKS	
PROPOSED STRIPING	
PROPOSED DIRECT CONNECTOR	
PROPOSED RIGHT-OF-WAY	
EXISTING RIGHT-OF-WAY	

MAIN LANES
RAISED MEDIAN

Appendix C – Sheet 2 of 6

Schematic
FM 518 from SH 288 to SH 335
CSJ: 0976-02-086, 3416-01-012



DESCRIPTION	SYMBOLOGY
PROPOSED MAIN LANES	
PROPOSED SIDEWALKS	
PROPOSED STRIPING	
PROPOSED DIRECT CONNECTOR	
PROPOSED RIGHT-OF-WAY	
EXISTING RIGHT-OF-WAY	

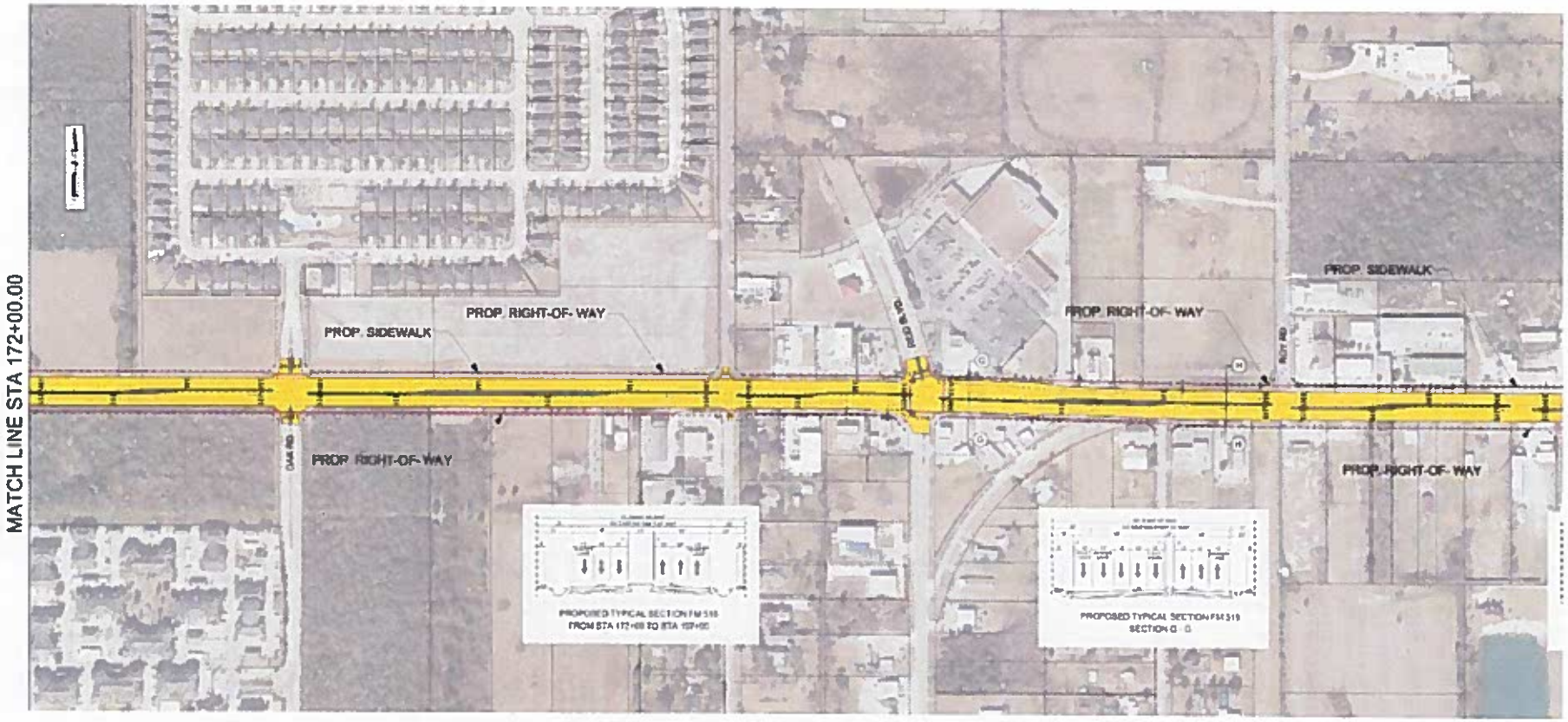
MAIN LANES
RAISED MEDIAN

Appendix C – Sheet 3 of 6

Schematic

FM 518 from SH 288 to SH 335

CSJ: 0976-02-086, 3416-01-012

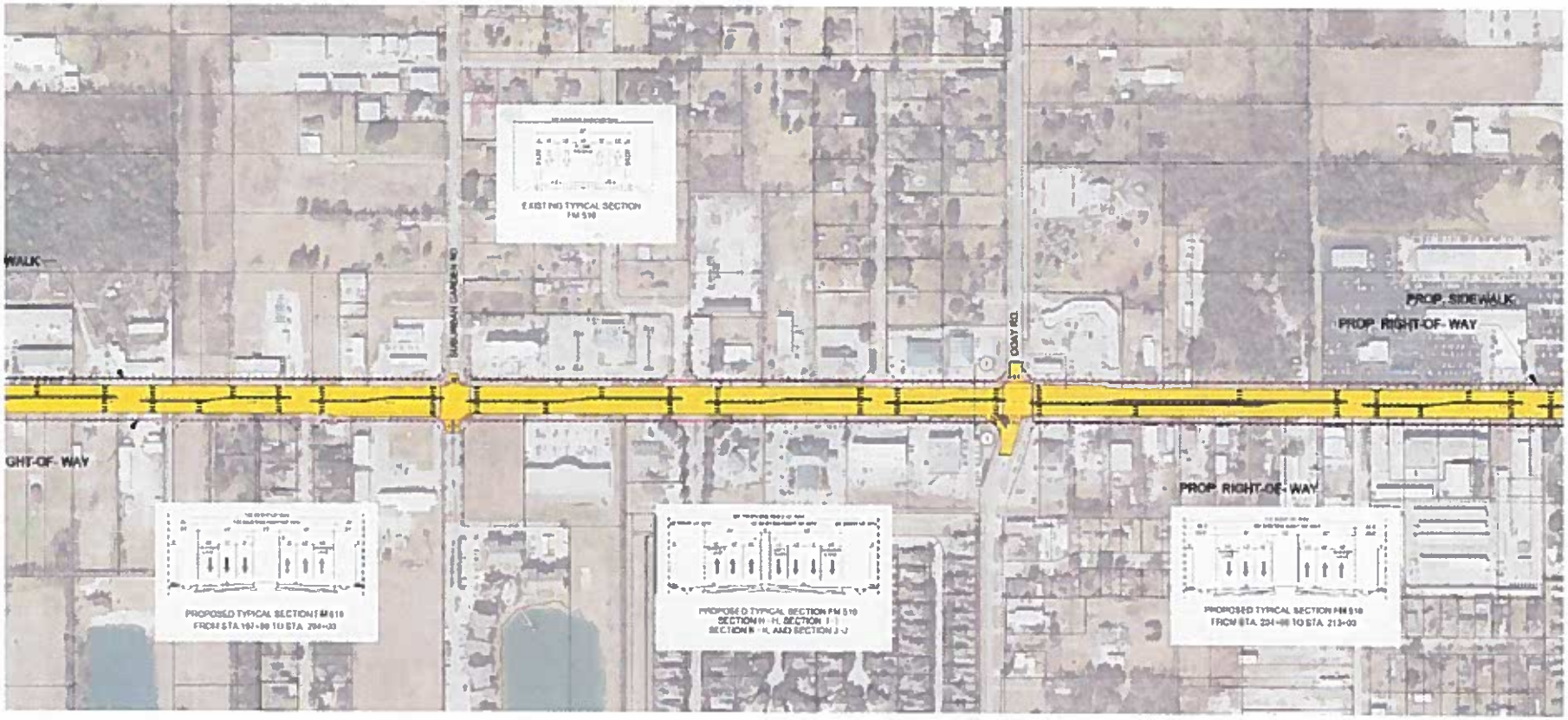


DESCRIPTION	SYMBOLOGY
PROPOSED MAIN LANES	
PROPOSED SIDEWALKS	
PROPOSED STRIPING	
PROPOSED DIRECT CONNECTOR	
PROPOSED RIGHT-OF-WAY	
EXISTING RIGHT-OF-WAY	

MAIN LANES
RAISED MEDIAN

Appendix C – Sheet 4 of 6

Schematic
FM 518 from SH 288 to SH 335
CSJ: 0976-02-086, 3416-01-012



DESCRIPTION	SYMBOLOGY
PROPOSED MAIN LANES	
PROPOSED SIDEWALKS	
PROPOSED STRIPING	
PROPOSED DIRECT CONNECTOR	
PROPOSED RIGHT-OF-WAY	
EXISTING RIGHT-OF-WAY	

MAIN LANES
RAISED MEDIAN

Appendix C – Sheet 5 of 6

Schematic
FM 510 from SH 288 to SH 336
CSJ: 0376-02-086, 3416-01-012

DESCRIPTION	SYMBOLOGY
PROPOSED MAIN LANES	
PROPOSED SIDEWALKS	
PROPOSED STRIPING	
PROPOSED DIRECT CONNECTOR	
PROPOSED RIGHT-OF-WAY	
EXISTING RIGHT-OF-WAY	

MAIN LANES
RAISED MEDIAN

Appendix C – Sheet 6 of 6

Schematic

FM 518 from SH 288 to SH 35
CSJ: 0576-02-086, 3416-01-012

Texas Department of Transportation

MEMO

September 16, 2016

TO: Administrative File
From: Renee Benn

District: Houston
County: Brazoria
CSJ#: 0976-02-086 & 3416-01-012
Highway: FM 518
Let Date: 2019

Project Limits: SH 288 to SH 35 (6 miles)
Project Description: Stipulation IX, Appendix 6. Widen from 4 to 6 lanes. Up to 25.88 acres of new ROW depending on selected alternative. No historic, non-archeological properties present.

SUBJECT: Internal review under the Section 106 Programmatic Agreement (Section 106 PA) among the Texas Department of Transportation, Texas State Historic Preservation Officer, Advisory Council on Historic Preservation, and Federal Highway Administration; and the Memorandum of Understanding (MOU) between the Texas Historical Commission and the Texas Department of Transportation

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

Existing Conditions:
The existing FM 518 consists of four 11-foot-wide travel lanes (two in each direction) with center turn lanes, 4-foot-wide outside shoulders and open vegetated ditches or swales.

Proposed Project:
The Houston District of the Texas Department of Transportation (TxDOT) proposes improvements to FM 518 from SH 35 to SH 288. The proposed improvements include three alternative design solutions: north right-of-way (North Alternative), middle right-of-way (Middle Alternative), and south right-of-way (South Alternative). For all three alternatives, the proposed improvements include widening the existing four-lane facility to six lanes.

The proposed improvements include widening the existing four 11-foot-wide lanes to 12 feet wide, adding one 15-foot-wide shared use lane in each direction, constructing an 18-foot-wide raised median, and adding 5-foot wide sidewalks in each direction. The proposed ROW varies between 150 and 162 feet in width depending on the location within the project limits.

The proposed additional ROW required for all three alternatives is generally 30 feet wide throughout the project limits, except at several intersections where the width varies. The north alternative would acquire all new ROW along the north side of the existing ROW, the middle

alternative would acquire all new ROW on both sides of the existing ROW (15 feet on each side), and the south alternative would acquire all 30 feet on the south side of the existing ROW. The improvements would require up to 25.88 acres new ROW.

Determination of Eligibility:
A review of the National Register of Historic Places (NRHP), the list of State Antiquities Landmarks (SAL), the list of Recorded Texas Historic Landmarks (RTHL), and TxDOT files indicated that no historically significant resources were previously documented within the area of potential effects (APE). It has been determined through consultation with the State Historic Preservation Officer (SHPO) that the APE for the proposed project is the current ROW where no new ROW is required, and 150' from the proposed ROW where new ROW is required for any alternative.

Based on the HRSR, attached, staff determined that there are 32 historic-age (built prior to 1974) properties in the APE.

The 32 historic-age properties consist of agricultural, domestic, and commercial property types. The properties were primarily constructed in the mid-20th century and do not embody the distinctive characteristics of a type, period, or method of construction. These properties are all of a common type and do not represent the work of a master or represent high artistic value. These properties are not known to be associated with a significant historical event, nor are they associated with a person of transcendent importance. As such, TxDOT historians have determined them *not eligible* for listing on the NRHP. In addition, these properties lack the integrity to form a rural or urban historic district.

Therefore, pursuant to Stipulation IX, Appendix 6 "Undertakings with the Potential to Cause Effects per 36 CFR 800.16(i)" of the Section 106 PA and the MOU, TxDOT historians determined that there are no historic, non-archeological properties in the APE. Individual project coordination with SHPO is not required.

Lead Reviewer RM Dobrasko for TxDOT 9/16/16
Rebekah Dobrasko Date

Approved by for TxDOT 9.20.16
Bruce Jensen Date

Texas Department of Transportation

MEMO

July 28, 2017

TO: Administrative File
From: Renee Benn

District: Houston
County: Brazoria
CSJ#: 0976-02-086 & 3416-01-012
Highway: FM 518
Let Date: 2019

Project Limits: SH 288 to SH 35 (6 miles)
Project Description: Stipulation IX, Appendix 6. Widen from 4 to 6 lanes. 24.5 acres of new ROW. No historic, non-archeological properties present.

SUBJECT: Internal review under the Section 106 Programmatic Agreement (Section 106 PA) among the Texas Department of Transportation, Texas State Historic Preservation Officer, Advisory Council on Historic Preservation, and Federal Highway Administration; and the Memorandum of Understanding (MOU) between the Texas Historical Commission and the Texas Department of Transportation

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

****Please note this is a recoordination of a project originally cleared in 2016 with the same limits, but with less required new ROW due to a design change in 2017. The design change resulted in two additional historic-age properties in the APE. TxDOT also selected a preferred alternative since 2016, which changed the amount of new ROW. See below for further details.**

Existing Conditions:
The existing FM 518 consists of four 11-foot-wide travel lanes (two in each direction) with center turn lanes, 4-foot-wide outside shoulders and open vegetated ditches or swales.

Proposed Project:
The proposed improvements to FM 518 include the reconstruction and widening of the existing roadway from four lanes to six lanes. The improvements include widening the existing four 11-foot-wide lanes to 12-feet wide, adding one 15-foot-wide shared use lane in each direction, and construction of an 18-foot-wide raised median. The proposed improvements also include 5-foot-wide sidewalks on both sides of the roadway. The roadway would be converted to a curb and gutter system. The proposed project requires approximately 24.5 acres of new right-of-way.

Summary of Design Changes:

TxDOT prepared the previously submitted clearance memo based on a schematic that reflected three alternative design solutions: north right-of-way (North Alternative), middle right-of-way (Middle Alternative), and south right-of-way (South Alternative). For all three alternatives, the proposed improvements included widening the existing four-lane facility to six lanes with two 12-foot-wide travel lanes and one 15-foot-wide shared use lane in each direction. The proposed right-of-way varied between 150 and 162 feet in width depending on the location within the project limits. Construction limits at the eastern terminus ended near Johnson Street west of SH 35.

The proposed additional right-of-way required for all three alternatives was generally 30 feet throughout the project limits, except at several intersections where the width varies. The North Alternative would acquire all new right-of-way along the north side of the existing right-of-way, the Middle Alternative would acquire new right-of-way on both sides of the existing right-of-way (15 feet on either side), and the South Alternative would acquire all 30 feet on the south side of the existing right-of-way.

TxDOT developed a preferred alternative considered the Build Alternative in the Environmental Assessment draft document. TxDOT eliminated the former three alternative design solutions from further study because, compared to the preferred alternative, they would have greater residential, business, and other displacement or relocation impacts; greater impacts to waters of the U.S.; and result in a higher number of right-of-way acquisitions throughout the project area.

Determination of Eligibility:
There are two historic-age properties in the revised APE, which is 150' from the current or proposed ROW (including parcels therein), due to a design change. They are both residential in type and are shown on page 13 of the attached revised APE map. Primarily constructed in the mid-20th century, the properties do not embody the distinctive characteristics of a type, period, or method of construction. These properties are all of a common type and do not represent the work of a master or represent high artistic value. These properties are not known to be associated with a significant historical event, nor are they associated with a person of transcendent importance. As such, TxDOT historians have determined them *not eligible* for listing on the NRHP. In addition, these properties lack the integrity to form a rural or urban historic district.

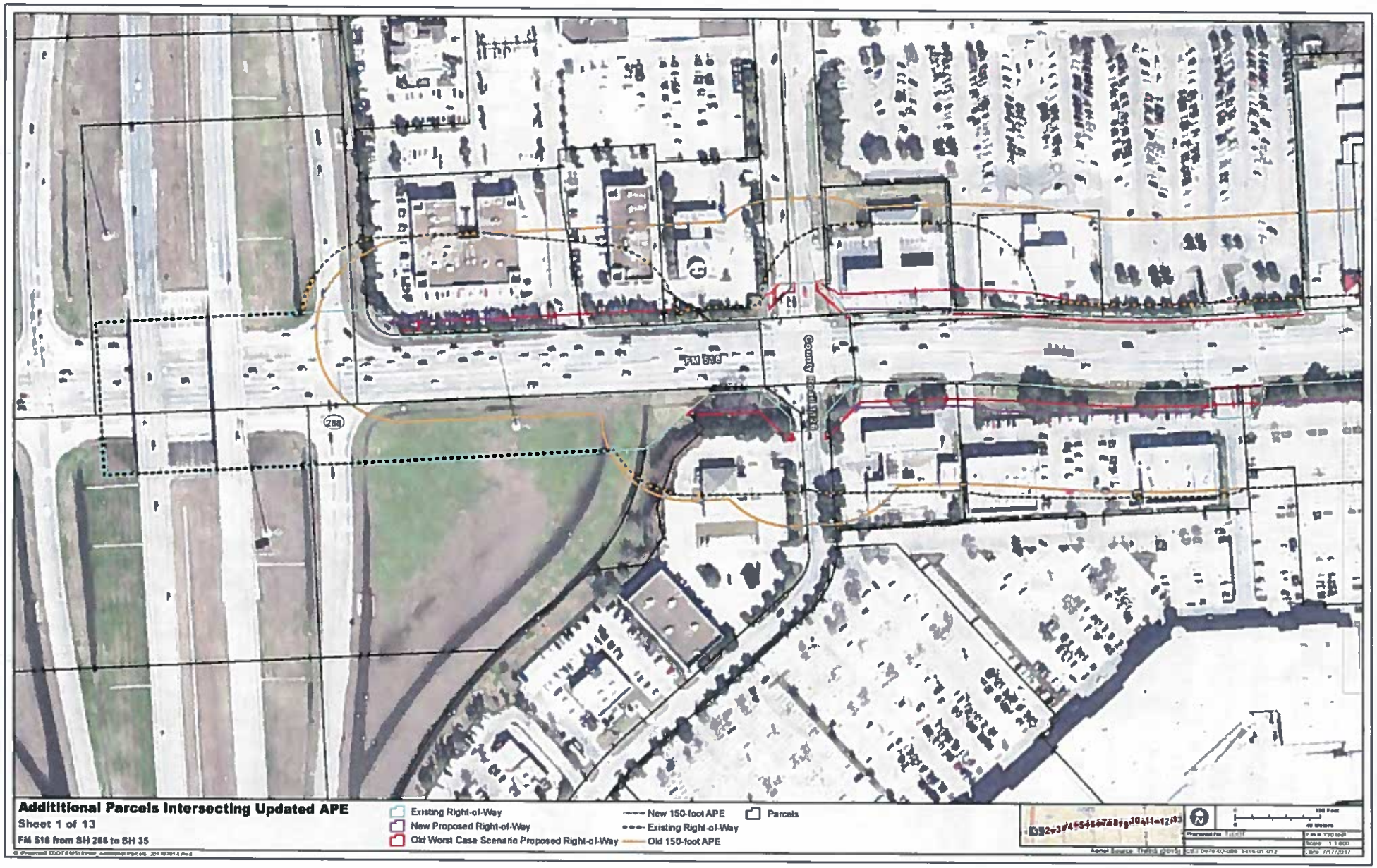
Therefore, pursuant to Stipulation IX, Appendix 6 "Undertakings with the Potential to Cause Effects per 36 CFR 800.16(i)" of the Section 106 PA and the MOU, TxDOT historians determined that there are still no historic, non-archeological properties in the APE. Individual project coordination with SHPO is not required.

Lead Reviewer RMDobrasko for TxDOT 7/31/2017
Rebekah Dobrasko Date

Approved by for TxDOT 8.01.17
Bruce Jensen Date

C. 1960 secondary domestic building at 4904 Walnut, Pearland. View south courtesy google streetview. Labeled as 166261 on page 13 of the attached revised APE map.

C. 1960 Ranch style residence located at 2603 McLean, Pearland. View east courtesy google streetview. Labeled as 166274 on the attached revised APE map.


FM 518
County Road 1128
288
Additional Parcels Intersecting Updated APE
Sheet 1 of 13
FM 518 from SH 288 to SH 35
Existing Right-of-Way
New Proposed Right-of-Way
Old Worst Case Scenario Proposed Right-of-Way
New 150-foot APE
Existing Right-of-Way
Old 150-foot APE
Parcels

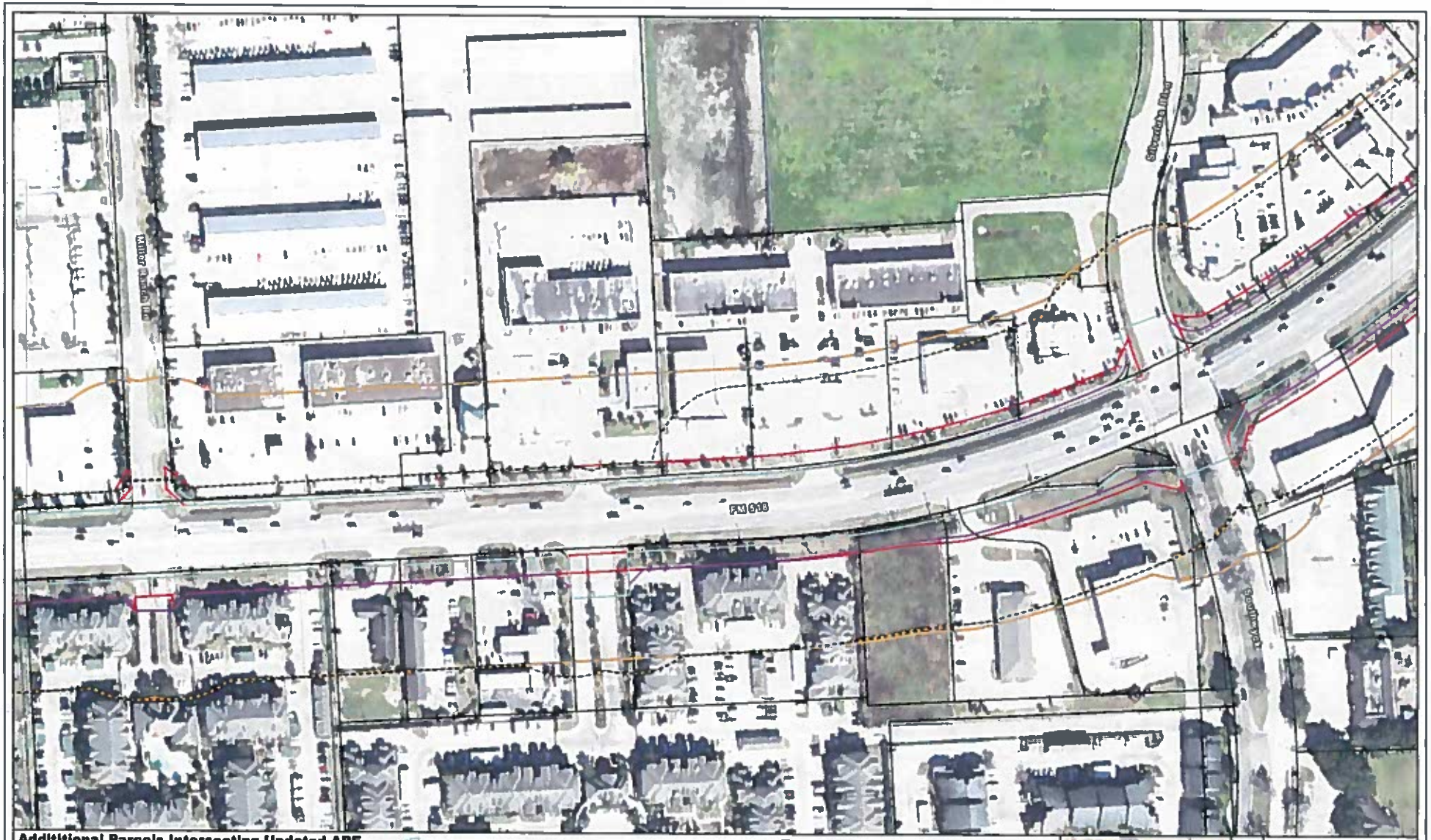
Additional Parcels Intersecting Updated APE

Sheet 2 of 13

FM 518 from SH 288 to SH 35

Existing Right-of-Way
New Proposed Right-of-Way
Old Worst Case Scenario Proposed Right-of-Way
New 150-foot APE
Existing Right-of-Way
Old 150-foot APE
Parcels

Aerial Source: TNRIS (2015)



Additional Parcels Intersecting Updated APE

Sheet 3 of 13

FM 518 from SH 288 to SH 35

Existing Right-of-Way
New Proposed Right-of-Way
Old Worst Case Scenario Proposed Right-of-Way
New 150-foot APE
Existing Right-of-Way
Old 150-foot APE
Parcels

Prepared for: TxDOT

Aerial Source: Nearmap, Dated: 2/3/2017

CSJ: 0918-02-066 3416-01-012

Date: 7/17/2017

Additional Parcels Intersecting Updated APE

Sheet 4 of 13

FM 518 from SH 288 to SH 35

Existing Right-of-Way
New Proposed Right-of-Way
Old Worst Case Scenario Proposed Right-of-Way
New 150-foot APE
Existing Right-of-Way
Old 150-foot APE
Parcels

Aerial Source: TNRIS (2015)

Prepared for: TxDOT

1 in = 150 feet

Scale: 1:1800

Date: 7/17/2017

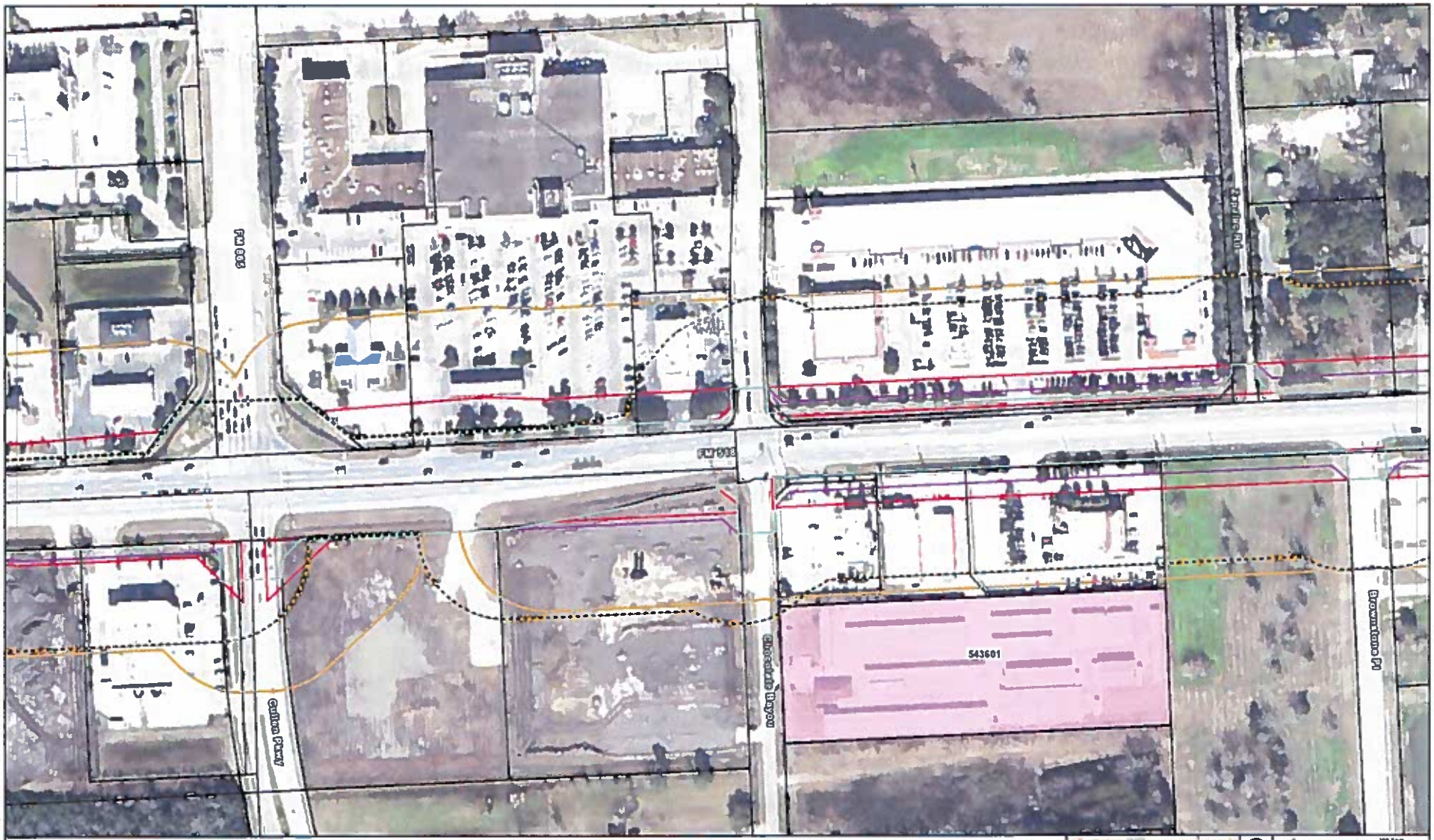
Additional Parcels Intersecting Updated APE

Sheet 5 of 13

FM 518 from SH 288 to SH 35

Existing Right-of-Way
New Proposed Right-of-Way
Old Worst Case Scenario Proposed Right-of-Way
New 150-foot APE
Existing Right-of-Way
Old 150-foot APE
Parcels

Prepared by: TxDOT
Scale: 1 in = 150 feet
Date: 7/17/2017



Additional Parcels Intersecting Updated APE

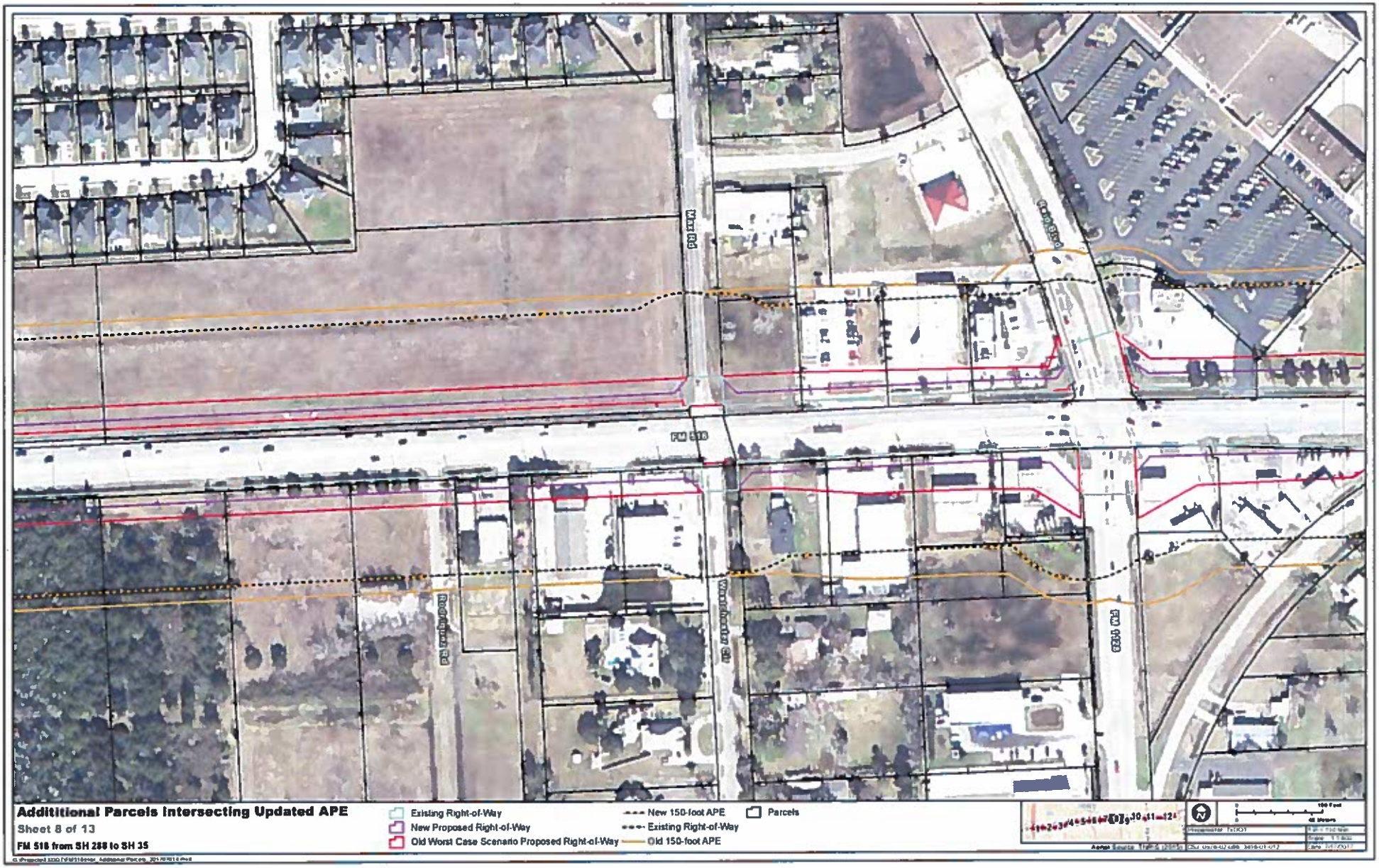
Sheet 6 of 13

FM 516 from SH 288 to SH 35

Existing Right-of-Way
New Proposed Right-of-Way
Old Worst Case Scenario Proposed Right-of-Way
New 150-foot APE
Existing Right-of-Way
Old 150-foot APE
Parcels
Additional Parcels Intersecting Updated APE

Aerial Source: TNRIS, 2015

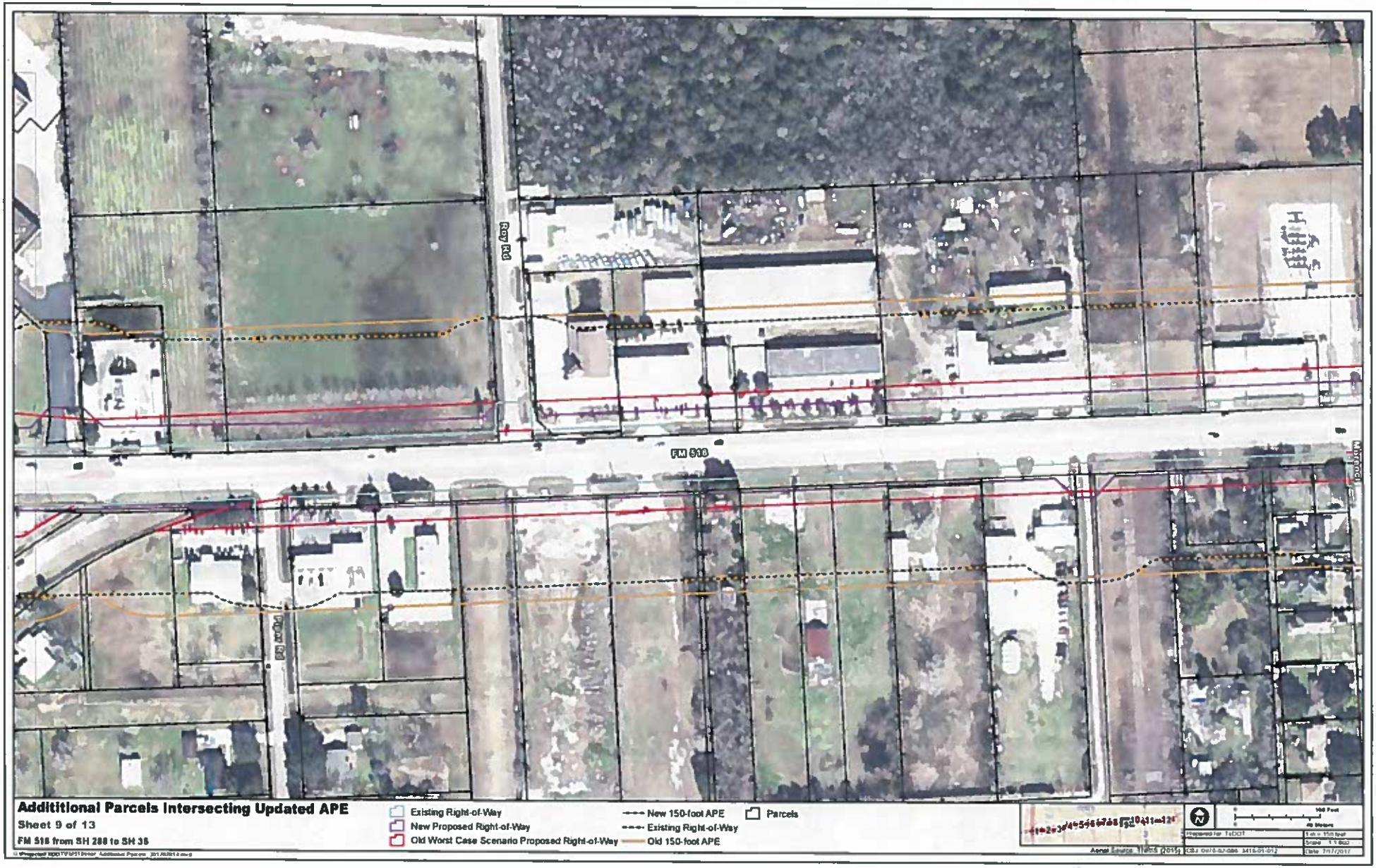
Additional Parcels Intersecting Updated APE
Sheet 7 of 13
FM 518 from SH 288 to SH 35
Existing Right-of-Way
New Proposed Right-of-Way
Old Worst Case Scenario Proposed Right-of-Way
New 150-foot APE
Existing Right-of-Way
Old 150-foot APE
Parcels
Aerial Source: TNRIS (2016)
CSJ: 0978-02-086 3616-01-017
Date: 7/17/2017
Scale: 1:1 Bdl
1 in = 150 feet
150 Feet
45 Meters



Additional Parcels Intersecting Updated APE

Sheet 8 of 13

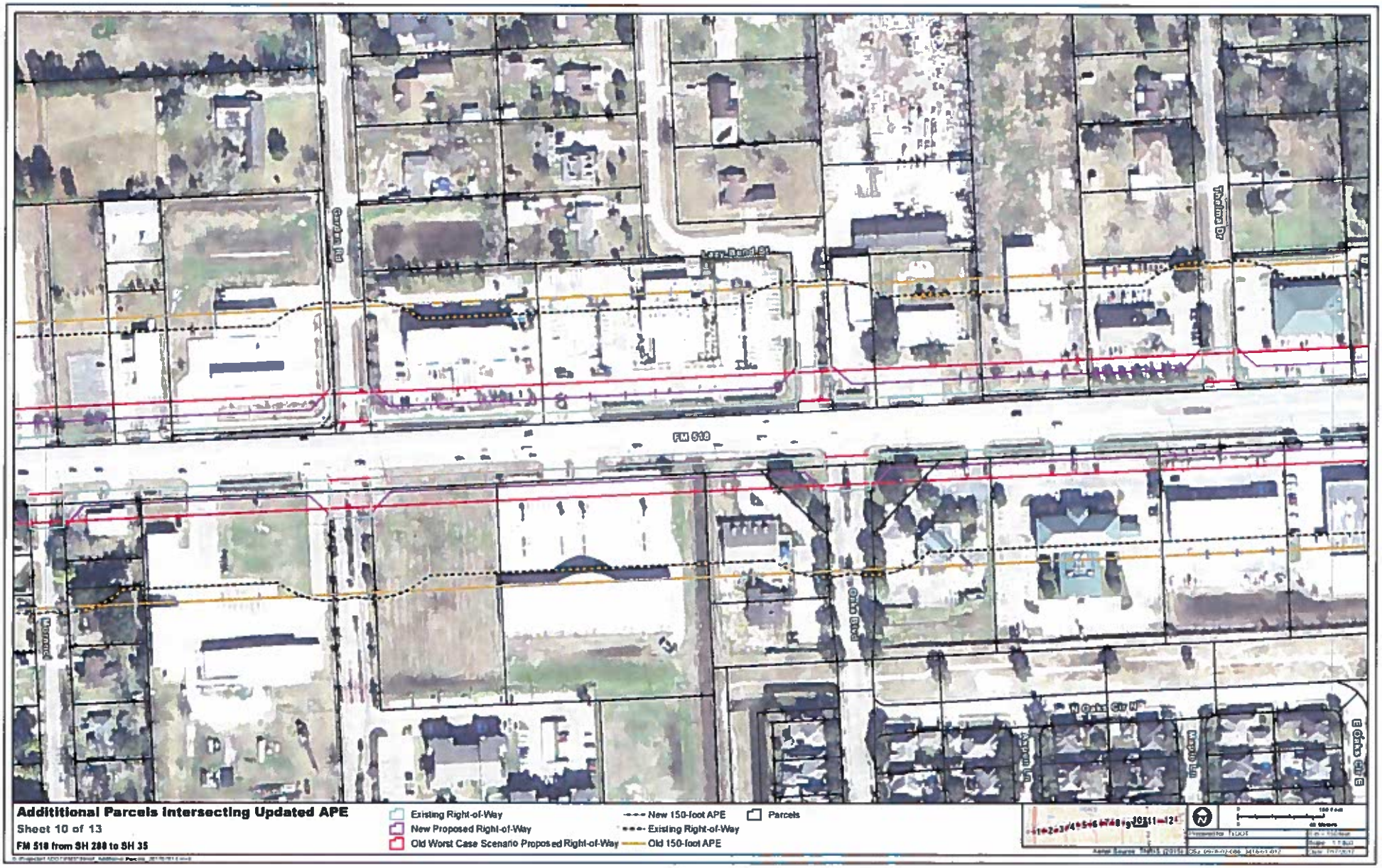
FM 518 from SH 288 to SH 35



Addititional Parcels Intersecting Updated APE

Sheet 9 of 13

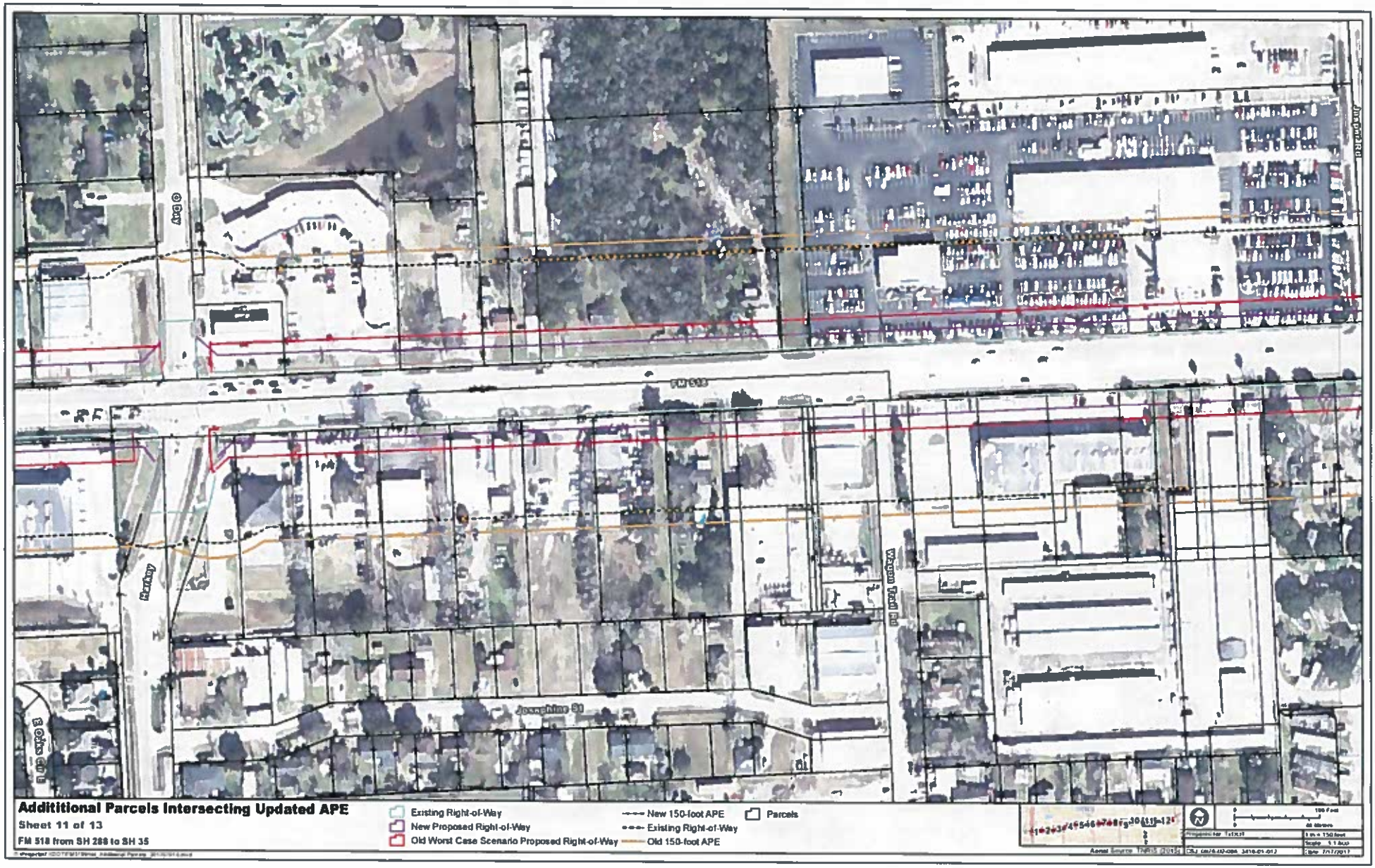
FM 518 from SH 288 to SH 35

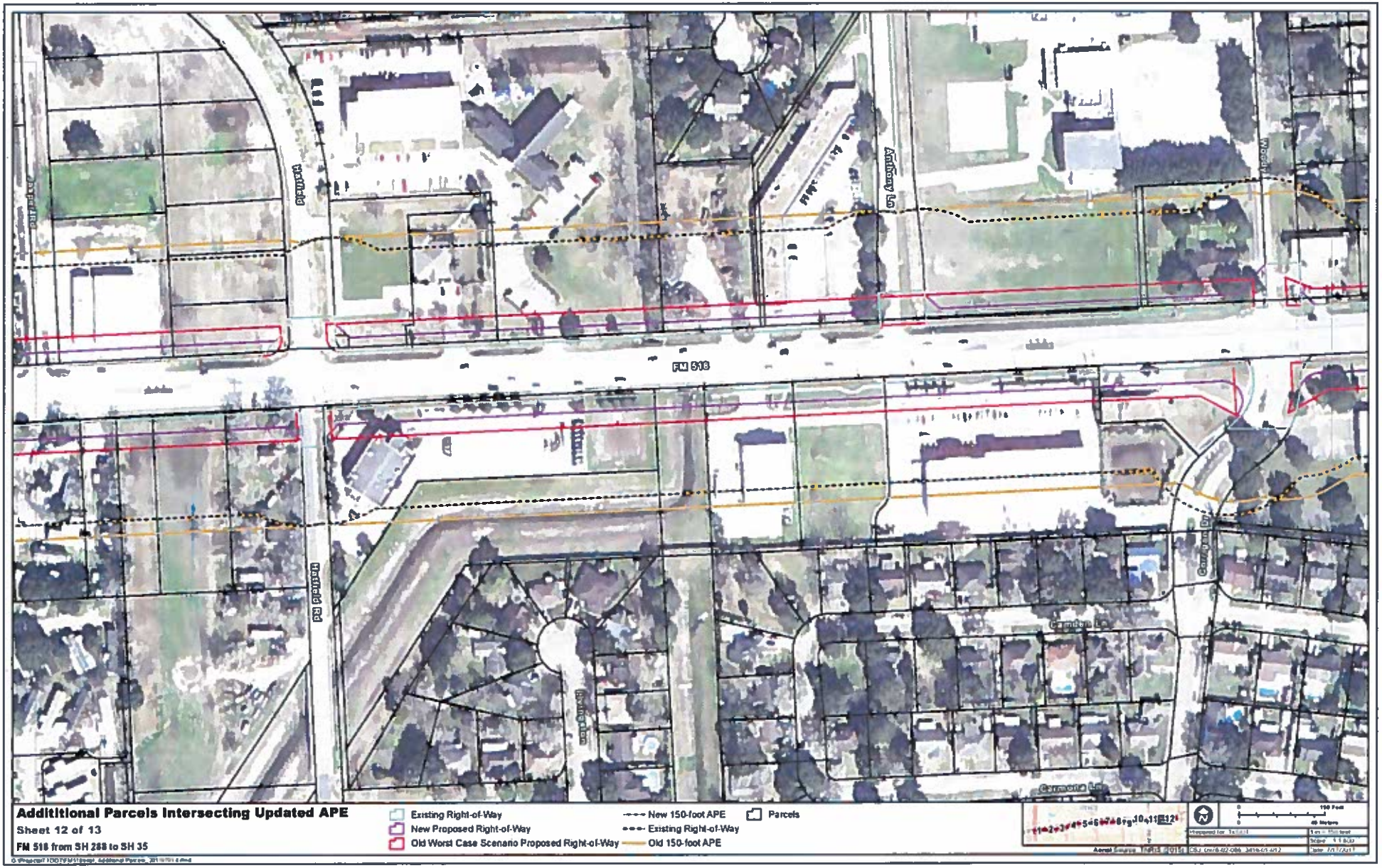


Additional Parcels Intersecting Updated APE

Sheet 10 of 13

FM 510 from SH 288 to SH 35

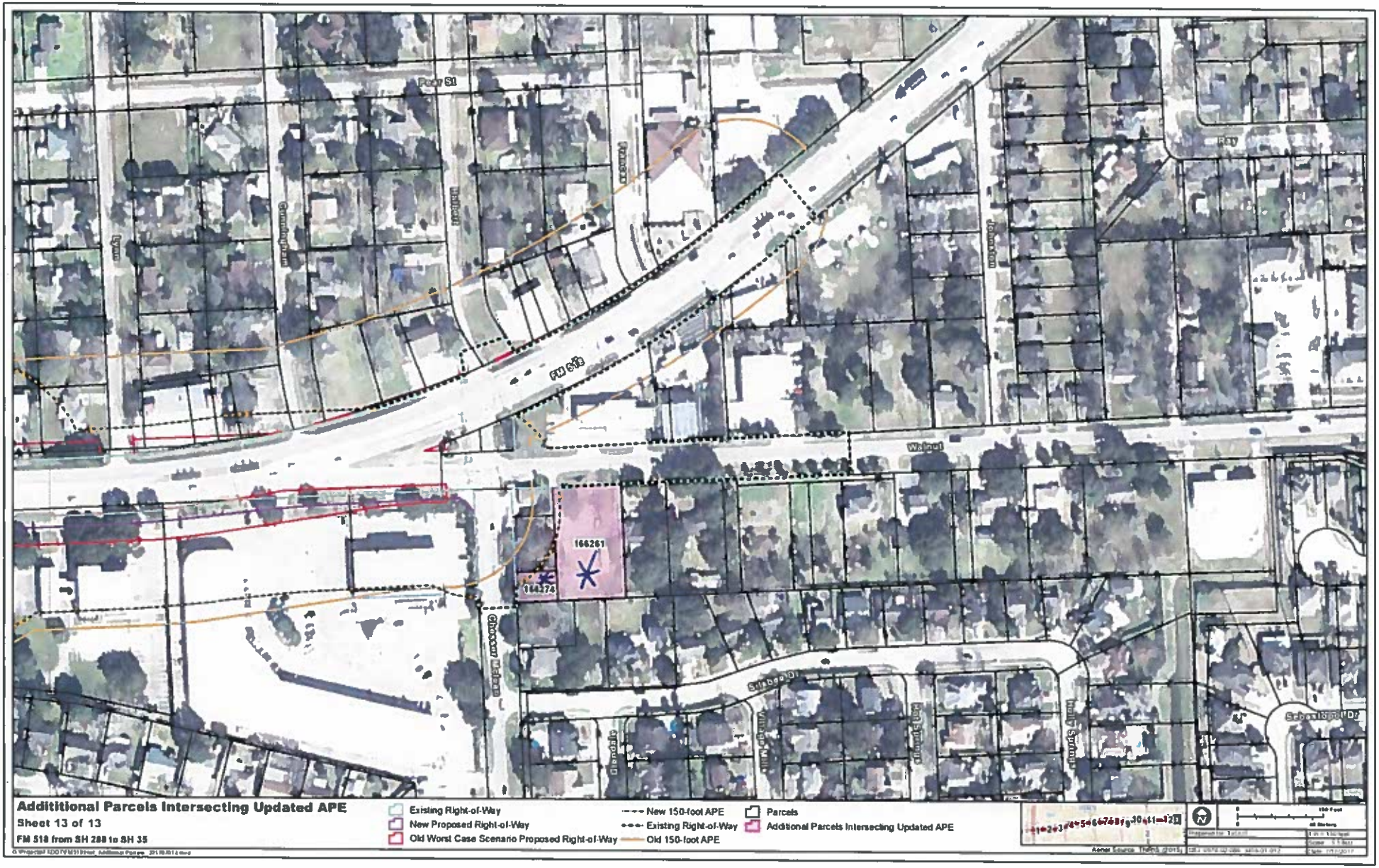

Ave O
FM 518
Kirby
Wood Trail Rd
Josephine St
Jacqueline
Additiitional Parcels Intersecting Updated APE
Sheet 11 of 13
FM 518 from SH 288 to SH 35
Existing Right-of-Way
New Proposed Right-of-Way
Old Worst Case Scenario Proposed Right-of-Way
New 150-foot APE
Existing Right-of-Way
Old 150-foot APE
Parcels



Additional Parcels Intersecting Updated APE

Sheet 12 of 13

FM 518 from SH 288 to SH 35


Poor St
Walnut
Walnut
Glendale
Glendale
Glendale

Courtney Filer

From: Sarah Wyckoff <Sarah.Wyckoff@txdot.gov>
Sent: Tuesday, May 30, 2017 8:08 AM
To: Larry Cox
Cc: Courtney Filer
Subject: FW: Early Coordination Request

TPWD Early Coordination is complete.

From: Sue Reilly [mailto:Sue.Reilly@tpwd.texas.gov]
Sent: Friday, May 26, 2017 5:36 PM
To: Sarah Wyckoff
Cc: Celeste Wyble (cwyble@eprusa.net); Courtney Filer (courtneyf@coxmclain.com); Larry Cox
Subject: RE: Early Coordination Request

Sarah,

Thank you for the response. If further investigation does reveal more suitable habitat, and individuals of this species are found, please contact the WHAB_TxDOT email address and submit an NDD form.

Thank you for submitting the following project for early coordination: FM 518 from SH 288 to SH 35 (CSJ 0976-02-086). TPWD appreciates TxDOT's commitment to implement the practices listed in the Biological Evaluation Form submitted on March 9, 2017. Based on a review of the documentation, the avoidance and mitigation efforts described, and provided that project plans do not change, TPWD considers coordination to be complete. However, please note it is the responsibility of the project proponent to comply with all federal, state, and local laws that protect plants, fish, and wildlife.
According to §2.204(g) of the 2013 TxDOT-TPWD MOU, TxDOT agreed to provide TXNDD reporting forms for observations of tracked SGCN (which includes federal- and state-listed species) occurrences within TxDOT project areas. Please keep this mind when completing project due diligence tasks. For TXNDD submission guidelines, please visit the following link: http://tpwd.texas.gov/huntwild/wild/wildlife_diversity/txndd/submit.phtml

Thank you,

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

From: Sarah Wyckoff [mailto:Sarah.Wyckoff@txdot.gov]
Sent: Wednesday, May 03, 2017 9:31 AM
To: Sue Reilly <Sue.Reilly@tpwd.texas.gov>
Cc: Celeste Wyble (cwyble@eprusa.net) <cwyble@eprusa.net>; Courtney Filer (courtneyf@coxmclain.com) <courtneyf@coxmclain.com>; Larry Cox <Larry@coxmclain.com>
Subject: RE: Early Coordination Request

Sue,

Field investigation for the FM 518 project took place in September and November 2016, which is typically outside the flowering period for this species. However, this plant is typically associated with deep prairie depressions in saturated soils and would be expected to occur in wetlands or areas associated with seasonally wet areas. This species was not identified during the wetland delineation field survey effort, which did identify hydric vegetation at water crossings and wetland areas. It should be noted that field investigation only occurred in areas where right-of-entry were obtained; however, based on aerial imagery interpretation there appears to be limited suitable habitat (deep prairie depressions) that would not have been previously included in the wetland delineation report.

Thank you.

Sarah

From: Sue Reilly [mailto:Sue.Reilly@tpwd.texas.gov]
Sent: Thursday, March 30, 2017 10:15 PM
To: Celeste Wyble-c; Sarah Wyckoff
Subject: RE: Early Coordination Request

Hello,

Have you done any surveys for giant sharpstem umbrella-sage? Is the habitat extensive? I would like to request that if you have not done any surveys, that TxDOT do surveys for this plant and notify WHAB_TxDOT email address if any individuals of this species are found. Even if the plants are within the project footprint, we would like to document them in TxNDD and perhaps make an effort to salvage plant material. If they are not in the footprint, I would ask that TxDOT notify contractors to avoid the area where they are present and that the area be protected with orange construction fencing.

Thank you,

Sue

From: WHAB_TxDOT
Sent: Thursday, March 09, 2017 3:00 PM
To: Celeste Wyble-c; Sarah Wyckoff
Cc: Sue Reilly
Subject: RE: Early Coordination Request

The TPWD Wildlife Habitat Assessment Program has received your request and has assigned it project ID # 37717. The Habitat Assessment Biologist who will complete your project review is copied on this email.

Thank you,

John Ney
Administrative Assistant
Texas Parks & Wildlife Department
Wildlife Diversity Program – Habitat Assessment Program

4200 Smith School Road
Austin, TX 78744
Office: (512) 389-4571

From: Celeste Wyble-c [mailto:CWYBLE-C@txdot.gov]
Sent: Thursday, March 09, 2017 12:38 PM
To: WHAB_TxDOT <WHAB_TxDOT@tpwd.texas.gov>
Cc: Sarah Wyckoff <Sarah.Wyckoff@txdot.gov>
Subject: Early Coordination Request

Good Afternoon,

I would like to initiate Early Coordination for the following project.

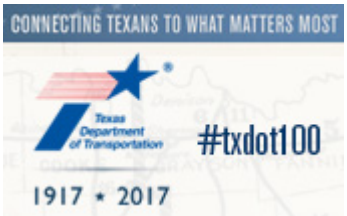
FM 518 (SH 288 to SH 35) in Brazoria County
CSJ: 0976-02-086

I have attached the TPWD Early Coordination Packet. In addition, this information is available in ECOS.

Please let me know if you have any questions or need any additional information.

Thank you,

Celeste



Appendix H – Summary of Alternatives Analysis

Summary of FM 518 Proposed Alternatives

Environmental Constraint	Unit	North Alternative	Middle Alternative	South Alternative	Preferred Alternative
Project Length	Miles	6.0	6.0	6.0	6.0
Estimated Construction Cost	$ million	50	50	50	55
Potential Wetlands/Waters of the U.S. Impacts[1]	acres	0.32	0.31	0.22	0.29
Stream Crossings	Number	5	5	5	5
Proposed ROW Acquisition	acres	25.5	24.8	25.9	24.5
Potential Hazardous Materials Impacts	Low/Medium/High	Low	Low	Low	Low
Potential Impacts to Archeological Resources	Low/Medium/High	Low	Low	Low	Low
Potential Impacts to Historical Resources	Low/Medium/High	Low	Low	Low	Low
Prime Farmlands Impacts	acres	N/A	N/A	N/A	N/A
Observed Vegetation Impacts	acres	39.4	41.7	43.3	45.8
Potential Protected Species Impacts	Low/Medium/High	Low	Low	Low	Low
Potential Residential Relocations/Displacements	Number	2	5	198	4
Potential Business Relocations/Displacements	Number	35	29	28	10
Potential Other Relocations/Displacements	Number	3	2	2	1
Changes in Community Cohesion[2]	Low/Medium/High	Low	Low	Medium	Low
Recreational Facility Impacts[3]	Number	1	1	None	1
Impacted Noise Receivers	Number	11	9	10	<pending>
Air Quality/MSAT	Low/Medium/High	Low	Low	Low	Low
Previous public involvement[4]	Number Preferring Alternative	7	0	6	

Source: Study Team, 2017

[1] Detailed design cannot determine potential impacts at this time. Assumed complete impact per alternative for comparative analysis.
[2] Changes to community cohesion would include bisecting, separating, or isolation of neighborhoods.
[3] Sam Jamison Middle School athletic field.
[4] The concept is determined by the public's preferences of alternative alignments as presented at one public meeting conducted in April 2015. Those who commented generally indicated that the right-of-way should be taken on either the north or south, and to avoid business impacts if at all possible.