PROGRAMMATIC CATEGORICAL EXCLUSION

FOR

U.S. 77

FROM 0.87 MILE SOUTH OF LA PARRA AVENUE TO 0.71 MILE NORTH OF LA PARRA AVENUE

CSJ 0327-02-050

KENEDY COUNTY, TEXAS

FEDERAL HIGHWAY ADMINISTRATION,
TEXAS DEPARTMENT OF TRANSPORTATION

JANUARY 2012

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1.0 PROPOSED ACTION

This programmatic categorical exclusion (PCE) document evaluates the social, economic and environmental impacts resulting from proposed improvements to U.S. 77 from 0.87 mile south of La Parra Avenue to 0.71 mile north of La Parra Avenue in Kenedy County, Texas. **Exhibit 1** shows the limits of the proposed project and the project location in relation to Kenedy County and the community of Sarita. The proposed project is being developed by the Texas Department of Transportation (TxDOT) - Pharr District, in order to provide a grade-separated overpass, improve mobility and enhance safety. The total project length is approximately 1.58 miles.

This project is covered under Control Section Job (CSJ) number 0327-02-050. As of October 26, 2011, the total estimated cost of the proposed project is $11,319,740, with an estimated construction cost of $9,050,000. Funding for this project is from Proposition 12 (100 percent state) and Category 11 funds (80 percent federal/20 percent state). The project was placed in the 2010–2014 Statewide Transportation Improvement Program (STIP) as a group number. The project number is 5000-00-950 in the November 2011 revision, which was approved by FHWA on December 23, 2011. This project has an anticipated letting date of August 2012 and an anticipated completion date of November 2013.

1.1 Existing Facility

Within the proposed project limits, U.S. 77 is a four-lane divided highway separated by an approximately 194-foot wide center grassy median. The northbound lanes consist of two 12-foot wide lanes with a 4-foot wide inside shoulder and 8-foot wide outside shoulder. The southbound lanes consist of two 12-foot wide lanes with a 4-foot wide inside shoulder and 10-foot wide outside shoulder. One local roadway, La Parra Avenue, crosses the facility at-grade. La Parra Avenue consists of two 12-foot wide lanes (one in each direction), with no shoulders. Another local roadway, Cuellar Avenue intersects U.S. 77 and terminates at the northbound lanes. In addition, there are three driveway connections to the northbound lanes. There is no controlled access onto U.S. 77 for either local roadway or the driveways. Within the project limits the existing right-of-way is 300–460 feet wide. A typical section of the existing roadway is shown on **Exhibit 2**. Photographs of the project area can be seen in **Appendix B**.

Drainage within the project limits is conveyed through open ditches. Cross drainage along the roadway occurs primarily 0.45 mile south of La Parra Avenue through a series of reinforced concrete pipe and box culvert structures. Six smaller cross drainage culverts also occur at various locations within the project limits.

Traffic for U.S. 77 within the project limits was provided by TxDOT Transportation Programming and Planning Division. Average daily traffic within the project limits for the year 2011 is 10,800 vehicles per day and the posted speed limit is 65 miles per hour.

1.2 Proposed Facility

The proposed project would construct an overpass along U.S. 77 at La Parra Avenue, converting the current at-grade intersection to a grade-separated intersection, with U.S. 77 crossing over La Parra Avenue. U.S. 77 would also be upgraded to national interstate highway design standards. Within the project limits, U.S. 77 would be a controlled access freeway consisting of mainlanes with two 12-foot wide lanes in each direction with 10-foot wide outside shoulders and 4-foot wide inside shoulders. Continuous frontage roads would occur within the project limits and would consist of two 12-foot wide lanes with 10-foot wide outside shoulders and 4-foot wide inside shoulders in both the southbound and northbound direction. La Parra Avenue would also be improved within the U.S. 77 right-of-way, to include two 14-foot wide travel lanes (one in each direction), with 8-foot wide outside shoulders. The Cuellar Avenue crossing of U.S. 77 would be removed.

To accomplish these improvements, the existing southbound lanes would become the southbound frontage road (with pavement overlays); the proposed northbound frontage road would be constructed east of the current northbound lanes; and the proposed mainlanes would be constructed in the current center grassy median. Additionally, a northbound entrance ramp would be constructed south of the La Parra Avenue overpass and a southbound entrance ramp would be constructed north of the La Parra Avenue overpass. Exit ramps would be constructed at the north and south project termini, merging the new mainlanes with the existing travel lanes north and south of the project area. All construction would be contained within existing right-of-way; no additional right-of-way would be acquired. Existing drainage would be maintained in the proposed design. A typical section of the proposed roadway is shown on **Exhibit 2** and a plan view of the proposed improvements is shown on **Exhibit 3**.

The projected 2031 average daily traffic within the project limits is 15,200 vehicles per day. The design speed for the proposed facility would be 70 miles per hour on the mainlanes, 50 miles per hour on the ramps, and 45 miles per hour on the frontage roads.

1.3 Need and Purpose

As evidenced below, there is a need to enhance safety and mobility, while minimizing the potential for accidents within the project area.

U.S. 77 serves as a critical link in the regional and state transportation network. U.S. 77 is a major arterial serving local trips to and from work, school, shopping, etc.; it serves as a principal route for vacation traffic headed to or from beaches and other tourist destinations in the Lower Rio Grande Valley; it serves as a designated hurricane evacuation route; and it serves as a major thoroughfare for heavy cargo trucks traveling within the region and between Mexico and the United States.

Currently, there are two at-grade intersections within the project limits: La Parra Avenue, with signalization (flashing yellow light) and Cuellar Avenue, without signalization. La Parra Avenue and Cuellar Avenue provide access to the community of Sarita, including Sarita Elementary

School. Sarita Elementary School is the only school in the area, with students being bused in from surrounding ranches. School traffic must travel through at-grade intersections without the benefit of traffic signals. Additionally, school and other local traffic is required to mingle with through traffic without the use of dedicated entrance/exit ramps. This situation results in slower traffic speeds along U.S. 77, reduced overall mobility and an increased potential for conflicts between through and local (including school) traffic. The safety and mobility concerns are further complicated by the presence of heavy trucks on the facility. Heavy trucks have relatively slow acceleration/deceleration times and require greater stopping distances, which exacerbates safety and mobility concerns within the project limits.

The purpose of the proposed project is to enhance safety and mobility by effectively addressing the needs described above. This will be accomplished by constructing continuous, controlled-access mainlanes, continuous frontage roads, entrance/exit ramps, and a grade-separated interchange at La Parra Avenue; thus, separating through traffic from local traffic in the project area. Traffic entering U.S. 77 via Cuellar Avenue and driveways would merge with local traffic on the frontage roads at lower speeds, rather than merging directly with through traffic at 70 miles per hour.

1.4 Bicycle and Pedestrian Accommodations

Consideration was given to incorporation of bicycle and pedestrian facilities into the proposed project design. The project area is located in a predominantly rural setting. Sarita Elementary School, the only major destination point in the project area, is located west of the project area, along with all residences within the community of Sarita. There are currently no existing developments to the east of the project area. Additionally, land use in the area is stable; there are no signs of planned developments or impending construction east of the project area. Therefore, the majority of pedestrian and bicycle activity would be limited to the west of U.S. 77 (within the community of Sarita) and would not need to cross or travel along the facility, as indicated by the lack of foot/bicycle paths in the project area. The lack of development on the east side of U.S. 77 limits current demand for bicycle and pedestrian accommodations on the proposed facility. For these reasons it was determined that construction of bicycle and pedestrian facilities would unnecessarily increase project cost while resulting in limited benefit.

1.5 Logical Termini and Independent Utility

The limits of the proposed project correspond to the distance necessary to address safety and mobility concerns associated with the existing U.S. 77/La Parra Avenue intersection; specifically, the space needed to construct an overpass and merge the proposed facility with the existing facility north and south of the project area.

The project would have independent utility; mainlanes would merge with the roadway at the north and south project termini to match the existing U.S. 77 typical section. Additionally, the project roadway would not require implementation of other projects to operate.

1.6 Description of the Alternatives

A Build Alternative and a No Build Alternative were considered for the proposed project.

1.6.1 No Build Alternative

The No Build Alternative would leave the existing U.S. 77 in its current condition, and no funds or energy would be expended for planning and construction. The allocated funds for this project could therefore be used for other projects. The No Build Alternative would not improve mobility or enhance safety along the roadway because the proposed improvements would not be realized. The No Build Alternative would not satisfy the need and purpose of the proposed project; therefore, the No Build Alternative is not the preferred alternative.

1.6.2 Build Alternative

The Build Alternative would serve to upgrade existing U.S. 77 within the project limits to current interstate design standards. The Build Alternative would incorporate all of the design components, including: continuous controlled access mainlanes (two in each direction), continuous frontage roads (two in each direction), a grade-separated interchange at La Parra Avenue, and entrance/exit ramps. No additional right-of-way would be required. The Build Alternative would satisfy the need and purpose of the proposed project by improving mobility and enhancing safety for through and local traffic in the project area; therefore, the Build Alternative is the preferred alternative.

1.7 Right-of-Way

The proposed project would be constructed within the existing 300–460-foot right-of-way; no additional right-of-way or easements would be required.

2.0 SURROUNDING AREA

2.1 Land Use

The proposed project is located in north-central Kenedy County, Texas. There are no incorporated cities or towns in Kenedy County, which has the 4th smallest population of any U.S. county. Accordingly, less than 0.01 percent (approximately 170 acres) of the County is in semi-urban use, occurring entirely within the Sarita Census Designated Place[1] (CDP), the Kenedy County seat of government. Sarita is located within the project limits, adjacent to the west right-of-way.

According to the 2007 Agricultural census, approximately 909,048 acres, or 85.5 percent, of Kenedy County is used for farmland, rangeland or pastureland (USDA 2007). Cattle ranching is the primary agricultural activity in Kenedy County, with 53,322 cattle among 25 ranches.

[1]CDPs are closely settled, named, unincorporated communities that generally contain a mixture of residential, commercial, and retail areas similar to those found in incorporated places of similar sizes. (Census Bureau). http://www.census.gov/geo/www/psapage.html#CDP

Additionally, there are 2,797 acres of cropland and 407 acres of irrigated land. The remainder of Kenedy County consists of primarily water features, most notably the Laguna Madre and associated estuarine wetland areas, and other undeveloped areas.

The proposed project is located in a predominantly rural setting. Except in Sarita, land use adjacent to the project right-of-way is exclusively rangeland. In Sarita, land use adjacent to the right-of-way consists of Sarita Elementary School and an adjacent residential neighborhood. The Union Pacific Railroad parallels U.S. 77 approximately 0.2 mile west of the project.

2.2 Natural Setting

The proposed project is located in south Texas, in the Nueces-Rio Grande River basin and the Coastal Sand Plain Ecological Region, which is characterized by flat-to-rolling dune topography. Vegetation largely consists of tallgrass prairie and mesquite savannah converted to cattle rangeland, with areas of dense live oak woodland. Project area elevation averages approximately 30 feet above mean sea level. Geographic Information Systems analysis reveals natural depressional freshwater wetlands, called sand sheet wetlands, located within or immediately adjacent to the project area. These wetlands are associated with the dune topography; there are more than 14,000 of these wetlands countywide, averaging approximately 2.5 acres in size (USFWS 2009).

3.0 SPECIFIC AREAS OF ENVIRONMENTAL CONCERN

3.1 Socioeconomics

This section discusses the social and economic conditions within the project area and the potential impacts of the proposed project on socioeconomic resources, focusing on community impacts, environmental justice, and limited English proficiency populations. All improvements would be constructed within the existing right-of-way. No land would be converted to transportation use and no displacements would occur as a result of the proposed project. For purposes of this analysis, the socioeconomic study area has been defined as the census blocks immediately adjacent to the existing right-of-way, as well as those blocks containing the population of Sarita, as shown on **Exhibit 4**. Socioeconomic information was collected from *Census 2000* and *Census 2010* (U.S. Census Bureau 2000, 2010). *Census 2010* data was used when available and *Census 2000* data was used when 2010 data was not yet available.

3.1.1 Community Impacts

Neighborhood Population Characteristics

The proposed project is located in the Sarita CDP and otherwise unincorporated areas of Kenedy County. Between 2000 and January 1, 2010, the population of Kenedy County increased by 0.5 percent; 2000 population data for Sarita CDP is unavailable (see **Table 1**).

Table 1: Population Estimates

Area	2000 Population	2010 Population (January 1, 2010)	Percent Change (2000–2010)
Kenedy County	414	416	0.5%
Sarita CDP	Not available	238	Not applicable

Source: U.S. Census 2000, Summary File 1, Table P001; U.S. Census 2010, Summary File 1, Table QT-P10.

Table 2 shows the racial and ethnic composition of Kenedy County, Sarita CDP, and the socioeconomic study area. There are 25 census blocks in the study area; however, only five of these census blocks are populated.

Table 2: 2010 Race and Ethnicity

Area/ Census Tract, Block Group, Block	Total Population*	Population of One Race, White Alone	Minority Population of One Race / Not Hispanic or Latino				Two or More Races/ Not Hispanic or Latino	Hispanic or Latino of Any Race	Total Minority Population/ Percent
			Black or African American	American Indian and Alaska Native	Asian American	Pacific Islander/ Other			
Kenedy County	416	86	1	6	1	2	1	319	330 79.3%
Sarita CDP	238	40	1	6	0	2	1	188	198 83.2%
Study Area									
Census Tract 9501, Block Group 1	43	9	0	0	0	3	0	31	**34 79.1%**
Block 1144	1	1	0	0	0	0	0	0	0 0%
Block 1147	4	1	0	0	0	0	0	3	3 75%
Block 1148	19	3	0	0	0	0	0	16	16 84.2%
Block 1151	2	0	0	0	0	0	0	2	2 100%
Block 1153	14	4	0	0	0	0	0	10	10 71.4%

Source: U.S. Census 2010, Summary File 1, Tables P8, P9.
*Population for whom ethnicity has been determined. The following census blocks within the study area are unpopulated and have been omitted from the table: CT 9501, BG1, Blocks 1074, 1075, 1076, 1077, 1078, 1102, 1103, 1104, 1105, 1141, 1142, 1143, 1145, 1146, 1149, 1150, 1152, 1154, 1155, 1156.

Table 3 shows the median household income of Kenedy County, the Sarita Census County Subdivision[2] (CCD), and the study area census block group.

Table 3: Median Household Income in 1999

Area/Census Tract & Block Group	Total Households	Median Household Income
*Kenedy County/ Census Tract 9501, Block Group 1	138	$25,000
**Sarita CCD	138	$25,000

*Census Tract 9501, Block Group 1 encompasses all of Kenedy County. Source: U.S. Census 2000, Summary File 3, Table DP-3
**Kenedy County and Sarita CCD data are identical. Source: U.S. Census 2000, Summary File 3, Table DP-3

Right-of-Way Acquisition and Displacements

All improvements would be constructed within the existing right-of-way. No land would be converted to transportation use and no displacements would occur as a result of the proposed project.

Community Cohesion, Mobility, and Access

Community cohesion is a term that refers to an aggregate quality of life in a residential area. Cohesion is a social attribute that indicates a sense of community, common responsibility and social interaction within a limited geographical area. It is the degree to which residents have a sense of belonging to their neighborhood or community or a strong attachment to neighbors, groups and institutions as a continual association over time.

No easements or right-of-way would be required for the proposed project. No residences, businesses, parks, schools, church or cemeteries would be displaced. In addition, the proposed project would not bisect an established neighborhood or subdivision or isolate any residential neighborhood. Therefore, community cohesion would not be affected by the proposed project. Additionally, the proposed project would improve mobility and access to public facilities (most notably Sarita Elementary School) and services in the area, including fire protection and other emergency services, due to the upgraded design and safety features of the proposed roadway. Travel patterns in the project area would be altered at the crossing of U.S. 77 with Cuellar Avenue and La Parra Avenue. Currently, traffic along Cuellar Avenue is capable of crossing the U.S. 77 facility. The controlled-access mainlanes being proposed as part of this project would restrict traffic from crossing U.S. 77 at this crossing. Instead, traffic would be required to cross the U.S. 77 facility at the designated grade-separated crossing (La Parra Avenue), in accordance with national interstate highway design standards. The existing La Parra Avenue crossing would be improved from at-grade to grade separated, facilitating ease of crossing and enhancing crossing safety.

[2]Sarita CDP data are unavailable for median household income; therefore, CCD data are presented. CCDs are geographic statistical subdivisions of counties established cooperatively by the Census Bureau and officials of state and local governments in states where minor civil divisions (MCDs) either do not exist or are unsatisfactory for census purposes (Census Bureau). http://www.census.gov/geo/www/psapage.html#CCD.

3.1.2 Environmental Justice

Executive Order 12898 "Federal Action to Address Environmental Justice in Minority Populations and Low-Income Populations" requires each federal agency to "make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies and activities on minority populations and low-income populations." FHWA has identified three fundamental principles of environmental justice:

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

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

1) Are predominantly borne by a minority population and/or a low-income population; or
2) Will be suffered by the minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that would be suffered by the non-minority population and/or non-low-income population.

FHWA Order 6640.23 applies the following definitions for minority and low-income populations, which are consistent with the definitions for Executive Order 12898 that have been issued by the federal Council on Environmental Quality and Environmental Protection Agency.

Minority means a person who is:

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

Minority Population means any readily identifiable group of minority persons who live in geographic proximity and, if circumstances warrant, geographically dispersed/transient persons (such as migrant workers or Native Americans) who will be similarly affected by a proposed FHWA program, policy or activity. Minority populations were identified based on the federal

Council on Environmental Quality's guidance document *Environmental Justice: Guidance Under the National Environmental Policy Act* (Council on Environmental Quality 1997). Based on this guidance,

> "Minority populations should be identified where either: (a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis…"

Low-Income means a household income at or below the U.S. Department of Health and Human Services poverty guidelines (i.e., $22,350 in 2011).

Low-Income Population means any readily identifiable group of low-income persons who live in geographic proximity and, if circumstances warrant, geographically dispersed/transient persons (such as migrant workers or Native Americans) who would be similarly affected by a proposed FHWA program, policy or activity.

Unlike the Council on Environmental Quality guidance on minority populations, no environmental justice order or guidance document contains a quantitative definition of how many low-income individuals constitute a low-income population. In the absence of guidance for this analysis, one of the measures used to identify low-income populations was the average median household income for the inclusive census tracts and/or census block groups. As described above, FHWA defines low-income as "a person whose household income level is at or below the U.S. Department of Health and Human Services poverty guidelines." In 2011, the U.S. Department of Health and Human Services poverty guidelines for a family of four persons was $22,350.

The potential effects of the proposed action have been evaluated in accordance with the requirements of Executive Order 12898 and "TxDOT Interim Guidance for Project Level Environmental Justice Analysis". The *Census 2000* and *Census 2010* data at the lowest scale available was used for the analysis.

Minority and Income Characteristics

As shown in **Table 2**, racial and ethnic minority groups account for the majority (exceeds 50 percent) of the population in four of the five populated census blocks; therefore, the project area contains environmental justice populations based on the minority criteria defined in FHWA Order 6640.23. As shown in **Table 3**, the sole block group (Tract 9501, Block Group 1) had a higher median household income in 1999 than the U.S. Department of Health and Human Services 2011 poverty level ($22,350); therefore, environmental justice populations do not occur in the study area based on the income (poverty level) criteria.

Environmental Justice Impacts

The study area contains environmental justice populations based on the minority population criteria. The No Build Alternative would impact environmental justice populations by not

providing enhanced safety and mobility in the project area. The Build Alternative would not adversely affect, separate or isolate minority or low-income neighborhoods or populations as it entails improvements within existing right-of-way and no relocations or displacements would be required. The environmental justice populations would realize the enhanced safety and mobility benefits of the proposed project. For these reasons, it has been determined that the proposed U.S. 77 project would not disproportionately or adversely affect environmental justice populations; therefore, the requirements of Executive Order 12898 appear to be satisfied.

Limited English Proficiency

Executive Order 13166 "Improving Access to Services for Persons with Limited English Proficiency" requires agencies to examine the services they provide, identify any need for services to those with limited English proficiency, and develop and implement a system to provide those services so that limited English proficiency persons can have meaningful access to them.

An analysis was conducted to identify residents in the study area that may have limited English proficiency, since these residents may not understand outreach materials. This analysis was conducted at the census block group level. The results are presented in **Table 4**.

Table 4: Population of Limited English Proficiency in 1999

Area/ Census Tract, Block Group	Total Population 5 Years and Older	Total Number who Speak English Less Than "Very Well" or "Not at All"	Limited English Proficiency
*Kenedy County/ Census Tract 9501, Block Group 1	378	138	36.5%
**Sarita CCD	378	138	36.5%

*Census Tract 9501, Block Group 1 encompasses all Kenedy County.
**Kenedy County and Sarita CCD data are identical. Source: U.S. Census 2010, Summary File 3, Table QT-P17

Limited English proficiency persons were identified within the study area block group. As noted in **Table 4**, 36.5 percent of residents within the study area block group have limited English proficiency. According to *Census 2000* data, of the residents who speak English "Not Well" or "Not at All" located in the project area, the predominant language spoken is Spanish. However, field reconnaissance indicated that English was the only language used for posted information in the project area.

Compliance with Executive Order 13166 would be ensured. A meeting with the Sarita Independent School District Board occurred on December 14, 2011 to explain this project and hear their concerns. Additionally, notices have been published in both English and Spanish in a local newspaper for the U.S. 77 Corridor Study Public Hearing to be held February 6, 2012. The notices were advertised in both English and Spanish and translators will be available. Steps would continue to be taken to ensure that any information on the proposed project is available for those persons with limited English proficiency and that they have meaningful access to the project development process.

Land Use Changes

The socioeconomic study area comprises approximately 11,000 acres of land. Of the 11,000 acres, approximately 3 acres are commercial, 4 acres are educational/institutional, 80 acres are residential, 90 acres are transportation, and the remaining 10,823 acres are undeveloped. The proposed project would be constructed within existing right-of-way where land use is currently for transportation purposes; therefore, there would not be any direct land use changes within the socioeconomic study area as a result of the proposed project.

3.2 Section 4(f) Resources

Section 4(f) of the U.S. Department of Transportation Act of 1966 (49 USC 303) requires documentation when right-of-way will be taken from publicly owned parks, recreation areas, wildlife or waterfowl refuges, publicly or privately owned historic properties and archeological sites that merit preservation in place. For federally-funded projects, the Section 4(f) documentation must demonstrate that there is no prudent or feasible alternative to the proposed action and that the project includes all possible planning to minimize harm to the resource. If a determination is made that there is no feasible or prudent alternative to the use of land from the property and the action includes all possible planning to minimize harm to the property resulting from such use, then the use may be approved.

Use occurs when land from a Section 4(f) property is acquired for a transportation project and (1) there is an occupancy of land that is adverse in terms of the statute's preservationist purposes; or (2) the proximity of impacts of the transportation project on the Section 4(f) property, without acquisition of land, are so great that the purposes for which the Section 4(f) property exists are substantially impaired (this is referred to as "constructive use").

The proposed roadway improvements would occur within existing right-of-way; no additional right-of-way would be acquired and no publicly owned parkland, wildlife or waterfowl refuges, recreational areas or known historic sites would be impacted. The Sarita Elementary School playground occurs immediately adjacent to the existing right-of-way. School playgrounds may qualify as Section 4(f) resources in some circumstances. However, no right-of-way would be acquired from the playground and there would be no constructive use of the playground as a result of the proposed project; therefore, no impacts to this property would occur. In summary, there would be no impacts to Section 4(f) resources. In addition, the proposed project would not impact any areas of unique scenic beauty or other lands of national, state or local importance.

3.3 Cultural Resources

Cultural resources are structures, buildings, archeological sites, districts (a collection of related structures, buildings, and/or archeological sites), cemeteries and objects. Both federal and state laws require consideration of cultural resources during project planning. At the federal level, the National Environmental Policy Act (NEPA) and the National Historic Preservation Act of 1966, among others, apply to transportation projects such as this one. In addition, state laws such as the Antiquities Code of Texas apply to these projects. Compliance with these laws often requires

consultation with the Texas Historical Commission/Texas State Historic Preservation Officer and/or federally-recognized tribes to determine the project's effects on cultural resources. Review and coordination of this project followed approved procedures for compliance with federal and state laws.

3.3.1 Historic Resources

A review of the National Register of Historic Places, the list of State Archeological Landmarks, and the list of Recorded Texas Historic Landmarks indicated that no historically significant resources have been previously documented within the area of potential effects. It has been determined through consultation with the State Historic Preservation Officer and application of professional judgment that the area of potential effects for the proposed project is the existing right-of-way. The right-of-way is a maximum of 460 feet wide at the highest point of the overpass and a minimum of 300 feet where the grade separation begins and ends, allowing ample distance for the assessment of any visual effects the project may have on nearby historic resources. A site visit and desktop research were conducted by qualified personnel to reveal that there are no historic resources (built prior to 1967) located within the area of potential effects. Additionally, no Official Texas Historical Markers are located within the project area of potential effects.

Pursuant to Stipulation V, Appendix 3 "Undertakings with No Potential to Cause Effects" of the First Amended Programmatic Agreement, regarding the Implementation of Transportation Undertakings between the FHWA, the State Historic Preservation Officer, the Advisory Council on Historic Preservation, TxDOT and the Memorandum of Understanding, TxDOT has determined that no historic properties are present within the proposed project's area of potential effects and individual project coordination with the State Historic Preservation Officer is not required (see **Appendix C – Agency Coordination**).

3.3.2 Archeological Resources

Existing agreements for compliance with applicable cultural resource laws define this project as a type that has no potential to adversely affect archeological resources. No consultation with the Texas Historical Commission/Texas State Historic Preservation Officer or other groups was required (see **Appendix C – Agency Coordination**).

3.4 Biological Resources

3.4.1 Vegetation

Texas Parks and Wildlife Department's *The Vegetation Types of Texas* identifies the vegetation type in the vicinity of the proposed project as Mesquite-Granjeno Parks (McMahan et al. 1984). Vegetation in the project area is generally consistent with that of Mesquite-Granjeno Parks, as mapped by the Texas Parks and Wildlife Department. However, five distinct vegetation communities were identified within the existing right-of-way during the November 2011 site visit.

The majority of the existing right-of-way is maintained vegetation, consisting of bermudagrass (*Cynodon dactylon*), King Ranch bluestem (*Bothriochloa ischaemum* var. *songarica*) and scattered mesquite trees (*Prosopis glandulosa*). Two wetland vegetation communities were identified in the right-of-way (see **Exhibit 5**). Wetland 1 (0.45 mile south of La Parra Avenue) consists of smartweed (*Polygonum persicaria*) and cattail (*Typha latifolia*) with a dense false willow (*Baccharis neglecta*) fringe. Wetland 2 (0.10 mile south of La Parra Avenue) consists exclusively of blunt spikerush (*Eleocharis obtusa*). A fencerow vegetation community occurs along the west right-of-way near the northern project terminus and consists of mesquite and hackberry (*Celtis laevigata*), with a false willow midstory. A portion of unmaintained vegetation (Mesquite Parks) occurs at the southern project terminus. This vegetation community consists of scattered mesquite within a denser midstory of yaupon (*Ilex vomitoria*) and false willow, and understory of tanglehead (*Heteropogon contortus*) and wolfberry (*Lycium berlandieri*). This vegetation community is generally consistent with the Mesquite-Granjeno Parks identified by the Texas Parks and Wildlife Department, with the exception of the midstory component. **Table 5** provides the amount of impacts to each vegetation community within the existing right-of-way as a result of the proposed project.

Table 5: Vegetation and Impacts

Vegetation	Dominant Species	Woody Vegetation Structure			Total Vegetation Impact[1] (acres)
		Height Range (feet)	*dbh Range (inches)	Canopy Cover (percent)	
Wetland 1	False willow (*Baccharis neglecta*)	10–15	2–6	5	1.13 (0.1 acre woody vegetation)
	Smartweed (*Polygonum persicaria*)	*Not applicable*			
	Cattail (*Typha latifolia*)				
Wetland 2	Blunt spikerush (*Eleocharis obtusa*)	*Not applicable*			0.10
Fencerow Vegetation	Mesquite (*Prosopis glandulosa*)	10–15	6–12	25	0.0[2]
	Hackberry (*Celtis laevigata*)	10–15	6–12	25	
	False willow	10–15	2–6	5	
Mesquite Parks	Mesquite	15–25	6–12	15	4.0 (1.0 acre woody vegetation)
	Yaupon (*Ilex vomitoria*)	5-12	2-6	5	
	False willow	10-15	2-6	5	
	Tanglehead (*Heteropogon contortus*)	*Not applicable*			
	Wolfberry (*Lycium berlandieri*)				
Maintained Right-of-Way	Mesquite	15–25	6–12	2	68.9 (1.4 acre woody vegetation)
	Bermudagrass *(Cynodon dactylon*)	*Not applicable*			
	King Ranch bluestem *(Bothriochloa ischaemum* var. *songarica*)				

[1]Except for maintained right-of-way, assumes 100 percent impacts to median vegetation within limits of proposed new pavement. Actual impacts may be less.
[2]Fence line vegetation occurs on the edge of the existing right-of-way. No impacts are anticipated as a result of the proposed project.
*dbh – diameter at breast height

Rare Vegetation Communities

In accordance with Provision (4)(A)(ii) of the Memorandum of Understanding between TxDOT and Texas Parks and Wildlife Department, and at the TxDOT - Pharr District's discretion, habitats given consideration for non-regulatory mitigation during project planning include the following:

1. habitat for federal candidate species (impacted by the project) if mitigation would assist in the preservation of the listing of the species;
2. rare vegetation series (S1, S2 or S3) that also locally provide habitat for a state listed species;
3. all vegetation communities listed as S1 or S2, regardless of whether or not the series in question provide habitat for state listed species;
4. bottomland hardwoods, native prairies and riparian sites; and
5. any other habitat feature considered locally important that the TxDOT District chooses to consider.

The project right-of-way does not contain habitat for any federal candidate species, and does not contain rare vegetation series, bottomland hardwoods, native prairies, riparian sites or any other locally important habitat feature.

Unusual vegetation features in the project right-of-way include the two wetland vegetation communities south of La Parra Avenue, the fencerow vegetation along the west right-of-way near the northern project terminus, and the unmaintained vegetation (Mesquite Parks) at the southern project terminus. Approximately 1.0 acre of unavoidable, permanent impacts and 0.23 acre of temporary impacts to the vegetation within the wetlands would occur as a result of the proposed project, as detailed in **Section 3.6.1**. Approximately 4.0 acres of unavoidable, permanent impacts to the unmaintained vegetation at the southern project terminus would occur as a result of the proposed project. No temporary impacts would occur at this location. Additionally, no temporary or permanent impacts to the fencerow vegetation would occur as a result of the proposed project.

No special habitat features occur within the proposed project limits.

Flora and fauna removal as a result of the proposed project would be limited to the minimum necessary to maintain the safety clear zone and provide construction access. Wherever feasible, trees would be trimmed and not removed. Additionally, the contractor would limit impacts to the project area wetlands during construction, to the maximum extent practicable. Any wetland areas within the right-of-way but not directly impacted by the project would be fenced with high visibility, temporary fencing during construction to prevent incidental impacts from construction access.

3.4.2 Beneficial Landscaping Practices and Invasive Species

In accordance with the Executive Memorandum of August 10, 1995, all agencies shall comply with the 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 comply with the Executive Memorandum and the guidelines for environmentally and economically beneficial landscape practices.

In accordance with Executive Order 13112 on Invasive Species and the Executive Memorandum on Beneficial Landscaping, landscaping would be limited to seeding and replanting the right-of-way with native species of plants, where possible. A mix of native and locally adapted grasses and forbs would be used to revegetate the right-of-way, to the maximum extent feasible.

3.4.3 Wildlife

Kenedy County is located in the subtropical Tamaulipan biotic province (Blair 1950), which is characterized by a dense growth of shrubs and small trees. Common species found in Kenedy County include coyote (*Canis latrans*), black-tailed jackrabbit (*Lepus californicus*), nine-banded armadillo (*Dasypus novemcinctus*), striped skunk (*Mephitis mephitis*), Virginia opossum (*Didelphis virginiana*), hispid pocket mouse (*Chaetodipus hispidus*), Harris' Hawk (*Parabuteo unicinctus*), Crested Caracara (*Caracara plancus*), American Kestrel (*Falco sparverius*), Mourning Dove (*Zenaida macroura*), White-winged Dove (*Zenaida asiatica*), Great-tailed Grackle (*Quiscalus mexicanus*) and Bewick's Wren (*Thryomanes bewickii*).

Potential impacts to wildlife resulting from the proposed project can be attributed to the interaction/avoidance of wildlife with construction machinery and the loss of wildlife habitat (see **Table 5**). Wildlife inhabiting the areas of proposed construction would be required to relocate to adjacent habitats in order to survive. Heavy machinery and other construction equipment may induce mortality of wildlife species that are slow moving, fossorial (adapted to burrowing and life underground), or those species that seek cover in debris and fallen vegetation. These include species of amphibians, gophers, lizards and snakes.

Construction noise and activity associated with the proposed project could also stress adjacent wildlife or cause adjacent wildlife populations to seek refuge further away from the edge of the project area. Overall, it is anticipated that the proposed project may impact a small amount of wildlife; however, no substantial long-term impacts to wildlife populations, diversity or composition are expected to occur because the proposed project would involve reconstruction of an existing roadway within existing right-of-way.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act of 1918 states it is unlawful to kill, capture, collect, possess, buy, sell, trade or transport any migratory bird, nest or egg in part or in whole, without a federal permit issued in accordance with the Act's policies and regulations. A nest survey was conducted in the project right-of-way in November 2011. No active nests were observed at the time of the site survey, and no evidence of migratory bird nesting (such as abandoned or inactive nests) was observed within the project limits, including existing culverts.

Habitat for migratory birds may exist in the project area; however, any streams, water bodies, woody vegetation, or other habitat impacted by the project serving as temporary or seasonal stop-over habitat for migratory birds are adjacent to similar features not impacted by the project that would serve the same function. At the landscape level, impacts to stop-over habitat from the project would be negligible. As a result, migration patterns would not be affected by the proposed project. Prior to construction a qualified biologist will conduct a nest survey. In the event that migratory birds are encountered on-site before or during project construction, every effort would be made to avoid adverse impacts to protected birds, active nests, eggs and/or young.

Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act of 1958 requires that federal agencies obtain comments from the U.S. Fish and Wildlife Service and Texas Parks and Wildlife Department regarding affects to wildlife as a result of water body modifications. Coordination with these agencies would be required if a project requires a U.S. Army Corps of Engineers Section 404 Individual Permit. The proposed project would not require an Individual Permit; therefore, coordination under the Fish and Wildlife Coordination Act is not required.

3.4.4 Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act, as amended on October 11, 1996, directs that all federal agencies, whose actions would impact essential fish habitat, must consult with the National Oceanic and Atmospheric Administration Fisheries Service regarding potential adverse effects. The project area does not contain any water bodies that are tidally influenced. Therefore, this project would not affect any essential fish habitat or require coordination with National Oceanic and Atmospheric Administration Fisheries Service.

3.4.5 Threatened and Endangered Species

The Endangered Species Act of 1973, as amended (16 U.S. Code 1531–1544), ensures that any actions authorized, funded or carried out by federal agencies do not jeopardize the continued existence of any listed endangered or threatened species or adversely modify or destroy critical habitat of such species. An "endangered" species is defined as one that is in danger of extinction throughout all or a significant portion of its range. A "threatened" species is defined as one that is likely to become endangered in the foreseeable future.

A state and federal listing of rare, threatened and endangered species for Kenedy County can be found in **Table 6**.

Table 6: Rare, Threatened and Endangered Species of Kenedy County, Texas

Common Name	Scientific Name	TPWD Status	USFWS Status	Habitat Description	Habitat Present	Impact/Effect Determination
AMPHIBIANS						
Black-spotted newt	*Notophthalmus meridionalis*	T	*	Wet or sometimes wet areas, such as arroyos, canals, ditches, or even shallow depressions; Gulf Coastal Plain south of the San Antonio River	Yes	May Impact
Mexican treefrog	*Smilisca baudinii*	T	*	Subtropical region of extreme southern Texas	No	No Impact
Sheep frog	*Hypopachus variolosus*	T	*	Predominantly grassland and savanna; moist sites in arid areas	Yes	May Impact
South Texas siren (large form)	*Siren sp 1*	T	*	Wet or sometimes wet areas, such as arroyos, canals, ditches, or even shallow depressions; southern Texas south of Balcones Escarpment	Yes	May Impact
BIRDS						
American Peregrine Falcon	*Falco peregrinus anatum*	T	*	Nests in tall cliff eyries; winters along coast and farther south; occupies wide range of habitats during migration, including urban, concentrations along coast and barrier islands; low-altitude migrant, stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands.	No	No Impact
Arctic Peregrine Falcon	*Falco peregrinus tundrius*	SOC	*	Occupies wide range of habitats during migration, including urban, concentrations along coast and barrier islands; low-altitude migrant, stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands.	No	No Impact
Audubon's Oriole	*Icterus graduacauda audubonii*	SOC	*	Scrub, mesquite; nests in dense trees, or thickets, usually along water courses	No	No Impact
Brown Pelican	*Pelecanus occidentalis*	E	DM	Largely coastal and near shore areas, where it roosts and nests on islands and spoil banks	No	No Effect
Cactus Ferruginous Pygmy-Owl	*Glaucidium brasilianum cactorum*	T	*	Riparian trees, brush, palm, and mesquite thickets; during day also roosts in small caves and recesses on slopes of low hills	No	No Impact
Eskimo Curlew	*Numenius borealis*	E	*	Grasslands, pastures, plowed fields, and less frequently, marshes and mudflats; thought to be extinct	No	No Impact
Mountain Plover	*Charadrius montanus*	SOC	PT	Breeding: nests on high plains or shortgrass prairie, on ground in shallow depression; nonbreeding: shortgrass plains and bare, dirt (plowed) fields	No	No Effect
Northern Aplomado Falcon	*Falco femoralis septentrionalis*	E	E	Open terrain with scattered trees or shrubs. In Mexico, they inhabit palm and oak savannas, open tropical deciduous woodlands, seasonally flooded coastal savannas and marshlands, desert grasslands, and upland pine parklands.	Yes	No Effect
Northern Beardless-Tyrannulet	*Camptostoma imberbe*	T	*	Mesquite woodlands; near Rio Grande frequents cottonwood, willow, elm, and great leadtree	No	No Impact
Piping Plover	*Charadrius melodus*	T	T	Beaches and bayside mud or salt flats	No	No Effect
Reddish Egret	*Egretta rufescens*	T	*	Brackish marshes and shallow salt ponds and tidal flats; nests on ground or in trees or bushes, on dry coastal islands in brushy thickets of yucca and prickly pear	No	No Impact
Rose-Throated Becard	*Pachyramphus aglaiae*	T	*	Mature riparian trees, woodlands, open forest, scrub, and mangroves	No	No Impact

Common Name	Scientific Name	TPWD Status	USFWS Status	Habitat Description	Habitat Present	Impact/Effect Determination
Sennett's Hooded Oriole	*Icterus cucullatus sennetti*	SOC	*	Often builds nests in and of Spanish moss (*Tillandsia usneoides*)	No	No Impact
Snowy Plover	*Charadrius alexandrinus*	SOC	*	Potential migrant; winter along coast	No	No Impact
Sooty Tern	*Sterna fuscata*	T	*	Predominately 'on the wing'; does not dive, but snatches small fish and squid with bill as it flies or hovers over water	No	No Impact
Southeastern Snowy Plover	*Charadrius alexandrinus tenuirostris*	SOC	*	Wintering migrant along the Texas Gulf Coast beaches and bayside mud or salt flats	No	No Impact
Sprague's Pipit	*Anthus spragueii*	SOC	*	Only in Texas during migration and winter, mid-September to early April; short to medium distance, diurnal migrant; strongly tied to native upland prairie, can be locally common in coastal grasslands, uncommon to rare further west; sensitive to patch size and avoids edges.	No	No Impact
Texas Botteri's Sparrow	*Aimophila botterii texana*	T	*	Grassland and short-grass plains with scattered bushes or shrubs, sagebrush, mesquite, or yucca; nests on ground of low clump of grasses	Yes	May Impact
Tropical Parula	*Parula pitiayumi*	T	*	Dense or open woods, undergrowth, brush, and trees along edges of rivers and resacas	No	No Impact
Western Burrowing Owl	*Athene cunicularia hypugaea*	SOC	*	Open grasslands, especially prairie, plains, and savanna, sometimes in open areas such as vacant lots near human habitation or airports; nests and roosts in abandoned burrows	Yes	May Impact
Western Snowy Plover	*Charadrius alexandrinus nivosus*	SOC	*	Potential migrant; winter along coast	No	No Impact
White-faced Ibis	*Plegadis chihi*	T	*	Prefers freshwater marshes, sloughs, and irrigated rice fields, but will attend brackish and saltwater habitats; nests in marshes, in low trees, on the ground in bulrushes or reeds, or on floating mats	No	No Impact
White-tailed Hawk	*Buteo albicaudatus*	T	*	Near coast on prairies, cordgrass flats, and scrub-live oak; further inland on prairies, mesquite and oak savannas, and mixed savanna-chaparral	No	No Impact
Whooping Crane	*Grus americana*	E	E	Potential migrant via plains throughout most of state to coast; winters in coastal marshes of Aransas, Calhoun, and Refugio counties	No	No Effect
Wood Stork	*Mycteria americana*	T	*	Forages in prairie ponds, flooded pastures or fields, ditches, and other shallow standing water, including salt-water; usually roosts communally in tall snags, sometimes in association with other wading birds (i.e. active heronries)	Yes	May Impact
Zone-tailed Hawk	*Buteo albonotatus*	T	*	Arid open country, including open deciduous or pine-oak woodland, mesa or mountain county, often near watercourses, and wooded canyons and tree-lined rivers along middle-slopes of desert mountains; nests in various habitats and sites	No	No Impact
FISHES						
American eel	*Anguilla rostrata*	SOC	*	Coastal waterways below reservoirs to gulf; most aquatic habitats with access to ocean, muddy bottoms, still waters, large streams, lakes; can travel overland in wet areas; males in brackish estuaries	No	No Impact
Opossum pipefish	*Microphis brachyurus*	T	*	Brooding adults found in fresh or low salinity waters and young move or are carried into more saline waters after birth; southern coastal areas	No	No Impact
Smalltooth sawfish	*Pristis pectinata*	E	*	Young found very close to shore in muddy and sandy bottoms; in sheltered bays, on shallow banks, and in estuaries or river mouths	No	No Impact

Common Name	Scientific Name	TPWD Status	USFWS Status	Habitat Description	Habitat Present	Impact/Effect Determination
INSECTS						
Los Olmos tiger beetle	*Cicindela nevadica olmosa*	SOC	*	Most tiger beetles are active, usually brightly colored, and found in open, sunny areas; adult tiger beetles are predaceous and feed on a variety of small insects; larvae of tiger beetles are also predaceous and live in vertical burrows in soil of dry paths, fields, or sandy beaches	No	No Impact
Superb grasshopper	*Eximacris superbum*	SOC	*	Collected in south Texas but repeated efforts to collect have not been successful; difficulty in collecting may be due to over-wintering in adult stage	Yes	May Impact
Texas asaphomyian tabanid fly	*Asaphomyia texensis*	SOC	*	Globally historic; adults of tabanid spp. found near slow-moving water; eggs laid in masses on leaves or other objects near or over water; larvae are aquatic and predaceous; females of tabanid spp. bite, while males chiefly feed on pollen and nectar; using sight, carbon dioxide, and odor for selection, tabanid spp. lie in wait in shady areas under bushes and trees for a host to happen by	No	No Impact
MAMMALS						
Coues' rice rat	*Oryzomys couesi*	T	*	Cattail-bulrush marsh with shallower zone of aquatic grasses near the shoreline; shade trees around the shoreline are important	No	No Impact
Jaguar	*Panthera onca*	E	*	Extirpated; dense chaparral; no reliable TX sightings since 1952	No	No Impact
Jaguarundi	*Herpailurus yaguarondi*	E	E	Thick brushlands, near water favored	No	No Effect
Ocelot	*Leopardus pardalis*	E	E	Dense chaparral thickets; mesquite-thorn scrub and live oak mottes; avoids open areas	No	No Effect
Plains spotted skunk	*Spilogale putorius interrupta*	SOC	*	Open fields, prairies, croplands, fence rows, farmyards, forest edges, woodlands; prefers wooded, brushy areas, tallgrass prairie	Yes	May Impact
Red wolf	*Canis rufus*	E	LE	Extirpated; formerly known throughout eastern half of Texas in brushy and forested areas, as well as coastal prairies	No	No Effect
Southern yellow bat	*Lasiurus ega*	T	*	Associated with trees, such as palm trees (*Sabal mexicana*) in Brownsville, which provide them with daytime roosts	No	No Impact
West Indian manatee	*Trichechus manatus*	E	E	Gulf and bay systems	No	No Effect
White-nosed coati	*Nasua narica*	T	*	Woodlands, riparian corridors and canyons	No	No Impact
REPTILES						
Atlantic hawksbill sea turtle	*Eretmochelys imbricata*	E	E	Gulf and bay systems	No	No Effect
Black-striped snake	*Coniophanes imperialis*	T	*	Extreme south Texas; semi-arid coastal plain, warm, moist micro-habitats and sandy soils	No	No Impact
Green sea turtle	*Chelonia mydas*	T	T	Gulf and bay systems	No	No Effect
Keeled earless lizard	*Holbrookia propinqua*	SOC	*	Coastal dunes, barrier islands, and other sandy areas	No	No Impact
Kemp's Ridley sea turtle	*Lepidochelys kempii*	E	E	Gulf and bay systems	No	No Effect
Leatherback sea turtle	*Dermochelys coriacea*	E	E	Gulf and bay systems	No	No Effect
Loggerhead sea turtle	*Caretta caretta*	T	T	Gulf and bay systems	No	No Effect
Northern cat-eyed snake	*Leptodeira septentrionalis septentrionalis*	T	*	Gulf Coastal Plain south of the Nueces River; thorn brush woodland; dense thickets bordering ponds and streams	No	No Impact

Common Name	Scientific Name	TPWD Status	USFWS Status	Habitat Description	Habitat Present	Impact/Effect Determination
Spot-tailed earless lizard	*Holbrookia lacerata*	SOC	*	Endemic to central and southern Texas and adjacent Mexico; prefers moderately open prairie-brushland, fairly flat areas free of vegetation or other obstructions, including disturbed areas; feeds on small invertebrates; lays eggs underground	Yes	May Impact
Texas horned lizard	*Phrynosoma cornutum*	T	*	Open, arid and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush or scrubby trees. Primarily feeds on harvester ants	Yes	May Impact
Texas indigo snake	*Drymarchon melanurus erebennus*	T	*	Thornbush-chaparral woodlands of south Texas, in particular dense riparian corridors; requires moist microhabitats, such as rodent burrows, for shelter.	Yes	May Impact
Texas scarlet snake	*Cemophora coccinea lineri*	T	*	Mixed hardwood scrub on sandy soils	Yes	May Impact
Texas tortoise	*Gopherus berlandieri*	T	*	Open brush with a grass understory is preferred; open grass and bare ground are avoided	Yes	May Impact
PLANTS						
Bailey's ballmoss	*Tillandsia baileyi*	SOC	*	Epiphytic on various trees and tall shrubs, most common in mottes of Live oak on vegetated dunes and flats in coastal portions of South Texas Sand Sheet, but also on evergreen sub-tropical woodlands along resacas in the Lower Rio Grande Valley	No	No Impact
Elmendorf's onion	*Allium elmendorfii*	SOC	*	Texas endemic; grassland openings in oak woodlands on deep, loose, well-drained sands; in Coastal Bend, on Pleistocene barrier island ridges and Holocene Sand Sheet that support live oak woodlands; to the north it occurs in post oak-black hickory-live oak woodlands over Queen City and similar Eocene formations; one anomalous specimen found on Llano Uplift in wet pockets of granitic loam; flowering March-April, May	No	No Impact
Roughseed sea-purslane	*Sesuvium trianthemoides*	SOC	*	Texas endemic; dunes and perhaps in saline clay of tidal flats or ephemeral ponds within a dune landscape; likely flowering June-August	No	No Impact

Source: U.S. Fish and Wildlife Service (USFWS) on-line (January 17, 2012) and USFWS Environmental Conservation Online System (2011); Texas Parks and Wildlife Department (TPWD) Annotated County Lists of Rare Species (December 15, 2011)

USFWS listing status: E – Endangered; T – Threatened; PT – Proposed Threatened; DM – Delisted Taxon, Recovered, Being Monitored First Five Years; C – Candidate for Listing; * - not listed by the USFWS for Kenedy County

TPWD listing status: E – Endangered; T – Threatened; SOC – Species of Concern (no regulatory listing status)

Texas Parks and Wildlife Natural Diversity Database Results

November 8, 2011 field reconnaissance and a search of the Texas Parks and Wildlife Department Natural Diversity Database were conducted to determine the potential presence of state and federally listed rare, threatened and endangered species and their habitat within the project area. None of the species listed in **Table 6** were observed in the project area during the field reconnaissance. An October 26, 2011 check of Texas Parks and Wildlife Department's "live" version of the Natural Diversity Database indicated that three occurrences of threatened or endangered species have been documented within 1.5 miles of the project area (**Table 7**). There have been an additional 22 occurrences of threatened or endangered species and one rare vegetation series that have been documented within 10 miles of the project area (see **Appendix D**). However, it should be noted that an absence of data for a particular species does not mean an absence of occurrence for threatened, endangered and rare species.

Table 7: Natural Diversity Database Elements of Occurrence within 1.5 Miles of Project Area

Common Name	Scientific Name	TPWD Status	USFWS Status	EOID
AMPHIBIANS				
Ocelot	*Leopardus pardalis*	E	E	3745
MAMMALS				
Keeled earless lizard	*Holbrookia propinqua*	SOC	*	2375
Texas indigo snake	*Drymarchon melanurus erebennus*	T	*	3444

Source: U.S. Fish and Wildlife Service (USFWS) on-line (November 15, 2011), Texas Parks and Wildlife Department (TPWD) Annotated County Lists of Rare Species (November 15, 2011)
USFWS listing status: E – Endangered; * - not listed by the USFWS for Kenedy County
TPWD listing status: E – Endangered; T – Threatened

Federally-Listed Species

As shown in **Table 6**, the project right-of-way contains suitable habitat for the federally endangered Northern Aplomado Falcon (*Falco femoralis septentrionalis*). Suitable habitat for the species (open terrain with scattered trees or shrubs) occurs in the maintained right-of-way. Although this habitat type would be impacted by the proposed project, Northern Aplomado Falcons are not known to nest in the area and there have not been any documented occurrences of the species by the Natural Diversity Database. Therefore, it is anticipated that the proposed project would have no effect on the Northern Aplomado Falcon.

The Natural Diversity Database lists one documented occurrence of the ocelot within 1.5 miles of the project area (EO ID 3745) and one additional documented occurrence within 10 miles of the project area (EO ID 131). There is a possibility of ocelots occurring in the project area; however, they prefer the uninhabited, highly dense brush to the south of Sarita. Therefore, if there is an ocelot occurrence in the project area, they would be passing through only. Formal coordination with the USFWS has occurred and is ongoing for the entire U.S. 77 corridor project. A wildlife crossing is proposed as part of this project south of Sarita in an area with more suitable habitat for the ocelot.

The proposed project would not impact beach habitat or gulf/bay system habitat; therefore, there would be no effect to the Brown Pelican, Piping Plover, Whooping Crane, West Indian manatee, Atlantic hawksbill sea turtle, green sea turtle, Kemp's Ridley sea turtle, leatherback sea turtle or loggerhead sea turtle. Additionally, there are no forested areas, shortgrass prairies, thick brushlands, dense chaparral thickets or riparian woodlands in the project right-of-way; therefore, there would be no effect to the red wolf, Mountain Plover, jaguarundi or ocelot.

State-Listed Species

As shown in **Table 6**, the project right-of-way contains suitable habitat for one state endangered species, the Northern Aplomado Falcon (discussed above), nine state threatened species and four state species of concern. The state threatened species are the black-spotted newt, sheep frog, South Texas siren (large form), Texas Botteri's Sparrow, Wood Stork, Texas horned lizard,

Texas scarlet snake, Texas indigo snake and Texas tortoise. The state species of concern are Western Burrowing Owl, superb grasshopper, plains spotted skunk and spot-tailed earless lizard.

Of the species having potential habitat in the project right-of-way, none have been documented by the Natural Diversity Database as occurring within 1.5 miles of the proposed project. However, two species (black-spotted newt [EO ID 912] and South Texas siren [EO ID 7103 and 4102]) have been documented within 10 miles of the project area (see **Appendix D**).

Suitable habitat for the black-spotted newt, sheep frog, South Texas siren (large form) and Wood Stork occurs in the project area wetlands. These wetlands would be impacted under the proposed improvements; therefore, the proposed project may impact the black-spotted newt, sheep frog, South Texas siren (large form) and Wood Stork. Suitable habitat for Texas Botteri's Sparrow, Western Burrowing Owl, superb grasshopper, Texas horned lizard and Texas tortoise occurs in portions of the maintained right-of-way (with bare ground or scattered mesquite). Approximately 68.9 acres of maintained right-of-way would be impacted by the proposed improvements; therefore, the project may impact Texas Botteri's Sparrow, Western Burrowing Owl, superb grasshopper, Texas horned lizard and Texas tortoise. Suitable habitat for the plains spotted skunk, spot-tailed earless lizard, Texas indigo snake and Texas scarlet snake occurs in the unmaintained vegetation (Mesquite Parks) at the southern project terminus. Approximately 4.0 acres of this habitat type would be impacted by the proposed improvements; therefore, the project may impact the plains spotted skunk, spot-tailed earless lizard, Texas indigo snake and Texas scarlet snake. However, the amount of remaining available, suitable habitat in the vicinity of the proposed project and the mobility of the some of the species, would serve to minimize impacts to these species. For these reasons it is unlikely that the proposed project would adversely impact these stated-listed species.

The remainder of the state-listed species for Kenedy County do not have potentially suitable habitat in the project right-of-way. Therefore, the proposed project would not impact the Mexican treefrog, American or Arctic Peregrine Falcon, Audobon’s Oriole, Cactus Ferruginous Pygmy-owl, Eskimo curlew, Northern Beardless-tyranulet, Reddish Egret, Rose-Throated Becard, Sennett’s Hooded Oriole, Snowy Plover, Sooty Tern, Southeastern Snowy Plover, Sprague’s Pipit, Tropical Parula, Western Snowy Plover, White-faced Ibis, White-tailed Hawk, Zone-tailed Hawk, American eel, opossum pipefish, smalltooth sawfish, Los Olmos tiger beetle, Texas asaphomyian tabanid fly, Coues’ rice rat, jaguar, southern yellow bat, white-nosed coati, black-striped snake, keeled earless lizard, northern cat-eyed snake, Bailey’s ballmoss, Elmendorf’s onion or roughseed sea-purslane.

Texas Parks and Wildlife Department Coordination

The proposed project would impact mature woody vegetation and is within the range and in suitable habitat of several state listed species and one federally listed species. Therefore, this project would require coordination with Texas Parks and Wildlife Department.

3.5 Soils/Farmlands

The Natural Resources Conservation Service online soil survey was reviewed to determine the types of soils that are mapped in the project right-of-way. The soil delineation identified five mapped soil units in the project right-of-way, as shown in **Table 8** and **Exhibit 5**.

Table 8: Project Right-of-Way Soils

Map Symbol	Soil Identification	Description	Hydric/Prime Farmland
BrA	Bordas loamy fine sand	Slopes are 0 to 1 percent; depressions on sand sheets; very poorly drained; water movement in the most restrictive layer is moderately high;	Hydric
PaA	Padrones fine sand	Deep and very deep, sandy uplands with clayey or loamy subsoils within 40 inches; low natural fertility; low to medium water holding capacity with good plant-soil-moisture relationship; medium to high production potential.	Hydric
PbB	Palobia loamy fine sand	Deep and very deep, sandy uplands with clayey or loamy subsoils within 40 inches; low natural fertility; low to medium water holding capacity with good plant-soil-moisture relationship; medium to high production potential.	Hydric
RbB	Ramita-Bordas complex	Slopes are 0 to 2 percent; on sand sheets on coastal plains; poorly drained; water movement in the most restrictive layer is very high.	Hydric
QuA	Quiteria fine sand	Slopes are 0 to 1 percent; on sand sheets on coastal plains; moderately well drained; water movement in the most restrictive layer is moderately high.	Hydric

Source: Natural Resources Conservation Service, United States Department of Agriculture. Soil Survey Geographic (SSURGO) Database for [Kenedy and Kleberg Counties, Texas]. Available online at http://soildatamart.nrcs.usda.gov . Accessed [11/2/2011].

The Farmland Protection Policy Act authorizes the U.S. Department of Agriculture's Natural Resources Conservation Service to develop criteria for identifying the effects of federal programs on the conversion of farmland and lands that could be used for farming to non-agricultural uses. Projects considered exempt under the Farmland Protection Policy Act include those that require no additional right-of-way, or projects that require additional right-of-way but that right-of-way is developed, urbanized or zoned for urban use. The proposed project would not require additional right-of-way; therefore, this project is exempt under the Farmland Protection Policy Act.

3.6 Water Resources

3.6.1 Waters of the U.S./Wetlands

A review of the U.S. Geological Survey 7.5-minute topographic map for Sarita, Texas, identified one unnamed water body that crosses the roadway approximately 0.45 mile south of La Parra Avenue (see **Exhibit 6**). No creeks, rivers, lakes, or canals were identified within the project limits, according to the topographic map. A review of the U.S. Fish and Wildlife Service National Wetlands Inventory Maps identified four potential wetlands within the existing right-of-

way (**Exhibit 5**). According to Cowardin et al. (1979), these wetlands would be classified as *palustrine, emergent-persistent, temporarily flooded*.

In November 2011, field investigations and wetland determinations were performed in accordance with the *1987 Corps of Engineers Wetlands Delineation Manual* as amended by the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region*. The October 2003 Standard Operating Procedures established by the U.S. Army Corps of Engineers - Galveston District were used for logging all global positioning system points in the field. Wetland Determination Data Forms may be viewed in **Appendix E**.

As a result of field investigations and wetland determinations, two wetlands were identified within the existing right-of-way (see **Appendix E** – SP 1 and SP 5). Wetland 1 crosses the right-of-way approximately 0.45 mile south of La Parra Avenue (see **Appendix B** – Photo 6). This wetland corresponds to the unnamed water body identified by the U.S. Geological Survey and one of the wetlands identified by the National Wetlands Inventory. Wetland 2, which was not identified by the National Wetlands Inventory, was identified within the median approximately 0.10 mile south of La Parra Avenue (see **Appendix B** – Photo 7). The remaining three wetlands identified on the National Wetlands Inventory maps exhibited no wetland hydrology or vegetation during field investigations. **Exhibit 5** and **Table 9** provide the location and additional details about the wetlands delineated within the project right-of-way.

Table 9: Water Features

Name of Water Body or Other Location Indicator	Existing Structure	Proposed Work or Structure	Permanent Fill		Temporary Fill		NWP[1]	PCN
			Open Waters (acres and linear feet)	Wetlands or other Special Aquatic Sites (acres)	Open Waters (acres and linear feet)	Wetlands or other Special Aquatic Sites (acres)		
W1 (Isolated wetland near southern project terminus)	Southbound Lanes 30-inch by 110-foot RCP Northbound Lanes 36-inch by 114-foot RCP; 2 – 10-foot by 7-foot by 88-foot RCB	Fill material associated with mainlanes; existing culverts to remain	N/A	0.90	N/A	0.23	N/A	N/A
W2 (Isolated wetland south of La Parra Avenue)	None	Fill material associated with mainlanes (no culverts proposed)	N/A	0.10	N/A	0.00	N/A	N/A

[1]It is anticipated that none of these water features would be considered jurisdictional and that impacts to these features would not require a permit from the U.S. Army Corps of Engineers
*RCP–Reinforced Concrete Pipe; RCB–Reinforced Concrete Box

Approximately 1.23 acres of water features (wetlands) were identified within the existing right-of-way. An analysis of U.S. Geological Survey topographic maps, Federal Emergency Management Agency maps, and field reconnaissance/wetland delineation (as indicated above)

reveals no potentially jurisdictional waters of the U.S. that would be impacted by the proposed project. This project would not result in the placement of temporary or permanent dredge or fill material into jurisdictional Waters of the U.S., including wetlands or other special aquatic sites; therefore, a Section 404 permit would not be required.

Approximately 1.23 acres total of non-jurisdictional wetlands are located within the existing right-of-way of the proposed project. Alternatives were reviewed as required by Executive Order 11990 on wetlands, and no practicable alternative to the 1.23 acres of wetland impacts were identified.

This project does not include work in or over a navigable water of the U.S.; therefore, Section 9 and Section 10 of the Rivers and Harbors Act do not apply.

3.6.2 Water Quality

Section 401 of the Clean Water Act: Water Quality Certification

The project would not require a U.S. Army Corps of Engineers Section 404 permit; therefore, Section 401 Certification would not be required.

Section 402 - Texas Pollutant Discharge Elimination System, Construction General Permit

This project would include five or more acres of earth disturbance. TxDOT would comply with the Texas Commission on Environmental Quality's Texas Pollutant Discharge Elimination System Construction General Permit. A Storm Water Pollution Prevention Plan would be implemented, and a construction site notice would be posted at the construction site. A Notice of Intent would be required.

The contractor would take appropriate measures to prevent, minimize and control the spill of hazardous materials in staging areas. All materials being removed and/or disposed of by the contractor would be done in accordance with state and federal laws and by approval of the project engineer.

Section 402 - Texas Pollutant Discharge Elimination System, Municipal Separate Storm Sewer System (MS4)

This project is not located within the boundaries of a regulated Municipal Separate Storm Sewer System.

Section 303(d) - Threatened and Impaired Waters

Runoff from this project would not discharge directly into a Section 303 (d) listed threatened or impaired water, or into a stream within 5 miles upstream of a Section 303(d) listed threatened or impaired water. The 2008 Section 303(d) list was utilized in this assessment.

3.6.3 Floodplains

Executive Order 11988 seeks to avoid adverse impacts associated with the use and modification of floodplains and to avoid direct or indirect support of floodplain development. This order directs federal agencies to evaluate the potential effects of its actions on floodplains. For actions

located in a regulatory floodplain, the agency is required to consider alternatives to avoid adverse effects and incompatible development.

The Federal Emergency Management Agency's Flood Insurance Rate Map panels 4812300025B and 4812310100B (both effective April 3, 1984) were reviewed to determine if the project area is within a mapped 100-year floodplain. The project is located within a Federal Emergency Management Agency designated 100-year floodplain (see **Exhibit 5**). 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 flood, 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. Coordination with the local Floodplain Administer will be required.

23 CFR 650.113 requires that encroachments on floodplains be the only practicable alternative which shall be supported by the following information: 1) the reasons why the proposed action must be located in the floodplain; 2) the alternatives considered and why they were not practicable, and 3) a statement indicating whether the action conforms to applicable state or local floodplain protection standards. Since the proposed project currently crosses floodplains, the following support information is provided:

1) the proposed project must be located in floodplains because the proposed project would consist of upgrading an existing linear transportation facility that currently crosses floodplains;
2) there were no alternatives considered (except the No Build Alternative which fails to satisfy the project's purpose and need) that would avoid encroachments on floodplains because it would not be feasible to move the proposed roadway out of the floodplains; and
3) the proposed project would conform to state floodplain protection standards.

The Build Alternative is the only practicable alternate that satisfies the need and purpose of the proposed project.

3.6.4 Texas Coastal Management Program

This project is located within Kenedy County, but is not within the Texas Coastal Management Program boundary; therefore a consistency determination is not required.

3.6.5 Wild and Scenic Rivers

According to the National Park Service 2011 List, there are no designated wild and scenic rivers near the project area.

3.7 Noise

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

Sound from highway traffic is generated primarily from a vehicle's tires, engine and exhaust. It

is commonly measured in decibels and is expressed as "dB."

Sound occurs over a wide range of frequencies. However, not all frequencies are detectable by the human ear; therefore, an adjustment is made to the high and low frequencies to approximate the way an average person hears traffic sounds. This adjustment is called A-weighting and is expressed as "dB(A)."

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

The traffic noise analysis typically includes the following elements:

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

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

Table 10: Noise Abatement Criteria

Activity Category	FHWA dB(A) Leq	**TxDOT dB(A) Leq**	Description of Land Use Activity Areas
A	57 (exterior)	56 (exterior)	Lands on which serenity and quiet are of extra-ordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 (exterior)	66 (exterior)	Residential
C	67 (exterior)	66 (exterior)	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools , television studios, trails, and trail crossings
D	52 (interior)	51 (interior)	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios
E	72 (exterior)	71 (exterior)	Hotels, motels, offices, restaurants/bars, and other developed lands, properties, or activities not included in A-D or F.
F	--	--	Agricultural, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G	--	--	Undeveloped lands that are not permitted.

NOTE: primary consideration is given to exterior areas (Category A, B, C, or E) where frequent human activity occurs. However, interior areas (Category D) are used if exterior areas are physically shielded from the roadway, or if there is little or no human activity in exterior areas adjacent to the roadway.

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

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

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

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

The FHWA traffic noise modeling software was used to calculate existing and predicted traffic noise levels. The model primarily considers the number, type and speed of vehicles; highway

alignment and grade; cuts, fills and natural berms; surrounding terrain features; and the locations of activity areas likely to be impacted by the associated traffic noise.

Existing and predicted traffic noise levels were modeled at receiver locations (**Table 11** and **Exhibit 3**) that represent the land use activity areas adjacent to the proposed project that might be impacted by traffic noise and potentially benefit from feasible and reasonable noise abatement.

Table 11: Traffic Noise Levels (dBA Leq)

Representative Receiver	NAC Category	NAC Level	Existing 2011	Predicted 2031	Change (+/-)	Noise Impact
R1 - Residence	B	67	63	63	0	No
R2 – School*	D	52	42	39	-3	No
R3 – School	C	67	68	64	-4	No
R4 – School*	D	52	38	38	0	No
R5 – Residence	B	67	56	59	+3	No
R6 – Residence	B	67	50	55	+5	No
R7 – Residence	B	67	50	54	+4	No

*School is a single-glazed, masonry building type; therefore, a 25 dB interior noise reduction factor was applied, per TxDOT *Guidelines for Analysis and Abatement of Roadway Traffic Noise* (2011)

As indicated in **Table 11**, the proposed project would not result in a traffic noise impact.

However, to avoid noise impacts that may result from future development of properties adjacent to the project, local officials responsible for land use control programs must ensure, to the maximum extent possible, no new activities are planned or constructed along or within the predicted (2031) noise impact contours, as shown in **Table 12**.

Table 12: Noise Impact Contours

Undeveloped Area	Land Use	Impact Contour (dBA)	Distance from Right-of-Way (feet)
NE, SE and SW corners of U.S. 77 and La Parra Avenue (overpass section)	NAC Category B & C	66	45
	NAC Category E	71	N/A*
East and West of U.S. 77, approximately 0.3 mile north of La Parra Avenue (at-grade section)	NAC Category B & C	66	40
	NAC Category E	71	N/A*

*The predicted (2031) 71 dBA noise impact contour is located within the existing right-of-way

Noise associated with the construction of the project is difficult to predict. Heavy machinery, the major source of noise in construction, is constantly moving in unpredictable patterns. However, construction normally occurs during daylight hours when occasional loud noises are more tolerable. None of the receivers is expected to be exposed to construction noise for a long duration; therefore, any extended disruption of normal activities is not expected. Provisions will be included in the plans and specifications that require the contractor to make every reasonable

effort to minimize construction noise through abatement measures such as work-hour controls and proper maintenance of muffler systems.

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

3.8 Air Quality

The project was placed in the 2010–2014 STIP as a group number. The project number is 5000-00-950 in the November 2011 revision, which was approved by FHWA on December 23, 2011. The project is located in Kenedy County, which is in an area in attainment or unclassifiable for all national ambient air quality standards; therefore, the transportation conformity rules do not apply.

Traffic data for the design year (2031) is 15,200 vehicles per day. A prior TxDOT modeling study and previous analyses of similar projects demonstrated that it is unlikely that a carbon monoxide standard would ever be exceeded as a result of any project with an average annual daily traffic below 140,000. The average annual daily traffic projections for the project do not exceed 140,000 vehicles per day; therefore, a Traffic Air Quality Analysis was not required.

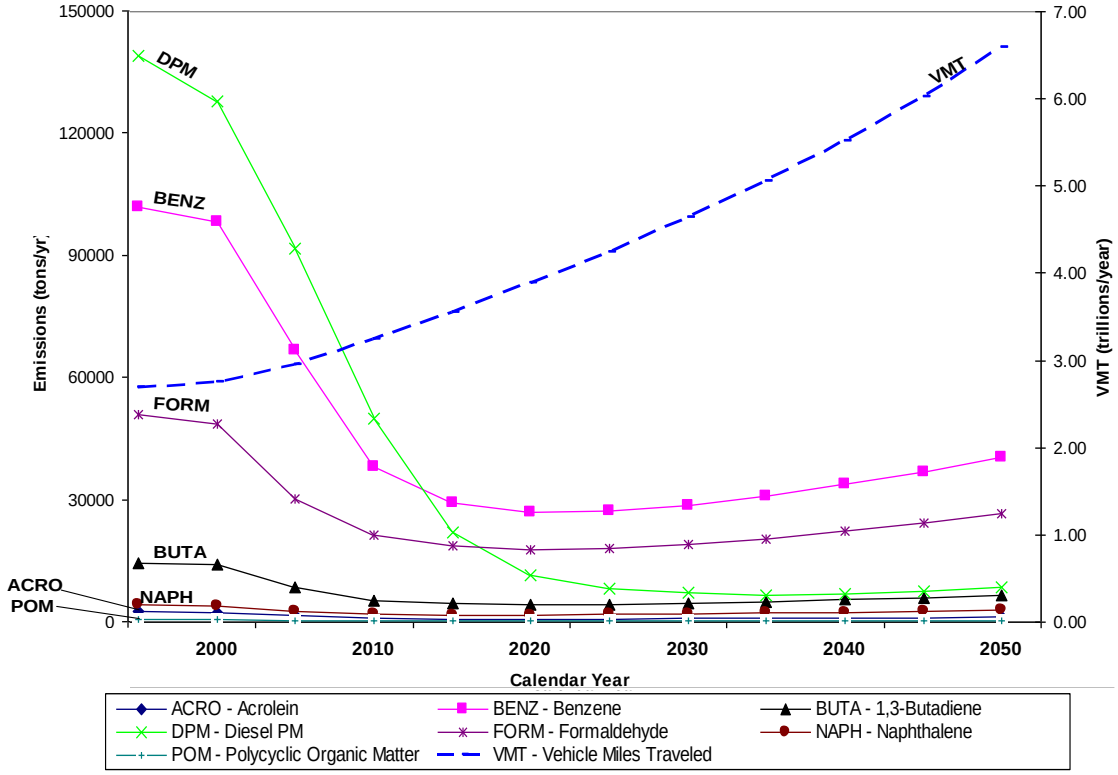
Mobile Source Air Toxics

Background

Controlling air toxic emissions became a national priority with the passage of the Clean Air Act Amendments (CAAA) of 1990, whereby Congress mandated that the U.S. Environmental Protection Agency (EPA) regulate 188 air toxics, also known as hazardous air pollutants. The EPA has assessed this expansive list in their latest rule on the Control of Hazardous Air Pollutants from Mobile Sources (Federal Register, Vol. 72, No. 37, page 8430, February 26, 2007) and identified a group of 93 compounds emitted from mobile sources that are listed in their Integrated Risk Information System (IRIS) (http://www.epa.gov/ncea/iris/index.html). In addition, EPA identified seven compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers from their 1999 National Air Toxics Assessment (NATA) (http://www.epa.gov/ttn/atw/nata1999/). These are acrolein, benzene, 1,3-butadiene, diesel particulate matter plus diesel exhaust organic gases (diesel PM), formaldehyde, naphthalene, and polycyclic organic matter. While FHWA considers these the priority mobile source air toxics, the list is subject to change and may be adjusted in consideration of future EPA rules.

The 2007 EPA Mobile Source Air Toxics (MSAT) rule mentioned above requires controls that will dramatically decrease MSAT emissions through cleaner fuels and cleaner engines. According to an FHWA analysis using EPA's MOBILE6.2 model, even if vehicle activity (vehicle-miles travelled, VMT) increases by 145 percent as assumed, a combined reduction of 72 percent in the total annual emission rate for the priority MSAT is projected from 1999 to 2050, as shown in **Figure 1** and **Table 13**.

Figure 1: National MSAT Emission Trends 1999-2050 for Vehicles Operating on Roadways Using EPA's MOBILE6.2 Model



Source: Table 1 below.
Note: (1) Annual emissions of polycyclic organic matter are projected to be 561 tons/yr for 1999, decreasing to 373 tons/yr for 2050.
(2) Trends for specific locations may be different, depending on locally derived information representing vehicle-miles travelled, vehicle speeds, vehicle mix, fuels, emission control programs, meteorology, and other factors

Table 13: Projected National MSAT Emissions and Percent Reduction for 1999-2050 for Vehicles Operating on Roadways Using EPA's MOBILE6.2 Model

Pollutant/VMT	Pollutant Emissions (tons) and Vehicle-Miles Traveled (VMT) by Calendar Year							Reduction
	1999	2000	2010	2020	2030	2040	2050	1999 to 2050
Acrolein	2570	2430	1000	775	824	970	1160	-55%
Benzene	102000	98400	38000	27000	28700	33900	40500	-60%
1,3-Butadiene	14400	14100	5410	4360	4630	5460	6520	-55%
Diesel PM	139000	128000	50000	11400	7080	7070	8440	-94%
Formaldehyde	50900	48800	21400	17800	19000	22400	26800	-47%
Naphthalene	4150	4030	1990	1780	2030	2400	2870	-31%
Polycyclic Organic Matter	561	541	259	233	265	313	373	-33%
Trillions VMT	2.69	2.75	3.24	3.88	4.63	5.51	6.58	145%

Source: U.S. Environmental Protection Agency. MOBILE6.2 Model run 20 August 2009

Air toxics analysis is a continuing area of research. While much work has been done to assess the overall health risk of air toxics, many questions remain unanswered. In particular, the tools and

techniques for assessing project-specific health outcomes as a result of lifetime MSAT exposure remain limited. These limitations impede the ability to evaluate how the potential health risks posed by MSAT exposure should be factored into project-level decision-making within the context of NEPA. The FHWA, EPA, the Health Effects Institute, and others have funded and conducted research studies to try to more clearly define potential risks from MSAT emissions associated with highway projects. The FHWA will continue to monitor the developing research in this emerging field.

Project-Specific MSAT Information

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

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

For each alternative in this document, the amount of MSAT emitted would be proportional to the VMT, assuming that other variables such as fleet mix are the same for each alternative. The VMT estimated for the Build Alternative is slightly higher than that for the No Build Alternative, because the additional capacity increases the efficiency of the roadway and attracts rerouted trips from elsewhere in the transportation network. This increase in VMT would lead to higher MSAT emissions for the preferred action alternative along the highway corridor, along with a corresponding decrease in MSAT emissions along the parallel routes. The emissions increase is offset somewhat by lower MSAT emission rates due to increased speeds; according to EPA's MOBILE6.2 emissions model, emissions of all of the priority MSAT except for diesel particulate matter decrease as speed increases. The extent to which these speed-related emissions decreases would offset VMT-related emissions increases cannot be reliably projected due to the inherent deficiencies of technical models. Regardless of the alternative chosen, emissions will likely be lower than present levels in the design year as a result of EPA's national control programs that are projected to reduce annual MSAT emissions by 72 percent between 1999 and 2050. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in nearly all cases.

The additional travel lanes contemplated as part of the Build Alternative will have the effect of moving some traffic closer to nearby homes, schools, and businesses; therefore, there may be localized areas where ambient concentrations of MSAT could be higher under the Build Alternative than the No Build Alternative. The localized increases in MSAT concentrations would likely be most pronounced along the expanded roadway sections that would be built at throughout the project area. However, the magnitude and the duration of these potential increases

compared to the No Build Alternative cannot be reliably quantified due to incomplete or unavailable information in forecasting project-specific MSAT health impacts. In sum, 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 lower in the future.

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

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

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

Other organizations are also active in the research and analyses of the human health effects of MSAT, including the Health Effects Institute (HEI). Two HEI studies are summarized in Appendix D of FHWA's *2009 Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA Documents*, which can be found at the following address: (http://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/100109guidmem.cfm). This Appendix also discusses a variety of FHWA research initiatives related to air toxics. Among the adverse health effects linked to MSAT compounds at high exposures are cancer in humans in occupational settings; cancer in animals; and irritation to the respiratory tract, including the exacerbation of asthma. Less obvious is the adverse human health effects of MSAT compounds at current environmental concentrations (HEI, http://pubs.healtheffects.org/view.php?id=282) or in the future as vehicle emissions substantially decrease (HEI, http://pubs.healtheffects.org/view.php?id=306).

The methodologies for forecasting health impacts include emissions modeling; dispersion modeling; exposure modeling; and then final determination of health impacts - each step in the process building on the model predictions obtained in the previous step. All are encumbered by technical shortcomings or uncertain science that prevents a more complete differentiation of the MSAT health impacts among a set of project alternatives. These difficulties are magnified for lifetime (i.e., 70 year) assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over that time frame, since such information is unavailable. The results produced by the EPA's MOBILE6.2 model, the California EPA's Emfac2007 model, and the EPA's MOVES model in forecasting MSAT emissions are highly inconsistent. Indications from the development of the MOVES model are that MOBILE6.2 significantly underestimates diesel particulate matter (PM) emissions and significantly overestimates benzene emissions.

Regarding air dispersion modeling, an extensive evaluation of EPA's guideline CAL3QHC model was conducted in an NCHRP study: (http://www.epa.gov/scram001/dispersion_alt.htm#hyroad), which documents poor model performance at ten sites across the country - three where intensive monitoring was conducted plus an additional seven with less intensive monitoring. The study indicates a bias of the CAL3QHC model to overestimate concentrations near highly congested intersections and underestimate concentrations near uncongested intersections. The consequence of this is a tendency to overstate the air quality benefits of mitigating congestion at intersections. Such poor model performance is less difficult to manage for demonstrating compliance with National Ambient Air Quality Standards for relatively short time frames than it is for forecasting individual exposure over an entire lifetime, especially given that some information needed for estimating 70-year lifetime exposure is unavailable. It is particularly difficult to reliably forecast MSAT exposure near roadways, and to determine the portion of time that people are actually exposed at a specific location.

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

There is also the lack of a national consensus on an acceptable level of risk. The current context is the process used by the EPA as provided by the Clean Air Act to determine whether more stringent controls are required in order to provide an ample margin of safety to protect public health or to prevent an adverse environmental effect for industrial sources subject to the maximum achievable control technology standards, such as benzene emissions from refineries.

The decision framework is a two-step process. The first step requires EPA to determine a "safe" or "acceptable" level of risk due to emissions from a source, which is generally no greater than approximately 100 in a million. Additional factors are considered in the second step, the goal of which is to maximize the number of people with risks less than one in a million due to emissions from a source. The results of this statutory two-step process do not guarantee that cancer risks from exposure to air toxics are less than one in a million; in some cases, the residual risk determination could result in maximum individual cancer risks that are as high as approximately 100 in a million. In a June 2008 decision, the U.S. Court of Appeals for the District of Columbia Circuit upheld EPA's approach to addressing risk in its two step decision framework. Information is incomplete or unavailable to establish that even the largest of highway projects would result in levels of risk greater than safe or acceptable.

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

Sensitive Receptor Assessment

There may be localized areas where ambient concentrations of MSATs are slightly higher in the build scenario than in the no build scenario. Dispersion studies have shown that the “roadway” air toxics start to drop off at about 100 meters. By 500 meters, most studies have found it very difficult to distinguish the roadway from background toxic concentrations in any given area. Therefore, an assessment of potential sensitive receptors within both 100 and 500 meters of the existing right-of-way was conducted for the project. Sensitive receptors include those facilities most likely to contain large concentrations of the more sensitive population (hospitals, schools, licensed day cares, and elder care facilities). As a result of field reconnaissance and a search of the Texas Department of Family and Protective Services website (2011), one sensitive receptor (Sarita Elementary School) was identified within 100 meters of the U.S. 77 project right-of-way (see **Exhibit 3**). No other sensitive receptors were identified within 100 or 500 meters of the project right-of-way.

Conclusion

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

3.9 Hazardous Materials

Based on the following project activities (construction of mainlanes, entrance/exit ramps, and an overpass at La Parra Avenue) an Initial Site Assessment (ISA) was conducted to identify

potential hazardous materials in the project area. The ISA consisted of a review of regulatory agency databases and a field reconnaissance to confirm and supplement information pertaining to the types of land use in the project area. The regulatory agency database search documented facilities within the minimum search distances set by American Society for Testing and Materials (ASTM) E 1527-97 (see **Table 14**). An analysis of the ISA data indicates hazardous materials impacts are not anticipated and further investigation is not required. This project will not involve the acquisition of known unresolved contamination where TxDOT could reasonably expect to assume liability for corrective action upon acquisition. In addition, this project does not involve known hazardous materials impacts that could be anticipated to adversely affect construction (e.g. cannot resolve before letting or during construction).

Table 14: Summary of Regulatory Records Review

Database	Search Radius (miles)	Facilities Within Search Distance*	# of At-Risk Sites
Federal			
National Priority List (NPL)	1.00	0	0
Delisted National Priority List (DNPL)	0.50	0	0
Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS)	0.50	0	0
No Further Remedial Action Planned (NFRAP)	0.50	0	0
Resource Conservation Recovery Act Information System - Corrective Action (RCRA COR)	1.00	0	0
RCRA Information System - Treatment, Storage, & Disposal (RCRA TSD)	0.50	0	0
RCRA Information System – Generators (RCRA GEN)	0.25	0	0
Federal Brownfields (FED BWN)	0.50	0	0
Federal Engineering and Institutional Controls (Federal IC/EC)	0.50	0	0
Emergency Response Notification System (ERNS)	0.25	0	0
State			
State/Tribal Equivalent NPL (ST NPL)	1.00	0	0
State/Tribal Equivalent CERCLIS (ST CER)	0.50	0	0
State/Tribal Disposal or Landfill (SWLF)	0.50	0	0
State/Tribal Leaking Storage Tank (LPST)	0.50	0	0
State/Tribal Storage Tank (PST)	0.25	3 (2 mapped, 1 unmapped)	0
State/Tribal Engineering Controls (ST EC)	0.50	0	0
State/Tribal Institutional Controls (ST IC)	0.25	0	0
State/Tribal Voluntary Cleanup (VCP)	0.50	0	0
State/Tribal Brownfields (ST BWN)	0.50	0	0
Non-ASTM/AAI Required Databases			
RCRA	0.25	1 (unmapped)	0
Dry Cleaners (DRYC)	0.25	0	0
Industrial Hazardous Waste (IHW)	0.25	1 (unmapped)	0
Oil/Gas Wells			
Gas Wells	0.25	5 (mapped)	1
Oil Wells	0.25	0	0
Dry Hole	0.25	2 (mapped)	0

Source: Banks Environmental Data, Inc. (October 2011)
*Sites were listed as 'unmapped' if their exact location could not be plotted, but they are identified as being located within the general area of the proposed improvements based on the submitted property information.

The regulatory database search identified three registered (State/Tribal) petroleum storage tanks within 0.25 mile of the project area. However, within the project limits, there are no registered petroleum storage tank facilities. The site survey and research into the historical land use did not reveal any other abandoned and/or active gasoline service stations. As previously stated, right-of-way acquisition or easements would not be required for this project, although significant excavation would be required in order to construct the overpass at La Parra Avenue. It is not anticipated that these sites would pose a risk to construction of the proposed facility.

The regulatory database search identified seven oil/gas wells within 0.25 mile of the project right-of-way. However, within the project limits, only one well (plugged gas), owned by Exxon Mobil Corporation, occurs within the project right-of-way (see **Exhibit 5**). According to the Railroad Commission of Texas Public GIS Map Viewer for Oil, Gas and Pipeline Data, the well is located off the right-of-way; however, the directional well surface location is located in the median, approximately 300 feet south of the north project terminus, and approximately 120 feet from the nearest area of proposed construction. No indication or evidence of this site or ground surface contamination was noted during the site survey. However, due to its location within the existing right-of-way, this well poses a moderate risk to construction of the proposed facility.

The regulatory database search identified one 'unmapped' RCRA facility (Exxon Mobil Corporation); however, the database search also lists the facility site address as located four miles northeast of Sarita. Examination of aerial photography shows a petroleum storage tank facility at this location. As a result, it appears the RCRA facility identified in the regulatory database search is located four miles from the project right-of-way and would not pose a risk to construction of the proposed project.

One unmapped Industrial Hazardous Waste site (Sarita Trash) was identified by the regulatory database search. No evidence of a landfill or other waste disposal site was identified within or adjacent to the project area during the site survey. As a result, it is not anticipated that this site would pose a risk to construction of the proposed facility.

A copy of the ISA and full regulatory database search is on file at the TxDOT – Pharr District office.

3.10 Visual Impacts

The proposed project would serve to upgrade the existing facility within existing right-of-way. No work outside of the existing right-of-way is proposed. Vertical changes to the roadway would consist of the overpass at La Parra Avenue, as well as a few minor (<5 feet) changes in the roadway profile in a few locations; otherwise, there would be no substantial changes to topography in the project area. The construction of the proposed project would result in a larger transportation facility due to the addition of southbound mainlanes in the current grassy median and addition of northbound frontage road lanes east of the current northbound lanes. Therefore, the proposed project would result in minor visual impacts.

3.11 Construction Impacts

U.S. 77 and La Parra Avenue would remain open to local and through traffic during construction. No roadway closures would occur. Traffic control would be consistent with TxDOT policies and standards. All traffic control would conform to Part IV (Traffic Control for Street and Highway Construction & Maintenance Operations) of the *Texas Manual of Uniform Traffic Control Devices*.

Due to operations normally associated with road construction, at times noise levels would be above normal in the areas adjacent to the right-of-way. Construction is normally limited to

daylight hours when occasional loud noises are more tolerable. Due to the relatively short-term exposure periods imposed on any one receptor, extended disruption of normal activities is not considered likely. Every reasonable effort would be made to minimize construction noise.

Construction may temporarily degrade air quality through dust and exhaust gases associated with construction equipment. The control of particulate matter emanating from various construction activities would be in accordance with the Texas Commission on Environmental Quality regulations and would be incorporated into the final design and construction specifications. To minimize exhaust emissions, contractors would be required to use emission control devices and limit unnecessary idling of construction vehicles.

3.12 Indirect and Cumulative Impacts

3.12.1 Indirect Impacts

This section describes the indirect impacts analysis prepared for the proposed improvements to U.S. 77 in Kenedy County, Texas. This analysis was conducted in accordance with Council on Environmental Quality, FHWA, and TxDOT regulations and guidance documents. The Council on Environmental Quality (40 CFR 1508.8) defines indirect impacts as:

> "…effects, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems."

There are three general categories of indirect effects:

- Encroachment-Alteration Effects, which are those that alter the behavior and functioning of the physical environment and are related to project design features, but are separated from the project by time and/or distance. An example of this type of effect would be a change in habitat regime and nesting patterns of a bird species due to the installation of a bridge.
- Access-Alteration Effects or induced growth effects are also known as Project-Influenced Effects or the Land Use Effect and involve changes in land use resulting from changes in traffic, access, and mobility. Access-Alteration Effects can result from highway projects that may promote an increased rate of development. An example would be development (i.e. new subdivision) in an area that was previously inaccessible prior to construction of a new road.
- Effects Related to Project-Influenced Development, or Induced Growth-Related Effects, are those effects that are attributable to the induced growth itself.

The methodology for the indirect impact analysis is based on the findings in the National Cooperative Highway Research Program Report 466, *Desk Reference for Estimating Indirect Effects of Proposed Transportation Projects*, and in TxDOT's *Guidance on Preparing Indirect*

and Cumulative Analyses (revised September 2010). For this analysis, TxDOT methodology was employed, which has been adapted from that set forth in the National Cooperative Highway Research Program Report 466. A geographic information systems-based approach, in conjunction with local interviews and field reconnaissance, was used to identify and quantify potential indirect effects of the proposed project. **Table 15** shows the seven-step approach that is used to analyze indirect impacts in this section.

Table 15: Seven-Step Approach to Estimating Indirect Effects

Step 1 – Scoping: The basic approach, effort required, and geographical boundaries of the study are determined.
Step 2 – Identify the Study Area's Direction and Trends: Information regarding the study area is compiled with the goal of defining the context for assessment.
Step 3 – Inventory the Study Area's Notable Features: Additional data on environmental features are gathered and synthesized with a goal of identifying specific environmental issues by which to assess the project.
Step 4 – Identify Impact-Causing Activities of Proposed Action and Alternatives: Fully describe the component activities of each project alternative.
Step 5 – Identify Potentially Significant Indirect Effects for Analysis: Indirect effects associated with project activities and alternatives are cataloged, and potentially significant effects meriting further analysis are identified.
Step 6 – Analyze Indirect Effects and Evaluate Analysis Results: Qualitative and quantitative techniques are employed to estimate the magnitude of the potentially significant effects identified in Step 5 and describe future conditions with and without the proposed transportation improvement. The uncertainty of the results of the indirect effects analysis is evaluated for its ramification on the overall assessment.
Step 7 – Assess Consequences and Develop Mitigation (when appropriate): The consequences of indirect effects are evaluated in the context of the full range of project effects. Strategies to avoid or lessen any effects found to be unacceptable are developed. Effects are reevaluated in the context of those mitigation strategies.

Below is the seven-step approach to estimate indirect impacts and a discussion of the analysis for each.

Step 1: Scoping

The main objectives of the scoping process are to determine the level of effort and general approach required to complete the indirect analysis and to determine the location and extent of the study area. In order to determine the scope, the most appropriate approach, and level of effort, the initial task in defining the scope of this analysis is to establish the context of the project.

The proposed improvements would satisfy the need and purpose of the project by providing a grade separation between local and freeway (truck) traffic thereby enhancing safety and mobility within the project area. The proposed project would add capacity to the existing U.S. 77 and would upgrade the facility within the project limits to national interstate highway design standards by incorporating the proposed improvements detailed in **Section 1.2**.

The proposed project is consistent with regional and state transportation plans and policies. The project is a response to existing and projected traffic as well as the need to upgrade the facility to meet current design standards and improve safety.

The geographical boundaries of the indirect effects study area (Area of Influence) is determined by considering the geographic extent of potential indirect effects from a proposed action. In the current case, the Area of Influence would be determined with respect to the accessibility and connectivity effects of the proposed improvements to the local socioeconomic and natural environments. An Area of Influence is inclusive of the area in which the proposed project could potentially influence local traffic patterns or land development, thereby affecting socioeconomics and natural resources. The appropriate study area and timeframe for analyzing changes to the social and natural environments would be the area where the proposed project is expected to affect travel patterns, noise levels, and air quality (in the short-term) within the Area of Influence. Phone calls to interview the Kenedy County judge were unsuccessful; however, Kenedy County-Wide Common School District officials were available and were interviewed. Therefore, information gathered for this analysis was mainly based on the discussions with the Kenedy County-Wide Common School District Superintendent and the principal of Sarita Elementary School. The school, which is located adjacent to U.S. 77 where the proposed overpass would be constructed (see **Exhibit 3**), would have the most potential to experience indirect impacts as a result of the proposed project. No officials interviewed foresee potential induced growth occurring within or outside the boundaries of Sarita. Therefore, the geographical boundaries of the Area of Influence include areas with direct access to Sarita Elementary School, the only school in town. The Area of Influence takes into account any encroachment alteration, induced growth effects, and effects related to induced growth that may occur to natural and human environments. The Area of Influence is geographically bounded by Andrew Road to the north, a utility easement to the east (approximately 0.30 to 0.55 mile east of U.S. 77), Garcia Road to the south, and approximately 0.80 mile west of U.S. 77 to the eastern boundary of the Chandler Division of the Kenedy Ranch.

It was determined that the appropriate geographic study area for indirect impacts, identified as the Area of Influence, encompasses approximately 1,970 acres or approximately 3 square miles of land. **Exhibit 7** depicts the Area of Influence for the proposed project. The temporal boundary for the indirect impacts analysis was determined to be through the horizon year of 2032 (estimated date of project completion plus 20 years), which is consistent with the industry standard for long-range transportation planning.

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

This step describes the general goals and trends of the Area of Influence, including planning goals, demographic trends, and how these goals and trends relate to the sensitivity of the natural and human environment.

As described in **Section 2.1**, within the Area of Influence, the unincorporated community of Sarita is the county seat for Kenedy County and comprises approximately 170 acres of semi-

urban land use. Sarita does not have established comprehensive community, transportation, and economic development plans available. Therefore, the goals below are based on conversations with the superintendent of Kenedy County-Wide Common School District and the principal of Sarita Elementary. Sarita has the present and future goals of rehabilitating the courthouse and maintaining the newly renovated Sarita Elementary School.

The ongoing trends or directions of the Area of Influence are presented below and show recent and present population growth and school enrollment. The Area of Influence currently ranges from a semi-urban corridor to ranchland in the remainder of the Area of Influence. During the 1990s, the population in the Area of Influence (population of Sarita) grew by more than 35 percent to 250 by the year 2000; however, the latest U.S. Census data reveals that the current population has decreased by five percent to 238. The trend for Kenedy County during the same time period showed the opposite population trend with an 11 percent decrease in population from 1990 to 2000 and a modest increase in population from 2000 to 2010. Population trends in the Area of Influence and Kenedy County are summarized in **Table 16**.

Table 16: Area of Influence Population (1990–2010)

Year	Sarita			Kenedy County		
	Population	Change	%	Population	Change	%
1990	185	N/A	N/A	460	N/A	N/A
2000	250	+65	+35.2	414	-46	-11.1
2010	238	-12	-5.0	416	+2	+0.5

Sources: U.S. Census Bureau (1990, 2000, 2010)

One school district is located within the Area of Influence, Kenedy County-Wide Common School District, which is the only school district in Kenedy County. There is only one school that makes up the district, Sarita Elementary School, which teaches pre-kindergarten through sixth grade. Overall, there was very little change in enrollment from the 2009–2010 school year to the 2010–2011 school year. School enrollment declined from 83 students in the 2009–2010 school year to 80 in the 2010–2011 school year. **Table 17** shows the school district located within the geographical boundaries of the indirect effects study area and the associated enrollment total.

Table 17: School District Enrollment Totals

Kenedy County-Wide Common School District	2009–2010 Enrollment	2010–2011 Enrollment	1-year Growth	% Growth
Sarita Elementary School	83	80	-3	-3.7

Source: Texas Education Agency, *http://ritter.tea.state.tx.us/adhocrpt/adste.html*, November 2011

Due to the limited amount of available data and limited availability of community and County officials, assessing the goals and trends for the Area of Influence was determined mainly by

gathering population trend information and through discussions with Kenedy County-Wide Common School District and Sarita Elementary School officials. According to the data gathered, the Area of Influence is stable with no development (no new buildings, including residences and businesses) occurring. Existing development in the Area of Influence is limited to the school, several homes, a post office, two churches, the Kenedy County Courthouse and the headquarters of the Kenedy Ranch, which is the one private business in the Area of Influence. The headquarters of the Kenedy Ranch (the Kenedy Pasture Company) is a whitewashed, two-story building which also houses the Kenedy Ranch Museum. The only recent construction that has occurred in the Area of Influence includes renovation projects to the Kenedy County Courthouse (ongoing) and Sarita Elementary School (recently completed).

Step 3: Inventory of Study Area's Notable Features

The baseline of conditions for environmental and socioeconomic resources affected by the proposed improvements is included in **Section 3**. Notable features of the Area of Influence could include socioeconomic resources, sensitive species and habitats, and other valued, unique, or unusual natural or vulnerable populations.

Notable features in the Area of Influence are described below:

- Chandler Division of the Kenedy Ranch – A 2,391-acre ranch located adjacent and to the west of Sarita. The Kenedy Ranch is considered the last large tract of native coastal prairie habitat in Texas and for over a century it has been a highly protected game preserve. Sarita is also home to the Kenedy Ranch headquarters. The location of the Kenedy Ranch within the Area of Influence is shown on **Exhibit 7**. (http://www.kenedy.org/KenedyRanch/tabid/1093/Default.aspx - November 2011)
- Kenedy Ranch Museum – Located at 200 East La Parra Avenue, inside the Kenedy Pasture Company building, the museum "highlights the legacy of the Kenedy Family regarding ranching and the founding of Sarita through art and artifacts." (http://www.tshaonline.org/handbook/online/articles/hls22)
- Sarita Elementary School – Located at 150 East La Parra Avenue (adjacent to the proposed project site), the town's only school provides pre-kindergarten through 6th grade. The school is part of the Kenedy County-Wide Common School District, which is "geographically one of the largest and most sparsely populated in Texas encompassing almost 1,400 square miles." (http://www.sarita.esc2.net/)
- Federally Endangered Wildlife Species – Ocelot. There are an estimated 100 ocelots that remain in Texas. Two breeding populations are known to occur east of U.S. 77 and represent an estimated one-third of the total ocelot population. One population, numbering six to 12 ocelots, is located on two U.S. Fish and Wildlife Service conservation easements totaling 2,240 acres within a private ranch in northern Willacy County (Tewes, M. E. et. al, 2001). This population is located approximately 50 miles south of the project area and seven miles east of U.S. 77. The second population,

numbering 13 confirmed resident ocelots, occurs in and near the 45,000-acre Laguna Atascosa National Wildlife Refuge located in Cameron County. There was one element of occurrence record for the ocelot within the Area of Influence on August 31, 1990.

- Union Pacific Railroad – Formerly the Missouri-Pacific Railroad, Union Pacific is the largest railroad in North America, covering 23 states across the western two-thirds of the U.S. The railway extends the length of and is parallel to the proposed project. The railroad has been integral in the development of the project corridor and within the Area of Influence.

Step 4: Identify Impact-Causing Activities of the Proposed Action

Impact-causing activities of the proposed project are described below.

Modification of Regime

- Modification of Habitat – Minor habitat alteration is anticipated due to construction activity.
- Alteration of Ground Cover – where new pavement (within existing right-of-way) is proposed, clearing of grasses, shrubs, and trees would occur.
- Alteration of Flow or Hydrology – The existing roadway drainage (open ditch) configuration would not be significantly modified in conjunction with the roadway construction. As a result, existing open ditch outfall locations would not be changed. The approximately 18.7-acre net increase in pavement would increase overall roadway runoff volume and alter associated drainage flow and hydrology.

Land Transformation and Construction

Because proposed construction would occur entirely within existing right-of-way, the proposed project would not result in conversion of land that is not already used for transportation uses (right-of-way). No change in driveway access to adjacent properties would result from proposed construction.

Resource Extraction

No dredging or excavation would be required except that required for construction of grade-separated sections of the roadway (overpass and approaches), installation of piers for elevated structures, and road base installation for proposed new pavement.

Processing (storage of construction materials)

Storage of materials would occur at the project construction site. It is anticipated, based on usual practices, that the contractor would negotiate to use a portion of a property adjoining the project right-of-way for the contractor's field office and storage site. If the contractor chooses to use undeveloped land for material storage, impacts to natural resources may increase; however, such increases would be minimal since field offices and areas where materials would be stored are of limited size.

Land Alteration (erosion control, landscaping, fill)

Stormwater pollution prevention plan best management practices would be utilized to minimize construction-related erosion and sedimentation associated with the project design. The project design incorporates landscaping features at some location for project aesthetics and erosion control.

Resource Renewal Activities

Except for areas of new roadway pavement, disturbed areas of vegetation would be reestablished by native and locally adapted vegetation following construction. Remediation for construction disturbance would be implemented where warranted or prescribed by regulation.

Changes in Traffic

Automobiles and Trucks – the Build Alternative would entail limited disruption to traffic and would include various construction activities over the build-out period. To alleviate this disruption, the proposed project would be constructed in phases, and a detailed traffic control plan would be developed and implemented for each of the construction phases. It is anticipated that once the proposed improvements to U.S. 77 are complete, the facility may experience an increase in car and truck traffic through the horizon year of 2030.

Waste Emplacement and Treatment (landfill, waste discharge)

Soil excavated from the project right-of-way would likely be stockpiled for use on this or other projects. The contractor would provide portable sanitary facilities for employees at the field office. No sanitary waste discharge is anticipated. Any pavement removed from the existing roadway would be recycled for use in other projects. Packing materials would be disposed of in the landfill by a certified contractor.

Chemical Treatment (fertilization, herbicide)

None of the slopes which would be revegetated are steeper than 3:1 in grade; therefore, no chemical binders would be needed. Periodic applications of herbicide may occur during the maintenance/operational phase of the project.

Access Alteration (changes in access, circulation patterns, travel times to major attractors)

The Cuellar Avenue crossing on U.S. 77 would be closed and traffic would be required to use the one-way frontage roads and La Parra Avenue to access the northbound mainlanes of U.S. 77; however, no substantial changes in access or circulation patterns (alternative roadway use) would be anticipated from the proposed improvements.

Step 5: Identify Potentially Significant Indirect Effects for Analysis

This step identifies and assesses potential indirect effects from the proposed project and their potential to be substantial. Impact-causing activities can include: 1) Encroachment-alteration effects – those that affect the functions of the natural or socioeconomic environment due to project features; 2) Access-alteration effects – induced growth resulting from traffic pattern or access changes attributable to the project, influencing the location, intensity, or rate of residential

and commercial growth; and 3) Effects related to Induced Growth – ecological and socioeconomic encroachment effects attributable to the induced growth itself. The proposed project would not be expected to have substantial encroachment alteration or access-alteration/induced growth effects to vegetation, prime farmland soils, jurisdictional waters, floodplains, aesthetic or cultural resources.

Encroachment-Alteration Effects

- The Build Alternative would enhance the safety of and accessibility to Sarita Elementary School. The school is located in the northwest quadrant of the intersection of U.S. 77 and La Parra Avenue. Currently, northbound buses and other vehicles that either drop children off or pick them up have to make a left turn onto La Parra Avenue from northbound U.S. 77. Buses and vehicles then have to cross oncoming southbound U.S. 77 traffic in order to get to the school. The Build Alternative would increase safety by directing all mainlane traffic onto the proposed overpass (bypassing La Parra Avenue), while providing a dedicated frontage road with traffic signals. The proposed frontage roads would allow for safer turning movements and safer crossing of northbound and southbound U.S. 77. The proposed project would also increase accessibility to the school by decreasing the amount of traffic buses and other vehicles that have to cross in order to get to the school. It is anticipated this type of indirect impact would potentially be substantial (positive benefit) and requires further analysis.

- The Build Alternative would introduce new pavement in existing right-of-way and would widen the distance the ocelot would have to travel to cross the roadway. However, based on habitat assessments for the proposed project, there are limited areas of optimal or suboptimal ocelot habitat along U.S. 77 within the Area of Influence. The potential for collisions between ocelots and vehicles under the Build Alternative would be similar to the potential under existing conditions and the No Build Alternative. There has been a concerted effort by federal and state regulators (i.e. U.S. Fish and Wildlife Service and Texas Parks and Wildlife Department), as well as privately-held ranches located along the U.S. 77 corridor, to set aside sizable amounts of acres of land in order for the ocelot to have enough protected habitat to thrive. No dedicated ocelot conservation lands are located within the Area of Influence. The populations remaining in Texas are noted to be seven miles or more to the east of U.S. 77 in Willacy and Cameron Counties, south of the Area of Influence. Also, mortalities that have occurred (according to the Natural Diversity Database, the last reported mortality on U.S. 77 was in late 1997) were in an unanticipated location and at a considerable distance from the known core populations. In order to minimize potential effects of the proposed improvements on the ocelot, clearing of any unmaintained areas in the existing right-of-way would be minimized. Therefore, it is anticipated that any potential indirect impact would not be substantial and does not require further analysis.

- The Area of Influence is located in Kenedy County, which is in attainment for all National Ambient Air Quality Standards. Based on the results of Steps 1 through 4 that evaluated the possible project-related actions that can indirectly impact air, it was determined that the proposed project would not be anticipated to cause indirect air quality impacts in the Area of Influence. No change in attainment status is anticipated within the Area of Influence as the result of emissions associated with the proposed project. Indirect air quality impacts from MSATs are unquantifiable due to existing limitations to determine pollutant emissions, dispersion and impacts to human health. Emissions would likely be lower than present levels in future years as a result of the Environmental Protection Agency's national control regulations (i.e., new light-duty and heavy duty on road fuel and vehicle rules, the use of low sulfur diesel fuel). Even with an increase in vehicle miles travelled and possible temporary emission increases related to construction activities, the Environmental Protection Agency's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions of on road emissions, MSATs, and the ozone precursors volatile organic compounds and nitrous oxides. As the proposed project is not anticipated to result in indirect air quality impacts, further discussion in Steps 6-7 is not necessary.

Access-Alteration/Induced Growth Effects

The Build Alternative, as with most transportation projects, may have the potential to induce development or increase the rate of planned development along the proposed project corridor within the Area of Influence. Development may occur where there is available land and the economic conditions to foster development (and redevelopment) in the foreseeable future. However, based on interviews with local officials it has been determined that Sarita foresees a minimal potential for induced development as a result of the Build Alternative. Nonetheless, it is necessary to explore the process of assessing potential induced growth effects within the Area of Influence. Therefore, a more detailed analysis of the potential for induced development will be discussed in Step 6.

Effects Related to Induced Growth

The potential for substantial induced growth effects have been determined to be minimal. Therefore, it is unlikely that the potential for effects related to induced growth would be substantial. Further discussion of potential induced growth effects in Step 6 was used as a baseline to determine potential effects related to induced growth.

Step 6: Analyze Indirect Effects and Evaluate Analysis Results

The objective of this step is to assess the potentially substantial indirect effects identified in Step 5 by determining their magnitude, probability of occurrence, timing and duration. The limitations of the analysis and the uncertainty of the results are also discussed.

Safety and Accessibility Enhancement to Sarita Elementary School

According to the Kenedy County-Wide Common School District Superintendent and the principal of Sarita Elementary School, detrimental effects to the operation and safety of the school would only be short-term and would be associated with construction activity. These concerns include the potential increase in noise, increased dirt and dust, as well as an increase in traffic congestion that the construction of the overpass would potentially bring. The concerns described by school officials were limited to the duration of construction of the proposed project are not foreseen subsequent to construction. In addition, school officials are concerned about the potential disruption of bus routes resulting from proposed construction activities. Because of the close proximity to U.S. 77 (approximately 70 feet away) there is a history of safety concerns regarding the cars and large trucks that frequently drive by the school on a daily basis while the children arrive at the school, during class, and when school is dismissed. To mitigate some of the safety concerns of the cars and large trucks driving by the school on U.S. 77, an iron fence was previously erected around the perimeter of the school (see Photograph 2 in **Appendix B**) that can withstand the striking force of a car or large truck. The stated safety concerns can be considered direct impacts related to the construction of the proposed project and operation of the existing U.S. 77 facility. Conversely, the proposed project features provide a perceived indirect benefit, as evidenced by local school official interviews. Therefore and based on the interviews with school officials, subsequent to the construction of the proposed project, the safety of and accessibility to the school location would be substantially increased for the following reasons:

1) Mainlane traffic would bypass La Parra Avenue;
2) The new facility's overpass mainlanes would be approximately 80 feet further east of the school;
3) Decreased traffic in the immediate vicinity of the school allowing for greater accessibility to the school; and
4) Traffic signals would afford safer turning movements and safer crossing of U.S. 77 frontage road under the new overpass for northbound vehicles.

Potential for Induced Growth and Effects Related to Induced Growth in the Area of Influence

Historically, roadway projects have been thought to indirectly spur development in the surrounding areas as a result of the increased access to adjacent land. This is supported by the construction of freeways in the 1950s that were believed to be the catalyst for the expansion of suburban areas (also referred to as urban sprawl) that developed at the same time (Handy 2002). Recent studies of the relationship between land use and transportation projects agree that such a link exists. However, the findings of these transportation/land use research studies are mixed as to what degree transportation improvements influence changes in land use and to what extent other factors such as the economics, quality of living and cultural issues play in guiding land use changes (Handy 2002). Real estate professionals interviewed for a University of Texas Center of Transportation Research study agree in their assertions that accessibility provided by roadway

projects is a necessary but not sufficient condition for development of surrounding land. They state that other factors such as zoning and development regulations play a much more important role in the timing and location of development, but caution that "…it would not be prudent to conclude that highway expansions have no impact on development" (Kockelman et al. 2002). Similarly, the study concluded that urban highway expansion shows no evidence of generating new growth; however, it affects the pattern or distribution of existing growth (Handy 2002).

A field investigation conducted in November 2011 showed no development activity in the Area of Influence. No commercial for-sale signs were noted along U.S. 77 or other portions of the Area of Influence, and no new development or redevelopment activity was noted in the Area of Influence. Neither buildings under construction nor evidence of recent construction (for example grass being established, staked tree plantings, or construction debris) were noted in the Area of Influence. Almost all buildings in the Area of Influence would be considered 'older' (over 10 years old with most noticeably older than that). There was no evidence of subdivision development such as surveyors' flags, stakes, clearing, parked earth-moving equipment, or construction activity. In addition, there would no direct land use changes as a result of the proposed project (see **Section 3.1.2**-Land Use Changes).

The enhanced local mobility provided by the project could increase the attractiveness of adjacent lands to development. The type, timing or intensity (density) of development in the Area of Influence would be enhanced accordingly, along with associated economic benefits such as job growth. Based on the local access already provided by the existing roadway and existing and observed development trends, any such growth would probably be of modest magnitude (not substantial).

This analysis is based in part on current trends in Kenedy County and the Area of Influence; therefore, the analysis has a certain level of uncertainty to the extent that future trends could differ. Moreover, the analysis does not include detailed economic, demographic and geographic variables that can be attributed to the rate and type of growth in undeveloped areas.

Based on interviews with local officials in conjunction with current and projected community goals and trends, and notable features, it is unlikely that the proposed upgrades to U.S. 77 would result in substantial induced growth effects. For the reasons discussed in previous steps, the proposed project is not anticipated to result in substantial negative indirect impacts (encroachment-alteration effects, induced growth effects and effects related to induced growth); therefore, further discussion in Step 7 is not necessary.

3.12.2 Cumulative Impacts

The cumulative impacts assessment prepared for the proposed project was conducted in accordance with Council on Environmental Quality, FHWA, and TxDOT regulations and guidance documents. The Council on Environmental Quality regulations (40 CFR 1508.7) define cumulative impacts as:

> "…the impact on the environment that results from the incremental impact of

> the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time."

The analysis considers the magnitude of the cumulative impacts on the resource health. Health refers to the general overall condition, stability, or vitality of the resource and the trend of that condition. Therefore, the resource health and trend are key components of the cumulative impacts analysis. Laws, regulations, policies or other factors that may change or sustain the resource trend will be considered to determine if more or less stress on the resource is likely in the foreseeable future. Opportunities to mitigate adverse cumulative impacts will be described.

The methodology for the analysis of potential cumulative impacts follows the process recommended in the TxDOT *Guidance on Preparing Indirect and Cumulative Impact Analyses* (revised September 2010). TxDOT developed an eight-step approach to evaluate cumulative impacts. These steps are included in **Table 18.**

In order to have a cumulative impact on a resource, the proposed action must have either a direct or indirect impact on that resource. The cumulative impacts analysis focuses on healthy resources substantially impacted, directly or indirectly, by the proposed action. Alternatively, the analysis focuses on resources that are of special concern or currently in poor or declining health, even if the direct or indirect impacts resulting from the project are relatively small (less than significant).

Table 18: Eight-Step Approach for the Cumulative Impacts Analysis

Step 1 - Identify the resources to consider in the analysis.
Step 2 - Define the study area for each affected resource. Cumulative impacts are considered within spatial and temporal boundaries. Each resource has its own Resource Study Area to best assess the impacts to that individual resource. Each Resource Study Area was defined by professionals experienced in the study and analysis of each resource.
Step 3 - Describe the current health and historical context for each resource. The examination of the current health and historical context of each resource is necessary to establish a baseline for determining the effects of the proposed action and other reasonably foreseeable actions on the resource.
Step 4 - Identify direct and indirect impacts that may contribute to a cumulative impact. The analysis of cumulative impacts must look at the impacts of the proposed action in combination with the impacts of other past, present, or reasonably foreseeable actions within the resource study areas. Identification of the direct and indirect impacts of the proposed action will also assist in determining the project's contribution to the cumulative impact on the resource.
Step 5 - Identify other reasonably foreseeable action that may affect the resources.
Step 6 - Assess potential cumulative impacts to the resources.
Step 7 - Report the results.
Step 8 - Assess and discuss mitigation issues for all adverse impacts.

Step 1-Step 4: Identify Resources to Consider; Study Areas; Current Resource Health; Direct and Indirect Project Effects.

According to TxDOT's guidance, the first step in conducting a cumulative impacts analysis is to identify impacted environmental resources and determine the stability and health of those resources. A review of **Section 3** was undertaken to identify resources that would be: (1) substantially impacted by the proposed improvements or (2) are impacted to some degree by the proposed improvements and are in poor or declining health or at risk. As described in the guidance, if a project will not cause direct or indirect impacts on a resource, it will not contribute to a cumulative impact on the resource; although actions by others may result in cumulative impacts to the resource. The geographic study area is described for each resource below. The temporal study boundary in the past is 1990, the earliest date for digital Kenedy County aerial photography amenable for use in a geographic information system. The future temporal boundary for the indirect impacts analysis was determined to be through the horizon year of 2032 (estimated date of project completion plus 20 years), which is consistent with the industry standard for long-range transportation planning. A discussion of resource health, which includes the effects of actions by others, along with project direct and indirect effects, serves as a screening tool to identify which resources warrant further cumulative impacts analysis. For this analysis, two resources are analyzed for potential cumulative impacts: socioeconomic resources and protected species. Although it was determined that there would be no substantial direct or indirect impacts to socioeconomic resources and protected species, it is instructive to explore potential cumulative impacts due to the potential for each resource to be vulnerable to changes in the Resource Study Areas.

Socioeconomic Resources

A stated previously, development is not occurring in the area of indirect impacts. The proposed project would improve mobility for local and through traffic on U.S. 77. Moreover, the enhanced mobility and access could increase the attractiveness of the local area to developers, spurring job growth (a beneficial socioeconomic effect). For this reason, the study area for this resource would be identical to the indirect impacts Area of Influence, since this corresponds to the area of potential induced development and associated job opportunities. No displacements or changes to land use would occur from the proposed project. According to local official interviews as well as a review of socioeconomic data, induced development would not be anticipated from the project; any minor growth that may occur would likely represent a temporary beneficial indirect effect (increased employment opportunities from highway construction). Substantial socioeconomic encroachment-alteration effects such as changes in neighborhood cohesion, local travel patterns, pedestrian mobility and safety, privacy and aesthetic or cultural values would not be anticipated. In summary, no direct socioeconomic effects and no substantial, adverse indirect socioeconomic effects would be anticipated, although positive indirect effects would occur (i.e. increase in the safety of and accessibility to Sarita Elementary School). As such, cumulative impacts to this resource will not be addressed further because substantial direct or indirect socioeconomic impacts would not be anticipated.

Protected Species

For this resource, the Resource Study Area would include local rangeland, estuarine and riparian habitat for four amphibian species, 26 bird species, three fish species, three insect species, eight mammal species, 13 reptile species and four plant species (see **Table 6**). The historic decline of these species is largely linked to large-scale conversion of native scrub-shrub habitat to ranch and farmland, as well as associated loss of wetland habitats and alteration of riparian habitat due to drainage activity associated with ranch/farmland conversion. Such conversion, primarily to rangeland, has occurred on virtually all land within five miles of the project limits; a small proportion of the Resource Study Area, in Kleberg County near Riviera, contains areas converted to agricultural uses. Sarita (within the Area of Influence) and Riviera comprise small areas converted to semi-urban residential and commercial use. The Resource Study Area for protected species is a five-mile buffer of the project limits (**Exhibit 8**) and provides a reasonable area for analysis of cumulative impacts to protected species for the proposed project. The five-mile buffer represents a reasonable and meaningful Resource Study Area because: 1) for most of the Resource Study Area, the surrounding area (rangeland) is extensive and homogeneous in nature; and 2) it encompasses a 10-mile diameter Texas Parks and Wildlife Department Natural Diversity Database Element of Occurrence 'bubble' for the species listed in **Table 19**. Other potential habitat within the Resource Study Area includes hundreds of isolated, small emergent and forested wetlands, riparian habitat of Los Olmos Creek, as well as hundreds of acres of ponds and lakes. The Resource Study Area encompasses approximately 60,700 acres or approximately 95 square miles of land, including hundreds of acres of littoral and open water habitat provided by Laguna Salada.

Table 19: Protected EO Species Potentially in the RSA

Scientific Name	Common Name	USFWS Status	TPWD Status
PLANTS			
Tilandsia bayleyi	Bailey's ballmoss	--	SOC
AMPHIBIANS			
Hypopachus variolosus	Sheep frog	--	T
Notophthalmus meridionalis	Black-spotted newt	--	T
Siren sp. *1*	South Texas siren – large form	--	T
Holbrookia propinqua	Keeled earless lizard	--	SOC
Smilisca baudinii	Mexican tree frog	--	T
MAMMALS			
Leopardus pardalis	Ocelot	E	E
REPTILES			
Drymarchon melanurus erebennus	Texas indigo snake	--	T
Gopherus berlandieri	Texas tortoise	--	T

SOC=Species of Concern; T=Threatened; E=Endangered

The proposed project does not require new right-of-way, and because the majority of the existing right-of-way is maintained, no substantial direct impacts to protected species habitat is anticipated. For the reasons discussed in the previous section, induced development (access-alteration effects) is not anticipated, thereby limiting the potential for impacts associated with induced growth effects. Moreover, there is limited potential for any substantial encroachment-

alteration impacts from the project. The extensive native habitat impacts that have already occurred in the Resource Study Area (historic rangeland conversion) have resulted in diminished habitat quality. Remnant habitat, however, remains stable in the Resource Study Area; no substantial development activity is anticipated. In view of these factors, cumulative impacts to protected species will not be addressed further.

Screening for cumulative impacts to socioeconomic resources and protected species resources from the U.S. 77 improvements within the project limits is summarized in **Table 20**. As shown, cumulative impacts analysis beyond the initial screening process is not warranted. No substantial cumulative impacts to socioeconomic or protected species resources are anticipated from the proposed project.

Table 20: Cumulative Effects Analysis Summary

Resource Category (Step 1)	Resource Study Area (Step 2)	Current Health and Historical Context (Step 3)	Direct and Indirect Impacts of Proposed Project (Step 4)	Results of Initial Screening
Socioeconomic Environment	Indirect Impacts Area of Influence	Sarita – stable population/socioeconomic health	Direct: No relocations or substantial changes in travel patterns Indirect: No substantial changes in neighborhood cohesion, local access, local economy, or pedestrian mobility and safety (encroachment-alteration). Potential for positive safety and accessibility benefit for Sarita Elementary School and potential for temporary job opportunities (highway construction); however, no indication of substantial detrimental indirect effects.	Stable; Potential safety/accessibility benefits; however, no substantial negative impacts from roadway improvements. Not addressed further
Protected Species	Potential rangeland/wetland habitat of Kenedy County and parts of southern Kleberg County as well as potential coastal plain, riparian, and Laguna Salada habitat, within five-mile buffer of project roadway	Remnant habitat (stable) for one federal endangered species, seven state threatened species, and three state species of concern	Direct: May impact three amphibian species, three bird species, one insect species, one mammal species, and five reptile species Indirect: No substantial access-alteration/induced growth effects to any area of occurrence or suitable habitat. No substantial encroachment-alteration effects to any area of known occurrence or suitable habitat.	Stable: No substantial impacts from roadway improvements; not addressed further

4.0 PERMITS AND COMMITMENTS

Cultural Resources

In the event that unanticipated archeological deposits are encountered during construction, work in the immediate area will cease and TxDOT archeological staff will be contacted to initiate post-review discovery procedures under the provisions of the Programmatic Agreement for Transportation Undertakings and Memorandum of Understanding.

Wildlife and Vegetation

Prior to construction a qualified biologist will conduct a nest survey. In the event that migratory birds are encountered on-site before or during project construction, every effort would be made to avoid adverse impacts to protected birds, active nests, eggs and/or young.

The project area wetlands, maintained right-of-way vegetation and unmaintained (Mesquite Parks) vegetation community provide suitable habitat for one federally endangered species (Northern Aplomado Falcon), three state threatened amphibians (black-spotted newt, Sheep frog and South Texas siren), two state threatened birds (Texas Botteri's Sparrow and Wood Stork), one bird species of concern (Western Burrowing Owl), one insect species of concern (superb grasshopper), one mammal species of concern (plains spotted skunk), four state threatened reptiles (Texas horned lizard, Texas indigo snake, Texas scarlet snake and Texas tortoise), and one reptile species of concern (spot-tailed earless lizard). Therefore, there is the potential for the presence of these species. Federal law prohibits taking of federally listed species, except by permit. State law prohibits the taking (incidental or otherwise) of state listed species. Taking is defined as the collection, hooking, hunting, netting, shooting, or snare by any means or devices. Prior to construction, the contractor will be provided descriptions of these species, along with the other listed species with the potential to occur within the County. If any listed species are observed during construction, neither the species nor its habitat would be disturbed. Work would cease in the immediate area and the Engineer would be contacted immediately.

It is anticipated, based on usual practices, that the contractor would negotiate to use a portion of a property adjoining the project right-of-way for the contractor's field office and storage site. If the contractor chooses to use undeveloped land for material storage, any impacts to threatened/endangered species habitat will be coordinated with USFWS.

Water Resources

Pursuant to Section 402 of the Clean Water Act, potential stormwater discharge from the project right-of-way during construction must be authorized by the Texas Commission on Environmental Quality. This project would include five or more acres of earth disturbance; therefore, TxDOT would comply with the Texas Commission on Environmental Quality's Texas Pollutant Discharge Elimination System Construction General Permit. A Stormwater Pollution Prevention Plan would be implemented, and a construction site notice would be posted on the construction site. A Notice of Intent would be filed with the Texas Commission on

Environmental Quality at least 48 hours prior to construction in order to obtain coverage under Texas Pollutant Discharge Elimination System Construction General Permit TXR150000.

Wetland impacts would result from proposed construction; however, the wetlands were determined to be potentially isolated and nonjurisdictional. Any wetland areas within the right-of-way but not directly impacted by the project would be fenced with high visibility, temporary fencing during construction to prevent incidental impacts from construction access. Additionally, if the contractor chooses to use undeveloped land outside the right-of-way for material storage, any impacts to waters of the U.S. will be coordinated with the U.S. Army Corps of Engineers.

Construction Noise

Provisions would be included in the plans and specifications requiring 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.

Air Quality

The control of particulate matter emanating from various construction activities would be in accordance with the Texas Commission on Environmental Quality regulations and would be incorporated into the final design and construction specifications. To minimize exhaust emissions, contractors would be required to use emission control devices and limit unnecessary idling of construction vehicles.

Hazardous Materials

The contractor would take appropriate measures to prevent, minimize and control the spill of hazardous materials in staging areas. All materials being removed and/or disposed of by the contractor would be done in accordance with state and federal laws and by approval of the project engineer.

5.0 PUBLIC INVOLVEMENT

A meeting with the Sarita Independent School District Board took place on December 14, 2011. A Public Hearing will be held on February 6, 2012 for the U.S. 77 Corridor Study at Sarita Elementary School. Public notices were published in English and Spanish in a local newspaper.

6.0 PROGRAMMATIC CATEGORICAL EXCLUSION DETERMINATION

The proposed action meets the criteria for a Programmatic Categorical Exclusion as defined in the *Programmatic Agreement for the Review and Approval of NEPA Categorically Excluded Transportation Projects* executed by the Texas Division of the FHWA and TxDOT on November 7, 2011. **Appendix F** contains a signed copy of the PCE Determination Form for the proposed project.

7.0 REFERENCES

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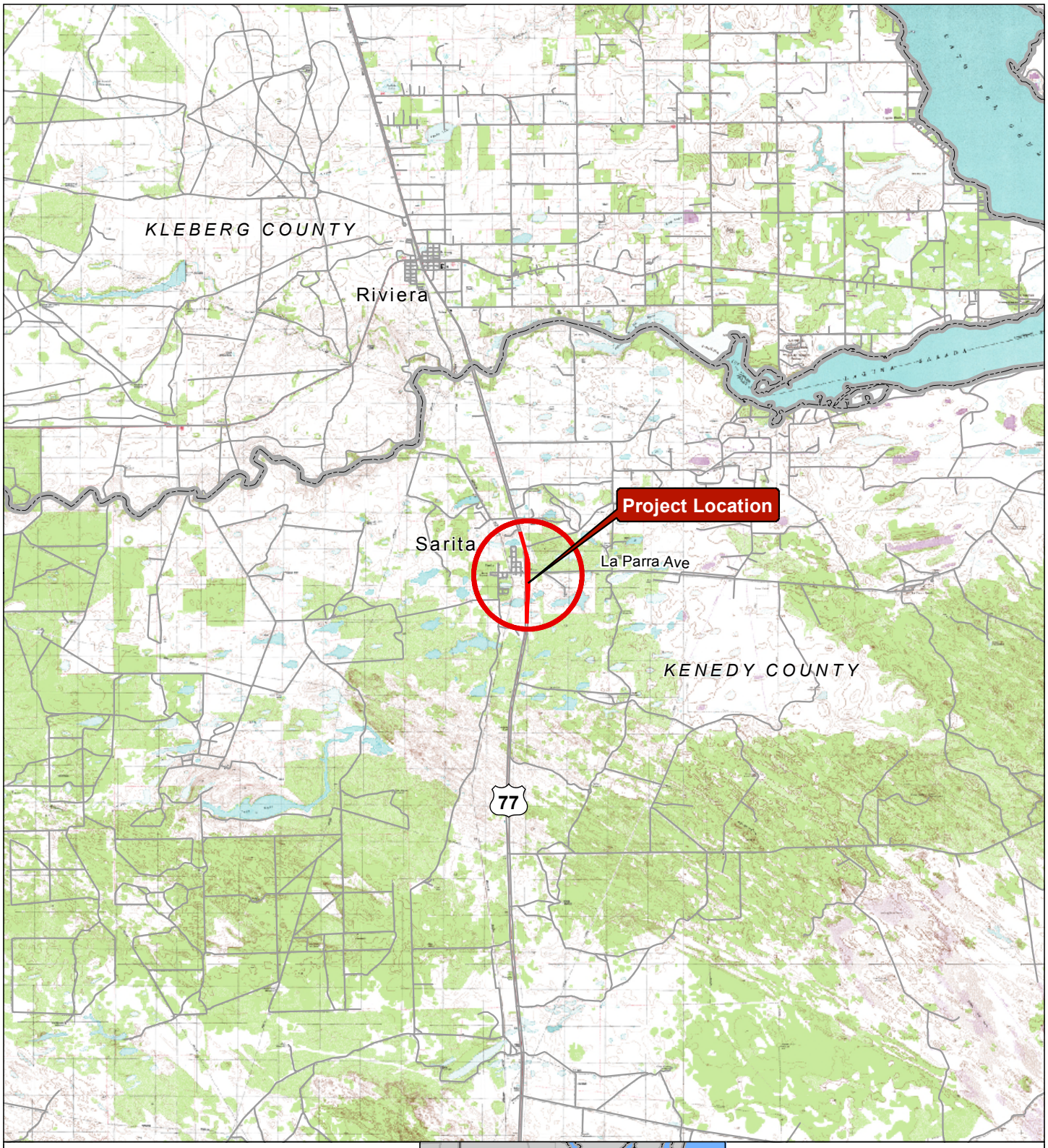
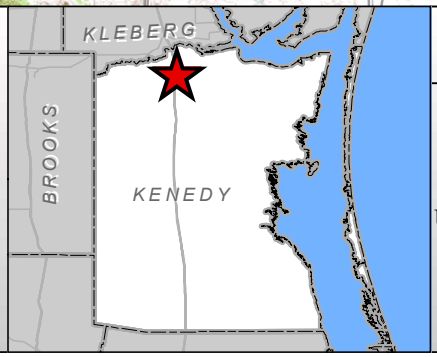


Project Limits

0 0.75 1.5 3
Miles
0 6,250 12,500 25,000
Feet

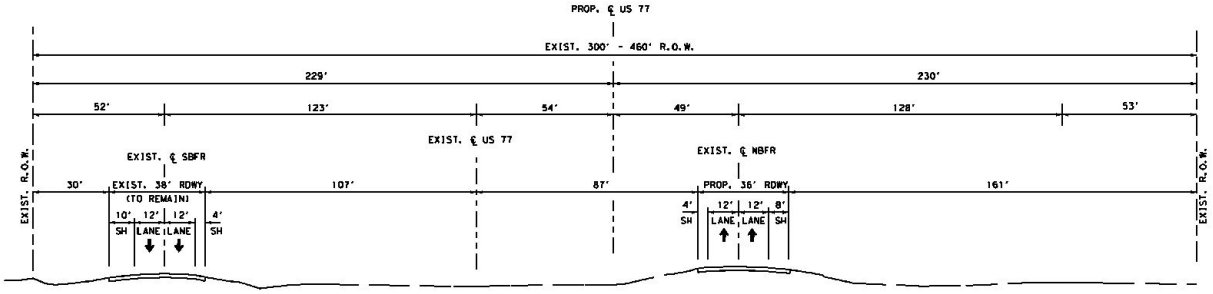


Texas Department of Transportation

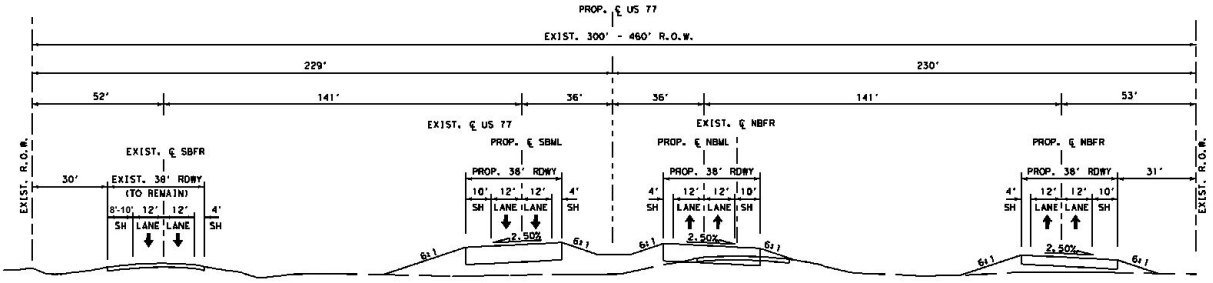
Exhibit 1
Project Location

US 77 from 0.87 mile south of La Parra Ave.
to 0.71 mile north of La Parra Ave.

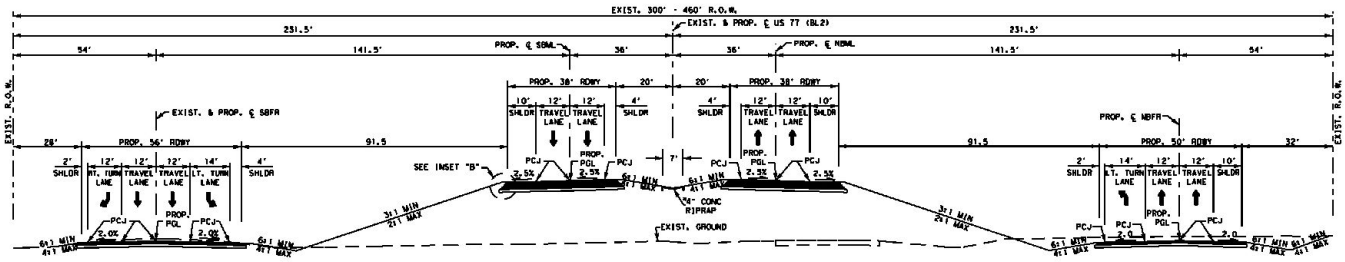
CSJ: 0327-02-050
Kenedy County, Texas



Existing Typical Section

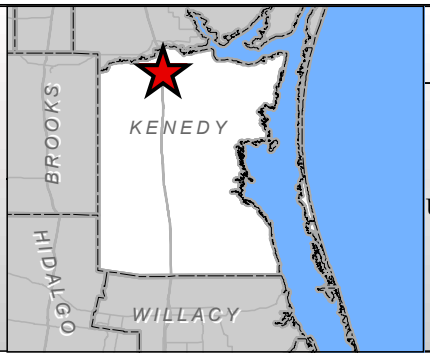


Proposed Typical Section – U.S. 77 At-Grade Sections



Proposed Typical Section – U.S. 77 Overpass at La Parra Ave

NOT TO SCALE

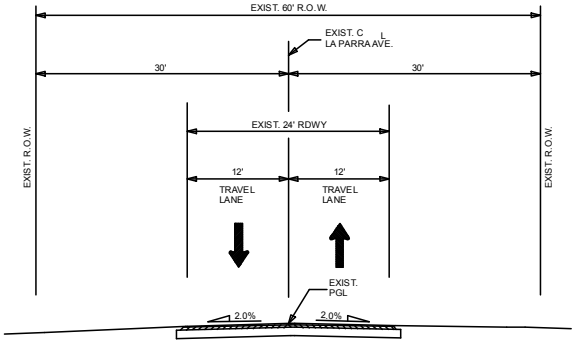


Texas Department of Transportation

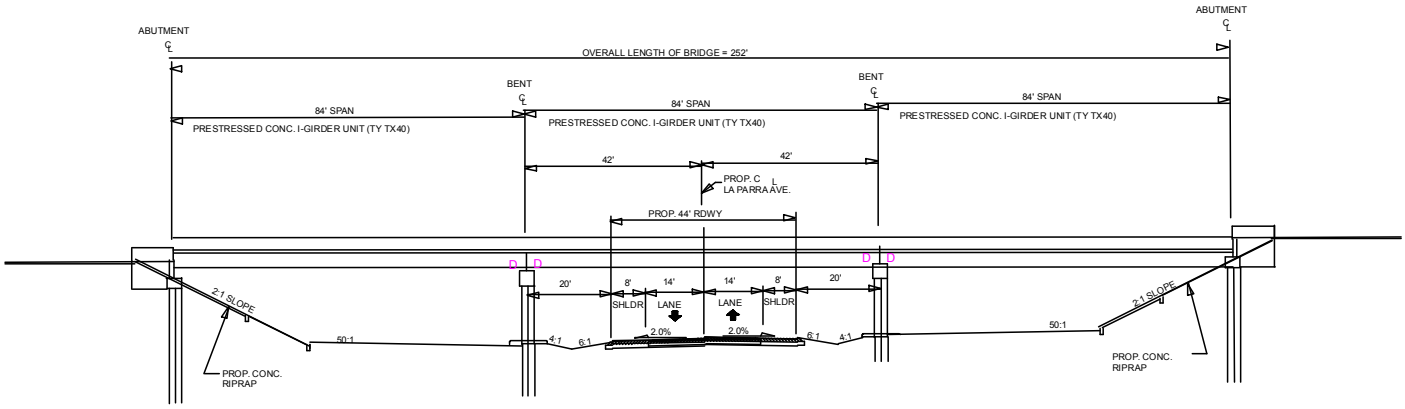
Exhibit 2a
Typical Sections

US 77 from 0.87 mile south of La Parra Ave.
to 0.71 mile north of La Parra Ave.

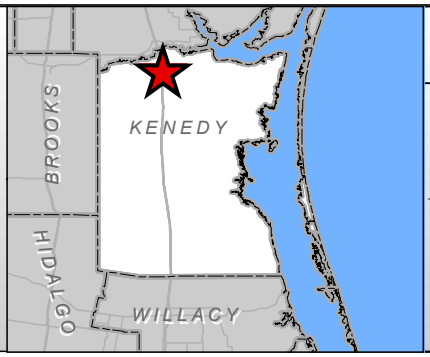
CSJ: 0327-02-050
Kenedy County, Texas



LA PARRA AVE.
EXIST. TYPICAL SECTION



LA PARRA AVE.
PROP. TYPICAL SECTION

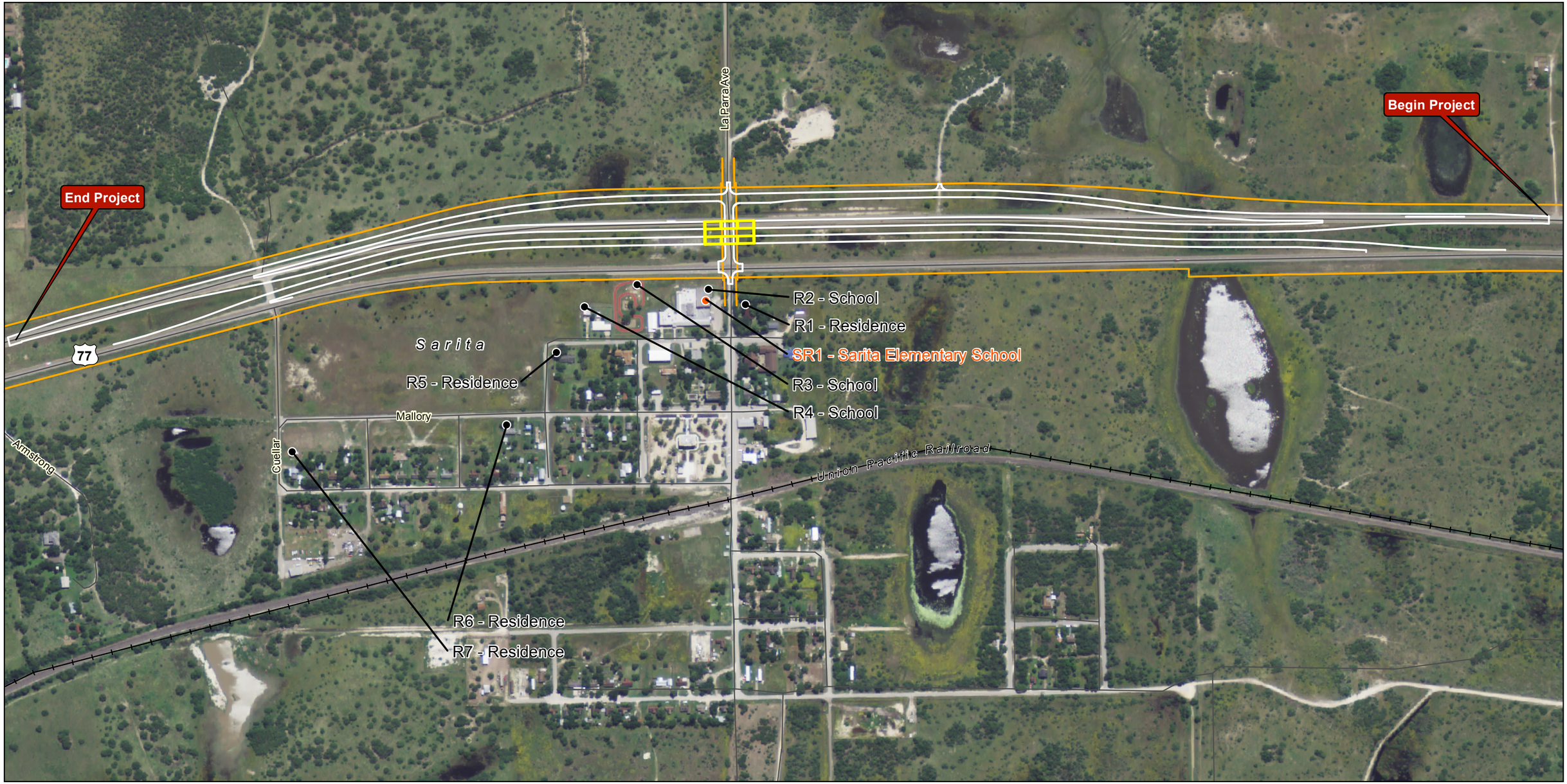


Texas Department of Transportation

Exhibit 2b
Typical Sections

US 77 from 0.87 mile south of La Parra Ave.
to 0.71 mile north of La Parra Ave.

CSJ: 0327-02-050
Kenedy County, Texas



- Noise Receivers
- MSAT Sensitive Receptor
- Proposed Edge of Pavement
- Proposed Overpass
- Existing Right-of-Way

Aerial Source: NAP 2010

1:6,010

0 300 600
Feet

0 0.15
Miles

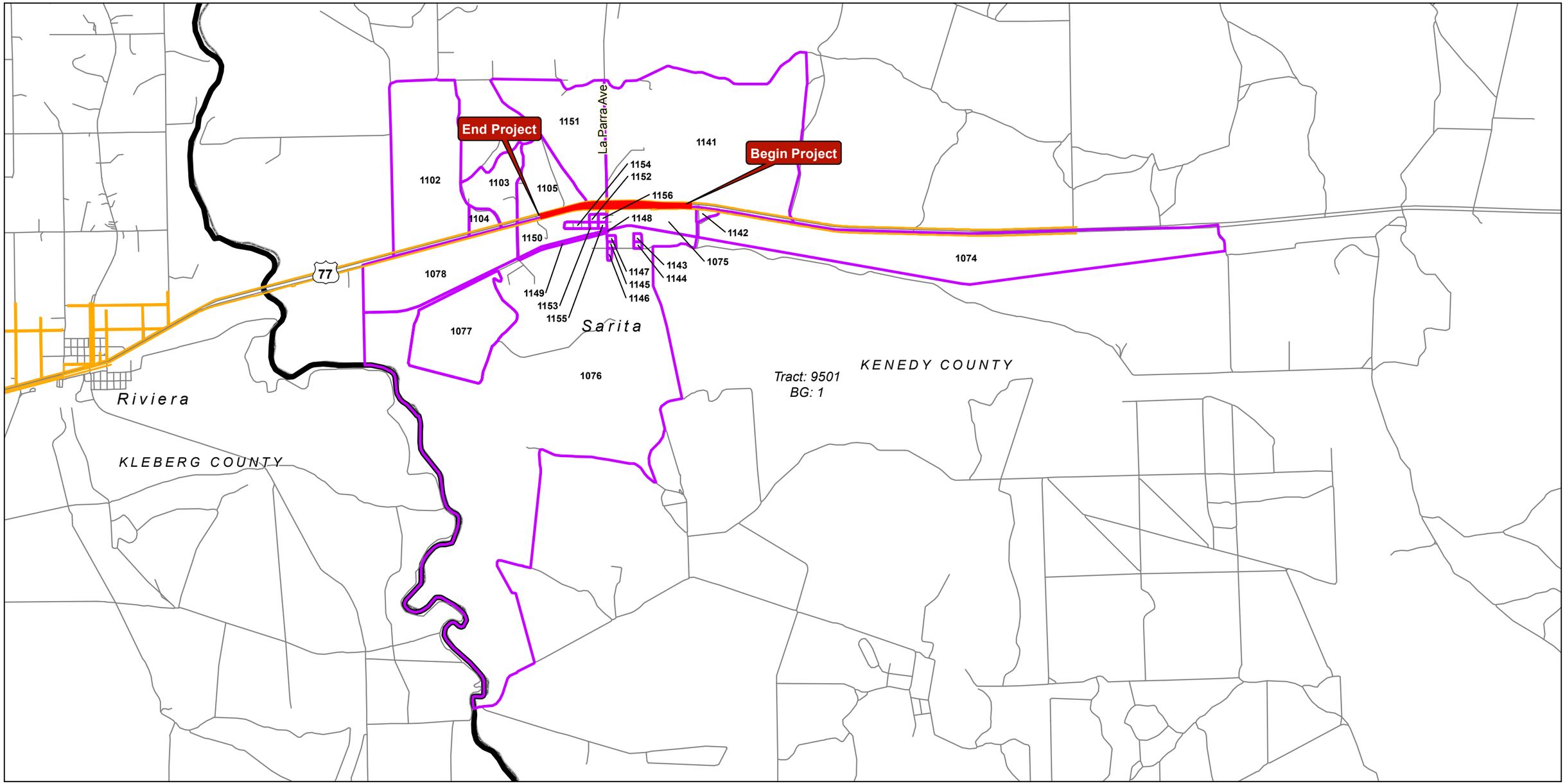
Texas Department of Transportation

Exhibit 3

Plan View

US 77 from 0.87 mile south of La Parra Ave.
to 0.71 mile north of La Parra Ave.

CSJ: 0327-02-050
Kenedy County, Texas



Project Limits
Census Block/Socioeconomic Study Area
Census Block Group
Existing Right-of-Way
Streets

Tract 9501, BG 1 encompasses all of Kenedy County

1:63,360

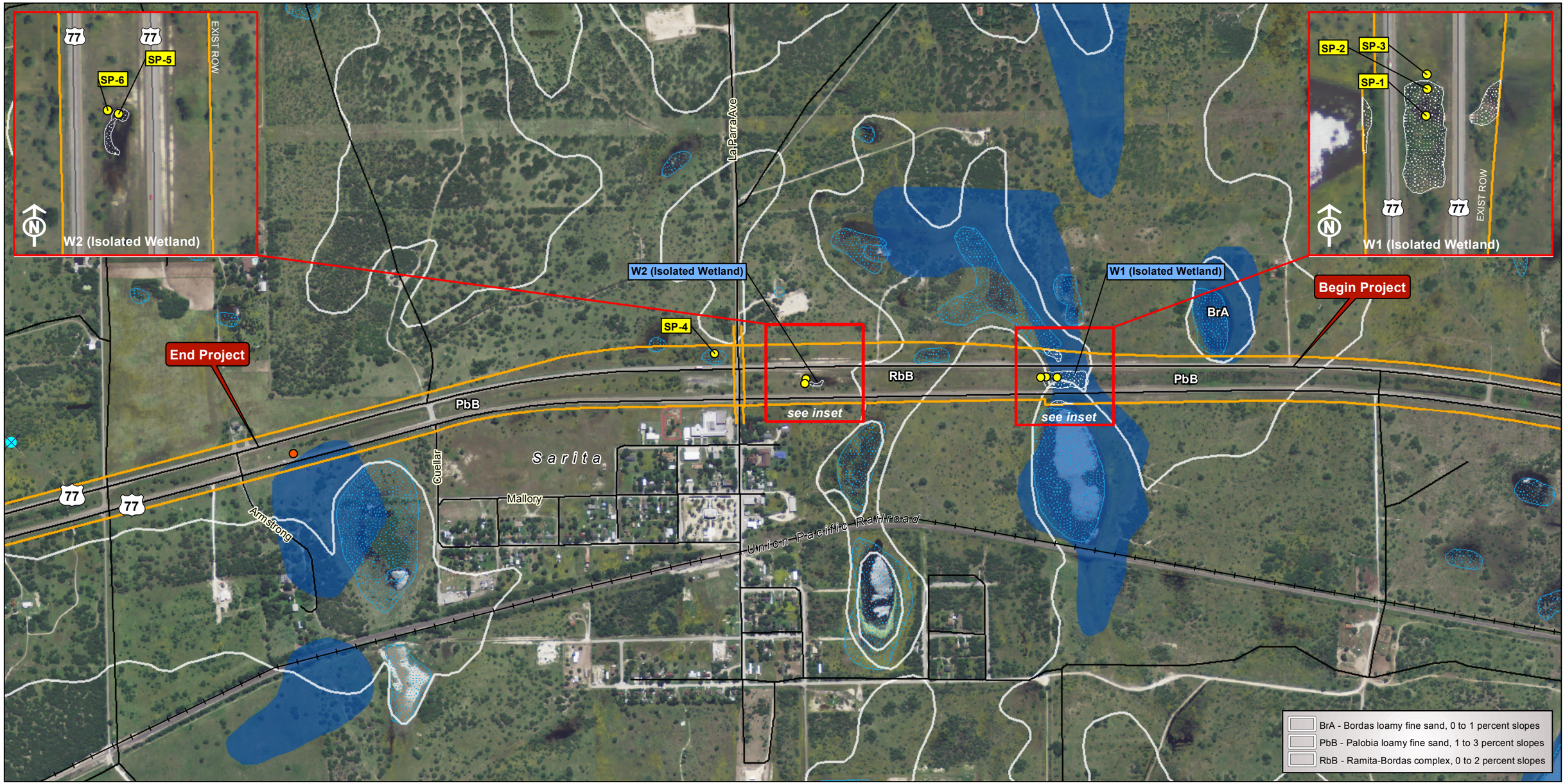
0 2,000 4,000
Feet

0 1
Miles

Texas Department of Transportation

Exhibit 4
Socioeconomic Study Area

US 77 from 0.87 mile south of La Parra Ave.
to 0.71 mile north of La Parra Ave.
CSJ: 0327-02-050
Kenedy County, Texas



Wetland Sample Point
Plugged Gas Well
Existing Right-of-Way
Soil Units
100-Year Floodplain
NWI Wetland
Delineated Wetland

Aerial Source: NAIP 2010

1:9,000

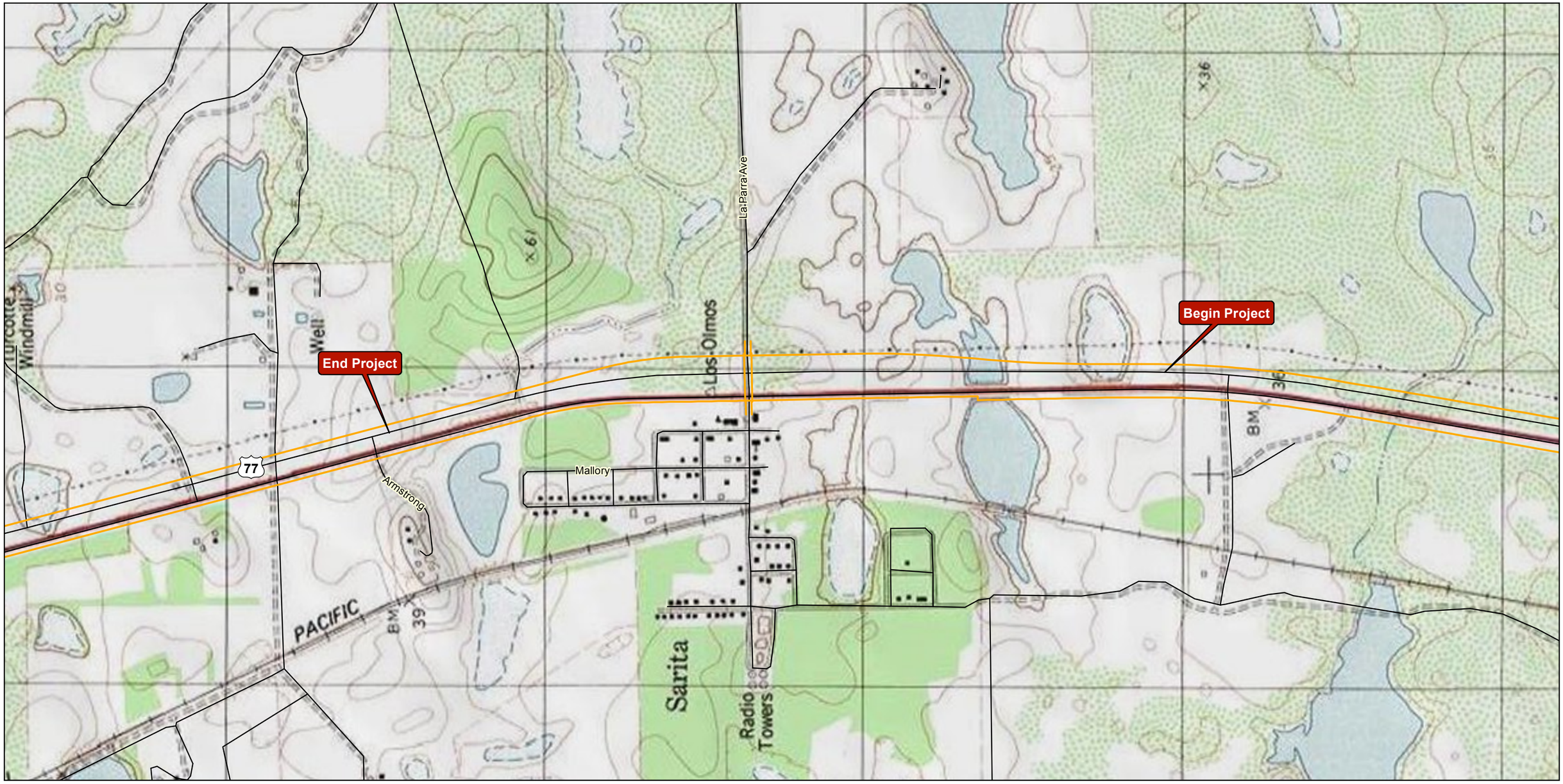
0 500 1,000
Feet

0 0.25
Miles

Texas Department of Transportation

Exhibit 5
Environmental Constraints

US 77 from 0.87 mile south of La Parra Ave.
to 0.71 mile north of La Parra Ave.
CSJ: 0327-02-050
Kenedy County, Texas



Existing Right-of-Way

1:12,000

0 500 1,000
Feet

0 0.25
Miles

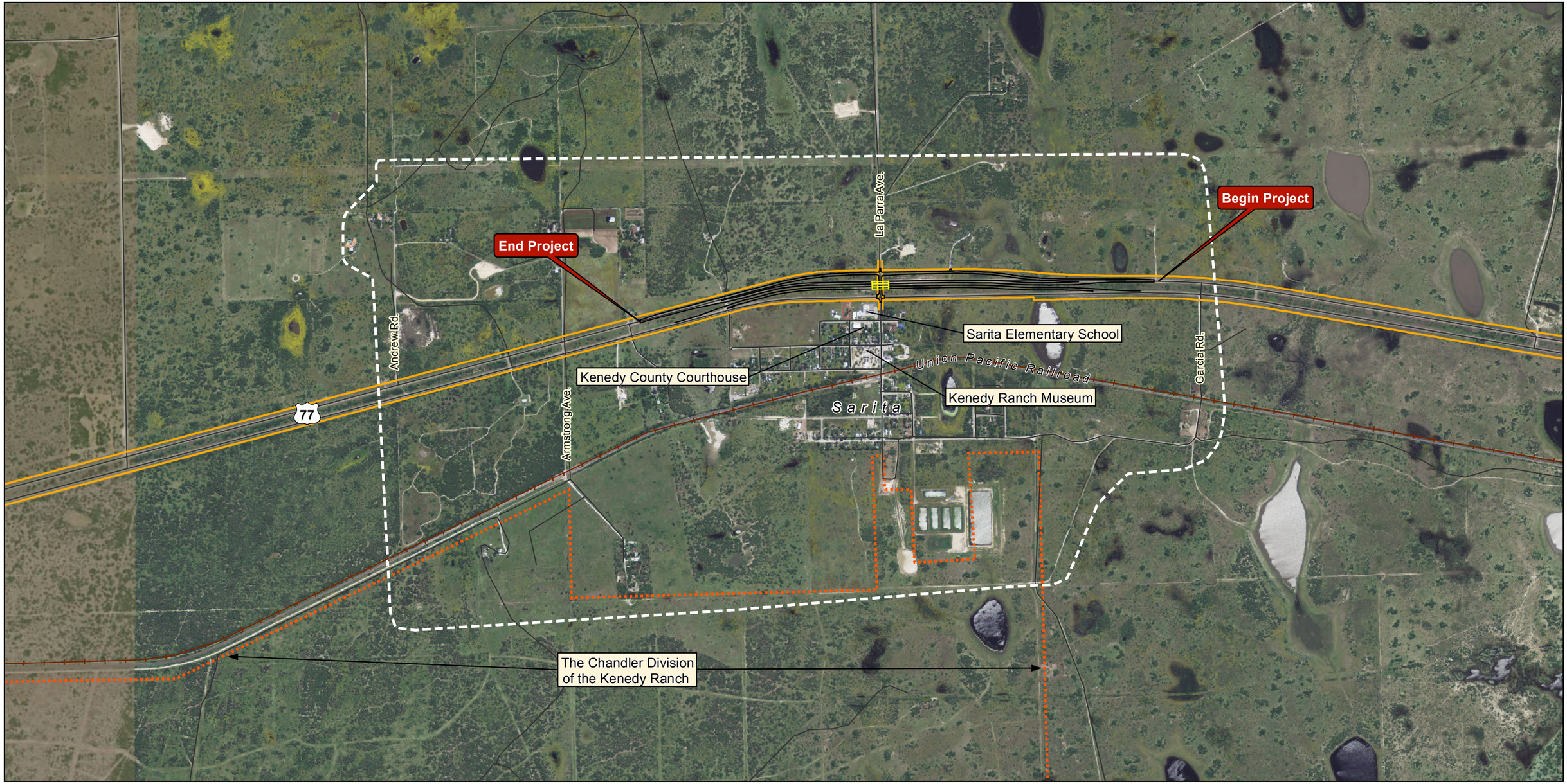
Texas Department of Transportation

Exhibit 6

USGS Topographic Map

Sarita Quadrangle

US 77 from 0.87 mile south of La Parra Ave.
to 0.71 mile north of La Parra Ave.
CSJ: 0327-02-050
Kenedy County, Texas



Edge of Pavement
Overpass
Existing Right-of-Way
Railroad
Kenedy Ranch Boundary
Area of Influence

Aerial Source: NAIP 2010

1:18,000

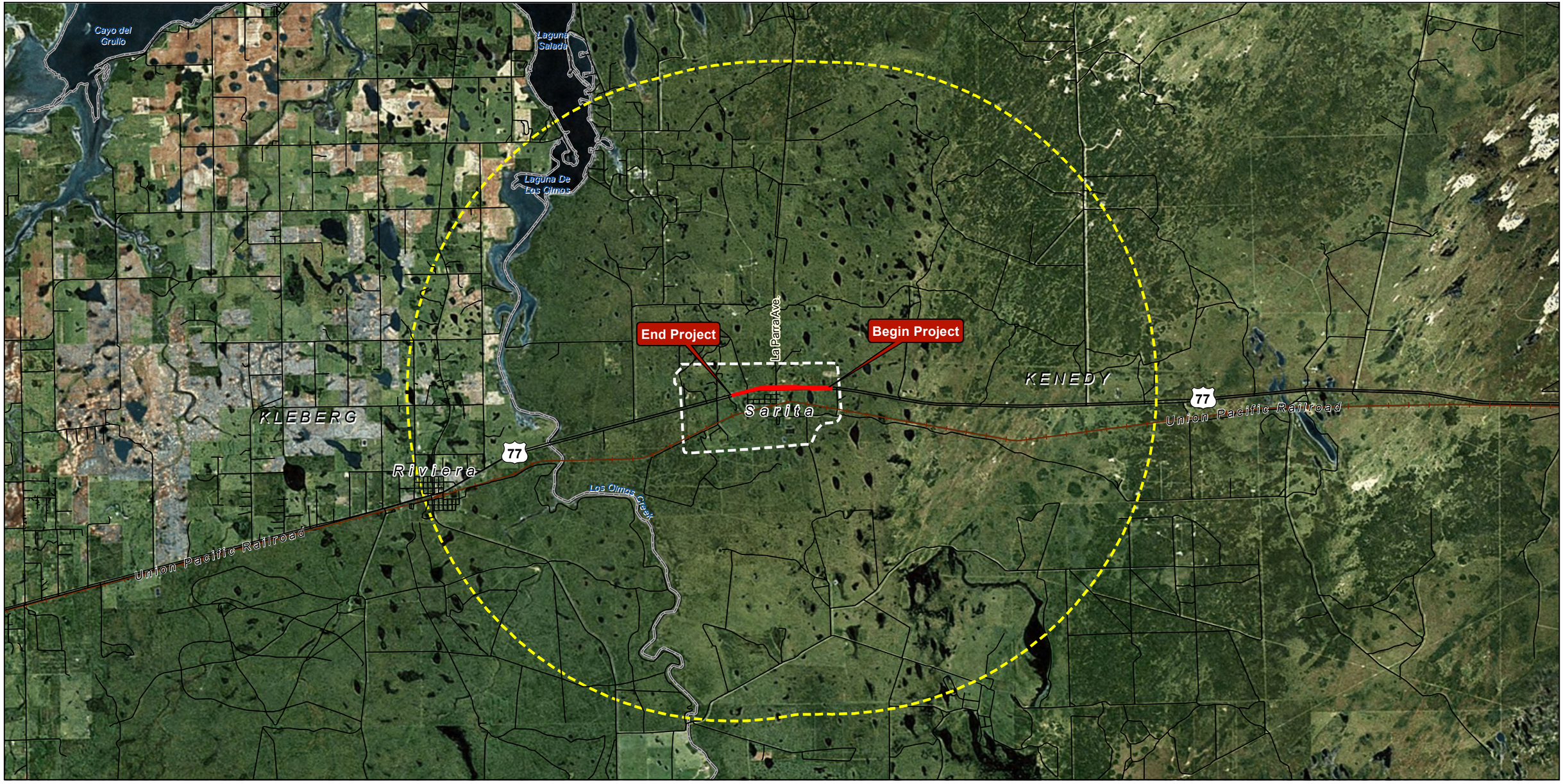
0 750 1,500
Feet

0 0.5
Miles

Texas Department of Transportation

Exhibit 7
Indirect Impacts Study Area

US 77 from 0.87 mile south of La Parra Ave.
to 0.71 mile north of La Parra Ave.
CSJ: 0327-02-050
Kenedy County, Texas



Protected Species RSA
Project Limits
Area of Influence/Socioeconomic RSA
County Boundary
Railroad

Aerial Source: (c) 2010 Microsoft Corporation and its data suppliers

1:95,040

0 5,000 10,000
Feet

0 1.5
Miles

Texas Department of Transportation

Exhibit 8
Cumulative Impacts Study Area

US 77 from 0.87 mile south of La Parra Ave.
to 0.71 mile north of La Parra Ave.
CSJ: 0327-02-050
Kenedy County, Texas

Appendix A
2011–2014 STIP Project Listing

Appendix B
Site Photographs

Photograph 1: View of existing U.S. 77 looking south from north project terminus

Photograph 2: View from east right-of-way, of La Parra Avenue, Sarita Elementary School and residences located west of U.S. 77. Site of proposed U.S. 77 overpass.

Photograph 3: Residential area adjacent to west right-of-way in Sarita.

Photograph 4: View 0.1 mile north of La Parra Avenue of vegetation within existing right-of-way and rangeland adjacent to the project

Photograph 5: La Parra Avenue crossing in U.S. 77 median.

Photograph 6: Wetland located in U.S. 77 median 0.45 mile south of La Parra Avenue

Photograph 7: Wetland (shovel) and typical maintained vegetation
in U.S. 77 median, looking north from 0.1 mile south of La Parra Avenue

Photograph 8: Unmaintained median vegetation near south project terminus

Appendix C
Agency Coordination

MEMORANDUM

Texas Department of Transportation

To:	**CRM Project File**
District:	**Pharr**
County:	**Kenedy**
CSJ#:	**0327-02-050**
Highways:	**US 77**
Limits:	**From 0.07 miles south of La Parra Ave. to 0.07 miles north of La Parra Ave.**
Project Description:	**Stipulation V, Appendix 3: Construct overpass. No new ROW or easements required. Negative survey.**

From: Laura Caffrey **Date:** December 21, 2011

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

This project proposes to construct an overpass to carry US 77 over La Parra Avenue in Sarita, Texas. All work is to take place within existing right-of-way (ROW) and no new ROW or easements are required.

A review of the National Register of Historic Places (NRHP) the list of State Archeological Landmarks (SAL), and the list of Recorded Texas Historic Landmarks (RTHL) indicated that no historically significant resources have been previously documented within the area of potential effects (APE). It has been determined through consultation with the State Historic Preservation Officer (SHPO) and application of professional judgment that the APE for the proposed project is the existing ROW. The ROW is a maximum of 460 feet wide at the highest point of the overpass and a minimum of 300 feet where the grade separation begins and ends, allowing ample distance for the assessment of any visual effects the project may have on nearby historic resources. A site visit and desktop research were conducted by qualified personnel to reveal that there are no historic resources (built prior to 1967) located within the APE. Additionally, no Official Texas Historical Markers (OTHM) are located within the project APE.

Pursuant to Stipulation V, Appendix 3 "Undertakings with No Potential to Cause Effects" of the First Amended Programmatic Agreement, regarding the Implementation of Transportation Undertakings (PA-TU) between the Federal Highway Administration (FHWA), the Texas State Historic Preservation Officer (SHPO), the Advisory Council on Historic Preservation, the Texas Department of Transportation (TxDOT) and the Memorandum of Understanding (MOU), TxDOT has determined that no historic properties are present within the proposed project's APE and individual project coordination with SHPO is not required.

Lead Reviewer CAN for TxDOT 12.21.11

Initials Date

CAN for SJC:lc
CC: Maria Cottagoma

District/County Pharr/Kenedy Highway U.S. 77 CSJ 0327-02-050
Contractor HNTB Submittal Date 11/30/2011

District Personnel Name:_____ Date:_____

	PART 3: ENV HIST Determinations Additional actions required by the District. SOU to be resubmitted with requested information *[DO NOT WRITE on this page; for ENV HIST STAFF ONLY]*	Yes
1	Project information is **insufficient** to determine level of Historic Resource Review and Consultation (see attached comments indicating why information is insufficient).	☐
2	Project information is sufficient to recommend that a **Reconnaissance Survey** be performed.** ENV HIST staff will consult with the District to (1) specify survey needs and (2) develop a scope of work and a timeline for receiving contract deliverables.	☐
3	Project information is sufficient to recommend that an **Intensive Survey** be performed.** ENV HIST staff will consult with the District to (1) specify survey needs and (2) develop a scope of work and a timeline for receiving contract deliverables.	☐
4	**Additional Comments:**	

** All work must meet appropriate Standards of Uniformity. Please consult ENV HIST if assistance is required through an ENV Scientific Services Contract.

	PART 4: ENV HIST Certification *[TO BE FILLED OUT BY ENV HIST STAFF; TO BE INCLUDED WITH DISTRICT'S SUBMISSION TO THE REC]*
1	ENV HIST staff determined that the project information is sufficient to record Section 106 actions on HIST screen in ETS. The appropriate NEPA language has been submitted to the District and recorded in ETS.
2	ENV HIST Reviewer Name: Carolyn A Nelson Date: 12.21.11 csj # 0327-02-050

Scanned & Distributed
12/20/11 dp

MEMORANDUM

Texas Department of Transportation

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

FROM: Scott Pletka, Ph.D. **DATE:** December 20, 2011

SUBJECT: Internal review under the First Amended Programmatic Agreement Among the Federal Highway Administration, the Texas Department of Transportation, the Texas State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding the Implementation of Transportation Undertakings (PA-TU), and internal review under the Memorandum of Understanding (MOU) Between the Texas Historical Commission and the Texas Department of Transportation

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Attached are the lists of projects reviewed internally by qualified TxDOT archeologists from 12/15/11 to 12/20/11. These projects either do not warrant survey as a result of a low probability of encountering archeological historic properties and State Archeological Landmarks, or the projects were inspected by survey or impact evaluation and do not warrant further work. As provided under the PA-TU, consultation with the Texas State Historic Preservation Officer is not necessary for these undertakings. As provided under the MOU, the proposed projects do not require individual coordination with the Texas Historical Commission.

Signature _____ Date 12/20/11
For FHWA and TxDOT

Attachment

cc: ETS Data Entry; PM; ENV_ARC; PA File;

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ETS

ARCHEOLOGICAL COORDINATION

Projects that do not warrant Archeological Survey

(Section 106 and ANTIQUITIES CODE OF TEXAS)

From : 12/15/2011 To: 12/20/2011

COUNTY	DISTRICT	PROJECT	CSJ	*F30/T20 Concur, no further work	*F10/T10 Unable to Concur
Kenedy	Pharr	US 77	0327-02-050		
Tarrant	Fort Worth	Bowman Branch Trail	0902-48-790		

Number of Projects: 2

Signature _____ Date 12/20/11

For FHWA and TxDOT

Appendix D
Texas Natural Diversity Database
Elements of Occurrence
Within 10 miles of Project Area

Appendix D: NDD Elements of Occurrence within 10 miles of Project Area

Common Name	Scientific Name	EOID
AMPHIBIANS		
Sheep frog	*Hypopachus variolosus*	1947
		5973
		365
Black-spotted newt	*Notophthalmus meridionalis*	912
South Texas siren – large form	*Siren* sp. *1*	7103
		4102
MAMMALS		
Ocelot	*Leopardus pardalis*	131
		3745*
REPTILES		
Black-striped Snake	*Coniophanes imperialis*	3952
		4253
Keeled earless lizard	*Holbrookia propinqua*	4259
		2375*
Mexican blackhead snake	*Tantilla atriceps*	5475
Texas Indigo Snake	*Drymarchon melanurus erebennus*	7049
		4492
		4988
		3444*
		2512
BIRDS		
Sennett's hooded oriole	*Icterus cucullatus sennetti*	1892
PLANTS		
Bailey's ballmoss	*Tillandsia baileyi*	3881
		8389
		4823
Kleberg saltbush	*Holbrookia propinqua*	4846
		445
RARE VEGETATION SERIES		
Seacoast bluestem-gulfdune paspalum series	*Schizachyrium scoparium var. (littoralis-paspalum monostachyum series)*	8142

Source: Texas Parks and Wildlife Department (October 2011)
*Reported within 1.5 miles of project area (as shown in **Table 7**)

Appendix E
Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: US 77: 0.87 mi S. to 0.71 mi N of La Parra Ave. City/County: Sarita, Kenedy County Sampling Date: 11/9/11
Applicant/Owner: Texas Department of Transportation State: TX Sampling Point: 1
Investigator(s): Cimagaroon Howell, Lee Ellison Section, Township, Range:
Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%):0
Subregion (LRR): I Lat: 27.214948 Long: -97.788901 Datum: NAD 83
Soil Map Unit Name: Ramita loamy fine sand (RaB) / Bordas loamy fine sand (BrA) Complex NWI classification: PEM1F
Are climatic/hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area within a Wetland?**	Yes X	No
Hydric Soil Present?	Yes X	No			
Wetland Hydrology Present?	Yes X	No			

Remarks: Exceptional drought conditions exist at the project site. SP 1 lies within a natural wetland bisected by U.S. 77. SP 1 has wetland soil, vegetation, and hydrology.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 20' radius)			
1. *Polygonum persicaria*	35	Yes	FACW+
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	35 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum <5%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC –): 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

____ Prevalence Index is ≤3.0[1]

____ Morphological Adaptations[1] (Provide Supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: 75% cover of dead cattail (*Typha latifolia*). SP1 has wetland vegetation.

SOIL

Sampling Point: 1

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/2	95	7.5YR 5/6	5	C	M	Clay	
6-18	7.5YR 4/2	100	NA	NA	NA	NA	Clayey fine sand	

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

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

- __ Histosol (A1)
- __ Histic Epipedon (A2)
- __ Black Histic (A3)
- __ Hydrogen Sulfide (A4)
- __ Stratified Layers (A5) (**LRR F**)
- __ 1 cm Muck (A9) (**LRR F, G, H**)
- __ Depleted Below Dark Surface (A11)
- __ Thick Dark Surface (A12)
- __ Sandy Mucky Mineral (S1)
- __ 2.5 cm Mucky Peat or Peat (S2) (**LRR G,H**)
- __ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- __ Sandy Gleyed Matrix (S4)
- __ Sandy Redox (S5)
- __ Stripped Matrix (S6)
- __ Loamy Mucky Mineral (F1)
- __ Loamy Gleyed Matrix (F2)
- __ Depleted Matrix (F3)
- __ Redox Dark Surface (F6)
- __ Depleted Dark Surface (F7)
- __ Redox Depressions (F8)
- __ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- __ 1 cm Muck (A9) (**LRR I, J**)
- __ Coast Prairie Redox (A16) (**LRR F, G, H**)
- __ Dark Surface (S7) (**LRR G**)
- __ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- __ Reduced Vertic (F18)
- __ Red Parent Material (TF2)
- __ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X **No**

Remarks: SP 1 meets criteria for wetland soils.

HYDROLOGY

Wetland Hydrology Indicators:

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

- __ Surface Water (A1)
- __ High Water Table (A2)
- __ Saturation (A3)
- X Water Marks (B1)
- __ Sediment Deposits (B2)
- __ Drift Deposits (B3)
- __ Algal Mat or Crust (B4)
- __ Iron Deposits (B5)
- __ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- __ Salt Crust (B11)
- __ Aquatic Invertebrates (B13)
- __ Hydrogen Sulfide Odor (C1)
- __ Dry-Season Water Table (C2)
- __ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- __ Presence of Reduced Iron (C4)
- __ Thin Muck Surface (C7)
- __ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- __ Surface Soil Cracks (B6)
- __ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- __ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- __ Crayfish Burrows (C8)
- __ Saturation Visible on Aerial Imagery (C9)
- __ Geomorphic Position (D2)
- __ FAC-Neutral Test (D5)
- __ Frost-Heave hummocks (D7) (**LRR F**)

Field Observations:

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

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

Saturation Present? Yes No X Depth (inches): _____

(includes capillary fringe)

Wetland Hydrology Present? Yes X **No**

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

Remarks: SP 1 meets criteria for wetland hydrology.

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: US 77: 0.87 mi S. to 0.71 mi N of La Parra Ave. City/County: Sarita, Kenedy County Sampling Date: 11/9/11
Applicant/Owner: Texas Department of Transportation State: TX Sampling Point: 2
Investigator(s): Cimagaroon Howell, Lee Ellison Section, Township, Range:
Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%):1
Subregion (LRR): I Lat: 27.215175 Long: -97.788889 Datum: NAD 83
Soil Map Unit Name: Ramita loamy fine sand (RaB)/ Bordas loamy fine sand (BrA) Complex; Palobia loamy fine sand (PbB)
NWI classification: PEM1F

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area within a Wetland?**	Yes X	No
Hydric Soil Present?	Yes X	No			
Wetland Hydrology Present?	Yes X	No			

Remarks: Exceptional drought conditions exist at the project site. SP 2 lies within a natural wetland bisected by U.S. 77. SP 2 has wetland soil, vegetation, and hydrology.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 10' x 30')			
1. *Baccharis neglecta*	90	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	90 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum <5%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC –): 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

____ Prevalence Index is ≤3.0[1]

____ Morphological Adaptations[1] (Provide Supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: SP2 meets the criteria for hydrophytic vegetation

SOIL

Sampling Point: 2

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	5YR 6/1	100	NA	NA	NA	NA	Loamy sand	
1-4	7.5YR 5/2	100	NA	NA	NA	NA	Sandy clay	
4-18	7.5YR 5/2	100	NA	NA	NA	NA	Clayey fine sand	

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

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

- __ Histosol (A1)
- __ Histic Epipedon (A2)
- __ Black Histic (A3)
- __ Hydrogen Sulfide (A4)
- __ Stratified Layers (A5) (**LRR F**)
- __ 1 cm Muck (A9) (**LRR F, G, H**)
- __ Depleted Below Dark Surface (A11)
- __ Thick Dark Surface (A12)
- __ Sandy Mucky Mineral (S1)
- __ 2.5 cm Mucky Peat or Peat (S2) (**LRR G,H**)
- __ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- __ Sandy Gleyed Matrix (S4)
- __ Sandy Redox (S5)
- x Stripped Matrix (S6)
- __ Loamy Mucky Mineral (F1)
- __ Loamy Gleyed Matrix (F2)
- __ Depleted Matrix (F3)
- __ Redox Dark Surface (F6)
- __ Depleted Dark Surface (F7)
- __ Redox Depressions (F8)
- __ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- __ 1 cm Muck (A9) (**LRR I, J**)
- __ Coast Prairie Redox (A16) (**LRR F, G, H**)
- __ Dark Surface (S7) (**LRR G**)
- __ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- __ Reduced Vertic (F18)
- __ Red Parent Material (TF2)
- __ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X **No**

Remarks: SP 2 meets the criteria for wetland soils with one hydric soil indicator.

HYDROLOGY

Wetland Hydrology Indicators:

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

- __ Surface Water (A1)
- __ High Water Table (A2)
- __ Saturation (A3)
- __ Water Marks (B1)
- __ Sediment Deposits (B2)
- __ Drift Deposits (B3)
- __ Algal Mat or Crust (B4)
- __ Iron Deposits (B5)
- __ Inundation Visible on Aerial Imagery (B7)
- __ Water-Stained Leaves (B9)
- __ Salt Crust (B11)
- __ Aquatic Invertebrates (B13)
- __ Hydrogen Sulfide Odor (C1)
- __ Dry-Season Water Table (C2)
- X Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- __ Presence of Reduced Iron (C4)
- __ Thin Muck Surface (C7)
- __ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- __ Surface Soil Cracks (B6)
- __ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- __ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- __ Crayfish Burrows (C8)
- __ Saturation Visible on Aerial Imagery (C9)
- __ Geomorphic Position (D2)
- __ FAC-Neutral Test (D5)
- __ Frost-Heave hummocks (D7) (**LRR F**)

Field Observations:

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

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

Saturation Present? Yes No X Depth (inches): _____

(includes capillary fringe)

Wetland Hydrology Present? Yes X **No**

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

Remarks: SP 2 meets the criteria for wetland hydrology with one primary indicator.

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: US 77: 0.87 mi S. to 0.71 mi N of La Parra Ave. City/County: Sarita, Kenedy County Sampling Date: 11/9/11
Applicant/Owner: Texas Department of Transportation State: TX Sampling Point: 3
Investigator(s): Cimagaroon Howell, Lee Ellison Section, Township, Range:
Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): level Slope (%):<1
Subregion (LRR): I Lat: 27.215298 Long: -97.788894 Datum: NAD 83
Soil Map Unit Name: Palobia loamy fine sand (PbB) NWI classification:
Are climatic/hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes	No X	**Is the Sampled Area within a Wetland?**	Yes	No X
Hydric Soil Present?	Yes X	No			
No Wetland Hydrology Present?	Yes	No X			

Remarks: Exceptional drought conditions exist at the project site. SP 3 lies adjacent to natural wetland bisected by U.S. 77. SP 3 was taken above the OHWM. SP 3 has wetland soil but does not have wetland vegetation or wetland hydrology.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
		= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	
Herb Stratum (Plot size: 30' radius)			
1. *Cynodon dactylon*	90	Yes	FACU+
2. *Bothriochloa ischaemum*	10	No	NA
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	90	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum <5%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC –): 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

____ Dominance Test is >50%

____ Prevalence Index is ≤3.0[1]

____ Morphological Adaptations[1] (Provide Supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: SP3 has upland vegetation with no hyrdophytic vegetation present.

SOIL

Sampling Point: 3

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	7.5YR 5/1	100	NA	NA	NA	NA	Loamy fine sand	
1-3	7.5YR 5/1	100	NA	NA	NA	NA	Clayey fine sand	

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

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

- __ Histosol (A1)
- __ Histic Epipedon (A2)
- __ Black Histic (A3)
- __ Hydrogen Sulfide (A4)
- __ Stratified Layers (A5) (**LRR F**)
- __ 1 cm Muck (A9) (**LRR F, G, H**)
- __ Depleted Below Dark Surface (A11)
- __ Thick Dark Surface (A12)
- __ Sandy Mucky Mineral (S1)
- __ 2.5 cm Mucky Peat or Peat (S2) (**LRR G,H**)
- __ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- __ Sandy Gleyed Matrix (S4)
- __ Sandy Redox (S5)
- x Stripped Matrix (S6)
- __ Loamy Mucky Mineral (F1)
- __ Loamy Gleyed Matrix (F2)
- __ Depleted Matrix (F3)
- __ Redox Dark Surface (F6)
- __ Depleted Dark Surface (F7)
- __ Redox Depressions (F8)
- __ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- __ 1 cm Muck (A9) (**LRR I, J**)
- __ Coast Prairie Redox (A16) (**LRR F, G, H**)
- __ Dark Surface (S7) (**LRR G**)
- __ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- __ Reduced Vertic (F18)
- __ Red Parent Material (TF2)
- __ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X **No**

Remarks: Due to extreme hardness of soils and in view of lack of wetland hydrology and vegetation, test pit was limited to 3 inches depth. SP3 has wetland soils with one hydric soil indicator.

HYDROLOGY

Wetland Hydrology Indicators:

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

- __ Surface Water (A1)
- __ High Water Table (A2)
- __ Saturation (A3)
- __ Water Marks (B1)
- __ Sediment Deposits (B2)
- __ Drift Deposits (B3)
- __ Algal Mat or Crust (B4)
- __ Iron Deposits (B5)
- __ Inundation Visible on Aerial Imagery (B7)
- __ Water-Stained Leaves (B9)
- __ Salt Crust (B11)
- __ Aquatic Invertebrates (B13)
- __ Hydrogen Sulfide Odor (C1)
- __ Dry-Season Water Table (C2)
- __ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- __ Presence of Reduced Iron (C4)
- __ Thin Muck Surface (C7)
- __ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- __ Surface Soil Cracks (B6)
- __ Sparsely Vegetated Concave Surface (B8)
- __ Drainage Patterns (B10)
- __ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- __ Crayfish Burrows (C8)
- __ Saturation Visible on Aerial Imagery (C9)
- __ Geomorphic Position (D2)
- __ FAC-Neutral Test (D5)
- __ Frost-Heave hummocks (D7) (**LRR F**)

Field Observations:

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

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

Saturation Present? Yes No X Depth (inches): _____

(includes capillary fringe)

Wetland Hydrology Present? Yes No X

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

Remarks: SP 3 does not have wetland hydrology indicators.

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: US 77: 0.87 mi S. to 0.71 mi N of La Parra Ave. City/County: Sarita, Kenedy County Sampling Date: 11/10/11
Applicant/Owner: Texas Department of Transportation State: TX Sampling Point: 4
Investigator(s): Cimagaroon Howell, Lee Ellison Section, Township, Range:
Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 0
Subregion (LRR): I Lat: 27.222209 Long: -97.788289 Datum: NAD 83
Soil Map Unit Name: Palobia loamy fine sand (PbB) NWI classification: PEM1A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes	No X	**Is the Sampled Area within a Wetland?**	Yes	No X
Hydric Soil Present?	Yes	No X			
No Wetland Hydrology Present?	Yes	No X			

Remarks: Exceptional drought conditions exist at the project site. SP 4 lies in a natural depression in the east U.S. 77 right-of-way. SP 4 does not have wetland soil, vegetation, or hydrology.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
		= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	
Herb Stratum (Plot size: 30' radius)			
1. *Cynodon dactylon*	80	Yes	FACU+
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	90	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum <5%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC –): 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

____ Dominance Test is >50%

____ Prevalence Index is ≤3.0[1]

____ Morphological Adaptations[1] (Provide Supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: SP4 has upland vegetation with no wetland vegetation present.

SOIL

Sampling Point: 4

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	7.5YR 7/2	100	NA	NA	NA	NA	Fine sand	

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

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

- __ Histosol (A1)
- __ Histic Epipedon (A2)
- __ Black Histic (A3)
- __ Hydrogen Sulfide (A4)
- __ Stratified Layers (A5) (**LRR F**)
- __ 1 cm Muck (A9) (**LRR F, G, H**)
- __ Depleted Below Dark Surface (A11)
- __ Thick Dark Surface (A12)
- __ Sandy Mucky Mineral (S1)
- __ 2.5 cm Mucky Peat or Peat (S2) (**LRR G,H**)
- __ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- __ Sandy Gleyed Matrix (S4)
- __ Sandy Redox (S5)
- __ Stripped Matrix (S6)
- __ Loamy Mucky Mineral (F1)
- __ Loamy Gleyed Matrix (F2)
- __ Depleted Matrix (F3)
- __ Redox Dark Surface (F6)
- __ Depleted Dark Surface (F7)
- __ Redox Depressions (F8)
- __ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- __ 1 cm Muck (A9) (**LRR I, J**)
- __ Coast Prairie Redox (A16) (**LRR F, G, H**)
- __ Dark Surface (S7) (**LRR G**)
- __ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- __ Reduced Vertic (F18)
- __ Red Parent Material (TF2)
- __ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes **No** X

Remarks: Due to extreme hardness of soils, test pit was limited to 10 inches depth. SP4 does not have hydric soil indicators; therefore, does not have wetland soils.

HYDROLOGY

Wetland Hydrology Indicators:

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

- __ Surface Water (A1)
- __ High Water Table (A2)
- __ Saturation (A3)
- __ Water Marks (B1)
- __ Sediment Deposits (B2)
- __ Drift Deposits (B3)
- __ Algal Mat or Crust (B4)
- __ Iron Deposits (B5)
- __ Inundation Visible on Aerial Imagery (B7)
- __ Water-Stained Leaves (B9)
- __ Salt Crust (B11)
- __ Aquatic Invertebrates (B13)
- __ Hydrogen Sulfide Odor (C1)
- __ Dry-Season Water Table (C2)
- __ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- __ Presence of Reduced Iron (C4)
- __ Thin Muck Surface (C7)
- __ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- __ Surface Soil Cracks (B6)
- __ Sparsely Vegetated Concave Surface (B8)
- __ Drainage Patterns (B10)
- __ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- __ Crayfish Burrows (C8)
- __ Saturation Visible on Aerial Imagery (C9)
- __ Geomorphic Position (D2)
- __ FAC-Neutral Test (D5)
- __ Frost-Heave hummocks (D7) (**LRR F**)

Field Observations:

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

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

Saturation Present? Yes No X Depth (inches): _____

(includes capillary fringe)

Wetland Hydrology Present? Yes **No** X

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

Remarks: SP 4 does not contain wetland hydrology indicators.

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: US 77: 0.87 mi S. to 0.71 mi N of La Parra Ave. City/County: Sarita, Kenedy County Sampling Date: 11/10/11
Applicant/Owner: Texas Department of Transportation State: TX Sampling Point: 5
Investigator(s): Cimagaroon Howell, Lee Ellison Section, Township, Range:
Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 0
Subregion (LRR): I Lat: 27.220267 Long: -97.788905 Datum: NAD 83
Soil Map Unit Name: Palobia loamy fine sand (PbB) NWI classification:

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area within a Wetland?**	Yes X	No
Hydric Soil Present?	Yes X	No			
No Wetland Hydrology Present?	Yes X	No			

Remarks: Exceptional drought conditions exist at the project site. SP 5 lies in a natural depression in the U.S. 77 median. SP 5 has wetland soil, vegetation, and hydrology.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
		= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	
Herb Stratum (Plot size: 15' radius)			
1. *Eleocharis quadrangulata*	95	Yes	OBL
2. *Acacia* sp.	<5	No	UPL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	90	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum <5%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC –): 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

____ Prevalence Index is ≤3.0[1]

____ Morphological Adaptations[1] (Provide Supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: SP5 has obligate, hydrophytic vegetation present.

SOIL

Sampling Point: 5

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	5YR 4/1	100	7.5YR 5/6	30	C	M	Clay	
4-18	10YR 7/2	100	7.5YR 5/6	10	C	M	Sandy clay	

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

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

- __ Histosol (A1)
- __ Histic Epipedon (A2)
- __ Black Histic (A3)
- __ Hydrogen Sulfide (A4)
- __ Stratified Layers (A5) (**LRR F**)
- __ 1 cm Muck (A9) (**LRR F, G, H**)
- __ Depleted Below Dark Surface (A11)
- __ Thick Dark Surface (A12)
- __ Sandy Mucky Mineral (S1)
- __ 2.5 cm Mucky Peat or Peat (S2) (**LRR G,H**)
- __ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- __ Sandy Gleyed Matrix (S4)
- __ Sandy Redox (S5)
- __ Stripped Matrix (S6)
- __ Loamy Mucky Mineral (F1)
- __ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- __ Redox Dark Surface (F6)
- __ Depleted Dark Surface (F7)
- __ Redox Depressions (F8)
- __ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- __ 1 cm Muck (A9) (**LRR I, J**)
- __ Coast Prairie Redox (A16) (**LRR F, G, H**)
- __ Dark Surface (S7) (**LRR G**)
- __ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- __ Reduced Vertic (F18)
- __ Red Parent Material (TF2)
- __ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X **No**

Remarks: SP5 has hyrdic soils with one hydric soil indicator.

HYDROLOGY

Wetland Hydrology Indicators:

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

- __ Surface Water (A1)
- __ High Water Table (A2)
- __ Saturation (A3)
- __ Water Marks (B1)
- X Sediment Deposits (B2)
- __ Drift Deposits (B3)
- __ Algal Mat or Crust (B4)
- __ Iron Deposits (B5)
- __ Inundation Visible on Aerial Imagery (B7)
- __ Water-Stained Leaves (B9)
- __ Salt Crust (B11)
- __ Aquatic Invertebrates (B13)
- __ Hydrogen Sulfide Odor (C1)
- __ Dry-Season Water Table (C2)
- X Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- __ Presence of Reduced Iron (C4)
- __ Thin Muck Surface (C7)
- __ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- __ Surface Soil Cracks (B6)
- __ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- __ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- __ Crayfish Burrows (C8)
- __ Saturation Visible on Aerial Imagery (C9)
- __ Geomorphic Position (D2)
- __ FAC-Neutral Test (D5)
- __ Frost-Heave hummocks (D7) (**LRR F**)

Field Observations:

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

Wetland Hydrology Present? Yes X **No**

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

Remarks: SP 5 has wetland hydrology with two primary wetland hydrology indicators.

WETLAND DETERMINATION DATA FORM - Great Plains Region

Project/Site: US 77: 0.87 mi S. to 0.71 mi N of La Parra Ave. City/County: Sarita, Kenedy County Sampling Date: 11/10/11
Applicant/Owner: Texas Department of Transportation State: TX Sampling Point: 6
Investigator(s): Cimagaroon Howell, Lee Ellison Section, Township, Range:
Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): level Slope (%): 0
Subregion (LRR): I Lat: 27.2203 Long: -97.78901 Datum: NAD 83
Soil Map Unit Name: Palobia loamy fine sand (PbB) NWI classification:
Are climatic/hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes	No X	**Is the Sampled Area within a Wetland?**	Yes	No X
Hydric Soil Present?	Yes	No X			
No Wetland Hydrology Present?	Yes	No X			

Remarks: Exceptional drought conditions exist at the project site. SP 5 lies adjacent to a natural depression in the U.S. 77 median. SP 6 does not have wetland soil, vegetation, or hydrology.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
		= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	
Herb Stratum (Plot size: 10' radius)			
1. *Cynodon dactylon*	95	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	95	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum <5%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC –): 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

____ Dominance Test is >50%

____ Prevalence Index is ≤3.0[1]

____ Morphological Adaptations[1] (Provide Supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: SP6 has facultative upland vegetation and does not contain hydric vegetation.

SOIL

Sampling Point: 6

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	2.5YR 6/3	100	NA	NA	NA	NA	Sandy loam	
2-6	2.5YR 5/3	100	7.5YR 5/6	10	C	M	Clayey fine sand	

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

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

- __ Histosol (A1)
- __ Histic Epipedon (A2)
- __ Black Histic (A3)
- __ Hydrogen Sulfide (A4)
- __ Stratified Layers (A5) (**LRR F**)
- __ 1 cm Muck (A9) (**LRR F, G, H**)
- __ Depleted Below Dark Surface (A11)
- __ Thick Dark Surface (A12)
- __ Sandy Mucky Mineral (S1)
- __ 2.5 cm Mucky Peat or Peat (S2) (**LRR G,H**)
- __ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- __ Sandy Gleyed Matrix (S4)
- __ Sandy Redox (S5)
- __ Stripped Matrix (S6)
- __ Loamy Mucky Mineral (F1)
- __ Loamy Gleyed Matrix (F2)
- __ Depleted Matrix (F3)
- __ Redox Dark Surface (F6)
- __ Depleted Dark Surface (F7)
- __ Redox Depressions (F8)
- __ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

Indicators for Problematic Hydric Soils[3]:

- __ 1 cm Muck (A9) (**LRR I, J**)
- __ Coast Prairie Redox (A16) (**LRR F, G, H**)
- __ Dark Surface (S7) (**LRR G**)
- __ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- __ Reduced Vertic (F18)
- __ Red Parent Material (TF2)
- __ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes **No** X

Remarks: Due to extreme hardness of soils, test pit was limited to 6 inches depth. SP6 does not have wetland soils.

HYDROLOGY

Wetland Hydrology Indicators:

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

- __ Surface Water (A1)
- __ High Water Table (A2)
- __ Saturation (A3)
- __ Water Marks (B1)
- __ Sediment Deposits (B2)
- __ Drift Deposits (B3)
- __ Algal Mat or Crust (B4)
- __ Iron Deposits (B5)
- __ Inundation Visible on Aerial Imagery (B7)
- __ Water-Stained Leaves (B9)
- __ Salt Crust (B11)
- __ Aquatic Invertebrates (B13)
- __ Hydrogen Sulfide Odor (C1)
- __ Dry-Season Water Table (C2)
- __ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- __ Presence of Reduced Iron (C4)
- __ Thin Muck Surface (C7)
- __ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- __ Surface Soil Cracks (B6)
- __ Sparsely Vegetated Concave Surface (B8)
- __ Drainage Patterns (B10)
- __ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- __ Crayfish Burrows (C8)
- __ Saturation Visible on Aerial Imagery (C9)
- __ Geomorphic Position (D2)
- __ FAC-Neutral Test (D5)
- __ Frost-Heave hummocks (D7) (**LRR F**)

Field Observations:

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

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

Saturation Present? Yes No X Depth (inches): _____

(includes capillary fringe)

Wetland Hydrology Present? Yes **No** X

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

Remarks: SP 6 does not contain wetland hydrology indicators.

Appendix F
PCE Determination Form