Categorical Exclusion

Trammel Fresno Road:
Widen from Fort Bend Parkway
to FM 521

Fort Bend County, Texas
CSJ: 0912-34-144

Prepared for:

Texas Department of Transportation

and

the Federal Highway Administration

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1.0 PROPOSED ACTION

1.1 *Introduction*

This environmental document is an evaluation of the social, economic, and environmental impacts that may result from the proposed widening of Trammel Fresno Road from Fort Bend Parkway to Farm-to-Market (FM) Road 521. The proposed project is located in Fort Bend County and within the Extraterritorial Jurisdiction of Missouri City, Texas (**Exhibit 1**). This environmental document would discuss the environmental impacts from the Fort Bend Parkway to FM 521. The proposed project is scheduled for letting in February 2014, with construction to begin in May of the same year and an estimated time of completion of approximately 24 months.

1.2 *Existing Facility*

Currently, Trammel Fresno Road is a two-lane undivided asphalt roadway with roadside ditches along each side of the facility. It traverses in an east-west direction. The width of the paved surface currently is 24 feet from Hurricane Lane to FM 521. Existing right-of-way (ROW) varies from 90 to 160 feet in width, with 120 feet usual from the Fort Bend Parkway to California Street and 160 feet usual from California Street to FM 521 (***Appendix A***). Detail on the right-of-way is as follows: 105-106 feet between Hurricane Lane and Caldera Way, 104-120 feet between Caldera Way and California Street, 160 feet between California Street and Mustang Bayou and 153-158 feet between Mustang Bayou and FM 521. The posted speed limit along Trammel Fresno Road is 40 MPH.

There is open ditch drainage along the both sides of the road. There are two traffic signals along the corridor (at Hurricane Lane and at FM 521). Adjacent commercial and residential properties have direct driveway access to Trammel Fresno Road, along with all local streets. There are no controls of access along the corridor; driveways intersect the corridor sporadically from east of Fort Bend Parkway to FM 521. There are no sidewalks along the corridor.

There is a railroad crossing just west of the intersection at FM 521. It is an at-grade, single track timber-crossing with gates, signs (crossbucks), and warning signs.

The corridor has one bridge: a single span (43 ft wide x 60 ft long) at Mustang Bayou.

1.3 *Proposed Facility*

The proposed improvements to Trammel Fresno Road include the construction of 3.021 miles of 4-lane roadway within the existing right-of-way. The improvements would include a 12-foot continuous left turn lane, continuous 14 foot outside and 11 foot inside lane. The proposed section would contain curb and gutter from Hurricane Lane to east of California Street (STA 64+51.42 to STA. 131+00.00) and 7 ½ foot shoulders on both sides with open ditch drainage (generally 4:1 front slope and 4:1 back slope; widths may vary) from east of California Street to FM 521. Sidewalks would be constructed along both sides of the roadway from Hurricane Lane (STA. 65+48.50) to the South Post Oak Road intersection (formerly signed as the intersection of Colorado Street and School Road, at STA. 164+61.70). Proposed sidewalks would connect with

all existing cross street sidewalks (Chimney Rock Blvd, Teal Bend Pkwy, Jabot Ave, Caldera Way, Liberty Square Trace, Winfield Lakes Trail and Hurricane Lane). (***Appendix A***) Where sidewalks are not proposed, pedestrian accommodations would be possible on the proposed 7.5 foot roadway shoulders. To enhance the pedestrian safety along Trammel Fresno, the proposed project includes crosswalk stripes and signage at all signalized intersections. A new signal with countdown timer at S. Post Oak Boulevard would join existing signals at Hurricane Lane, Winfield Lakes/Liberty Trace and Chimney Rock/Teal Bend Boulevard. Cyclist accommodations would be addressed with the addition of a 14 foot outside travel lane in each direction through the limits of the proposed project.

Improvements would include a concrete curb and gutter section from Fort Bend Parkway to California Street. No curbs would be included within the open ditch section (from California Street eastward). The corridor would have a 10-inch thick concrete pavement, over a 6-inch lime treated sub-grade (***Appendix A***). The proposed project would be constructed within the existing right-of-way.

Total proposed roadway between Hurricane Lane and California Street would have a paved surface 64 feet wide, between curbs. Between California Street and Mustang Bayou, the paved road surface would be 77 feet wide, which includes travel lane, turn lane and 7.5 foot shoulder on each side. The road would transition onto the bridge at Mustang Bayou and continue east past the bridge with the same dimension (77 feet of paved surface, with 7.5 foot shoulder) to FM 521.

The project would include the construction of two detention ponds. Plans for the ponds are included as ***Appendix E***. The two detention ponds are included in the proposed plans. Drainage System A, which is the west segment, has a detention pond located at the NE corner of Trammel Fresno and Hurricane Lane intersection on an unnamed tributary to Long Point Creek. The required storage volume is 4.5 Ac-Ft and the provided volume is 4.8 Ac-Ft. Drainage System B, which is the mid project segment, has a detention pond at the NW corner of Trammel Fresno and Chimney Rock Road. The required volume is 13.2 Ac-Ft and the provided volume is 13.8 Ac-Ft. This basin is an extension of the existing detention system that was built for the Winfield Lakes Subdivision.

The proposed design requires a widening of the existing bridge over Mustang Bayou. The bridge would be widened to 70 feet overall within the existing corridor right-of-way. There would be no walkway on the bridge; however, pedestrian/bicycle access would be accommodated through the 5 foot shoulder provided on the bridge.

1.4 *Funding*

The estimated total construction cost is $19,187,634 as of April 2012, and would be both state and locally funded; 45% and 55% respectively. The project is included in the FY 2013-2016 State Transportation Improvement Program. This project is within the Houston-Galveston Area Council's FY 2013-2016 Transportation Improvement Program (TIP) and the 2035 Regional Transportation Plan Update (***Appendix C***). The project has an estimated completion date of 24 months following the start of construction.

1.5 *Need and Purpose*

Within a 10 year period (1995-2005), the area of influence covered by this CE experienced the conversion of +/- 1,465 acres of vacant land into new housing, schools and commercial developments. The additional population has resulted in an increase in traffic in the area. Traffic volumes on this corridor are forecast to be as high as 13,600 vpd by 2031. However, traffic volumes collected in 2007 as part of the initial CE reconnaissance east of the existing Fort Bend Parkway corridor already recorded traffic numbers in the area which are close to the forecast (13,170 vpd). These numbers have already created traffic congestion issues on Trammel Fresno Road, particularly east of Hurricane Lane to California Street. This pattern is anticipated to continue long term due to the investments made in improving regional access to this area from the Fort Bend Parkway, FM 521 and State Highway 6. Increasing traffic volumes in the area would continue to increase congestion on Trammel Fresno Road.

The purpose of this project is to relieve congestion on the roadway.

1.6 *Logical Termini*

This project has a defined starting point at the Fort Bend Parkway and ending point at FM 521.

1.7 *Alternatives*

The alternatives explored for this project were the Build and No-Build alternatives. The No-Build alternative would not address the purpose and need for the project, which includes reducing congestion and increasing mobility of the roadway. However, the No-Build alternative is carried forward as a baseline against which to compare the Build alternative.

The Build alternative, described in Section 1.3, meets the need and purpose for the project, which includes reducing congestion and increasing mobility of the roadway.

1.8 Right-of-way and Utility Adjustments

Construction of this project would occur within existing right-of-way owned by Fort Bend County, Texas. It was acquired under a separate locally funded project. The existing ROW varies from 120 to 160 feet in width throughout the corridor. No ROW or temporary or permanent easement acquisitions would be necessary for completion of this project.

There are some existing utilities that would require relocation prior to the start of construction (gas, telecommunications, water lines, power). Fort Bend County would be responsible for relocating all identified utilities in conflict with the new roadway as part of the project's utility relocation plan.

All right of way acquired for this project was obtained in accordance with the Uniform Relocation Assistance Act. In 2005, Fort Bend County began right-of-way acquisition. A total of 80 feet of right-of-way was acquired along the north side of the existing Trammel Fresno Road which affected a total of 46 parcels. Of these, four structures were impacted. The total number of displacements was 0. The total number of parcels that went to condemnation was 3.

The process followed by the County to acquire the parcels is documented in a letter dated October 5, 2011 from the County Engineer. (***Appendix D***) All right of way acquisition was completed in 2007 prior to the initiation of the NEPA process in 2008 and selection of the project for federal funding.

2.0 SURROUNDING AREA

2.1 *Land Use*

The proposed project is located within an area best classified as agricultural/rural and suburban residential. Individual commercial sites can be found at the eastern end of the corridor, and scattered along the middle of the corridor (**Exhibit 5**).

The western end of the proposed project area (east of Fort Bend Parkway) contains numerous single-family developments under construction. The pattern continues east of the Missouri City city limits through Fresno to California Street. East of California Street, the pattern could be considered more rural. Individual homes (single-family site built and mobile homes) can be found on larger lots, some with an agricultural component (livestock, barns, ponds).

At the time of the land use survey, commercial sites along the corridor consisted of several gas stations (La Fresno Food Mart at Illinois Street; Crossroads Market at Alice Street), several auto repair/sales lots, a propane sales yard and one agricultural storage facility. Several utility sites were identified along the corridor (Cell Tower, east of the Fort Bend Parkway corridor; Verizon Substation in 800 Block of Trammel Fresno; Utility Vault east of Caldera Street). At least one closed commercial site (formerly known as La Market, at Trammel Fresno and Lissie Road) was identified.

The project is located within the Fort Bend Independent School District. Hightower High School, located at the intersection of Trammel Fresno Road and Hurricane Lane, is adjacent to the project corridor. Two churches were identified along the corridor (Greater Harvest Church, at Trammel Fresno and Nail Street; Pentecostal Missionary Baptist Church in the 800 Block of Trammel Fresno). One building was identified as a former church site (Trammel Fresno, east of Gettie Road). One day care center was identified along the south side of the corridor, west of the Jan Street/Trammel Fresno Road intersection)

Current developed and occupied land adjacent to the corridor is not expected to change as a result of this project. Vacant and underutilized land adjacent to the corridor would develop based upon a combination of market demands, in keeping with the adopted land use and zoning requirements for the area. Land uses at the activity level have been documented for properties adjacent to the corridor at the time of the initial field review in December 2008 and as part of a follow-up visit made in March 2010 (**Exhibit 5**).

2.2 *Natural Setting*

The project is located within a region of the Gulf Coast Prairies and Marshes identified as with the Brazos River Basin, within the crops vegetation type. The area contains one intermittent

waterway, Mustang Bayou and the unnamed tributary of the Long Point Creek. Project area includes portion of floodplain associated with Mustang Bayou. A series of drainage ditches exist along the roadway and in the adjacent area to carry storm runoff into these waterways and adjacent detention and retention areas. Existing vegetation types include trees and shrubs typical of new suburban development (maintained grasses, landscaped areas) as well as some areas cut or maintained in agricultural uses. Some larger trees remain and have been identified as part of the general vegetation survey completed in the corridor area.

3.0 SPECIFIC AREAS OF ENVIRONMENTAL CONCERN

3.1 *Community Impacts*

A windshield survey of the adjacent and surrounding areas revealed that populations are concentrated at the corridor's western end, as well as scattered throughout the central portion of the project limits. Within these areas are well developed residential and commercial areas. A review of 2010 Census Data indicates that a minority population exists within the study area. Furthermore, 2010 Census Data indicates that LEP persons also reside within the study area (***Tables 1, 2 and 3***).

This project involves the widening of Trammel Fresno Road from two to four lanes, and other associated improvements, and is intended to improve mobility and operational efficiency of the roadway. This project would not alter traffic patterns or create any changes in access through the project limits. No detours are anticipated for this project as a means of traffic control. If any detours are found to be required, these would be utilized during certain phases of construction and would be experienced by all motorists and residents of the area. A phased construction plan would be used to assure full traffic access during project construction (***Appendix A***). To minimize impacts to travel times through and within the immediate area, detours would be temporary and conducted outside of "peak traveling periods". All business and residential access within the project limits would remain open during construction. All traffic control measures would conform to Part VI (Traffic Controls for Street and Highway Construction and Maintenance Operations) of the Texas Manual on Uniform Traffic Control Devices (TMUTCD).

This project would not bisect any adjacent communities or neighborhoods, nor would any changes or impacts to community cohesion occur as a result of the proposed project.

3.2 *Environmental Justice*

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires agencies to make achieving environmental justice as 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 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 the full and fair participation by all potentially affected communities in the transportation decision-making process;
3) To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority populations and low-income populations.

Disproportionately high and adverse human health or environmental effects are defined by FHWA as adverse effects that are predominantly borne by a minority population and/or low-income population; or that would be suffered by the minority population and low-income population and are appreciably more severe or greater in magnitude than the adverse effects suffered by the non-minority and or non-low-income populations. Low-income populations include populations whose household income is at or below the annually issued U.S. Department of Health and Human Services (HHS) poverty guidelines. The 2013 HHS poverty guideline for a family of four is $23,550/year.

According to the 2010 Census Data, the total minority population living in the block groups identified within the study area blocks was 94.2% (***Table 1***). This indicates that an identifiable minority population exists within the study area. Median household income and poverty status for Census Tracts within the project study area from the American Community Survey (ACS) ranged from $49,375 to $111,813 (***Table 2***). None of the tracts in the study area fell below the DHHS 2013 poverty level.

While the 2010 Census Data indicates the presence of a minority population within the study area, this project is intended to improve mobility of the roadway and would not create any adverse impacts to any population in comparison with the No-Build Alternative. The No-Build Alternative would not address the mobility concerns of the roadway, and present EJ populations would continue to experience the high traffic volumes and congestion associated with the roadway. Bicycle and pedestrian accommodations would be addressed through the addition of sidewalks, shared use lanes and shoulders within the project limits. The proposed project would not restrict access to existing public or community services, businesses or commercial areas along the corridor. All project related road closures and access restrictions would be coordinated as to not impede access to adjacent neighborhoods or properties. Any delays in traffic would be minimal and street closures temporary for the period of project construction. There would be no disproportionate impacts to any minority or low-income populations in proximity to the project.

Table 1: Distribution of Race/Ethnicity in Project Study Area

Census 2010 Block Group and Block Level Data	Total Population	Not Hispanic or Latino						Hispanic or Latino Population
		Population of One Race					Two or More Races	
		White	Black or African American	American Indian & Alaska Native	Asian	Other Race		
Fort Bend County, Census Tract 6707								
Block Group 2	1,286	330 25.7%	238 18.5%	2 0.2%	224 17.4%	1 0.1%	31 2.4%	460 35.8%
Block 2141								
Block 2142								
Block 2150								
Block 2151								
Block 2152								
Block 2153	**4**	**3**	**1**	**0**	**0**	**0**	**0**	**0**
Block 2160	**5**	**0**	**4**	**0**	**0**	**0**	**0**	**1**
Block 2166								
Block 2168								
Block 2169								
Block 2170								
Total	**9**	**3**	**5**	**0**	**0**	**0**	**0**	**1**
Fort Bend County, Census Tract 6708								
Block Group 3	6,957	184 2.6%	5,154 74.1%	14 0.2%	54 0.8%	14 0.2%	96 1.4%	1,441 20.7%
Block 3000	**79**	**4**	**25**	**2**				**48**
Block 3001	**150**		**52**		**3**		**4**	**91**
Block 3002	**1,238**	**29**	**925**	**3**	**5**	**4**	**16**	**256**
Block 3009	**8**							**8**
Block 3020	**202**	**9**	**157**	**1**				**35**
Block 3023	**74**	**4**	**65**					**5**
Block 3024	**705**	**12**	**624**	**1**	**8**		**1**	**59**
Block 3027	**117**		**106**		**1**	**1**		**9**
Block 3029								
Block 3030	**5**							**5**
Block 3034								
Block 3036								
Block 3037								
Block 3038								
Block 3069	**14**	**9**	**2**					**3**
Block 3070	**36**		**3**		**1**			**32**
Block 3071	**10**							**10**
Total	**2,638**	**67**	**1,959**	**7**	**18**	**5**	**21**	**561**

Table 1: Distribution of Race/Ethnicity in Project Study Area (continued)

Census 2010 Block Group and Block Level Data	Total Population	Not Hispanic or Latino						Hispanic or Latino Population
		Population of One Race					Two or More Races	
		White	Black or African American	American Indian & Alaska Native	Asian	Other Race		
Fort Bend County, Census Tract 6709.01								
Block Group 2	4,586	799 17.4%	2,408 52.5%	9 0.2%	788 17.2%	12 0.3%	122 2.7%	488 9.8%
Block 2011	**1,355**	**176**	**778**	**3**	**167**	**6**	**38**	**187**
Block 2045								
Block 2046								
Block 2047								
Block 2048								
Block 2049								
Block 2052								
Block 2053								
Total	***1,355***	***176***	***778***	***3***	***167***	***6***	***38***	***187***
Fort Bend County, Census Tract 6709.02								
Block Group 1	3,480	158 4.5%	2,736 78.6%	2 0.1%	62 1.8%	12 0.3%	83 2.4%	427 12.3%
Block 1007	2,251	105	1,790	1	44	12	52	247
Block 1022								
Block 1025								
Block 1026								
Total	2,251	105	1,790	1	44	12	52	247
Block Group 2	1,540	127 8.2%	32 2.1%	1 0.1%	6 0.4%	2 0.1%	4 0.3%	1,368 88.8%
Block 2008	5	1						4
Block 2009	81	7	3		4			67
Block 2010	25	6	2					17
Block 2011	69	6						63
Block 2012	61	11	3					47
Block 2013	50	1						49
Block 2014	30	2						28
Block 2015	82	2	2			1		77
Total	403	36	10	0	4	1	0	352
Total Population of Blocks within Study Area	6,656	387 5.8%	4,542 68.2%	11 0.2%	233 3.5%	24 0.4%	111 1.7%	1,348 20.3%
Total Percent Minority Population in Census Blocks Within Project Study Area (2010)		**94.2%**						

Source: U.S. Census Bureau, Census 2010.

Table 2: Median Household Incomes and Poverty Status (2011)

Area	Median Household Income	Poverty Level, Percent of Population for whom poverty is determined (all ages)
Fort Bend County, Census Tract 6707	$58,208	13.6%
Fort Bend County, Census Tract 6708	$66,377	11.2%
Fort Bend County Census Tract 6709.01	$112,250	4.4%
Fort Bend County Census Tract 6709.02	$73,250	2.1%

Source: U.S. Census, American Community Survey 2007-2011, Tables B17001 and S1903.

Notes:

1. ACS 07-11 data is based upon Census 2010 tract geographies. Values represent an estimate of the value within the identified geographic area.
2. Households are classified as poor when the total income of the householder's family in the last 12 months is below the appropriate poverty threshold.

3.3 *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 (LEP), and develop and implement a system to provide those services so that LEP persons can have meaningful access to them.

Because LEP data is not available at the Census block level, block group data was obtained from the 2010 Census. According to this data, presented in ***Table 3***, approximately 11% of thepersons residing in the identified project area within the four Census tracts examined speak English less than "very well", which is considered LEP. Of those who are considered LEP, the majority (71%) speak Spanish, the remaining 29% speaking other Indo-European Languages (6%), languages associated with Asian/Pacific Islanders (21%) or other languages (2%). The data concludes that while an LEP population does not exist within the project area, LEP persons do reside within close proximity to the project.

A windshield survey of the area did identify signage and advertisements in Spanish at many local businesses and a local elementary school. Public involvement held in conjunction with this project included translation services and materials in Spanish in order for information about the project to be accessible to LEP persons. Spanish-language advertisements for the meeting were also placed within local newspapers and staff was available during the meeting to provide translation services. Any further public involvement would include translation services and materials in Spanish, or other languages as requested.

Table 3: Percentage LEP Population by Census Tract (2011)

Geography	Total Population (5 Years & Older)	LEP Persons*	% LEP	LEP Population Language Distribution			
				Speak Spanish	Speak Other Indo-European Languages	Speak Asian/Pacific Islander	Speak Other
Census Tract 6707	2,701	408	15.1%	65.9%	2.5%	31.6%	0.0%
Census Tract 6708	12,504	1,509	12.1%	88.7%	0.3%	1.7%	9.3%
Census Tract 6709.01	8,910	978	11.0%	11.9%	9.8%	75.5%	2.9%
Census Tract 6709.02	4,068	374	9.2%	86.4%	0.0%	13.6%	0.0%

(*) Speak English less than very well
Source: U.S. Census, American Community Survey 2007-2011, Table B16001.

Note: ACS 07-11 data is based upon Census 2000 tract geographies. Values represent an estimate of the value within the identified geographic area.

3.4 *Section 4(f) Properties*

The proposed project would not require the use of publicly owned lands from a public park, recreation area, wildlife/waterfowl refuge, or any historic sites of national, state, or local significance. Thus, a Section 4(f) evaluation would not be necessary for the continuation of this project.

3.5 *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, 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.

3.5.1 *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 (APE). It has been determined through consultation with the State Historic Preservation Officer that the APE for the proposed project is the existing ROW. A cultural resource survey conducted by TxDOT personnel revealed that there are no resources 50 years of age or older (built prior to 1964) located within the project APE. Furthermore, no Official State Historical Markers are located within the project APE.

Pursuant to Stipulation V, Appendix 3, "Undertakings with No Potential to Affect Historic Resources" of the First Amended Statewide Programmatic Agreement for Cultural Resources (PA) between the Federal Highway Administration, the Texas State Historic Preservation Officer (SHPO), the Advisory Council on Historic Preservation, the Texas Department of Transportation, and the Memorandum of Understanding (MOU), TxDOT Historians have determined that the proposed action has no potential to affect historic properties and that individual project coordination with the SHPO is not required (***Appendix D***).

3.5.2 *Archeological Resources*

TxDOT archeologists completed their review of this project on June 25, 2009 and determined that the project would have no effect on archeological sites or cemeteries that would be afforded further consideration under cultural resource laws (***Appendix D***). Based on the archeological study, no further investigation is warranted. The background study found that the project area had been extensively disturbed, precluding the possibility of it containing any intact archeological deposits. No consultation with the Texas Historical Commission/Texas State Historic Preservation Office was required. In addition, no public controversy exists regarding the project's potential impacts on archeological sites or cemeteries. In the event that unanticipated archeological deposits are encountered during construction, work in the immediate area would cease, and TxDOT archeological staff would be contacted to initiate post-review discovery procedures.

Consultation with federally recognized Native American tribes with a demonstrated historic interest in the area was initiated on July 28, 2009 (***Appendix D***). No objections or expressions of concern were received within the comment period.

The Area of Potential Effect (APE) for this project is defined as the existing right-of-way and vertical APE for the project would be approximately 4 to 6 feet in depth.

The PALM for the area (***Exhibit 4***) shows the majority of the corridor is in an area where two conditions appear. No survey is recommended in the areas east of Teal Bend Boulevard and California Street, while the majority of the area west is recommended for surface survey of mounds or areas with no deep reconnaissance.

3.6 *Water Resources*

3.6.1. Section 404 of the Clean Water Act: Waters of the U.S.

This project would result in the placement of 3.25 acres of permanent fill material into waters of the U.S., including wetlands. This amount would exceed the limits authorized by a NWP; therefore, a Section 404 Individual Permit (IP) would be required. It has been determined that 2.52 acres of wetlands and 0.73 acre of open waters of the U.S. would require fill (***Table 4***). A jurisdictional determination for the project was requested as part of the submittal of the current wetlands delineation on February 16, 2012. The USACE issued a preliminary jurisdictional determination of these findings on April 9, 2012 (***Appendix D***). The Section 404 IP Application for this project would be submitted to the USACE by Fort Bend County prior to the start of construction. An IP preconstruction certification notification would be filed. The permit application would be submitted with all appropriate plans and specifications for construction. The activities at Long Point Creek and Mustang Bayou have been determined to not be single and complete projects because activities would take place at individual crossings over two separate water bodies, and would therefore be permitted together. The purpose of the proposed activity is to expand the linear transportation facility within the project limits. Appropriate measures would be taken to maintain normal downstream flows and minimize flooding. Stream channel modifications, including bank stabilization, would be limited to the minimum necessary to construct or protect the structure and the immediate vicinity of the project. If requested by the USACE, it is proposed that these impacts would be mitigated by use of an approved on- or off-site method.

Table 4: Potential Wetland Impacts by Location

Name of Water Body or Other Location Indicator	Existing Structure	Proposed Work or Structure	Permanent Fill		Temporary Fill		NWP (Indicate Number)	PCN (Y/N)	IP (Y/N)
			Open Waters (acre and linear feet)	Wetlands and other Special Aquatic Sites (acre)	Open Waters (acre and linear feet)	Wetlands and other Special Aquatic Sites (acre)			
Area A	Roadside Ditch	Ditch	0 acre	0.35 acre	---	---	-n/a-	Y	Y
Area B	Roadside Ditch	Ditch	0 acre	0.04 acre	---	---	-n/a-	Y	Y
Mustang Bayou	Bridge	Bridge	0 acre	0.29 acre	---	---	-n/a-	Y	Y
Area C	Roadside Ditch	Ditch	0 acre	0.10 acre	---	---	-n/a-	Y	Y
Area D	Roadside Ditch	Ditch	0 acre	1.81 acres	---	---	-n/a-	Y	Y
Area E	Roadside Ditch	Ditch	0 acre	0.12 acre	---	---	-n/a-	Y	Y

Table 4: Potential Wetland Impacts by Location (continued)

Name of Water Body or Other Location Indicator	Existing Structure	Proposed Work or Structure	Permanent Fill		Temporary Fill		NWP (Indicate Number)	PCN (Y/N)	IP (Y/N)
			Open Waters (acre and linear feet)	Wetlands and other Special Aquatic Sites (acre)	Open Waters (acre and linear feet)	Wetlands and other Special Aquatic Sites (acre)			
Tributary to Long Point Creek	Roadside Ditch	Ditch	0 acre	0.05 acre	---	---	-n/a-	Y	Y
Long Point Creek	Crossing Roadside Ditch	Box Culvert	0 acre	0.03 acre	---	---	-n/a-	Y	Y
Long Point Creek	None	Detention Pond	0 acre	0.36 acre	---	---	-n/a-	Y	Y
Area A	None	Detention Pond	0 acre	0.10 acre	---	---	-n/a-	Y	Y

3.6.2 Section 401 of the Clean Water Act: Water Quality Certification

The 401 Certification requirements would be met by implementing approved applicable erosion, sediment, and post-construction TSS control best management practices (BMPs) from *TCEQ's 401 Water Quality Certification Conditions* for Nationwide Permits. Best management practices identified as part of the SW3P plan of the project include silt fencing, rock filter dams, inlet protection barriers, temporary and permanent vegetation.

3.6.3 *Executive Order 11990*

Wetland impacts are anticipated as a result of this project. The project did consider the impact of the No-Build which would not address the project purpose and need. Alternatives were reviewed as required by Executive Order 11990 on wetlands and no practicable alternatives to filling the 3.25 acres of wetlands and waters were identified.

3.6.4 *Rivers and Harbors Act of 1899, Section 10*

This project does not involve work in or over a navigable Water of the U.S., therefore Section 10 of the Rivers and Harbors Act does not apply.

3.6.5 *Section 303(d) of the Clean Water Act*

Runoff from this project would discharge within five miles upstream of Oyster Creek. Segment 1110 of Oyster Creek is listed as impaired for bacteria and depressed dissolved oxygen on the Texas Commission on Environmental Quality's (TCEQ) *2010 Texas Integrated Report – Texas 303(d) List*. Best management practices identified as part of the SW3P plan of the project

include silt fencing, rock filter dams, inlet protection barriers, temporary and permanent vegetation.

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

This project would include five or more acres of earth disturbance. TxDOT would comply with TCEQ'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 on the construction site. A Notice of Intent is required.

3.6.7 *Section 402 of the Clean Water Act: Texas Pollutant Discharge Elimination System, Municipal Separate Storm Sewer System*

This project is located within the boundaries of the Phase II Fort Bend County Municipal Separate Storm Sewer System (MS4), and would comply with the applicable MS4 requirements.

3.6.8 *Floodplains*

Portions of the proposed project (29.79 acres) are located within the Federal Emergency Management Agency designated 100-year floodplain. These include the crossings at Long Point Creek, East Fork of Long Point Creek, and Mustang Bayou (***Exhibit 6***). The hydraulic design of 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 Administrator would be required. Fort Bend County is a participant in the National Flood Insurance Program.

3.6.9 *Texas Coastal Management Program*

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

3.6.10 *Coastal Barrier Resources Act*

This project is located in Fort Bend County and is not within a designated Coastal Barrier Resources Act map unit. Coordination with the U.S. Fish and Wildlife service is not required.

3.6.11 *General Bridge Act/Section 9 of the Rivers and Harbors Act*

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

3.7 *Biological Resources*

3.7.1 *Threatened and Endangered Species*

Table 5 provides a list of the threatened and endangered species that the USFWS and Texas Parks and Wildlife Department consider as having the potential to occur in Fort Bend County. Also included in the table is the federal and state regulatory status, description of species habitat, presence or absence of habitat, and the effect/impact of the proposed project on the species in question. A search of the TWPD's Natural Diversity Database (NDD), in conjunction with GIS, has been updated on February 20, 2012.

Field reconnaissance conducted as part of a *Threatened and Endangered Species Report* completed for the project area (prepared by S&B Infrastructure, June 2009) revealed that no habitat of any state or federally listed threatened or endangered species is present within the project limits. In addition to field reconnaissance, a search of TPWD's Natural Diversity Database (NDD) Mimic ("live" version), in conjunction with GIS, was conducted on February 20, 2012.

An NDD search contains limited locality records and may not be exclusively used to determine the absence of threatened or endangered species. The NDD Mimic search revealed that the Houston toad (*Anaxyrus houstonensis*, EO_ID 968) has been documented within 1.5 miles of the project area. The area identified by the NDD for the Houston toad currently consists of a well developed, suburban area occupied by single-family residential subdivisions, other single-family residences, an elementary school and a high school. Very few undeveloped areas remain within the NDD designated Houston toad area.

The Houston toad is a terrestrial amphibian associated with deep sandy soils within the Post Oak Savannah vegetation area of east-central Texas. Preferred habitat of the Houston toad was not observed within the project limits. No sandy soil areas or ephemeral ponds were located in the NDD designated Houston toad area within or near the project ROW. The Houston Toad is most frequently associated with soils of the Sparta, Carrizo, Goliad, Queen City, Reclaw, Weches and Wouldis geologic formations. These geologic formations are located further inland and are not located along the Texas Gulf Coast.

The project area is located in the designated Alluvium and/or Beaumont geologic formations. Water bodies are limited in the NDD designated area. Areas conveying water, waterbodies, or depressional areas in the NDD designated Houston toad area consist of Long Point Creek, roadside ditches, relict ditches, drainage canals, one detention pond, and several amenity ponds for local subdivision developments. No sightings of the Houston toad or characteristics of any critical habitat for the Houston Toad were identified during field visits to the project area.

A finding of "no effect" has been determined on this proposed project for the Houston toad. No species of concern have been documented within 1.5 miles of the project area. Based on field reconnaissance, the scope of work, and the NDD Mimic search, it has been determined that the proposed project would have no effect on any federally listed threatened or endangered species,

their habitat, or designated critical habitat. Furthermore, the project would have no impact on any state listed threatened or endangered species, their habitat or designated critical habitat.

3.7.2 *Migratory Bird Treaty Act*

The Migratory Bird Treaty Act (MBTA) states that it is unlawful to kill, capture, collect, posses, buy, sell, trade, or transport any migratory bird, nest, or egg in part or in whole, without federal permit issues in accordance within the act's policies and regulations. Migratory patterns would not be affected by the proposed project. It is not anticipated that any migratory birds would be encountered due to the nature of the project; however, in the event that migratory birds are encountered onsite during construction, every effort would be made to avoid protected birds, active nests, eggs, and/or young. The contractor would remove all old migratory bird nests from September 1 through the end of February from any structure where work would be done. In addition, the contractor would be prepared to prevent migratory birds from building nests between March 1 and August 31. No established bird nests would be removed during nesting season. No active bird nests were observed during field investigations.

3.7.3 *Bald and Golden Eagle Protection Act*

The Bald and Golden Eagle Protection Act of 1940 prohibits the taking of Bald or Golden Eagles, the destruction of their nests, or the taking of their eggs. This act is intended to protect Eagles from commercial exploitation and promote their survival. The proposed project area does not contain suitable habitat for nesting Bald or Golden Eagles. Thus, the proposed project would not endanger or affect Bald or Golden Eagles.

3.7.4 *Magnuson-Stevens Fishery Conservation and Management Act*

The Magnuson-Stevens Fishery Conservation and Management Act directs all Federal agencies whose actions would impact an essential fish habitat, must confer with the National Marine Fisheries Service regarding any potential effects to the habitat. No tidally influenced waterways are located within the project limits; therefore, no essential fish habitat would be impacted by the proposed project.

3.7.5 *Fish and Wildlife Coordination Act*

The proposed project would be authorized under a Section 404 NWP #14; therefore, coordination under the Fish and Wildlife Coordination act is not required.

3.7.6 *Invasive Species and Beneficial Landscape Practices*

Executive Order 13112 was issued to prevent the introduction of invasive species, provide for their control, and minimize the economic, ecological, and human health impacts. Any landscaping plans included with the proposed project would include native species in the seed mixes where practicable according to TxDOT Standard Specifications. In accordance with the Executive Memorandum issued August 10, 1995, all agencies shall comply with NEPA as it relates to vegetation management and landscape practices for all federally assisted projects. The

Table 5: State and Federal Threatened and Endangered Species of Fort Bend County

Common Name	Scientific Name	State Status	Federal Status	Habitat Description	Habitat Present	Impact/ Effect
AMPHIBIANS						
Houston Toad	*Anaxyrus houstonensis*	E	LE	Sandy soil, breeds in ephemeral pools	**No**	**No Impact No Effect**
BIRDS						
American Peregrine Falcon	*Falco peregrinus anatum*	T	DL	Potential migrant	**No**	**No Impact No Effect**
Arctic Peregrine Falcon	*Falco peregrinus tundrius*		DL	Potential migrant	**No**	**No Effect**
Attwater's Greater Prairie-chicken	*Tympanuchus cupido attwateri*	E	LE	Thick 1-3' tall grass from 0'-200' above sea level along coast	**No**	**No Impact No Effect**
Bald Eagle (Nesting)	*Haliaeetus leucocephalus*	T	DL	Near water areas, in tall trees	**No**	**No Impact No Effect**
Henslow Sparrow (wintering)	*Ammodramus henslowii*	SOC	SOC	Weedy fields, fields with bunch grass, vines, and brambles, need bare ground	**No**	**None**
Interior Least Tern	*Sterna antillarum athalassos*	E	LE	Nests along sand and gravel bars within streams and rivers, only listed when 50 miles inland	**No**	**No Impact No Effect**
Peregrine Falcon	*Falco peregrinus*	T	DL	Nests on coasts, mountains and canyons wherever it locates a suitable high cliff ledge to its nest site	**No**	**No Impact No Effect**
Sprague's Pipit	*Anthus spragueii*		C	Tied to native upland prairie, can be locally common in coastal grasslands, uncommon to rare further west	**No**	**No Effect**
Western Burrowing Owl	*Athene cunicularia hypugaea*	SOC	SOC	Open grasslands, prairie, plains, and savannahs	**No**	**None**
White-faced Ibis	*Plegadis chihi*	T		Freshwater marshes, but some brackish or salt marshes	**No**	**No Impact**
White-tailed Hawk	*Buteo albicaudatus*	T		Coastal Prairies	**No**	**No Impact**
Whooping Crane	*Grus americana*	E	LE	Winters in Aransas NWR	**No**	**No Impact No Effect**
Wood Stork	*Mycteria americana*	T		Prairie ponds and flooded pastures	**No**	**No Impact**
FISHES						
American Eel	*Anguilla rostrata*	SOC	SOC	Coastal waterways below reservoirs to gulf	**No**	**None**
Sharpnose Shiner	*Notropis oxyrhynchus*		C	Large turbid river, sand, gravel, and clay-mud bottom	**No**	**No Effect**
MAMMALS						
Louisiana Black Bear	*Ursus americanus luteolus*	T	LT	Bottomland hardwoods; large, undisturbed forested areas	**No**	**No Impact No Effect**
Plains Spotted Skunk	*Spilogale putoria interrupta*	SOC	SOC	Open fields, prairies, croplands, fence rows, farm yards, brushy areas, and tall grass prairies	**No**	**None**

Table 5: State and Federal Threatened and Endangered Species of Fort Bend County (continued)

Common Name	Scientific Name	State Status	Federal Status	Habitat Description	Habitat Present	Impact/ Effect
MAMMALS						
Red Wolf	*Canis rufus*	E	LE	Extirpated, brushy, forested areas, coastal prairies	**No**	**No Impact No Effect**
MOLLUSKS						
False Spike Mussel	*Quincuncina mitchelli*	T		Cobble and mud substrate with water lilies present	**No**	**No Impact**
Smooth Pimpleback	*Quadrula houstonensis*	T	C	Mixed mud, sand, and fine gravel, tolerates slow to moderate flow rates.	**No**	**No Impact No Effect**
Texas Fawnfoot	*Truncilla macrodon*	T	C	Little known, possibly rivers and larger streams and intolerant of impoundment; flowing rice irrigation canals, possibly sand, gravel, and perhaps sandy-mud bottoms in moderate flows	**No**	**No Impact No Effect**
REPTILES						
Alligator Snapping Turtle	*Macrochelys temminckii*	T		Water bodies with mud bottom and abundant vegetation	**No**	**No Impact**
Texas Horned Lizard	*Phrynosoma cornutum*	T		Open, semi-arid regions, with bunch grass	**No**	**No Impact**
Timber/Canebrake Rattlesnake	*Crotalus horridus*	T		Swamps/floodplains of hardwood/upland pine	**No**	**No Impact**
VASCULAR PLANTS						
Texas Prairie Dawn	*Hymenoxys texana*	E	LE	Poorly drained areas in open grasslands; pimple mounds	**No**	**No Impact No Effect**
Threeflower Broomweed	*Thurovia triflora*	SOC	SOC	Low vegetation, on light colored silt or fine sand over saline clay.	**No**	**None**

LE, LT = Federally Listed Endangered/Threatened; PE, PT= Federally Proposed Endangered/Threatened; SAE, SAT = Federally Listed Endangered/Threatened by Similarity of Appearance; C= Federal Candidate for Listing – formerly Category 1 Candidate; DL, PDL= Federally Delisted/Proposed for Delisting; NL=Not Federally Listed; E,T = State Listed Endangered/Threatened; NT=Not tracked or no longer tracked by the State; "blank" = Rare, but with no regulatory listing status. Texas Parks and Wildlife Department, Wildlife Division, Diversity and Habitat Assessment Programs. County Lists of Texas' Special Species. [Fort Bend and October 10, 2011]

Executive Memorandum directs that where cost-effective and to the extent practicable, agencies shall (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. Any landscaping plans associated with this project would be in compliance with the Executive Memorandum on beneficial landscaping.

3.7.7 *Vegetation and Habitat Features*

According to the Texas parks and Wildlife Department's (TPWD), *Vegetation Types of Texas*, the proposed project lies within a region of the Gulf Coast Prairies and Marshes identified as within the *Crops* vegetation type. This vegetation type consists of cultivated cover crops or row crops providing food and/or fiber. This could also include grasslands associated with crop rotation. The proposed project area is not consistent with the *Crops* designation.

The project area consists of approximately 51 acres, including the existing 2-lane roadway. Of this area, approximately 40 acres (78%) have been identified as vegetated. The remaining 11 acres (22%) has been developed to include the roadway surface, intersecting streets, driveways and miscellaneous concrete structures. All of the approximate 40 acres are anticipated to be disturbed due to construction of the roadway. Approximately 8 of these acres were found to be densely wooded, while the rest (approximately 32 acres) are consistent with the maintained roadside vegetation groups, containing trees and shrubs of various types.

Predominant vegetation patterns in the corridor are not atypical for this area of Fort Bend County. Dominant species for each strata includes: (tree-strata) sugarberry (*Celtis laevigata*); Chinese tallow (*Sapium sebiferum*); (shrub/understory strata) roughleaf dogwood (*Cornus drummondii*); yaupon (*Ilex vomitoria*); deciduous holly (*Ilex decidua*); (vine strata) poison Ivy (*Toxicodendron radicans*); southern dewberry (*Rubus trivalis*); (herbaceous strata) Bermuda-grass (*Cynodon dactylon*); Johnson grass (*Sorghum halepense*).

Trees along the project corridor ranged in height from approximately 5 feet to 40 feet. The diameter at breast height (dbh) for the trees evaluated ranged from less than one inch to 3 feet in diameter. Within the densely wooded area identified previously (approximately 8 acres of the ROW or 16% of the area), the canopy cover was identified by the surveyor as approximately 75 to 95 percent. Based on the field investigation, it was determined that the project would not affect mature woody vegetation or dense mature brush that is part of any significant remnant native vegetation (e.g. undisturbed prairie or bottomland hardwood).

In Accordance with Provision (4)(A)(ii) of the Memorandum of Understanding (MOU) between TxDOT and TPWD, habitats given consideration for compensatory mitigation include, (1) habitat for federal candidate species (impacted by the project) if mitigation would assist in the prevention of the listing of the species, (2) rare vegetation species (S1, S2, 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 to be locally important that the TxDOT District chooses to consider. Unusual vegetation features include, (1) unmaintained vegetation, (2) trees or shrubs along a fence line, (3) riparian vegetation, (4) unusually large trees, and (5) unusual stands of vegetation.

At the time of the general vegetation survey, several areas along the ROW would be considered to consist of "unmaintained" vegetation. Fence row vegetation was also observed in the area, but

that was not atypical. The total amount of fence row acreage identified along the corridor was 6.3 acres of the total area surveyed (40.2 acres).

Approximately 0.4 acre of riparian vegetation exist at Mustang Bayou. This consists of maintained roadside grasses. Mustang Bayou is considered a special habitat feature, with all fill in the area to be below the established high water mark. In order to minimize impacts on these areas, the design and scope of the project is limited to that necessary to support project construction. No other unusual vegetation or special habitat features exist within the project area. The riparian and fence row vegetation is not considered a prime species habitat and therefore no compensatory mitigation is proposed for this area.

3.8 *Farmland Protection Policy Act*

Projects considered exempt under the Farmland Policy Protection Act (FPPA) are those that require no ROW acquisitions, or require ROW that is developed, urbanized, or zoned for urban use. This project would require no additional ROW, therefore the project is considered exempt under the FPPA.

3.9 *Air Quality*

This project is located within Fort Bend County, which is part of the Houston-Galveston area that has been designated by the EPA as non-attainment in accordance with the 2008 8-hour ozone standard, therefore transportation conformity rules apply.

The proposed action is consistent with the Houston-Galveston Area Council's (H-GAC) financially constrained 2035 Regional Transportation Plan Update (RTP) and 2013-2016 Transportation Improvement Program (TIP). The 2035 RTP Update and 2013-2016 TIP were found to conform to the TCEQ State Implementation Plan (SIP) by FHWA and FTA on January 25, 2011 and November 1, 2012 respectively. A copy of the TIP page is included in ***Appendix C***. All projects in the H-GAC TIP that are proposed for federal or state funds were initiated in a manner consistent with federal guidelines in Section 450, of Title 23 Code of Federal Regulations (CFR) and Section 613.200, Subpart B, of Title 49 CFR. Energy, environment, cost, and mobility considerations are addressed in the programming of the TIP.

Traffic data for the design year 2031 is 13,600 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 (AADT) below 140,000. The AADT projections for the project do not exceed 140,000 vehicles per day; therefore a Traffic Air Quality Analysis was not required.

Consistency with CMP
HGAC issued a letter of waiver of Congestion Mitigation Analysis (CMA) on September 30, 2010 because the project is "a major collector in a suburban area" and is not on the CMP roadway network. A copy of the letter is in ***Appendix D***.

Mobile Source Air Toxics (MSAT)

Controlling air toxic emissions became a national priority with the passage of the Clean Air Act Amendments (CAAA) of 1990, whereby Congress mandated that the U.S. Environmental Protection Agency (EPA) regulate 188 air toxics, also known as hazardous air pollutants. The EPA has assessed this expansive list in their latest rule on the Control of Hazardous Air Pollutants from Mobile Sources (Federal Register, Vol. 72, No. 37, page 8430, February 26, 2007) and identified a group of 93 compounds emitted from mobile sources that are listed in their Integrated Risk Information System (IRIS) (http://www.epa.gov/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 would 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 traveled, 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.

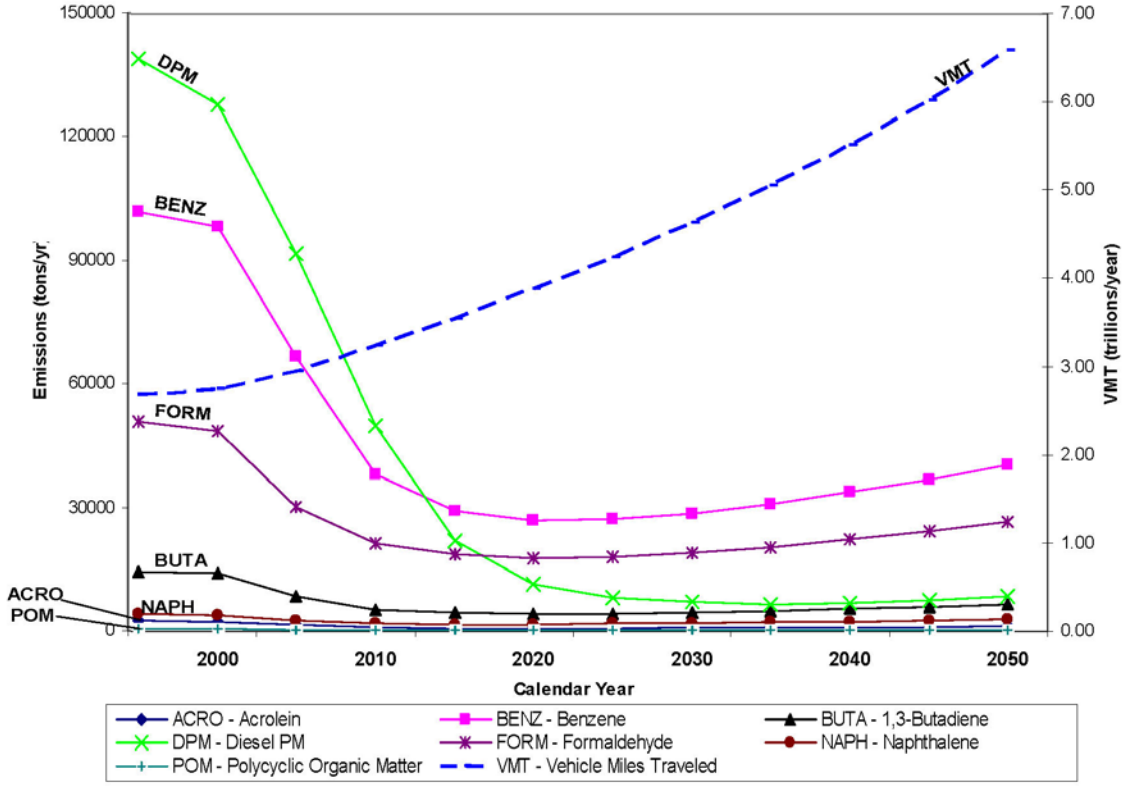
Project-Specific MSAT Information

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.

Widening Projects

For each alternative in this document, the amount of MSAT emitted would be proportional to the vehicle miles traveled (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 the technical models. Also, regardless of the alternative chosen, emissions would 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

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

Figure 2 – 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

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 project alternative will have the effect of moving some traffic closer to nearby homes, schools and businesses; therefore there may be some 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 will likely be most pronounced along the expanded roadway sections that will be built from west of Chimney Rock Road to east of Kansas Street near the northern project ROW line and from Kansas Street to FM 521 along the southern project ROW. However, the magnitude and duration of these potential increases compared to the No-Build alternative cannot be reliability 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 reduction 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 uncertainty introduced into the process through assumption and speculation rather than by any genuine insight into the actual health impacts directly attributable to MSAT exposure associated with the proposed action.

The US Environmental Protection Agency (EPA) is responsible for protecting the public health and welfare from any known or anticipated effect of an air pollutant. They are the lead authority for administering the Clean Air Act and its amendments and have specific statutory obligations with respect to hazardous air pollutants and MSAT. The EPA is in the continual process of assessing human health effects, exposures and risks posed by air pollutants. They maintain the Integrated Risk Information System (IRIS), which is "a compilation of electronic reports on specific substances found in the environment and their potential to cause human health effects" (EPA, http://www.epa.gov/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 analysis 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 emission 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 the MOBILE6.2 significantly underestimates diesel particulate matter (PM) emissions and significantly overestimates benzene emissions.

Regarding air dispersion modeling and 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 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 and 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 1 in a million due to emissions from a source. The results of this statutory two-step process do not guarantee that cancer risks from exposure to air toxics are less than 1 in a million; in some cases, the residual risk determination could result in maximum individual cancer risks that are as high as approximately 100 in a million. In a June 2008 decision, the U.S. Court of Appeals for the District of Columbia Circuit upheld EPA's approach to addressing risk in its two step decision framework. Information is incomplete or unavailable to establish that even the largest of highway projects would result in levels of risk greater than safe or acceptable.

Because of 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 need to weigh this information against project benefits, such as reducing traffic congestion, accident rates, and fatalities plus improved access for emergency response that are better suited for quantitative analysis.

Conclusion

In this document, a qualitative MSAT assessment has been provided relative to the various alternatives of MSAT emissions and has acknowledged that the current widening 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.

3.10 *Traffic Noise*

Under TxDOT and FHWA policy, a traffic noise study is required whenever a roadway or highway improvement project adds a new highway/roadway, adds additional travel lanes or significantly changes the horizontal or vertical alignment of an existing highway or roadway. This project is proposed to increase the number of travel lanes within the project limits and therefore requires a traffic noise analysis.

This traffic noise analysis conforms to FHWA regulation 23 CFR 772, "Procedures for Abatement of Highway Traffic Noise and Construction Noise," and the TxDOT's "Guidelines for Analysis and Abatement of Roadway Traffic Noise" dated April 13, 2011 (including subsequent updates).

Sound from highway traffic is generated primarily from a vehicle's tires, engine and exhaust. This sound 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 "dBA". A description of common sources of sound, or noise, and their associated dBA level has been provided for comparison (***Table 6***).

Table 6: Common Sound/Noise Levels

Outdoor	dBA	Indoor
Air Horn	110	Rock/Blues Band
Leaf Blower	100	Subway
Gas weed eater		
	90	Food blender
Police Whistle	80	Garbage disposal at 3 feet
		Shouting at 3 feet
	70	
Normal Conversation at 3 feet	60	Clothes dryer at 3 feet
Babbling brook		Large business office
Quiet urban (daytime)	50	Refrigerator
Quiet urban (nighttime)	40	Library

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 "L_{eq}".

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 7***).

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

- Absolute criterion: Under this criterion, a noise impact occurs when the predicted noise level approaches (defined by TxDOT as 1 dBA), equals or exceeds the FHWA Noise Abatement Criteria (NAC), shown in ***Table 7***.
- Relative criterion: Under this criterion, a noise impact occurs when the predicted noise level "substantially exceeds" (defined by TxDOT as 10 dBA) the existing level even if it does not approach, equal or exceed the NAC in ***Table 7***.

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.

Table 7: Noise Abatement Criteria (NAC)

Activity Category	FHWA dB(A) L_{eq}	TxDOT dB(A) L_{eq}	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, places of worship, playgrounds, public meeting rooms, public or non profit 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 (interior)	71 (exterior)	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities no 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.

The FHWA Traffic Noise Model (TNM), version 2.5, 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.

The maximum or worse case, existing and predicted traffic noise levels for 10,000 vehicles per day in 2011 and 13,600 vehicles per day in 2031 were modeled at 51 Category B and C receivers (***Table 8, Exhibit 7***) that represent the residences and commercial businesses adjacent to the highway project that might be impacted by traffic noise and that may potentially benefit from reduced noise levels. *(Note, traffic numbers used for this analysis obtained from TXDOT, April 30, 2009. The figures were obtained from a comparison of the 1996, 2001 and 2006 TxDOT Houston District Saturation Counts.)*

Table 8: Traffic Noise Levels (dBA L_{eq})

Receiver	NAC Category	NAC Level	Existing 2011	Predicted 2031	Change (+/-)	Noise Impact
NR-1 - School	C	67	54	55	+1	No
NR-2 - Residential	B	67	55	57	+2	No
NR-3A - Residential	B	67	60	61	+1	No
NR-3B - Residential	B	67	60	61	+1	No
NR-3C - Residential	B	67	59	61	+2	No
NR-3D - Residential	B	67	52	54	+2	No
NR-4A - Residential	B	67	59	61	+2	No
NR-4B - Residential	B	67	60	62	+2	No
NR-4C - Residential	B	67	60	61	+2	No
NR-4D - Residential	B	67	60	61	+1	No
NR-5A - Residential	B	67	58	59	+1	No
NR-5B - Residential	B	67	60	61	+1	No
NR-6A - Residential	B	67	60	61	+1	No
NR-6B - Residential	B	67	59	60	+1	No
NR-7 - Residential	B	67	56	57	+1	No
NR-8A - Residential	B	67	59	60	+1	No
NR-8B - Residential	B	67	60	61	+1	No
NR-9A - Residential	B	67	59	61	+2	No
NR-9B - Residential	B	67	60	61	+1	No
NR-9C - Residential	B	67	60	61	+1	No
NR-9D - Residential	B	67	60	61	+1	No
NR-10A - Residential	B	67	59	61	+2	No
NR-10B - Residential	B	67	60	61	+1	No
NR-11A - Residential	B	67	60	61	+1	No
NR-11B Residential	B	67	60	61	+1	No
NR-11C - Residential	B	67	60	61	+1	No
NR-11D - Residential	B	67	59	60	+1	No
NR-12A - Residential	B	67	59	62	+3	No
NR-12B - Residential	B	67	59	62	+3	No
NR-13A - Residential	B	67	59	62	+3	No
NR-14 - Residential	B	67	59	60	+1	No
NR-15 - Residential	B	67	53	55	+2	No
NR-16A – Commercial	F	---	64	66	+2	---
NR-16B - Residential	B	67	58	59	+1	No
NR-16C - Residential	B	67	65	67	+2	**YES**
NR-17 - Residential	B	67	59	60	+1	No
NR-18 - Residential	B	67	58	59	+1	No
NR-19A - Residential	B	67	59	60	+1	No
NR-19B – Commercial	F	---	60	62	+2	---
NR-20 – Residential	B	67	60	61	+1	No

Table 8: Traffic Noise Levels (dBA Leq) continued

Receiver	NAC Category	NAC Level	Existing 2011	Predicted 2031	Change (+/-)	Noise Impact
NR-21A – Residential	B	67	59	60	+1	No
NR-21B – Commercial	F	---	62	64	+2	---
NR-22 - Residential	B	67	54	56	+2	No
NR-23 - Residential	B	67	62	64	+2	No
NR-24 - Residential	B	67	58	59	+1	No
NR-25 - Residential	B	67	57	58	+1	No
NR-26 - Residential	B	67	59	60	+1	No
NR-27 - Residential	B	67	60	61	+1	No
NR-28 - Residential	B	67	60	61	+1	No
NR-29 - Residential	B	67	57	58	+1	No

See note on page 27 regarding table headings as these relate to traffic provided by TXDOT for this study. Table compiled by S&B Infrastructure, 2009. Updated by Burk-Kleinpeter to address changes in NCA Categories in TxDOT revised noise policy, See Figure 7a for the location of receiver NR-16C (pg. 52). NR 16A and NR 19B are retail establishments (convenience stores with gasoline pumps), NR 21B is an industrial site (truck storage and loading facility with maintenance shop).

As indicated in ***Table 8***, predicted noise levels exceed existing levels by a maximum of only 3 dBA; the NAC was approached, equaled or exceeded at one receiver (NR-16C). Therefore, the project would result in a traffic noise impact and the following noise abatement measures were considered: traffic management, alternation of horizontal and/or vertical alignments, acquisition of undeveloped property to act as a buffer zone and the construction of noise barriers.

Before any abatement measure can be incorporated into the project, it must be both "feasible" and "reasonable." In order to be feasible, the measure should be able to be physically provided and should reduce noise levels by at least 7 dBA for at least one impacted receiver. To be reasonable the abatement measure should not exceed $25,000 per benefited receiver. Noise abatement measures include:

- **Traffic management**: Control devices could be used to reduce the speed of the traffic; however, the minor benefit of one dBA per 5 mph reduction in speed does not outweigh the associated increase in congestion and air pollution. Other measures such as time or use restrictions for certain vehicles are prohibited on state highways.
- **Alteration of horizontal and/or vertical alignments**: Any alteration of the existing alignment would displace existing businesses and residences, require additional ROW and not be cost effective/reasonable.
- **Buffer zone**: The acquisition of sufficient undeveloped land adjacent to the highway project to preclude future development that could be impacted by highway traffic noise would not be cost effective/reasonable.
- **Noise barriers:** This is the most commonly used noise abatement measure. Noise walls were evaluated for each of the impacted receiver locations with the following results:

NR 16B, NR 16C, NR 17: These receivers represent a total of individual residences with driveways facing and taking access from the roadway. Only NR 16C was identified as impacted by noise. A continuous noise wall would restrict access to this residence. Gaps in a noise wall would satisfy access requirements, but the resulting non-continuous walls segments would not be sufficient to achieve the reduction of seven dB(A).

None of the above noise abatement measures would be feasible and reasonable; therefore no abatement measures are proposed for this project.

Noise Contour Analysis

Some land use activity areas adjacent to the project are currently Category G, undeveloped land. Also, no known new development is currently planned, designed or programmed in these areas. There is no NAC for undeveloped land; therefore, the project would not result in any noise impacts in these areas. 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 should ensure, to the maximum extent possible, that no new activities are planned or constructed along or within the following predicted 2031 noise impact contours (***Table 9***).

Table 9: 2031 Noise Impact Contours

Undeveloped Area	Land Use	Impact Contour	Distance from ROW	
			120 ft ROW	160 ft ROW
Along the Trammel Fresno Road Project Corridor	NAC B/C	66 dBA	9.0 feet	Within the ROW
	NAC E	71 dBA	Within the ROW	Within the ROW

Table compiled by S&B Infrastructure, 2009. Updated by Burk-Kleinpeter, Inc., 2012.

On the date of approval of this document (Date of Public Knowledge), the FHWA and TxDOT are no longer responsible for providing noise abatement for new development adjacent to the project.

3.11 *Hazardous Materials*

Based on anticipated construction activities associated with the project, an initial site assessment (ISA) was conducted to identify potential hazardous materials in the project area. The ISA consisted of an on-site assessment and a review of a Regulatory Database Search (completed in 2008, updated in 2010, provided in ***Appendix G)***. The ISA analysis indicated the presence of two leaking petroleum storage tanks (LPSTs) at the northeastern and southeastern corners of the FM 521 and Trammel Fresno/Palmetto Drive intersection. It has been determined that the construction of traffic signal footings at this site has the potential to encounter contaminated soil and/or groundwater.

Table 10: Environmental Data Search Summary (LUST)

Database	Checked Date	Minimum Search Distance	Description	
TXLUST (Leaking Underground Storage Tanks)	5/2010	0.5 mile	Site #1	LPST#107798, Facility ID#0023838, discovered 12/23/93; reported 2/11/94; minor soil contamination, does not require a rap, final concurrence, pending documentation of well plugging
			Site #2	LPST#113432, Facility ID #0054977, discovered 07/16/98; reported 8/27/98; monitoring, preapproval given to plug and abandon five monitor wells in 11/2009

Original Data Source: Environmental Data Search, TellALL Corporation, Widening of Trammel Fresno Road, Fort Bend, TX, September 23, 2003. Site research completed by Burk-Kleinpeter, Inc. of the Texas Commission on Environmental Quality PST Registration Database, www.tceq.state.tx.us, July 2008 and May 2010.
Table compiled by Burk-Kleinpeter, Inc., 2010.

Due to this, a Soil and Groundwater Management Plan (SGMP) has been developed to give direction into the site operations and management of potentially contaminated soil and groundwater during construction activities at the intersection. (***Appendix H***)

This project also includes the demolition of a structure (bridge). The structure may contain asbestos containing materials. Asbestos inspections, specifications, notification, abatement, and disposal, as applicable, would be conducted in compliance with federal and state regulations. Also, based on the scope of demolition work, it would be determined prior to construction if a lead based paint inspection would be required.

The contractor would take appropriate measures to prevent, minimize, and control the spill of hazardous materials in the construction area. The use of construction equipment within sensitive areas should be minimized or eliminated entirely. All construction materials used for this project should be removed as soon as work schedules permit. Should any leaks or spills occur, they would be handled according to applicable state and federal regulations and TxDOT standard specifications. Furthermore, any unanticipated hazardous materials and/or petroleum contamination encountered during construction would be handled according to applicable state and federal regulations and TxDOT Standard Specifications and Guidelines for handling emergency discovery of hazardous materials.

Based on the ISA analysis and through consultation with the Environmental Affairs Division, it is not anticipated that there is any other known hazardous materials contamination sites that would adversely affect construction. A copy of the ISA and Regulatory Database Search would remain on file at the TxDOT Houston District offices.

3.12 *Construction Impacts*

Construction impacts associated with the proposed project would include elevated ambient noise levels, degraded air quality, expedited erosion and sedimentation patterns, and occasional traffic delays.

To lessen the noise impacts associated with construction activities, provisions would be set forth in the plans to ensure that the contractor makes every reasonable effort to minimize construction noise through abatement measures such as regulation of work hours and proper maintenance of muffler systems.

During the construction phase of this project there can be temporary increases in air pollutant emissions from construction activities, equipment, and related vehicles. The primary construction related emissions are particulate matter (fugitive dust) from site preparation and construction and non-road mobile source air toxics (MSAT) from construction equipment and vehicles. The primary MSAT emission related to construction is diesel particulate matter from diesel powered construction equipment and vehicles. These emissions are temporary in nature (only occurring during actual construction) and it is not reasonably possible to estimate impacts from these emissions due to limitations of the existing models. However, the potential impacts of particulate matter emissions would be minimized by using fugitive dust control measures such as covering or treating disturbed areas with dust suppression techniques, sprinkling, covering loaded trucks, and other dust abatement controls. The MSAT emissions would be minimized by measures to encourage use of EPA required cleaner diesel fuels, limits on idling, increasing use of cleaner burning diesel fuel engines, and other emission limitation techniques. Considering the temporary and transient nature of construction related emissions as well as the mitigation actions to be utilized, it is not anticipated that emissions from construction of this project would have any significant impact on air quality in the area.

Expedited erosion and sedimentation patterns would be expected from construction activities. Storm events would cause erosion of the disturbed areas and allow the sediment to flow freely into exposed intake systems. The acceleration of this natural process would be controlled by incorporated job specifications, on-site inspections, silt fencing and other BMPs, re-vegetation of the ROW, and other suitable management practices. TxDOT contract specifications require contractors to minimize and abate adverse effects to the environment at all times during the construction process.

Construction would be conducted in manner that would minimize delays to the vehicular traffic passing through the project area. All traffic control operations would conform to Part VI (Traffic Controls for Street and Highway Construction and Maintenance Operations) of the TMUTCD.

3.13 *Indirect Impacts Analysis*

The proposed project adds capacity to an existing roadway in Fort Bend County, adjacent to the City of Missouri City. As such, a checklist model has been employed to determine the level of indirect impacts associated with the project. By definition, indirect impacts include those which are “caused by an action and are later in time or farther removed in distance, but are reasonably foreseeable” (40 CFR 1508.8).

3.13.1 *Step 1: Scoping*

Area of Influence (AOI)
The Area of Influence (AOI) defined for the purposes of this study, considers the existing pattern of development, proposed thoroughfare development plans and transportation improvements. The AOI extends from Lake Olympia Parkway on the North to FM 521 on the east, then to State Highway 6 on the south and Fort Bend Parkway on the west (***Figure 8***). In general, this area is transitioning from rural to suburban. It has experienced concentrated population growth and suburban land development on its western and southern ends, closest to Fort Bend Parkway, State Highway 6 and the Missouri City limits. In the Census Tracts adjacent to Trammel Fresno within the AOI, the 2010 population levels demonstrate that growth of 181.6% has occurred since the 2000 Census.

The future year identified for this analysis of conditions is 2035, which allows incorporation of the 20-year horizon found within individual comprehensive plans in Missouri City and Pearland and the HGAC's Regional Transportation Plan Update. However, given that plans offer, at best, a guide toward a shared community vision for the future, often without the ability to significantly influence purchase and development decisions, the timeline for realization may extend far beyond any theoretical horizon.

3.13.2 *Step 2: Identify the Study Area Goals and Trends*

The AOI contains 5,117.6 total acres. Approximately 3,606 acres of this area can be considered developed. A review of Google Earth photography for the AOI allowed for analysis of land consumption between 1995 and 2011. During that time, the AOI experienced +/- 1,547 acres of new development, which represents approximately 42.9% of all development within its boundaries (***Table 11***).

According to the Census Bureau, population growth in the Fresno CDP, which includes a portion of the corridor, recorded growth of 188.8% between 2000 and 2010. By comparison, population growth between 2000 and 2010 within the City of Houston was 7.5%; 27.3% in the City of Missouri City and 65.3% in Fort Bend County.

By 2040, the population of the Houston area has been forecast to be around 9.024 million according to the Texas Water Development Board (TWDB). This represents a projected increase of 32.5% from the 2010 population. In Fort Bend County, forecasts from the same entity have a population increase to 1,259,307 in the county by 2040, an increase of 53.5% from 2010 levels. TWDB forecasts for Missouri City, Arcola and MUD #23, the populated areas adjacent to the Trammel Fresno Road corridor, show potential growth in population of 72.9% (73,670 to 127,352) between 2010 and 2040. Given the TWDB's population estimates and trends, it is possible that the population in the area of the project could approach 118,000 by 2035, representing a 60% increase over the 2010 Census count.

Table 11: Summary Land Use Trend, Trammel Fresno Road AOI

Year	1995	2002	2005	2008	2010	2011
Development Added	+/- 133 acres at Teal Bend Boulevard, 1 mile north of State Hwy 6 First suburban development detected in AOI	+/- 460 acres residential development +/- 74 acres Fort Bend ISD School (HHS)	+/- 786 acres residential development +/- 12 acres commercial along SH 6	+/- 65 acres residential development +/- 12 acres Fort Bend ISD school (RPE) Scattered new construction in existing subdivisions	Scattered infill construction within existing subdivisions	+/- 17 acres residential development Scattered new construction in existing subdivisions
Acre Used	+/- 133 Acres Total	+/- 667 Acres Total	+/- 1,465 Acres Total	+/- 1,530 Acres Total	+/- 1,530 Acres Total	+/- 1,547 Acres Total
Key Roadway Improvements	**Baseline:** **Within AOI** State Hwy 6 (2 lanes) Trammel Fresno Rd (2 lane) **Regional** State Hwy 8 (boulevard)	**Changes:** **Regional** State Hwy 8 (Tollway)	**Changes:** **Within AOI** State Hwy 6 (6 lanes) Fort Bend Parkway (Tollway)	**Changes:** **None**	**Changes:** **Within AOI** Trammel Fresno Rd (2 lane, realigned)	**Changes:** **None**

Source: Google Earth historical photography, downloaded April 25, 2012. Table compiled by Burk-Kleinpeter, Inc., 2012.

The AOI is within the extraterritorial jurisdiction (ETJ) of four cities: Pearland, Arcola, Houston and Missouri City. Only a very small portion of this project at Hightower High School is within the Missouri City city limits. The ETJ allows for the regulation of subdivisions and formation of utility districts in these areas. Some communities have incorporated these locations into their comprehensive planning, but zoning has not been extended into these areas. Missouri City and Pearland have completed comprehensive plans; the City of Houston has a general plan. The goal of the community-based plans is to provide direction to the continued growth occurring in these cities. All are posted on their individual municipal websites and have been reviewed for this analysis in order to identify goals (***Table 12***).

Table 12: Summary Goals, Trammel Fresno AOI

Entity	Plan by Title	Overall Goals (Land Use or Transportation)
Missouri City	Comprehensive Plan, adopted September 21, 2009	Business Park development in vicinity of Fort Bend Parkway, west and north of Hightower High School, Low Density Residential south and east of Hightower High School
Pearland	Comprehensive Plan Update, May 2004 (amended 2010)	Low Density Residential, within the identified ETJ area, with ultimate population citywide of 114,200
Houston	Houston General Plan City Mobility Planning, Phase II	None provided, no immediate/apparent plans to annex ETJ Lower density residential and employment in ETJ
Arcola	None adopted, no planning division	None Projected within City or ETJ
Fort Bend County	Major Thoroughfare Plan, Fort Bend County, August 18, 2010	Completion of public thoroughfare network to improve circulation within the AOI and between the AOI and region.
Fort Bend County	Major Thoroughfare Plan map, Fort Bend County, 2007	Trammel Fresno Road is a public thoroughfare, connecting additional thoroughfares. Other thoroughfares extending through area (Lake Olympia, S. Post Oak, Chimney Rock) would appear to offer better connectivity to regional routes including Beltway 8, Fort Bend Parkway, FM 2234/McHard Road.
Regional (HGAC)	2035 Houston-Galveston Regional Transportation Plan Update, Adopted 10/29/10, Found to Conform to the SIP by FHWA/FTA 1/25/11. Appendix E, RTP Project Listing (2012 Amendment)	Continued growth in the number of residents, jobs and housing units in region anticipated. This would require development of a balanced transportation system (roads, transit, ITS, HOV Lanes, etc.) to maintain regional viability. A total of 168 projects in the RTP update have been reviewed. The projects are grouped into four categories from Let (implemented) to Long Range.

Sources: Missouri City Comprehensive Plan, September 21, 2009; 2004 Comprehensive Plan Update and Comprehensive Plan Update 2010, City of Pearland; Houston General Plan, Annexation Plan 2012-2014; City Mobility Planning, Phase II 2011-presentation March 15, 2012; Houston Galveston Area Council, Bridging Our Communities, The 2035 Houston Galveston Regional Transportation Plan Update, October 29, 2010, Found to Conform to the SIP by FHWA/FTA 1/25/11; Houston Galveston Area Council, Fort Bend County, Major Thoroughfare Plan Map, August 18, 2010; Fort Bend County, Major Thoroughfare Plan Map signed, February 13, 2007.

Table compiled by Burk-Kleinpeter, Inc., 2013.

3.13.3 *Step 3: Inventory the Study Area's Notable Features*

Previous sections of this CE document the socioeconomic, natural and cultural resources of the project area. The project is located within a region of the *Gulf Coast Prairies and Marshes* identified as with the Brazos River Basin, within the crops vegetation type. The area contains one intermittent waterway, Mustang Bayou and an unnamed tributary of Long Point Creek. Project area includes portion of floodplain associated with Mustang Bayou.

At the time of the general vegetation survey, several areas along the ROW would be considered to consist of "unmaintained" vegetation. Fence row vegetation was also observed in the area, but that was not atypical. The total amount of fence row acreage identified along the corridor was 6.3 acres of the total area surveyed (40.2 acres). Approximately 0.4 acre of riparian vegetation exists at Mustang Bayou. This consists of maintained roadside grasses. No other types of unusual vegetation were observed in the project area.

A NDD Search identified that the Houston Toad (*Anaxyrus houstonensis*, EO_ID 968) has been documented in within 1.5 miles of the project area. Field reconnaissance revealed that no habitat of any state or federal listed threatened and endangered species is present within the project limits.

Four schools of the Fort Bend ISD are located in the AOI, three elementary schools and one high school. None of these schools' attendance boundaries cross Trammel Fresno Road. It forms the boundary between two of the schools. The fourth school, Hightower High School, maintains frontage along Trammel Fresno Road east of Hurricane Lane. This area is not used, landscaped in a grassy area abutting the High School's Football Stadium (***Exhibit 1***).

No prime farmland is found in the AOI or along Trammel Fresno Road. Recreation spots in the AOI are limited to facilities located at the individual school sites or within subdivision maintained and operated recreational facilities (pools, tennis courts, playgrounds, walking paths). None of these facilities abut Trammel Fresno Road.

The majority of the proposed project lies in an area within an incorporated area of Fort Bend County. There are no zoning ordinances or comprehensive plans in place for which specific project goals can be established, except for the portion of the project within the Missouri City city limits. Historically, the area has developed primarily as residential, with some minor commercial development restricted to service and general retail establishments.

3.13.4 *Step 4: Identify Impact Causing Activities of the Proposed Action*

Steps 2 and 3 of the indirect effects assessment have focused on using existing information on the AOI to identify goals, trends and notable features. The next steps identify and assess impacts which conflict with these goals and features. This step summarizes the impact-causing actions of the project (***Table 13***).

Table 13: Impact Causing Activities, Trammel Fresno Road

Type of Activity	Project Specific Activity	Relevant Details
Modification of Regime	Alteration of Ground Cover	Ground cover along the corridor and adjacent to existing bridges would be temporarily disturbed during the period for construction, estimated to be 12 months. Best Management Practices would be used to control for soil erosion. Approximately 51.9 acre of existing roadside area would be altered.

Table 13: Impact Causing Activities, Trammel Fresno Road (continued)

Type of Activity	Project Specific Activity	Relevant Details
Modification of Regime	Flow Modification	The bridge at Mustang Bayou would be widened 13' 4" on each side. It would not have any impact on the flow or water surface elevation of Mustang Bayou. At Long Point Creek, we are replacing the existing 2 - 72" and 1 – 60" Corrugated Metal Pipe with 2 – 6ft. x 6ft. concrete box culverts. No impacts to water surface elevation or reduction in flow capacity.
Modification of Regime	Drainage	Existing drainage would be modified. A Storm Sewer System would be installed from near Hurricane Lane to near California Street and roadside ditches would be replaced with a system of new ditches extending the length of the corridor, tied to two new detention structures located at the western end of the corridor. These structures, defined in Appendix E, have the capacity of 17.5 Ac-Ft which is more than sufficient to address the needs of the corridor, as well as enhance available capacity for existing developed areas.
Land transformation and Construction	New or Expanded Facility	The proposed project would widen the existing roadway from two to four lanes, and would increase the overall width of the facility by 40 feet.
Resource extraction	Excavation	Approximately 71,842 CY would be excavated and 60,326 CY would be re-used on site. This estimate is based upon the proposed design for the current roadway cross section, drainage system (based upon an analysis of hydrologic needs) and detention pond structures.
Processing	Construction Staging	Storage of construction materials and equipment for the project would be off site. It is anticipated that the contractor, when selected, would negotiate with a local property owner to use a portion of their developed site to stage and store equipment. Several large commercial centers with available parking lots can be found within close proximity to this project. If the contractor proposes to use undeveloped land or another site for storage, impacts to natural resources might increase.
Land alteration	Paving	Land alteration as a result of this project would be limited to the increase in the paved area, as well as the construction of the two detention structures. Vegetated areas within the ROW would be restored, to their current condition with similar vegetation.
Land alternation	Erosion Control	The project would employ approved Best Management Practices to ensure appropriate erosion control measures are in-place during mobilization and construction activities.
Land alternation	Filling	Approximately 71,842 CY would be excavated and 60,326 CY would be re-used on site.
Resource renewal activities	Revegetation	Ground covers along the corridor would be replaced as part of the project. Approximately 22.3 acres of vegetation, primarily native materials (grasses) would be restored to the corridor.

Table 13: Impact Causing Activities, Trammel Fresno Road (continued)

Type of Activity	Project Specific Activity	Relevant Details
Resource renewal activities	Remediation	The existing ditches from near California Street to FM 521 would be replaced with a variable width ditch sufficient to carry the required flows.
Waste Emplacement and Treatment	Soils, Paving and Waste	Approximately 71,842 CY would be excavated and 60,326 CY would be re-used on site; the excess would be hauled off site. All removed pavement would be stockpiled for re-use by the County at a County-facility approved for such activities. All contractors working on site are expected to have and maintain their own portable sanitary waste disposal facilities for employees working in the area. No other sanitary waste discharge is anticipated.
Waste Emplacement and Treatment	Soils, Paving and Waste	All other wastes generated by construction and associated activities would be disposed of off-site at a legally approved facility by the contractor.
Changes in traffic	Traffic Patterns	Project introduces a sidewalk along the western end of the corridor, connecting to the existing neighborhood network and two Fort Bend ISD facilities in the area. Existing signalized intersections in the suburban segment of the corridor at Hurricane Lane, Liberty Square Trace and Chimney Rock Road/Teal Bend Boulevard would be equipped with crosswalks.
Access alternation	Changes in Access	Project would provide a center turn lane which would remove waiting vehicles from the traffic stream, reducing congestion and stopped vehicle delay. Project would not close any existing direct property driveways or local street intersections.

3.13.5 *Step 5: Identify Potentially Substantial Indirect Effects for Analysis*

This step summarizes the methods used to identify indirect impacts. Specifically, this step would identify which impacts require additional analysis, and those which require no additional review. The methods identified correspond to the Planning Judgment methodology of the Indirect Impacts Assessment in the *Guidance on Preparing Indirect and Cumulative Impact Analyses*. It relies on data, elements and indicators which characterize the AOI based upon the baseline investigations. Impacts are examined in three general categories: encroachment alternation, induced growth and effects related to induced growth.

- *Encroachment Alternation Effects* – the project would not substantially alter the project area outside of the construction related impacts and accompanying mitigation steps (***Table 13***). Employment of all appropriate best practices during construction would minimize the duration of temporary disruptions to traffic flow and property access. No existing driveways

or streets would be closed as a result of this construction project. Since the project provides additional capacity, it would aid in the mobility of persons along the Corridor. In addition, introduction of sidewalks would better connect the dense suburban residential areas on the western end of the corridor, which have their own internal sidewalk system. Crossings of Trammel Fresno would be oriented to existing traffic signals where crosswalks and signals can be used to provide for high visibility and improved pedestrian safety.

- *Induced Growth Effects* – Prior to the improvement of this corridor, the area was experiencing pressure to develop residentially unrelated to the presence of this roadway. This corridor, in place since the 1940s according to historical photography, started seeing increased activity as a result of a combination of market factors with the improved regional connectivity to the area offered by the SH 6, SH 8/Sam Houston Toll Road and the South and Southwest Freeways.

This step offers no substantial effects on notable features of the AOI that would result from the proposed project. Therefore, no issues would be carried forward for further analysis in steps 6-8.

3.14 Cumulative Impacts Analysis

As this project proposes a capacity improvement, analysis of the cumulative effects is required to consider the following steps for identification and assessment:

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

Cumulative impacts include those "which result from incremental consequences of an action when added to other past and reasonably foreseeable future actions" (40 CFR 1508.7). These are generally less defined than those direct construction-period impacts identified previously.

According to TxDOT guidance, if a project does not cause direct or indirect impacts to a resource, it would not contribute to a cumulative impact on that resource. An analysis of impacts for this project would focus on those resources which are affected by the proposed project or considered at-risk of declining, even though the project's direct and indirect impacts appear relatively minor.

3.14.1 *Step 1: Identify the Resources to Consider in the Analysis*

Overall, the project would not cause significant direct impacts. Generally, those indirect impacts to the project area resulting from the proposed project would be minimal. Resources considered for the review of cumulative impacts have been identified by resource category (***Table 14***).

Table 14: Resources Examined Within Cumulative Impact Analysis

Resource	Summary of Direct Impacts	Indirect Impacts	Within Cumulative Impact Analysis	Reason Eliminated
Land Use	Approximately 51.0 acres of existing transportation ROW.	Land use development adjacent to roadway may change as a result of roadway construction. Existing development trends in area anticipated to continue with pace determined by market demands.	YES	N/A
Environmental Justice	No communities would be bisected by road – already exists. Relocations required for this project have been addressed by County. Socio economic data does indicate a minority population in the project area, but does not indicate presence of low-income population.	Access and circulation for communities (and all areas) would be enhanced by the project. Construction period access to a 2-lane roadway would be maintained. Driveway and street connections would be maintained throughout construction. Closures would be limited to what is required to accommodate construction and would be coordinated with property owners.	NO	Impacts not substantial, resource not at risk.
Prime Farmland	No prime farmland found in area. Project in an area which is developed, urbanized or zoned for urban use.	None	NO	N/A
Vegetation	40 acres of vegetation within transportation ROW would be changed. Current proposal it for 36 total acres of vegetation to be disturbed.	Of these, the majority (28 acres) consist of maintained roadside vegetation, with the remainder (8 acres) considered densely wooded. Predominant vegetation not atypical for area.	NO	Impacts not substantial, resource not at risk.
Wildlife, including Threatened and Endangered Species	A NDD search identified that the Houston Toad (*Anaxyrus houstonensis*, EO_ID 968) has been documented within 1.5 miles of the project area.	Field reconnaissance revealed that no habitat of any state or federally listed threatened and endangered species is present within the project limits.	NO	Impacts not substantial, resource not at risk.
Historic Resources	NO NRHP Properties would be impacted by the proposed project.	No indirect impacts as there are no NHRP eligible properties in the APE.	NO	Impacts not substantial, resource not at risk.
Archeological Resources	No recorded sites in the project area APE.	Background study found project area extensively disturbed; precludes possibility it contained any intact archeological deposits.	NO	Low probability of encountering sites. No effect on archeological resources.
Parkland	No parklands would be disturbed by proposed project.	No parklands in the project area.	NO	Impacts not substantial, resource not at risk.
Water Resources	A total of 3.25 acres of waters of the U.S., including wetlands have been found within the transportation ROW.	All appropriate mitigation steps would be taken to address any impacts to these areas as a result of construction of this project.	YES	N/A

Table 14: Resources Examined Within Cumulative Impact Analysis

Resource	Summary of Direct Impacts	Indirect Impacts	Within Cumulative Impact Analysis	Reason Eliminated
Floodplains	29.79 acres of project are in the 100 year floodplains. Bridges and creek crossings along corridor are within 100 year floodplains.	Hydraulic design of project and final recommended drainage features would be in accordance with current FHWA and TxDOT design practices require coordination with the local Floodplain Administrator.	YES	N/A
Air Quality	Project within an area designated as non-attainment in accordance with the 2008 8-hour ozone standard (July 20, 2012 effective date of non-attainment area designation). Traffic volumes do not require a Traffic Air Quality Analysis (TAQA).	None foreseen	NO	Proposed action is consistent with the area's financially constrained transportation plan and TIP, which conform to the State Implementation Plan (SIP).
Noise	The proposed project would not result in a noise impact.	Concerns were raised during the public information regarding noise along the corridor. Analysis found impact at one site, abatement of this impact not deemed feasible and reasonable.	NO	Impacts not substantial, resource not at risk.
Hazardous Materials	This project does not involve known hazardous materials sites, based upon regulatory database search.	None foreseen	NO	Should construction encounter contaminated soils, all appropriate measures would be taken to address and mitigate any potential hazard to the community.

3.14.2 *Step 2: Define the Study Area for Each Resource*

The Area of Influence (AOI) for each resource was chosen based upon the determination of the potential direct and indirect impacts arising from changes in land use occurring along the proposed project, as well as other known projects that may contribute to cumulative impacts. The AOI is reviewed for a defined period, to determine the level of proposed changes which might occur at some point during and following the construction of the project.

3.14.3 *Step 3: Describe the Current Status/Viability and Historical Context for Each Resource*

<u>*Land Use*</u>
Land uses consist primarily of undeveloped, developed agricultural, residential, institutional industrial and commercial land uses. As identified in ***Table 11***, new suburban style development in the area appeared around 1995 with the initial development on Teal Bend Boulevard. Over the next 16 year period (1995-2011), the pace of development quickened, with the period 2002-

2005 offering this most concentrated change in land use, with the addition of +/- 1,332 acres of new development (residential, commercial, schools). The pressure to build on available land has slowed since 2005, as more residential units have been added as infill to these areas on scattered lots.

It is estimated that the subdivisions north of Trammel Fresno Road, where most of the open and available lots are concentrated, are between 60 and 75% developed. Some of this land has been subdivided. Some of this is anticipated to become occupied by surface drainage features (detention ponds, detention areas) and common green space areas. Most of the open areas are closer the rear of these developments, which abut the northern boundary of the AOI. Lack of large tracts of open land and existing settle development east of California Street appear to be buffers keeping new development largely closer to Missouri City. Over time, the proposed plans adopted by Missouri City would encourage additional commercial and business park development west of the AOI and north of Trammel Fresno along Fort Bend Parkway. This would be expected to increase pressure for development of residential in these areas.

Water Resources

Wetlands and native vegetation have decreased in Fort Bend County as development pressures increased. Within the AOI, 387.8 acres of the area was considered wetlands on the National Wetland Index maps for the County. Approximately 262 acre of wetlands, or 68% of the total potential wetlands found in the AOI according to the NWI, have been developed. A total 3.25 acres of wetlands have been found in the corridor as a result of field review, representing than 1.2% of the total undeveloped wetland areas identified in the AOI.

The project would require a Section 404 Individual Permit as the amount of permanent fill/dredge materials would exceed the limits authorized by a NWP. The USACE issued a preliminary jurisdictional determination (SWG-2012-00170) on April 9, 2012.

Floodplains

Fort Bend County is a participant in the Federal Emergency Management Agency's (FEMA) National Flood Insurance Program (NFIP). According to FEMA's FIRMs for Fort Bend County, 1,442 acres of land inside of the AOI is within the 100 year floodplain. Approximately 1,117 acres of this area has been developed, with the majority appearing to occur between 1995 and 2011 as a result of new into residential subdivisions and commercial development in the AOI. A total of 29.79 acres of the project would be in the 100 year floodplain, representing 2% of the total floodplains found in the AOI.

3.14.4 *Step 4: Identify Direct and Indirect Impacts of the Project That Might Contribute to a Cumulative Impact*

A summary of direct and indirect impacts that may contribute to cumulative impacts are summarized (***Table 15***).

Table 15: Summary of Potential Cumulative Impacts

Resource	Proposed Alternative		Potential Cumulative Impacts	Health of Resource
	Direct Impacts	Indirect Impacts		
Land Use	Approximately 51.0 acres of existing transportation ROW.	Land use development adjacent to roadway may change as a result of roadway construction. Existing development trends in area anticipated to continue with pace determined by market demands.	Minor; potential acceleration of current development trends in area.	Stable
Water Resources	3.25 acres of potential jurisdictional wetlands and waters of the US have been found within the transportation ROW.	All appropriate mitigation steps would be taken to address any impacts to these areas as a result of construction of this project.	Loss of remaining wetlands in area due to increasing urbanization	Generally good
Floodplains	29.79 acres of project are in the 100 year floodplains. Bridges and creek crossings along corridor are within 100 year floodplains.	Hydraulic design of project would be in accordance with current FHWA and TxDOT design practices require coordination with the local Floodplain Administrator.	Some increase urbanization could bring about increased runoff. Project includes drainage features to address project related needs. Surrounding development in residential subdivisions appears to be mitigating their drainage impacts through retention pond construction. Anticipated this practice, regulated through the local development review and approval process (county and city), would continue.	Generally good

3.14.5 *Step 5: Identify Other Reasonably Foreseeable Future Effects*

In addition to the direct and indirect impacts of the proposed project identified previously, there are other actions occurring or proposed to occur within the AOI which are likely to affect land use, water resources and floodplains.

Past Infrastructure Projects

Fort Bend Parkway, which opened in August 2004, provides a direct high speed access from the AOI to the SH 8/Sam Houston Toll Road and US 90 Corridor. Plans are to extend this road south of SH 6 to a future terminus at US 36 south of Rosenberg. At the present, extension concept B which, if implemented, would construct the road west to Sienna Parkway, would take the road across SH 6 and end it just north the of the Sienna Plantation development. Two new traffic signals have been proposed and installed along the Trammel Fresno Road corridor as well within the AOI: at the intersection of Teal Bend Boulevard and Chimney Rock Road and intersection of Liberty Square Trace and Winfield Lakes Trace.

Future Transportation Projects
A review of the HGAC *2035 Regional Transportation Plan (RTP) Update* identified the following highway and transit projects suggested within the AOI or adjacent to the AOI which improves access through the area:

- SH6 (0192-01-088), 500' South of Teal Bend Boulevard, 1,200' north of FM 521, Implement Phase 1 (part 2) Access Management Improvements [Adjacent to AOI];
- Fort Bend Parkway Toll Road, SH 6 to Sienna Parkway, construct 4-lane toll road (2012 TIP) [Adjacent to AOI];
- FM 2234/McHard Road Widening (2105-01-020), widen 2 lanes to 4 lane divided rural section, Fort Bend Parkway Toll Road to FM 521 (2014 TIP);
- Hurricane Lane and Lake Olympia Parkway (0912-34-182), construct 2 lane concrete roadway to existing interchange at Fort Bend Parkway (2014 TIP);
- Trammel Fresno Road, Vicksburg Boulevard to Fort Bend Parkway, construct 4 lane divided concrete divided with storm sewers (0912-34-143) (2014 TIP) [Adjacent to AOI];
- Lake Olympia Parkway, Fort Bend Parkway Toll Road to FM 521, construct 4-lane undivided road (2018 RTP);
- Trammel Fresno Road, Sienna Parkway to SH 6, construct 4-lane undivided road, (2018 RTP) [Adjacent to AOI];
- Palmetto Road, CR 59, FM 521 to Fort Bend County Limit, widen to 4-lane divided (2020 RTP) [Adjacent to AOI];
- Missouri City Park and Ride (FB-2), Near SH 6 and Ft Bend Parkway, construct additional 500 spaces (ultimate lot size to include 1,000 spaces) (2023 RTP) [Adjacent to AOI];
- FM 521 Park and Ride, acquire 6 large transit vehicles (Phase 2) for express service from FM 521 P&R from Arcola-Sienna P&R (2024 RTP);
- Fort Bend Parkway Toll Road, (3585-02-900) Sienna Parkway to SH 99, construct 4 lane toll road and Brazos Bridge (2025 RTP) [Adjacent to AOI];

Other Reasonably Foreseen Projects
No additional public developments have been identified within the AOI. At the time of field review during March 2012, a new 155,405 square foot Wal-Mart Supercenter was under construction approximately 1 mile west of the AOI adjacent to the intersection of Vicksburg Boulevard with Trammel Fresno Road. This development includes provisions for seven outparcels capable of support a concentration of retail and commercial development. A traffic impact analysis obtained from the City completed by the developer indicates that new driveways and traffic signals around this development would mitigate projected traffic demands, coming primarily from other roads including SH 6 and Sierra Parkway. Traffic impacts to Trammel Fresno Road within the AOI were identified as minimal.

The continued infill of housing unit construction within existing subdivisions within the AOI is also expected to continue. Some of the vacant land initially developed to support streets, utilities and subdivided lots might likely be developed into logical extensions of the community-based drainage and parks system which can be observed within the existing footprint of development.

3.14.6 *Step 6: Identify and Assess Cumulative Impacts*

Cumulative impacts were evaluated by considering a variety of factors, including historical context, current condition, trends, potential future land uses and transportation improvements, and the appropriate regulations associated with each resource. These elements present the totality of items which would have an influence on their use and development, as well as those qualities which they would be likely to possess. As this review took place, several key assumptions were made regarding the future condition of these resources:

- All appropriate federal, state and local guidelines (permits, reviews, approvals, studies) would be completed by the appropriate owner in order to establish protection as required for individual elements;
- Proposals for development would be completed generally as outlined, although market decisions may have an impact on timing or pace of development;
- The trends identified historically would likely continue through the future period, although the pace of change would slow as the area moves from greenfield to suburban and thence suburban with some urban characteristics;
- Impacts identified are based upon a build-out of those areas which can likely be expected to develop in the future.

3.14.7 *Step 7: Report the Results*

In review of past, current and future developments, the proposed project is not expected to adversely contribute to the cumulative impacts on land use, water resources and floodplains within the AOI. As Fort Bend County has no land use controls and only controls for the subdivision of land, the current market would continue to be a driving force in the type, pace and scale of development. Fort Bend County's adopted Major Thoroughfare Plan map, used a guide, would identify the levels of access anticipated as the system completes its future build-out, which includes improved connectivity as a result of future north-south roadway connections between existing boulevard streets and SH 8/Sam Houston Toll Road.

Based upon NWI mapping, there are 387.8 acres of potential wetland areas in the AOI. Of this identified acreage, only 125.8 acres (32%) are in areas which are undeveloped.

Based upon the current FEMA FIRMs for Fort Bend County, 1,442.2 acres of the AOI is within the 100 year floodplain. Of this total, 325.1 acres are considered undeveloped. Developed land uses within mapped floodplains should be minimal as mapping of these areas deters development. However, decisions to enforce this measure reside with the local city/county governments.

3.14.8 *Step 8: Assess the Need for Mitigation*

Project construction would result in unavoidable impacts to existing vegetation. These impacts would be partially mitigated through re-vegetation activities associated with the project. All landscaping would be in accordance, with EO 13112 on Invasive Species and the Executive Memorandum on Beneficial Landscaping.

Waters of the US would be regulated by the USACE under authority granted through Section 404 of the CWA. This allows the USACE to issue permits for dredge and fill operations within Wetland areas. Submittal of information on the project has been submitted for review to the USACE to confirm the extent of jurisdictional wetlands, along with permit and mitigation requirements has yet to occur. Should this review identify jurisdictional wetlands, all appropriate avoidance and mitigation steps would be taken as part of the final project design and implemented as part of the project construction and development process.

Hydraulic design of project would be in accordance with current FHWA and TxDOT design practices require coordination with the local Floodplain Administrator. Currently, new development in the area is using a combination of improved detention and retention areas and canals to help manage storm runoff. This project is no different, as two retention areas would be constructed on the western edge of the corridor between Chimney Rock Road and Hurricane Lane to address needs for this project. These facilities would be integrated to the existing network, helping to increase overall capacity for the immediate area.

4.0 PERMITS AND COMMITMENTS

This section summarizes the elements that constitute the Environmental Permits, Impacts, and Commitment (EPIC) sheets. The EPIC sheets documents and communicates permits issues and environmental commitments that must be incorporated into the project plans, specifications, and estimates. The permits, impacts, and commitments relevant to the proposed project are as follows:

- **Soil and Groundwater Management Plan**
  To address potential for interaction with hazardous materials, a Soil and Groundwater Management Plan (SGMP) has been developed to give direction into the site operations and management of potentially contaminated soil and groundwater during construction activities at the intersection. (***Appendix H***)

- **Section 303d Commitments**
  To address runoff from this project, best management practices identified as part of the SW3P plan of the project include silt fencing, rock filter dams, inlet protection barriers, temporary and permanent vegetation.

- **Section 402 Commitments**
  This project would include five or more acre of earth disturbance. TxDOT would comply with TCEQ's Texas Pollutant Discharge Elimination System (TPDES) Construction General Permit (CGP). A Storm Water Prevention Plan (SW3P) would be implemented, and a construction site notice would be implemented, and a construction site notice would be posted on the construction site. A Notice of Intent (NOI) would be required.

  This project is located within the boundaries of the Phase II Fort Bend County Municipal Separate Storm Sewer System (MS4), and would comply with the applicable MS4 requirements.

- **Sections 401/404 Commitments**

This project would require a Section 404 Individual Permit. The USACE issued a preliminary jurisdictional determination (SWG-2012-00170) on April 9, 2012. A permit is required prior to the discharge any dredge of fill material into wetlands and tributaries (3.25 acres).

The 401 Certification requirements for NWP 14 would be met by implementing approved applicable erosion, sediment, and post-construction TSS control best management practices (BMPs) from *TCEQ's 401 Water Quality Certification Conditions* for Nationwide Permits. Coordination with the local floodplain administrator is required.

Approximately 0.4 acre of riparian vegetation exist at Mustang Bayou. This consists of maintained roadside grasses. Mustang Bayou is considered a special habitat feature, with all fill in the area to be below the established high water mark. In order to minimize impacts on these areas, the design and scope of the project is limited to that necessary to support project construction.

- **Floodplains**

Portions of the proposed project (29.79 acres) are located within the Federal Emergency Management Agency designated 100-year floodplain. These include the crossings at Long Point Creek, East Fork of Long Point Creek, and Mustang Bayou. Coordination with the local Floodplain Administrator would be required.

Hydraulic design of project would be in accordance with current FHWA and TxDOT design practices require coordination with the local Floodplain Administrator.

- **Invasive Species and Beneficial Landscape Practices**

Any landscaping plans included with the proposed project would include native species in the seed mixes where practicable according to TxDOT Standard Specifications. In accordance with the Executive Memorandum issued August 10, 1995, all agencies shall comply with NEPA as it relates to vegetation management and landscape practices for all federally assisted projects.

- **Vegetation Resources Commitments**

No compensatory mitigation is proposed for this project.

- **Texas Parks and Wildlife Coordination**

Coordination with TPWD is required for this project.

Table 16: TPWD Coordination Triggers

Yes	No	N/A	Scope of Work
X			Does the project involve more than 1.0 acres of new ROW within floodplains or creek drainages in rural or undeveloped urban areas? If yes, coordinate with TPWD.

Yes	No	N/A	Scope of Work
X			Does the project require channel modifications to streams, rivers or water bodies? If yes, coordinate with TPWD.
X			Does the project include a channel re-alignment requiring the creation of new drainage ways or other excavation impacting more than 1.0 acres of mature woody vegetation? If yes, coordinate with TPWD.
	X		Does the project require any excavation (scraping, clearing, or other surface disturbance) of the existing channel outside of TxDOT's existing ROW, or of the channel inside the ROW which is not routinely maintained and exhibits native vegetation? If yes, coordinate with TPWD.
X			Might the project affect mature woody vegetation or dense mature brush, including any significant remnant native vegetation (e.g., undisturbed native prairie or bottomland hardwood, etc.)? If yes, coordinate with TPWD.
X			Is the project within range and in suitable habitat of any state or federally listed threatened or endangered species? If yes, coordinate with TPWD.
	X		Does the project involve mitigation plans or otherwise involve proposals to redress project impacts on fish, wildlife, or plant resources? If yes, coordinate with TPWD.
	X		Does the project have previous environmental clearance, i.e., three years have passed without major action(s) and/or TPWD review, but now meets any of the above listed criteria? If yes, coordinate with TPWD.
		X	Have three years passed since environmental clearance with major actions (i.e., the TPWD may have or may not have reviewed, but the project meets any of the above listed criteria)? If yes, coordinate with TPWD.

- **Threatened and Endangered Species/MBTA Commitments**

A finding of "no effect" has been determined on this proposed project for the Houston toad. No species of concern have been documented within 1.5 miles of the project area. Based on field reconnaissance, the scope of work, and the NDD Mimic search, it has been determined that the proposed project would have no effect on any federally listed threatened or endangered species, their habitat, or designated critical habitat. Furthermore, the project would have no impact on any state listed threatened or endangered species, their habitat or designated critical habitat.

In the event that migratory birds are encountered onsite during construction, every effort would be made to avoid protected birds, active nests, eggs, and/or young. The contractor would remove all old migratory bird nests from September 1 through the end of February from any structure where work would be done. In addition, the contractor would be prepared to prevent migratory birds from building nests between March 1 and August 31. No established bird nests would be removed during nesting season.

- **Hazardous Materials Commitments**

An analysis of the ISA data indicates that this project would not involve the acquisition of known unresolved contamination where TxDOT could reasonably expect to assume liability for corrective action upon acquisition.

This project also includes the demolition of a structure (bridge). The structure may contain asbestos containing materials. Asbestos inspections, specifications, notification, abatement, and disposal, as applicable, would be conducted in compliance with federal and state regulations. Also, based on the scope of demolition work, it would be determined prior to construction if a lead based paint inspection would be required

Table 17: Additional Project Commitments by Specific Activity

Specific Activity	Commitment
Alteration of Ground Cover	Best Management Practices would be used to control for soil erosion in areas of altered ground cover. Soil and Groundwater Management Plan for project is incorporated as an appendix to this report.
Construction Period Access	If any detours are found to be required, these would be utilized during certain phases of construction and would be experienced by all motorists and residents of the area. A phased construction plan would be used to assure full traffic access during project construction (***Appendix A***). To minimize impacts to travel times through and within the immediate area, detours would be temporary and conducted outside of "peak traveling periods". All business and residential access within the project limits would remain open during construction. All traffic control measures would conform to Part VI (Traffic Controls for Street and Highway Construction and Maintenance Operations) of the Texas Manual on Uniform Traffic Control Devices (TMUTCD). The proposed project would not restrict access to existing public or community services, businesses or commercial areas along the corridor. All project related road closures and access restrictions would be coordinated as to not impede access to adjacent neighborhoods or properties. Any delays in traffic would be minimal and street closures temporary for the period of project construction.
Construction Staging	Storage of construction materials and equipment for the project would be off site. It is anticipated that the contractor, when selected, would negotiate with a local property owner to use a portion of their developed site to stage and store equipment. Several large commercial centers with available parking lots can be found within close proximity to this project.
Construction Period Practices	To lessen the noise impacts associated with construction activities, provisions would be set forth in the plans to ensure that the contractor makes every reasonable effort to minimize construction noise through abatement measures such as regulation of work hours and proper maintenance of muffler systems. Particulate matter emissions would be minimized by using fugitive dust control measures such as covering or treating disturbed areas with dust suppression techniques, sprinkling, covering loaded trucks, and other dust abatement controls.

Table 17: Additional Project Commitments by Specific Activity

Specific Activity	Commitment
Construction Period Practices (continued)	The MSAT emissions would be minimized by measures to encourage use of EPA required cleaner diesel fuels, limits on idling, increasing use of cleaner burning diesel fuel engines, and other emission limitation techniques. The acceleration of this natural process would be controlled by incorporated job specifications, on-site inspections, silt fencing and other BMPs, re-vegetation of the ROW, and other suitable management practices. TxDOT contract specifications require contractors to minimize and abate adverse effects to the environment at all times during the construction process. Construction would be conducted in manner that would minimize delays to the vehicular traffic passing through the project area. All traffic control operations would conform to Part VI (Traffic Controls for Street and Highway Construction and Maintenance Operations) of the TMUTCD. In keeping with the SGMP, use of construction equipment within sensitive areas should be minimized or eliminated entirely. All construction materials used for this project should be removed as soon as work schedules permit.
Erosion Control	The project would employ approved Best Management Practices (BMP) to ensure appropriate erosion control measures are in-place during mobilization and construction activities. BMPs identified as part of the SW3P plan of the project include silt fencing, rock filter dams, inlet protection barriers, temporary and permanent vegetation. Soil and Groundwater Management Plan for project is incorporated as an appendix to this report.
Excavation	Approximately 71,842 CY would be excavated and 60,326 CY would be re-used on site. The remaining 11,516 CY of material would be hauled off site and banked in an approved county facility or disposed of in an approved manner.
Filling	Approximately 71,842 CY would be excavated and 60,326 CY would be re-used on site. The remaining 11,516 CY of material would be hauled off site and banked in an approved county facility or disposed of in an approved manner.
Paving	Land alteration as a result of this project would be limited to the increase in the paved area, as well as the construction of the two detention structures. Vegetated areas within the ROW would be restored, to their current condition with similar vegetation.
Pedestrian and Cyclist Access and Safety	To enhance the pedestrian safety along Trammel Fresno, the proposed project includes crosswalk stripes and signage at all signalized intersections. A new signal with countdown timer at S. Post Oak Boulevard would join existing signals at Hurricane Lane, Winfield Lakes/Liberty Trace and Chimney Rock/Teal Bend Boulevard. Cyclist accommodations would be addressed with the addition of a 14 foot outside travel lane in each direction through the limits of the proposed project.
Public Involvement	Future public involvement for this project would include a Notice of Availability for a Public Hearing (NAOPH). Any further public involvement would include translation services and materials in Spanish, or other languages as requested.

Table 17: Additional Project Commitments by Specific Activity

Specific Activity	Commitment
Revegetation	Ground covers along the corridor would be replaced as part of the project. Approximately 22.3 acres of vegetation, primarily native materials (grasses) would be restored to the corridor. All species chosen would be consistent with the TXDOT policy on the introduction of non-native species. Any landscape plans with this project would be in compliance with the Executive Memorandum on Beneficial Landscape. (See Commitment on Invasive Species and Beneficial Landscape Practices).
Soils, Paving and Waste	Approximately 71,842 CY would be excavated and 60,326 CY would be re-used on site; the excess would be hauled off site. All removed pavement would be stockpiled for re-use by the County at a County-facility approved for such activities. All contractors working on site are expected to have and maintain their own portable sanitary waste disposal facilities for employees working in the area. No other sanitary waste discharge is anticipated. All other wastes generated by construction and associated activities would be disposed of off-site at a legally approved facility by the contractor.
Spills, Leaks and Hazardous Materials	In keeping with the SGMP, should any leaks or spills occur, they would be handled according to applicable state and federal regulations and TxDOT standard specifications. Any unanticipated hazardous materials and/or petroleum contamination encountered during construction would be handled according to applicable state and federal regulations and TxDOT Standard Specifications and Guidelines for handling emergency discovery of hazardous materials.
Water Resources	All appropriate mitigation steps would be taken to address any impacts to these areas as a result of construction of this project, using approved best management practices approved by TxDOT and FHWA.

5.0 PUBLIC INVOLVEMENT

One public information meeting was held on April 29, 2010 in the project area at Hightower High School in Missouri City, TX. For this meeting, the public was invited to have the opportunity to review project purpose and need and information on proposed improvements. To address concerns about the presence of limited English population, notices for the meeting were published in Spanish within the local Spanish periodical. In addition, translators were made available to help with communications of information and exhibits.

A total of 60 members of the public attended this meeting. A total of 22 comment forms were submitted to the project team at this meeting. Participants were encouraged to provide comments following the meeting within a ten (10) business day comment and review period. As of the close of the comment period, no additional comment forms had been submitted on this project.

In keeping with standard TxDOT practice, this meeting was advertised in advance within the local area English and Spanish language newspapers. In addition, property owners adjacent to

A total of 60 members of the public attended this meeting. A total of 22 comment forms were submitted to the project team at this meeting. Participants were encouraged to provide comments following the meeting within a ten (10) business day comment and review period. As of the close of the comment period, no additional comment forms had been submitted on this project.

In keeping with standard TxDOT practice, this meeting was advertised in advance within the local area English and Spanish language newspapers. In addition, property owners adjacent to the roadway received a notification post card of the project meeting. Signs posted along the corridor reminded passing motorists of the meeting date, time and location.

Within the comment forms received, none expressed opposition for this project. Most used this form to report on existing conditions and issues of concern. It was felt that this project could work to address traffic and drainage issues in the area. However, additional work beyond the scope of this project is needed to fully address concerns. For example, residents report a high volume of traffic in the area, particularly in the morning. Half of the 22 total forms submitted by residents commented on the need for a direct ramp access to the Fort Bend Parkway, in addition to this project, as a means to alleviate some this traffic conditions. Comments on sidewalk development on four of the forms suggested extending what was proposed for this project to include additional areas along the undeveloped portion of the corridor, as well as within and throughout the adjacent neighborhoods. Comments on drainage needs identified by some residents on two of the forms identified needs for general area wide improvements to help with addressing storm runoff and keeping the area clean.

A Public Meeting Summary for this meeting, including a copy of all advance materials, summary of the meeting questions received by the project team, as well as public comment forms mailed within the prescribed comment period, has been developed and placed on file with TxDOT Houston and Fort Bend County. No controversy was noted with this project as proposed.

Future public involvement for this project would include a Notice of Availability for a Public Hearing (NAOPH).

6.0 CONCLUSION

The proposed action meets the criteria for a Categorical Exclusion (CE) as defined in the Programmatic Agreement for the Review and Approval of NEPA Categorically Excluded Transportation Projects (PA) executed by the Texas Division of the Federal Highway Administration (FHWA) and the Texas Department of Transportation (TXDOT) on October 26, 2004, or received an exemption (attached) from FHWA to process the proposed action as a CE.
No significant social, economic, and/or environmental impacts associated with this project have been discovered. Therefore, the proposed action qualifies as a Categorical Exclusion.

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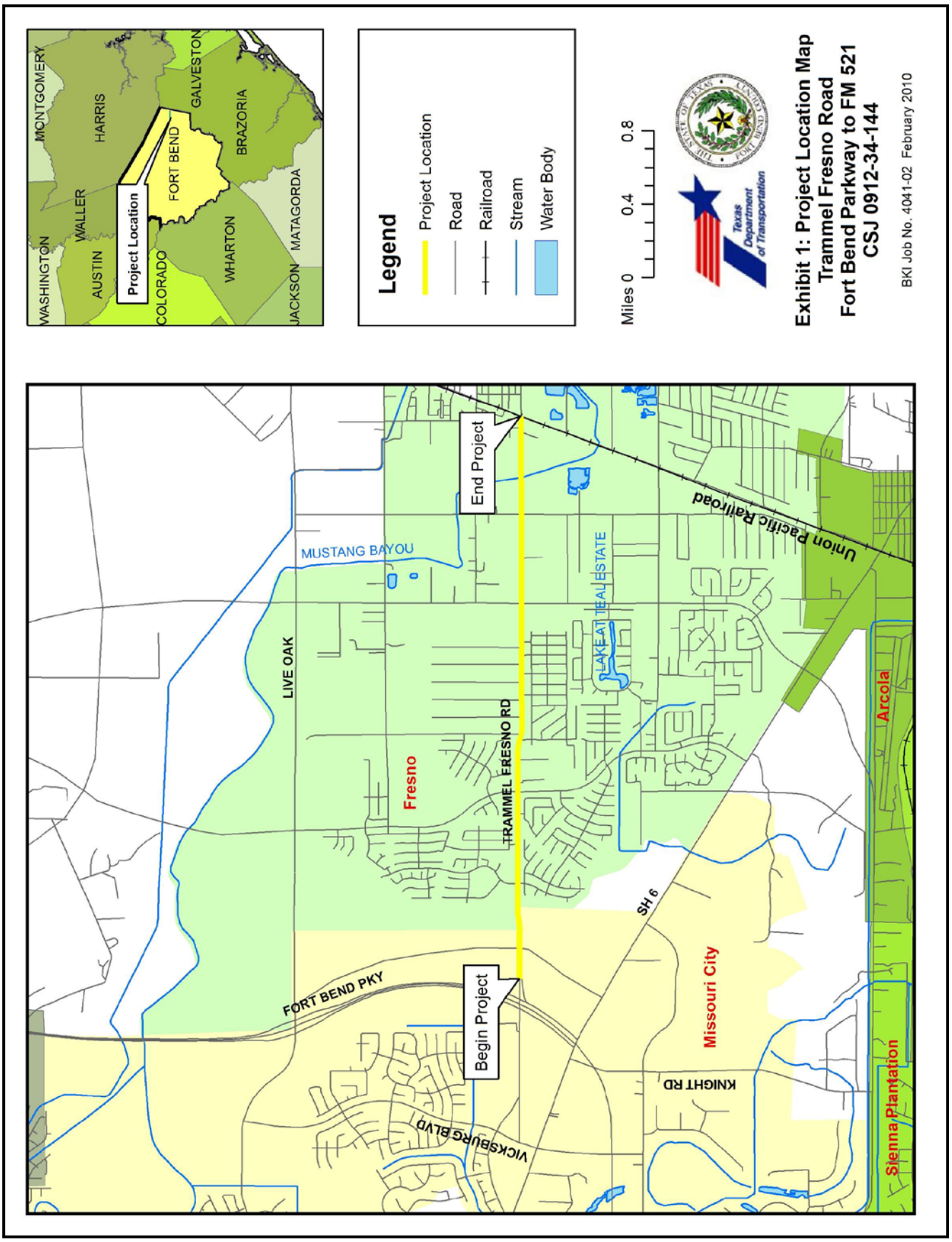
Exhibits


MONTGOMERY
HARRIS
GALVESTON
WASHINGTON
WALLER
FORT BEND
BRAZORIA
AUSTIN
Project Location
COLORADO
WHARTON
JACKSON
MATAGORDA
Legend
Project Location
Road
Railroad
Stream
Water Body
Miles 0
0.4
0.8
Texas Department of Transportation
Exhibit 1: Project Location Map
Trammel Fresno Road
Fort Bend Parkway to FM 521
CSJ 0912-34-144
BKI Job No. 4041-02 February 2010
End Project
Union Pacific Railroad
MUSTANG BAYOU
LAKE AT TEAL ESTATE
LIVE OAK
Fresno
TRAMMEL FRESNO RD
Arcola
SH 6
Missouri City
FORT BEND PKY
Begin Project
KNIGHT RD
VICKSBURG BLVD
Sienna Plantation

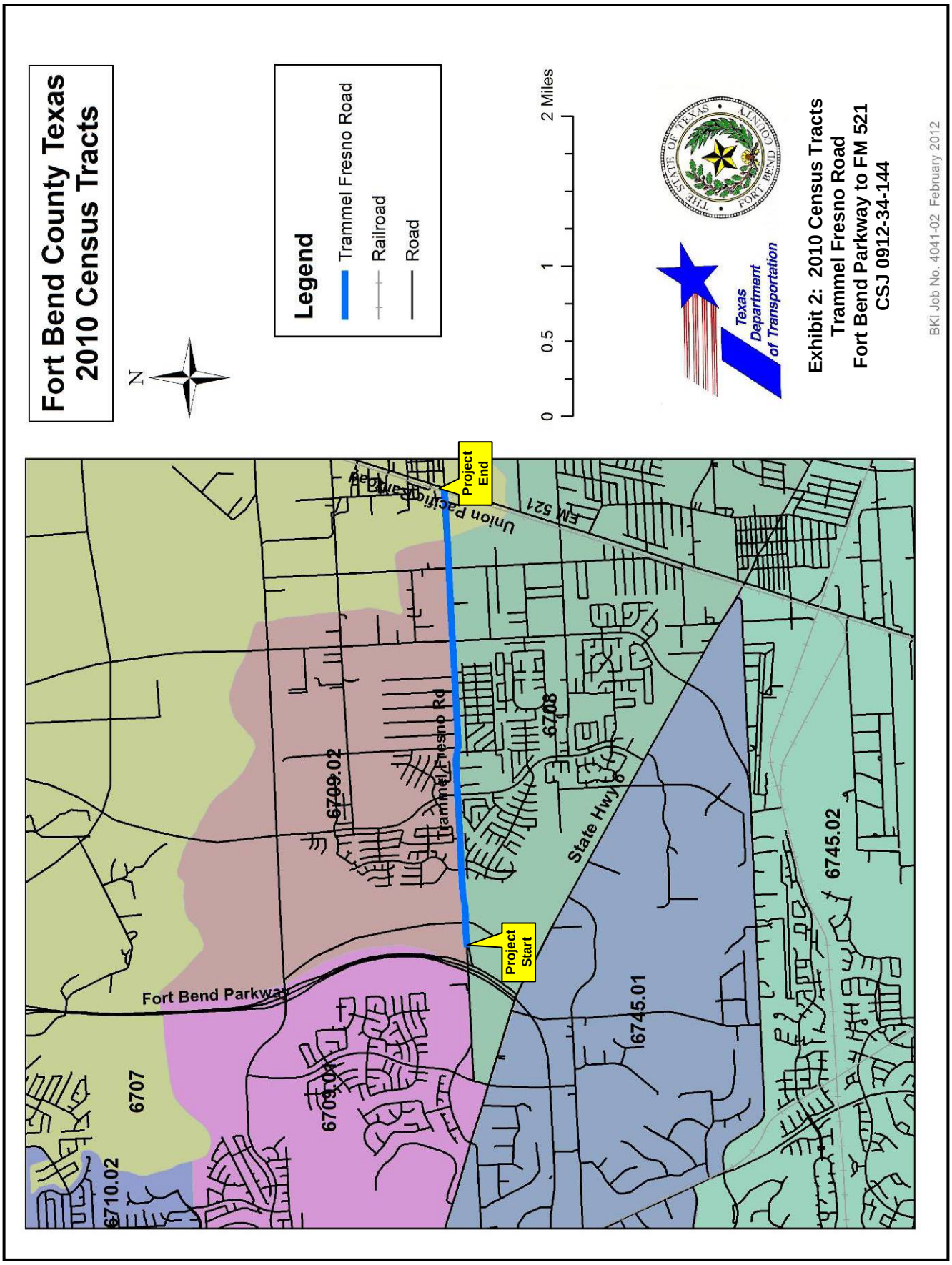
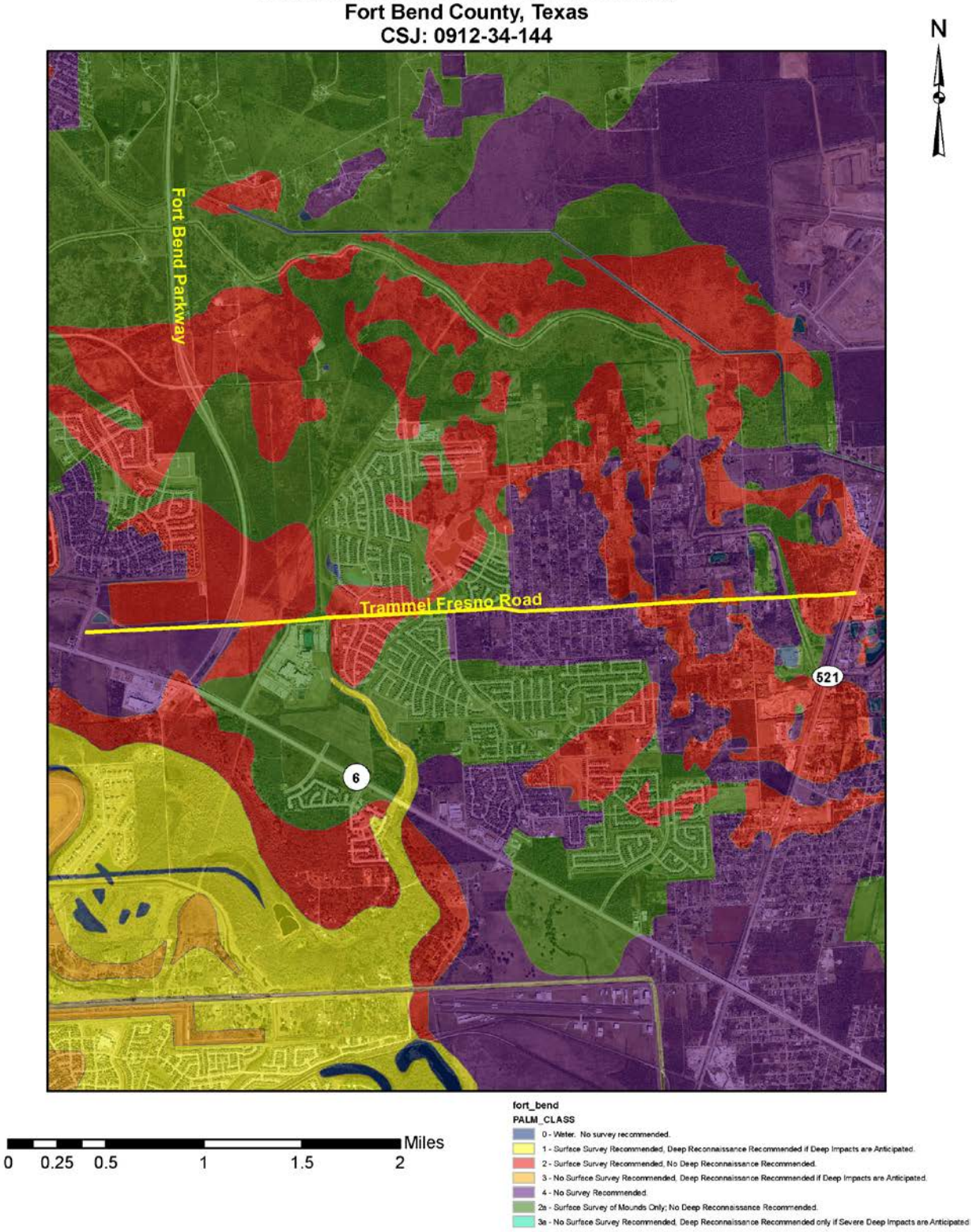
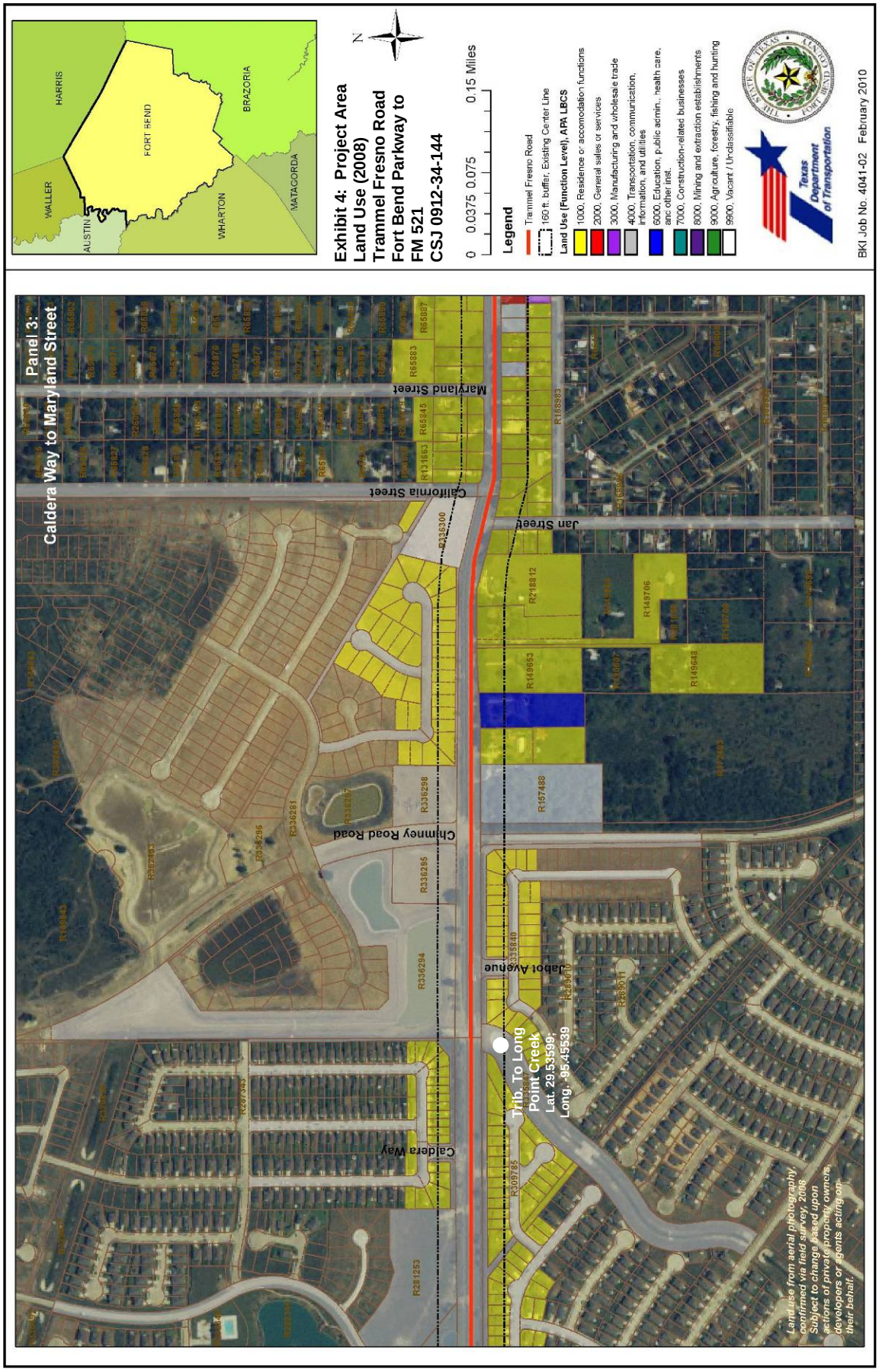

Fort Bend County Texas
2010 Census Tracts
N
Legend
Trammel Fresno Road
Railroad
Road
0
0.5
1
2 Miles
Texas Department of Transportation
Exhibit 2: 2010 Census Tracts
Trammel Fresno Road
Fort Bend Parkway to FM 521
CSJ 0912-34-144
BKI Job No. 4041-02 February 2012
Project End
Union Pacific Railroad
FM 521
Trammel Fresno Rd
State Hwy 6
Project Start
Fort Bend Parkway
6709.02
6708
6745.02
6745.01
6709.01
6707
6710.02

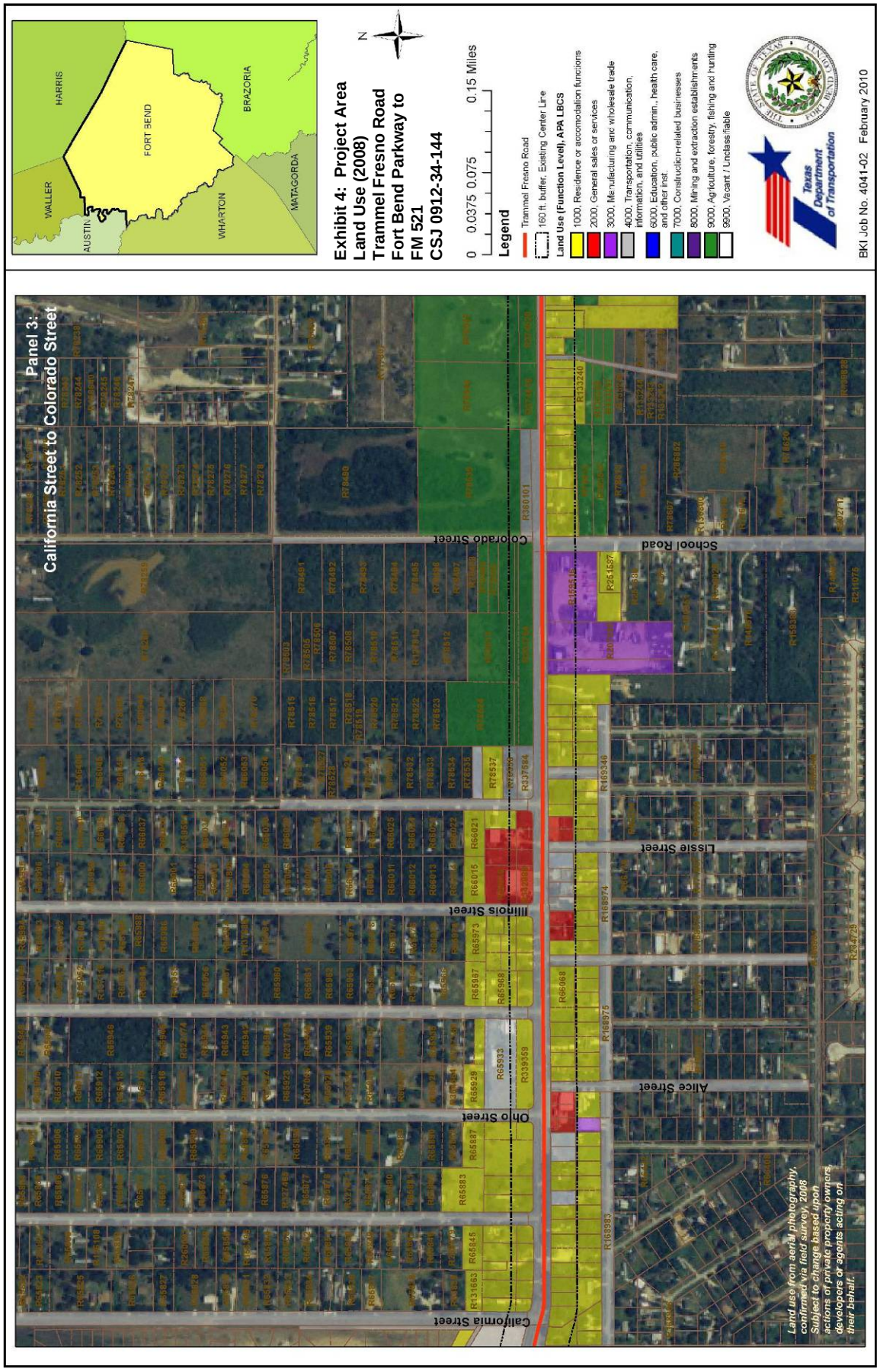
Exhibit 3:
POTENTIAL ARCHEOLOGICAL LIABILITY MAP

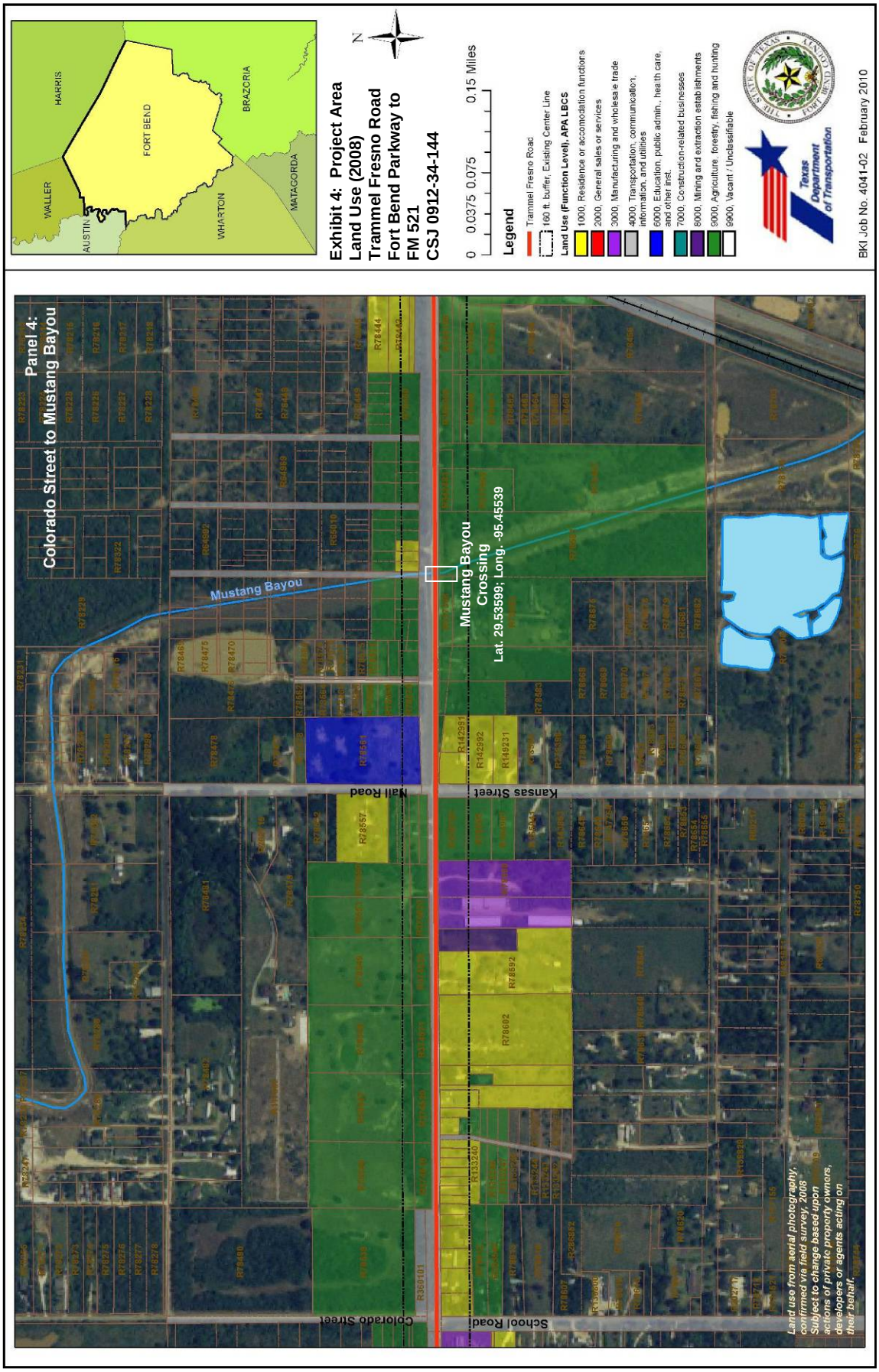
Trammel Fresno Road: Roadway Widening
Fort Bend County, Texas
CSJ: 0912-34-144

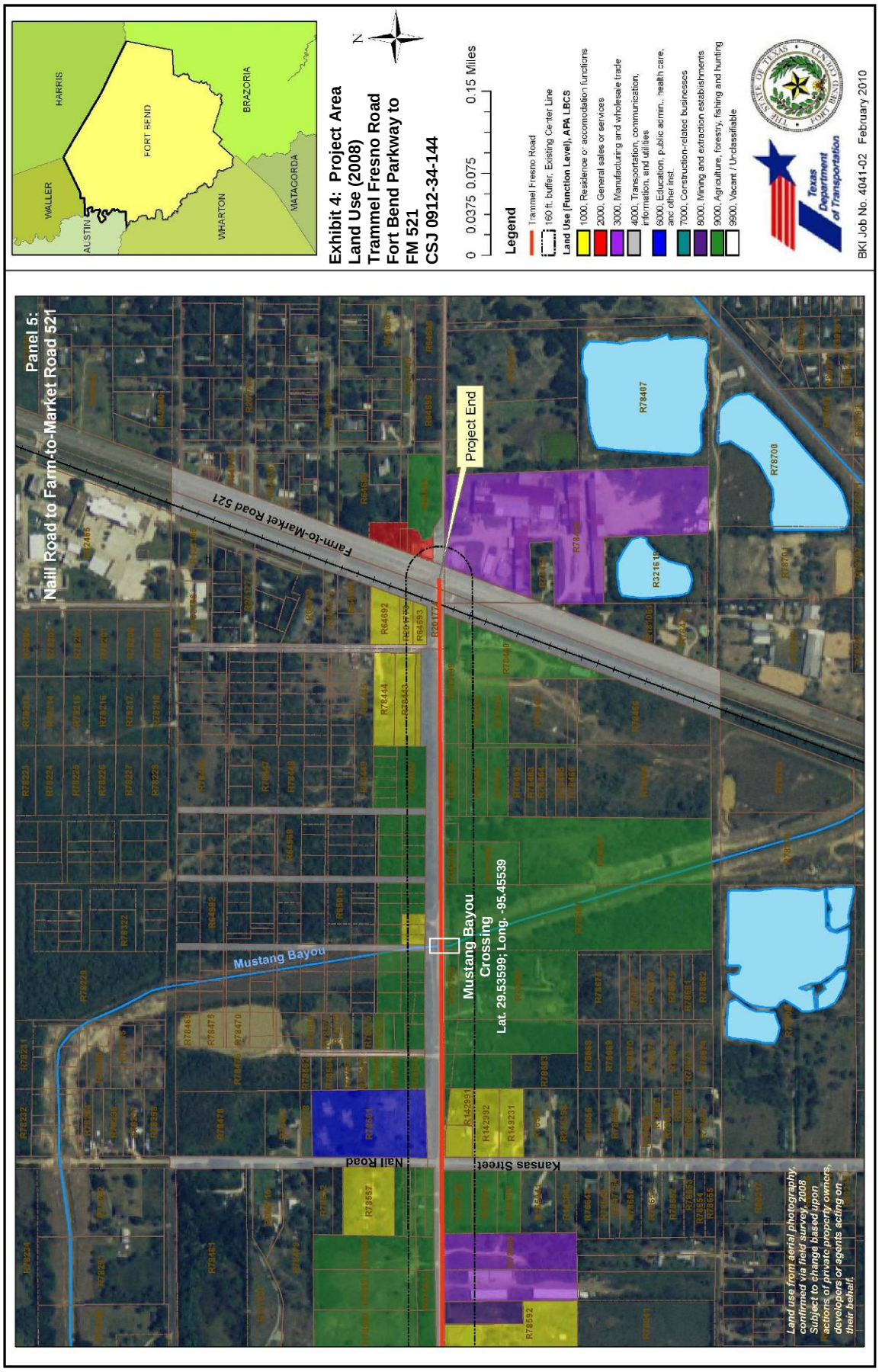


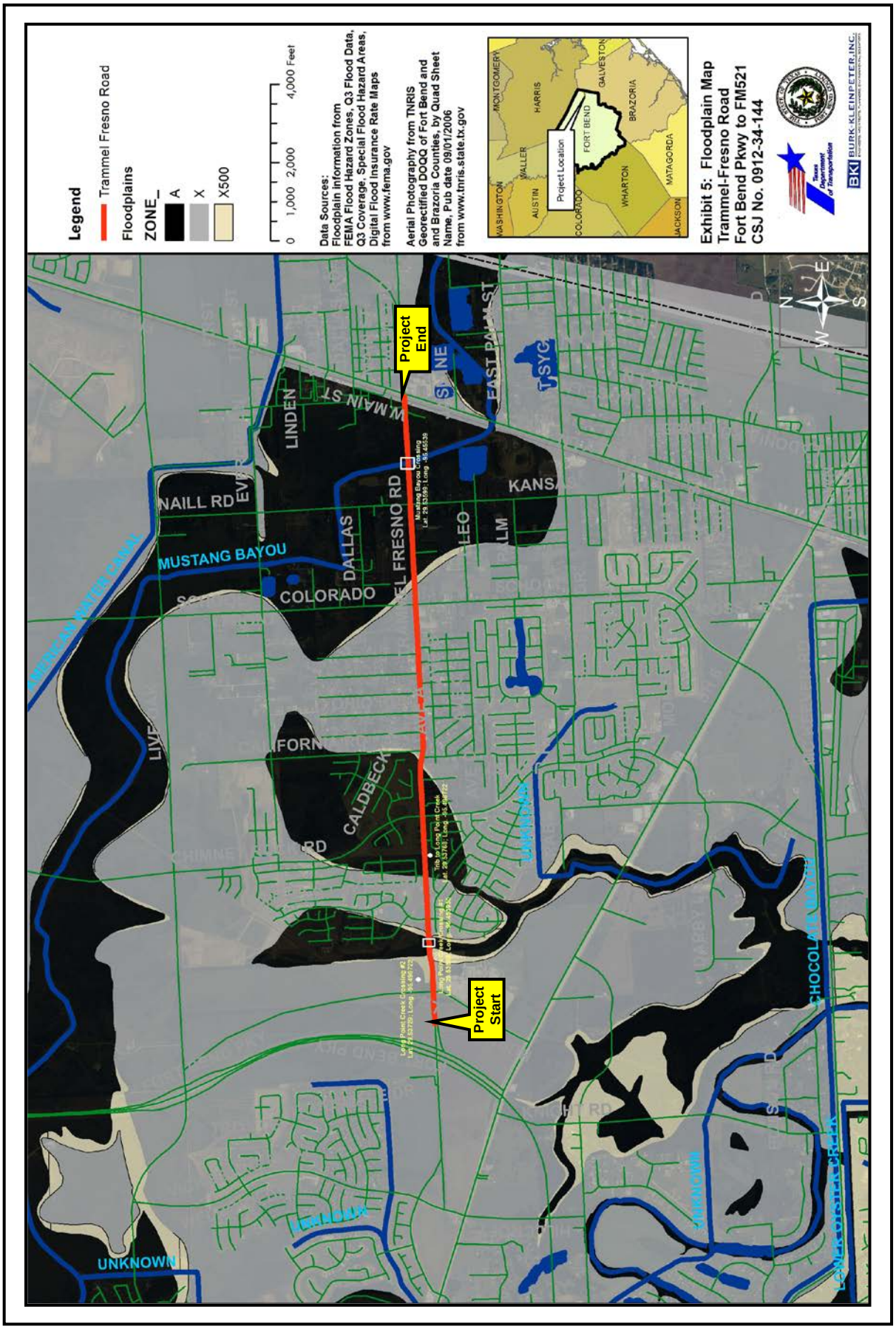
Panel 1:
Fort Bend Parkway to Caldera Way
Caldera Way
Winfield Lakes Trail
Liberty Square Trail
Long Point Creek
Crossing #1
Lat. 29.63558
Long. -95.453930
Long Point Creek
Crossing #2
Lat. 29.53729
Long. -95.496722
Project
Start
Fort Bend Parkway
Hurricane Lane
Hightower High School
(Fort Bend ISD)
R313322
R281253
R309768
R335847
R212049
R281955
R281964
R306087
R305095
Land use from aerial photography,
confirmed via field survey, 2008
Subject to change based upon
actions of private property owners,
developers or agents acting on
their behalf.
HARRIS
WALLER
AUSTIN
FORT BEND
WHARTON
BRAZORIA
MATAGORDA
Exhibit 4: Project Area
Land Use (2008)
Trammel Fresno Road
Fort Bend Parkway to
FM 521
CSJ 0912-34-144
N
0 0.0375 0.075 0.15 Miles
Legend
Trammel Fresno Road
180 ft. buffer Existing Center Line
Land Use (Function Level), APA LBCS
1000, Residence or accomodation functions
2000, General sales or services
3000, Manufacturing and wholesale trade
4000, Transportation, communication,
information, and utilities
6000, Education, public admin., health care,
and other inst.
7000, Construction-related businesses
8000, Mining and extraction establishments
9000, Agriculture, forestry, fishing and hunting
9900, Vacant / Unclassifiable
Texas
Department
of Transportation
BKI Job No. 4041-02 February 2010


Panel 3:
Caldera Way to Maryland Street
Maryland Street
California Street
Jan Street
Chimney Road Road
Jabot Avenue
Caldera Way
Trib. To Long Point Creek
Lat. 29.53599;
Long. -95.45539
Land use from aerial photography, confirmed via field survey, 2008
Subject to change based upon actions of private property owners, developers or agents acting on their behalf.
WALLER
HARRIS
AUSTIN
FORT BEND
WHARTON
BRAZORIA
MATAGORDA
Exhibit 4: Project Area
Land Use (2008)
Trammel Fresno Road
Fort Bend Parkway to
FM 521
CSJ 0912-34-144
0 0.0375 0.075 0.15 Miles
Legend
Trammel Fresno Road
160 ft. buffer, Existing Center Line
Land Use (Function Level), APA LBCS
1000, Residence or accomodation functions
2000, General sales or services
3000, Manufacturing and wholesale trade
4000, Transcortation, communication, information, and utilities
6000, Education, public admin., health care, and other inst.
7000, Construction-related businesses
8000, Mining and extraction establishments
9000, Agriculture, forestry, fishing and hunting
9900, Vacant / Unclassifiable
Texas Department of Transportation
BKI Job No. 4041-02 February 2010


Panel 3:
California Street to Colorado Street
Colorado Street
Illinois Street
Ohio Street
California Street
Lissie Street
Alice Street
School Road
Land use from aerial photography, confirmed via field survey, 2008
Subject to change based upon actions of private property owners, developers or agents acting on their behalf.
HARRIS
WALLER
AUSTIN
FORT BEND
WHARTON
BRAZORIA
MATAGORDA
Exhibit 4: Project Area
Land Use (2008)
Trammel Fresno Road
Fort Bend Parkway to
FM 521
CSJ 0912-34-144
N
0 0.0375 0.075 0.15 Miles
Legend
Trammel Fresno Road
160 ft. buffer, Existing Center Line
Land Use (Function Level), APA LBCS
1000, Residence or accomodation functions
2000, General sales or services
3000, Manufacturing and wholesale trade
4000, Transportation, communication, information, and utilities
6000, Education, public admin., health care, and other inst.
7000, Construction-related businesses
8000, Mining and extraction establishments
9000, Agriculture, forestry, fishing and hunting
9900, Vacant / Unclassifiable
Texas Department of Transportation
BKI Job No. 4041-02 February 2010


Panel 4:
Colorado Street to Mustang Bayou
Mustang Bayou
Mustang Bayou Crossing
Lat. 29.53599; Long. -95.45539
Mall Road
Kansas Street
Colorado Street
School Road
Land use from aerial photography, confirmed via field survey, 2008
Subject to change based upon actions of private property owners, developers or agents acting on their behalf.
HARRIS
WALLER
AUSTIN
FORT BEND
WHARTON
BRAZORIA
MATAGORDA
Exhibit 4: Project Area
Land Use (2008)
Trammel Fresno Road
Fort Bend Parkway to
FM 521
CSJ 0912-34-144
N
0 0.0375 0.075 0.15 Miles
Legend
Trammel Fresno Road
160 ft. buffer, Existing Center Line
Land Use (Function Level), APA LBCS
1000, Residence or accomodation functions
2000, General sales or services
3000, Manufacturing and wholesale trade
4000, Transportation, communication, information, and utilities
6000, Education, public admin., health care, and other inst.
7000, Construction-related businesses
8000, Mining and extraction establishments
9000, Agriculture, forestry, fishing and hunting
9900, Vacant / Unclassifiable
Texas Department of Transportation
BKI Job No. 4041-02 February 2010


Panel 5:
Naill Road to Farm-to-Market Road 521
Farm-to-Market Road 521
Project End
Mustang Bayou
Mustang Bayou Crossing
Lat. 29.53599; Long. -95.45539
Naill Road
Kansas Street
R78407
R78700
R32161
Land use from aerial photography, confirmed via field survey, 2008. Subject to change based upon actions of private property owners, developers or agents acting on their behalf.
HARRIS
WALLER
AUSTIN
FORT BEND
WHARTON
BRAZORIA
MATAGORDA
Exhibit 4: Project Area
Land Use (2008)
Trammel Fresno Road
Fort Bend Parkway to
FM 521
CSJ 0912-34-144
N
0 0.0375 0.075 0.15 Miles
Legend
Trammel Fresno Road
160 ft. buffer, Existing Center Line
Land Use (Function Level), APA LBCS
1000, Residence or accomodation functions
2000, General sales or services
3000, Manufacturing and wholesale trade
4000, Transportation, communication, information, and utilities
6000, Education, public admin., health care, and other inst.
7000, Construction-related businesses
8000, Mining and extraction establishments
9000, Agriculture, forestry, fishing and hunting
9900, Vacant / Unclassifiable
Texas Department of Transportation
BKI Job No. 4041-02 February 2010


Legend
Trammel Fresno Road
Floodplains
ZONE_
A
X
X500
0 1,000 2,000 4,000 Feet
Data Sources:
Floodplain information from FEMA Flood Hazard Zones, Q3 Flood Data, Q3 Coverage, Special Flood Hazard Areas, Digital Flood Insurance Rate Maps from www.fema.gov
Aerial Photography from TNRIS Georectified DOQQ of Fort Bend and and Brazoria Counties, by Quad Sheet Name, Pub date 09/01/2006 from www.tnris.state.tx.gov
MONTGOMERY
HARRIS
WASHINGTON
WALLER
AUSTIN
Project Location
FORT BEND
GALVESTON
BRAZORIA
COLORADO
WHARTON
MATAGORDA
JACKSON
Exhibit 5: Floodplain Map
Trammel-Fresno Road
Fort Bend Pkwy to FM521
CSJ No. 0912-34-144
BKI BURK-KLEINPETER,INC.
Project End
Project Start
W MAIN ST
LINDEN
NAILL RD
MUSTANG BAYOU
COLORADO
DALLAS
EL FRESNO RD
LEO
KANS
EAST PALM ST
CALDBECK
UNKNOWN
CHOCOLATE BAYOU
N
E
S
W

Panel #1
Manion
Stonewall
Beauregard
Bull Run
Truesdale
Cumberland
Confederate
Breckenridge
Savannah
Shiloh
Pickett
Fort Bend Pkwy
Vicksburg
Analysis Start
CSJ 0912-34-144
Corridor Start
Trammel Fresno
Hillcroft
6
Knight
S&B INFRASTRUCTURE, LTD.
SOURCE- HGAC, 2006
0 500 1,000 Feet
N
Exhibit 6: Noise Receivers Map
Trammel Fresno Road
CSJ: 0912-34-144
Legend
Project Corridor
Noise Receivers (NR)
BKI BURK-KLEINPETER, INC.
ENGINEERS, ARCHITECTS, PLANNERS, ENVIRONMENTAL SCIENTISTS
TRAMMEL FRESNO ROAD
FORT BEND COUNTY, TEXAS

SOURCE- HGAC, 2006

0 500 1,000 Feet

N

Exhibit 6: Noise Receivers Map
Trammel Fresno Road
CSJ: 0912-34-144

Legend

Project Corridor

Noise Receivers (NR)

BKI BURK-KLEINPETER, INC.
ENGINEERS. ARCHITECTS. PLANNERS. ENVIRONMENTAL SCIENTISTS

TRAMMEL FRESNO ROAD
FORT BEND COUNTY, TEXAS

SOURCE- HGAC, 2006

0 500 1,000 Feet

N

Exhibit 6: Noise Receivers Map
Trammel Fresno Road
CSJ: 0912-34-144

Legend

Project Corridor
Noise Receivers (NR)

BK BURK-KLEINPETER, INC.
ENGINEERS, ARCHITECTS, PLANNERS, ENVIRONMENTAL SCIENTISTS

TRAMMEL FRESNO ROAD
FORT BEND COUNTY, TEXAS

SOURCE- HGAC, 2006

0 500 1,000 Feet

N

Exhibit 6: Noise Receivers Map
Trammel Fresno Road
CSJ: 0912-34-144

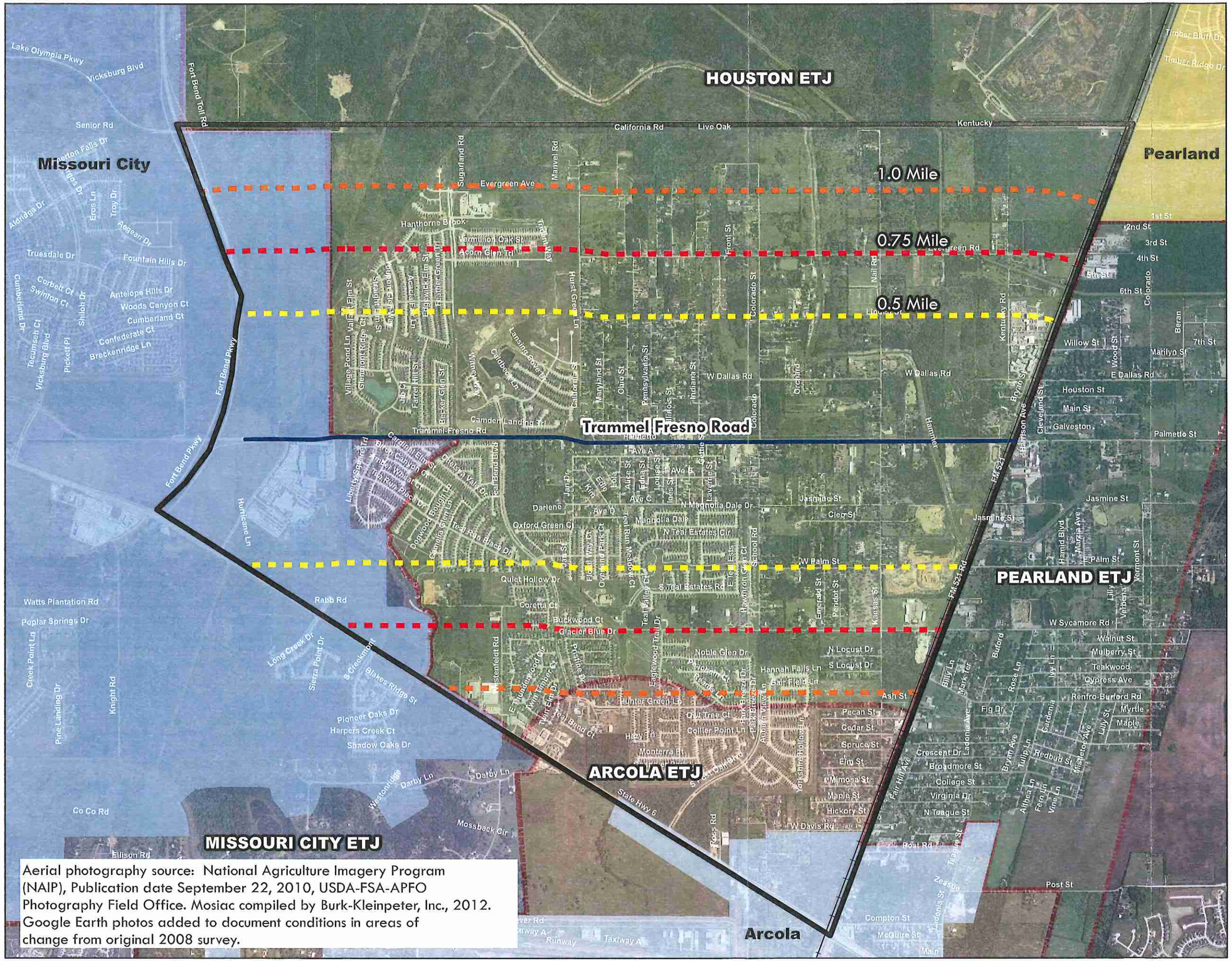
Legend

Project Corridor
Noise Receivers (NR)

BKI BURK-KLEINPETER, INC.
ENGINEERS. ARCHITECTS. PLANNERS. ENVIRONMENTAL SCIENTISTS

TRAMMEL FRESNO ROAD
FORT BEND COUNTY, TEXAS

Exhibit 7: Noise Receivers Map
Trammel Fresno Road
CSJ: 0912-34-144



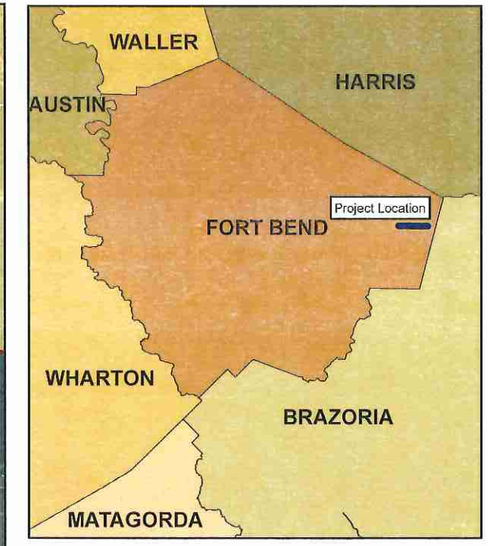


Exhibit 8
Area of Influence Map
Trammel Frenso Road
Fort Bend Parkway to FM521
CSJ 0912-34-144

N

0 0.2 0.4 0.8 Miles

Legend
- Trammel Fresno Road
- Area of Influence

City/ETJ Limits
- ARCOLA
- HOUSTON
- MISSOURI CITY
- PEARLAND

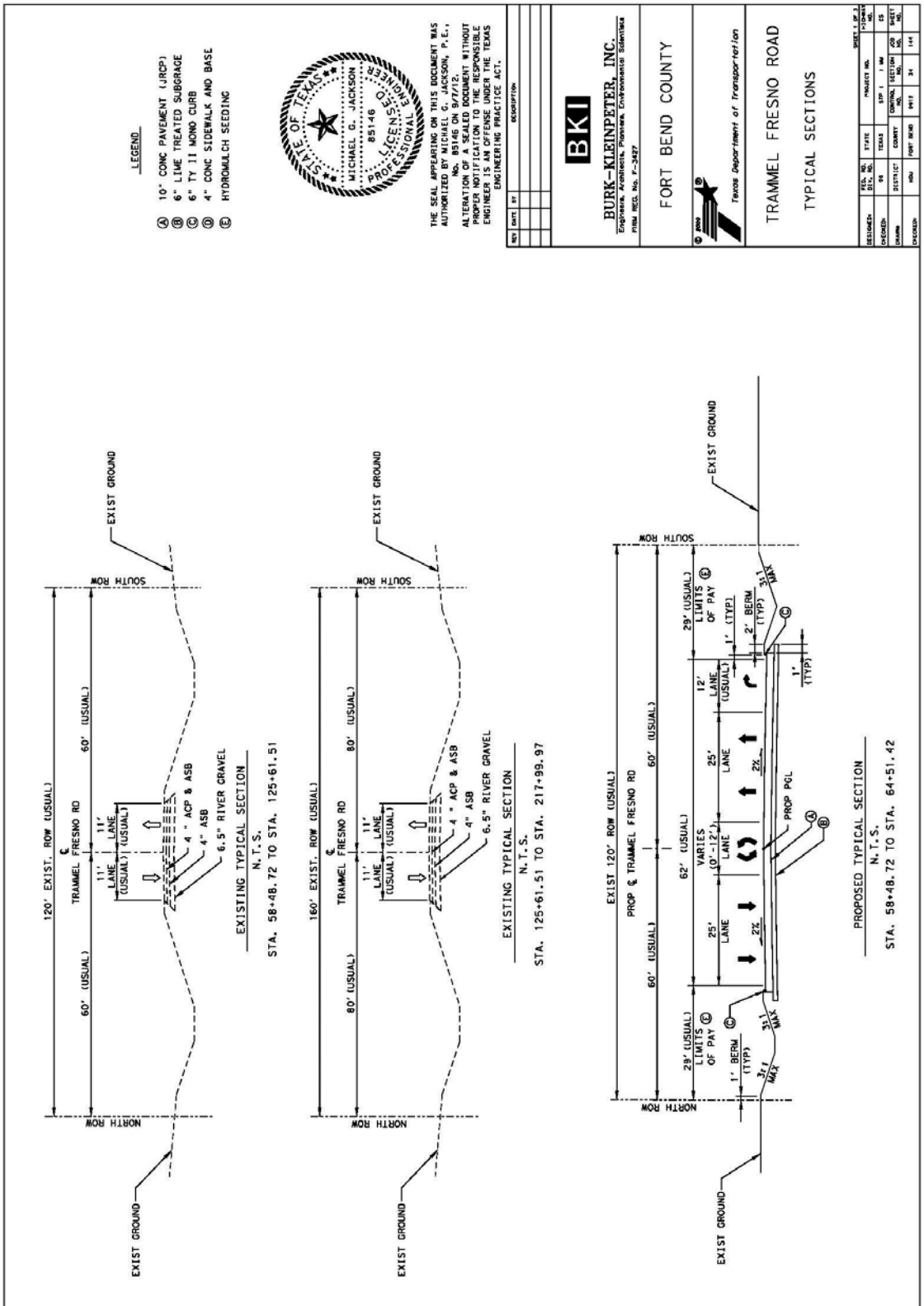
Texas Department of Transportation

THE STATE OF TEXAS FORT BEND COUNTY

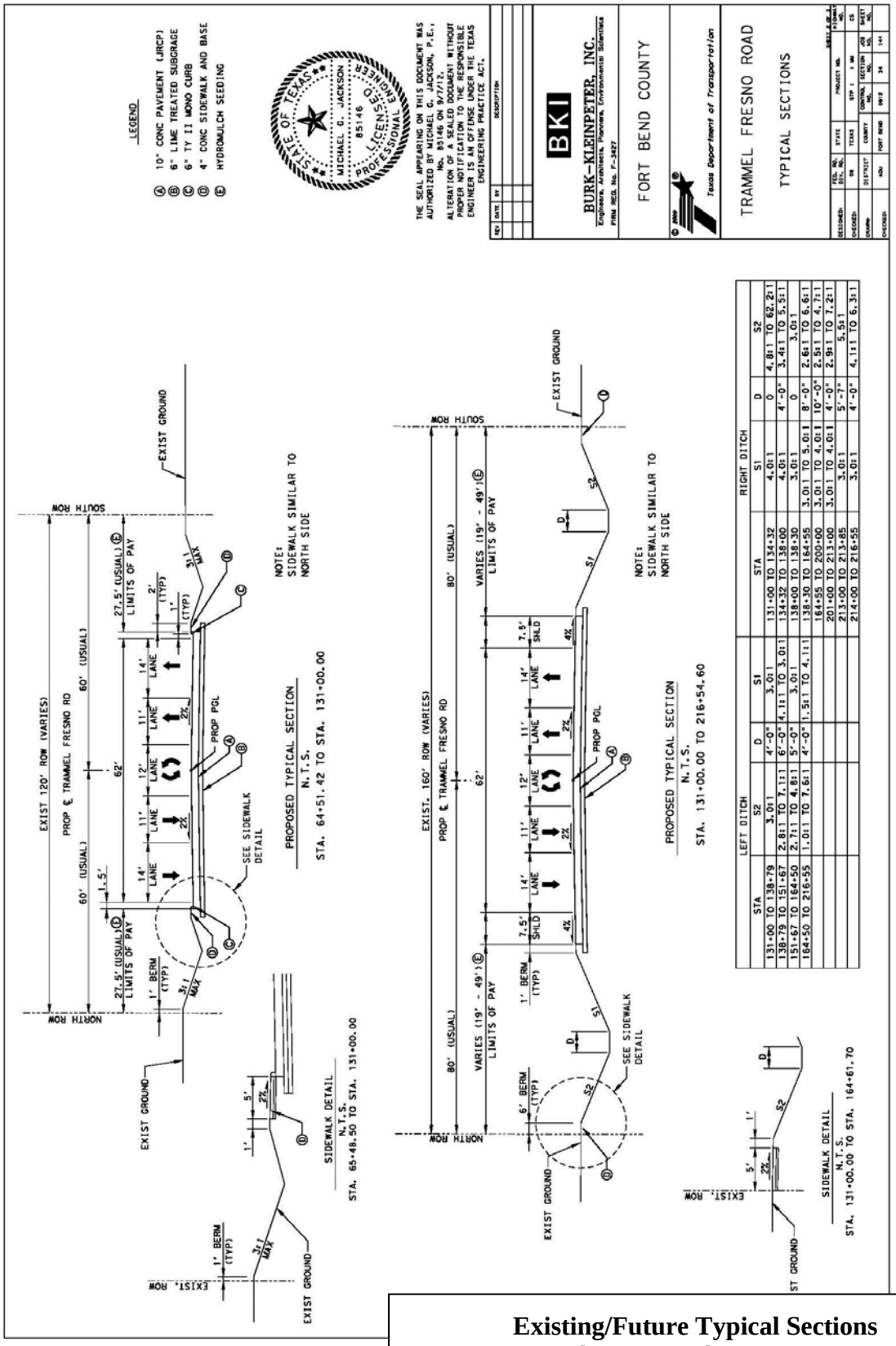
BKI Job No. 4041-02 February 2012

Appendix A:

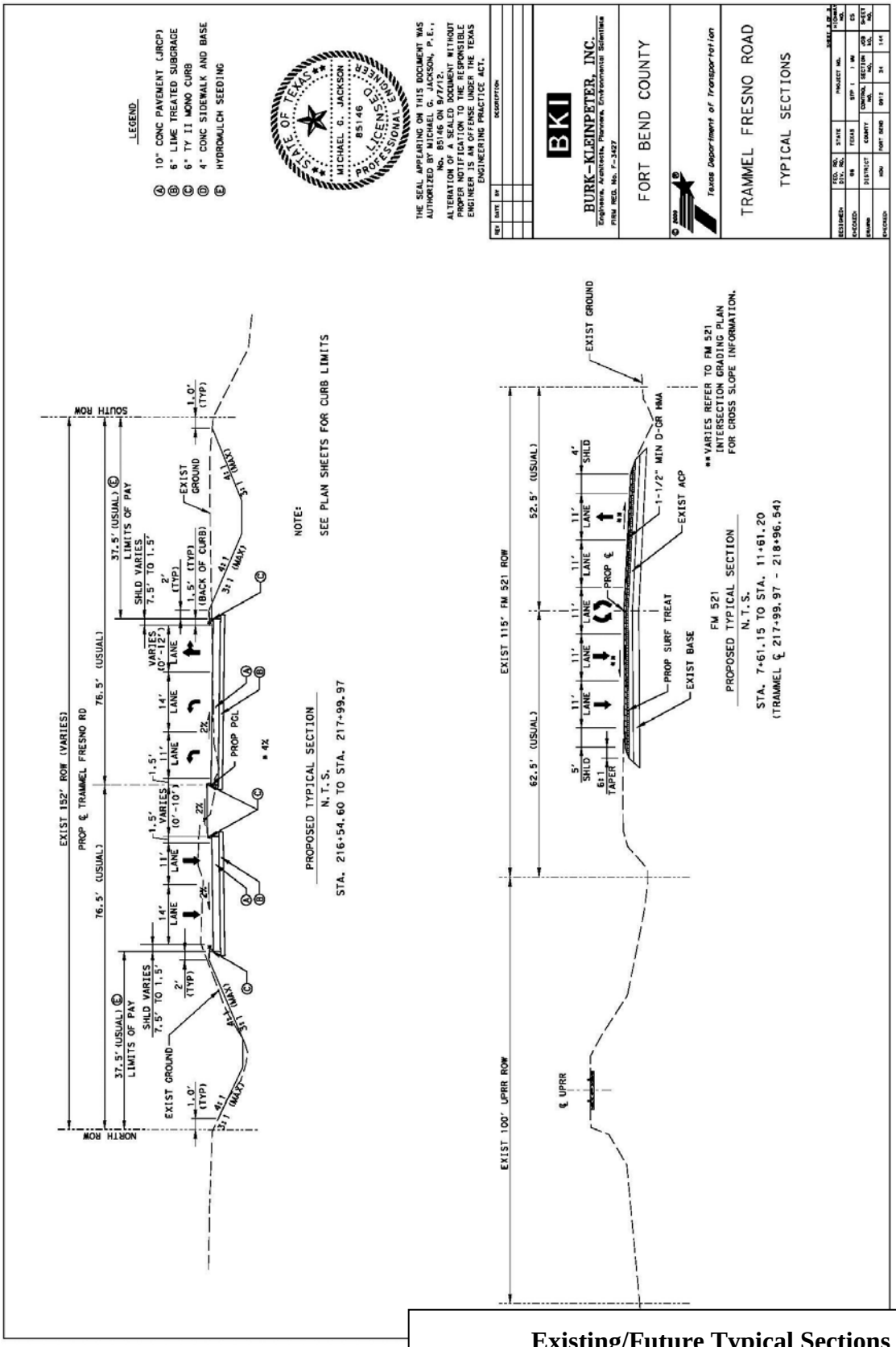
Typical Sections/Design Plans/Traffic Control Plans



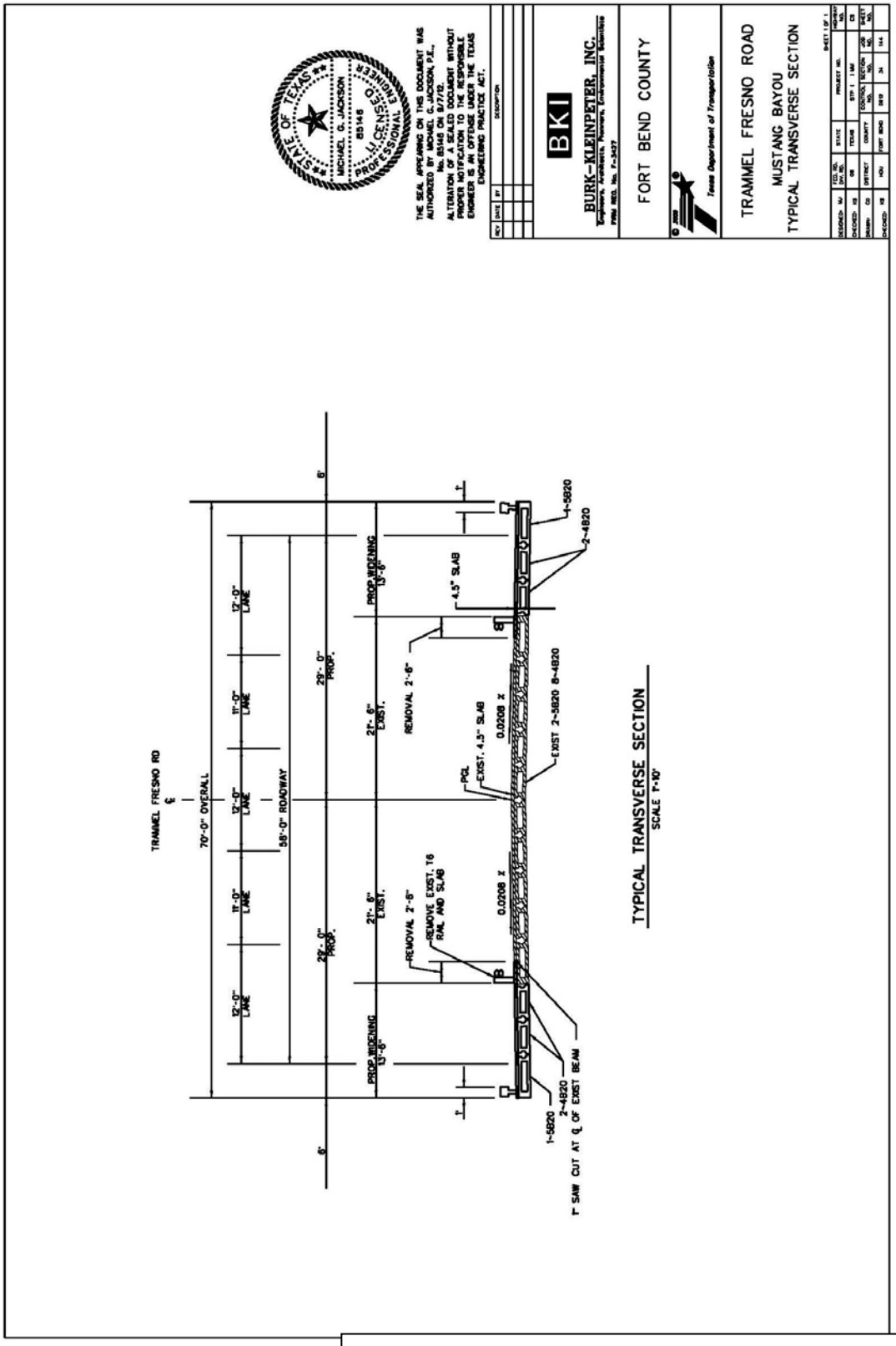
Existing/Future Typical Sections
Trammel Fresno Road, CSJ: 0912-34-144



Existing/Future Typical Sections
Trammel Fresno Road, CSJ: 0912-34-144



Existing/Future Typical Sections
Trammel Fresno Road, CSJ: 0912-34-144



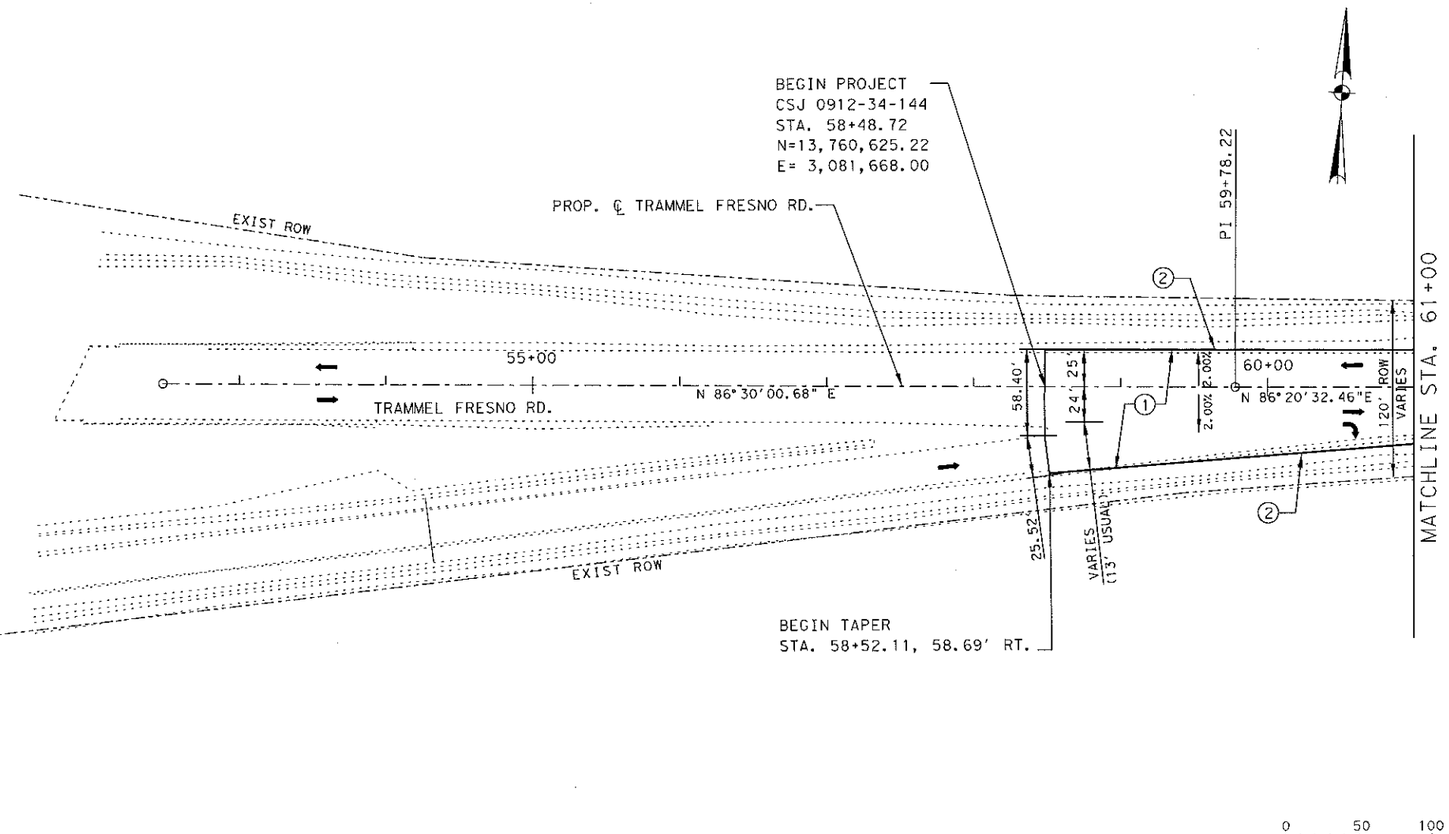
Existing/Future Typical Sections
Trammel Fresno Road, CSJ: 0912-34-144

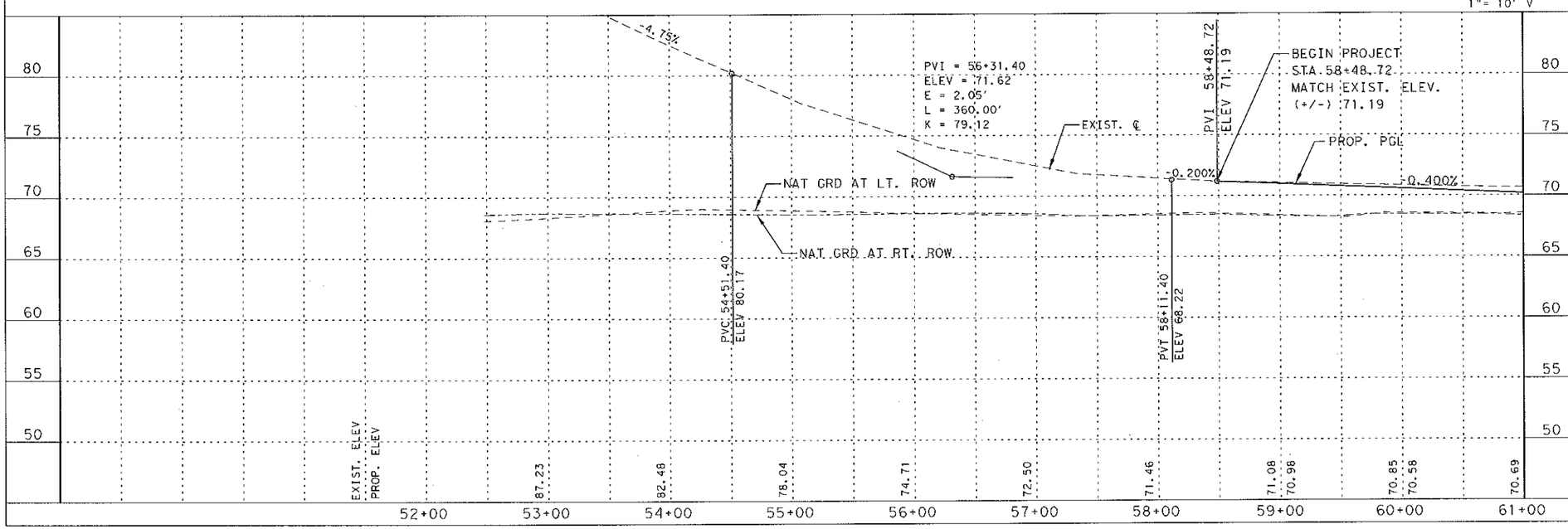
LEGEND

1. 10" JRCP, 6" LTS
2. TY II MONO CURB
3. 4" CONCRETE SIDEWALK (5' WIDTH)
4. HANDICAPPED RAMP TYPE 9
5. HANDICAPPED RAMP TYPE 7
6. CONC RIPRAP 4"
7. ACP PLANING & OVERLAY
8. # DRIVEWAY ID

NOTES:

1. SEE INTERSECTION LAYOUTS FOR INTERSECTION DETAILS.
2. SEE SUMMARY OF DRIVEWAYS AND MISC. DRIVEWAY DETAIL SHEETS.
3. SEE DRAINAGE PLAN & PROFILE FOR DRAINAGE INFORMATION.
4. SEE SURVEY CONTROL LAYOUTS FOR CONTROL POINT INFORMATION.
5. ALL DIMENSIONS ARE TO FACE OF CURB.
6. SEE EXIST UTILITY LAYOUT FOR EXIST UTILITY LOCATIONS.





0 50 100
SCALE: 1"=100' H
1"= 10' V

STATE OF TEXAS
MICHAEL G. JACKSON
85146
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PROFESSIONAL ENGINEER

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FIRM REG. No. F-3427

FORT BEND COUNTY

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TRAMMEL FRESNO ROAD

PLAN & PROFILE
STA. 58+48.72 TO STA. 61+00

SHEET 1 OF 15

DESIGNED:	FED. RD. DIV. RD.	STATE	PROJECT NO.			HIGHWAY NO.
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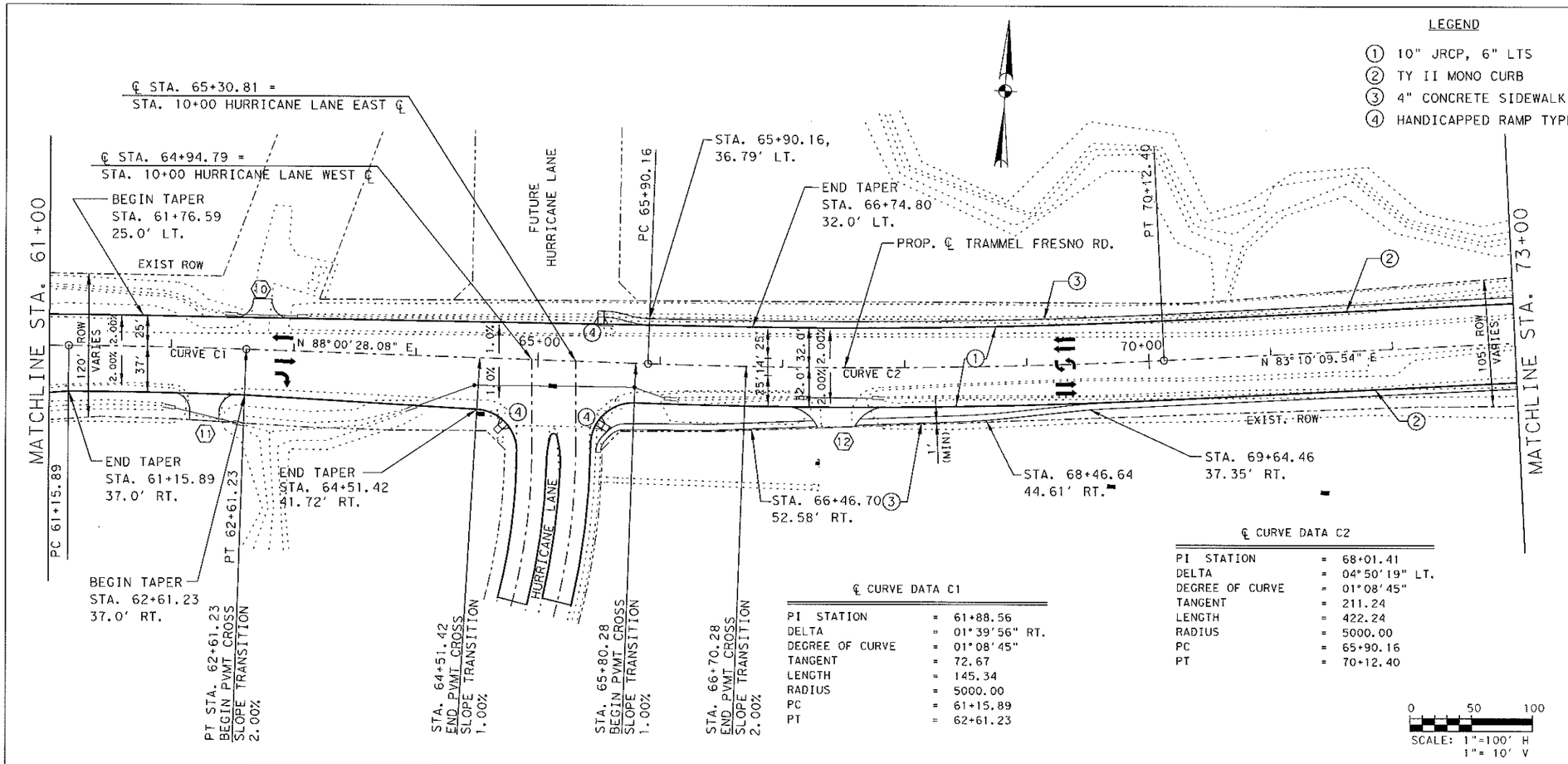
DRAWN:	DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CHECKED:	HOU	FORT BEND	0912	34	144	



LEGEND

1. 10" JRCP, 6" LTS
2. TY II MONO CURB
3. 4" CONCRETE SIDEWALK (5' WIDTH)
4. HANDICAPPED RAMP TYPE 9
5. HANDICAPPED RAMP TYPE 7
6. CONC RIPRAP 4"
7. ACP PLANING & OVERLAY
#. DRIVEWAY ID

NOTES:

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4. SEE SURVEY CONTROL LAYOUTS FOR CONTROL POINT INFORMATION.
5. ALL DIMENSIONS ARE TO FACE OF CURB.
6. SEE EXIST UTILITY LAYOUT FOR EXIST UTILITY LOCATIONS.

℄ CURVE DATA C1

PI STATION	=	61+88.56
DELTA	=	01°39'56" RT.
DEGREE OF CURVE	=	01°08'45"
TANGENT	=	72.67
LENGTH	=	145.34
RADIUS	=	5000.00
PC	=	61+15.89
PT	=	62+61.23

℄ CURVE DATA C2

PI STATION	=	68+01.41
DELTA	=	04°50'19" LT.
DEGREE OF CURVE	=	01°08'45"
TANGENT	=	211.24
LENGTH	=	422.24
RADIUS	=	5000.00
PC	=	65+90.16
PT	=	70+12.40

0 50 100
SCALE: 1"=100' H
1"= 10' V

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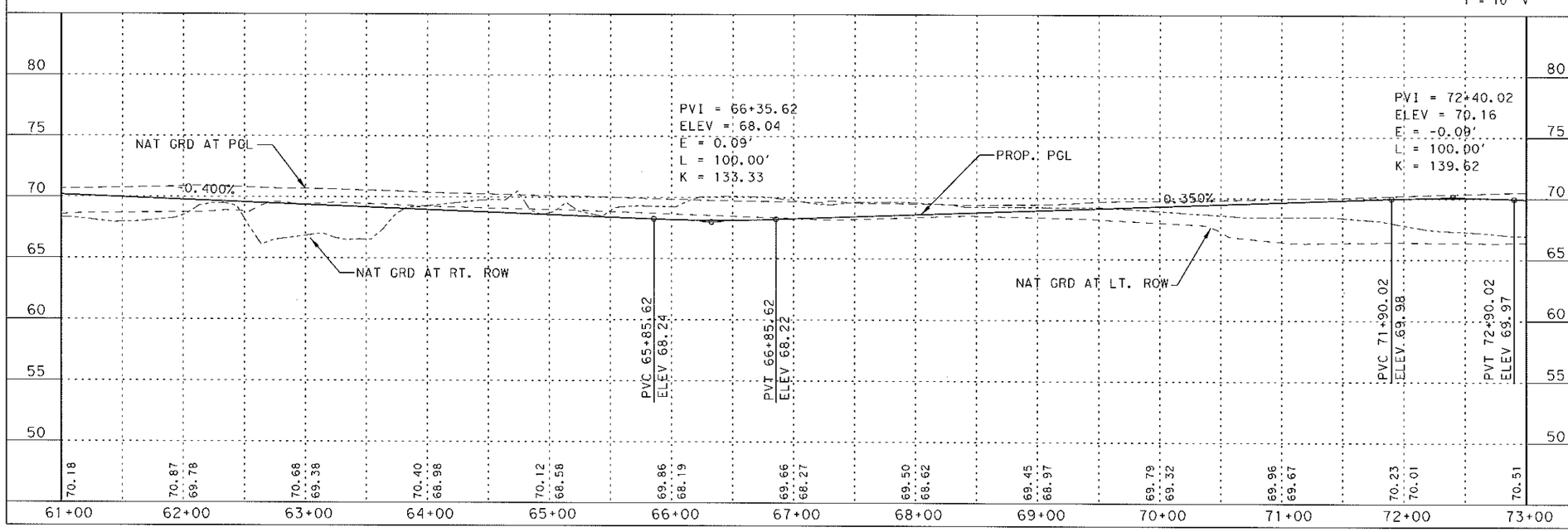

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TRAMMEL FRESNO ROAD

PLAN & PROFILE
STA. 61+00 TO STA. 73+00

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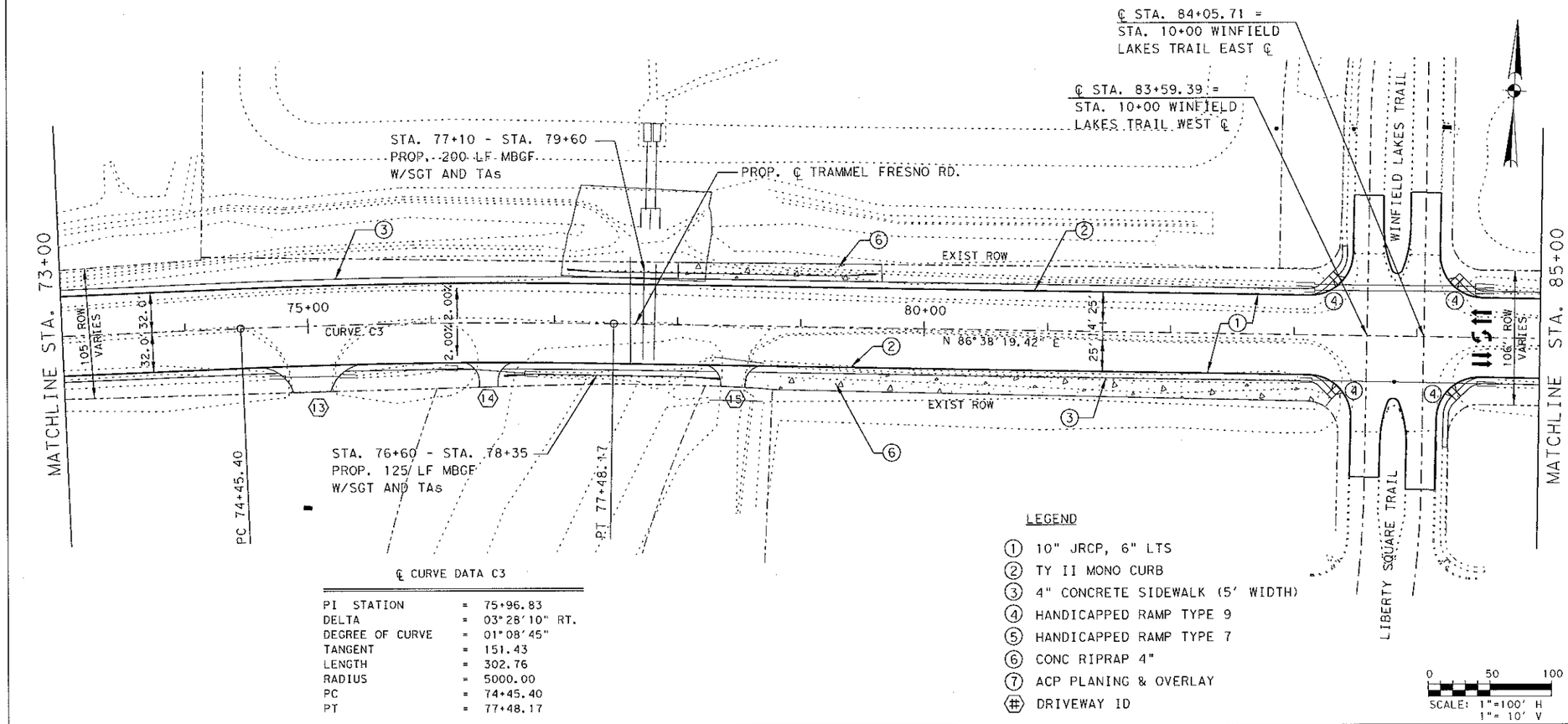

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4. SEE SURVEY CONTROL LAYOUTS FOR CONTROL POINT INFORMATION.
5. ALL DIMENSIONS ARE TO FACE OF CURB.
6. SEE EXIST UTILITY LAYOUT FOR EXIST UTILITY LOCATIONS.

℄ CURVE DATA C3

PI STATION	=	75+96.83
DELTA	=	03°28'10" RT.
DEGREE OF CURVE	=	01°08'45"
TANGENT	=	151.43
LENGTH	=	302.76
RADIUS	=	5000.00
PC	=	74+45.40
PT	=	77+48.17

LEGEND

1. 10" JRCP, 6" LTS
2. TY II MONO CURB
3. 4" CONCRETE SIDEWALK (5' WIDTH)
4. HANDICAPPED RAMP TYPE 9
5. HANDICAPPED RAMP TYPE 7
6. CONC RIPRAP 4"
7. ACP PLANING & OVERLAY
DRIVEWAY ID

0 50 100
SCALE: 1"=100' H
1"= 10' V

STATE OF TEXAS
MICHAEL G. JACKSON
85146
LICENSED
PROFESSIONAL ENGINEER

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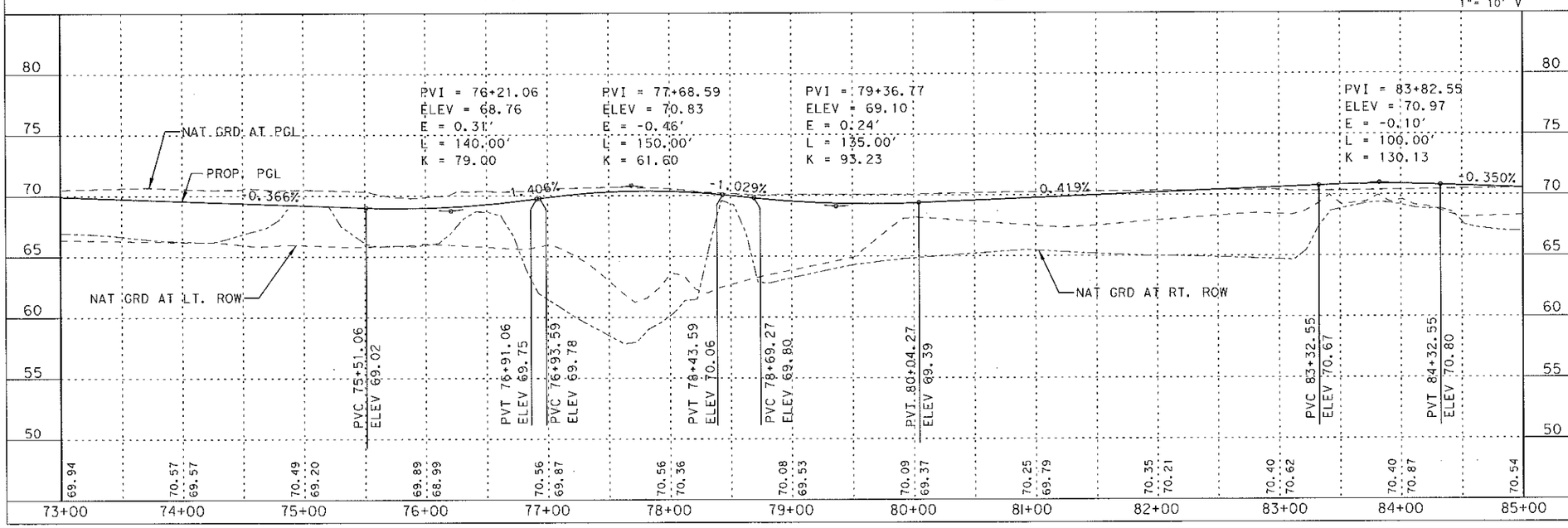

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TRAMMEL FRESNO ROAD

PLAN & PROFILE
STA. 73+00 TO STA. 85+00

SHEET 3 OF 15

DESIGNED:	FED. RD. DIV. RD.	STATE	PROJECT NO.			HIGHWAY NO.
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DRAWN:	DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CHECKED:	HOU	FORT BEND	0912	34	144	

LEGEND

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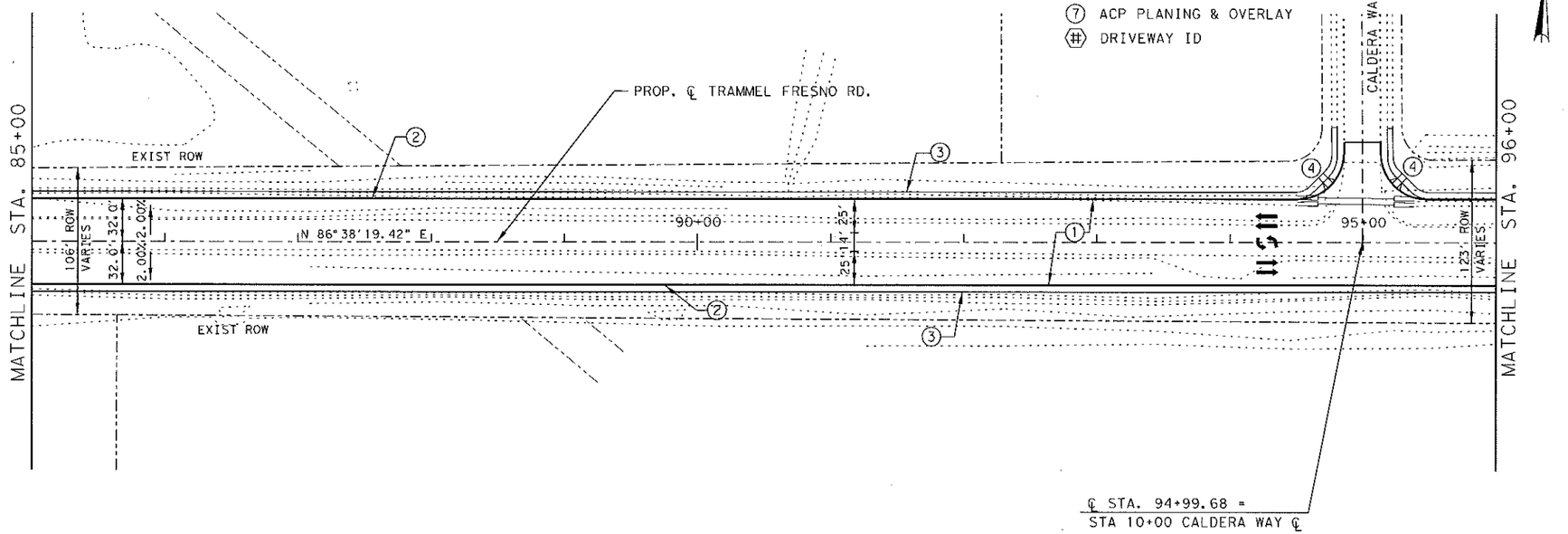

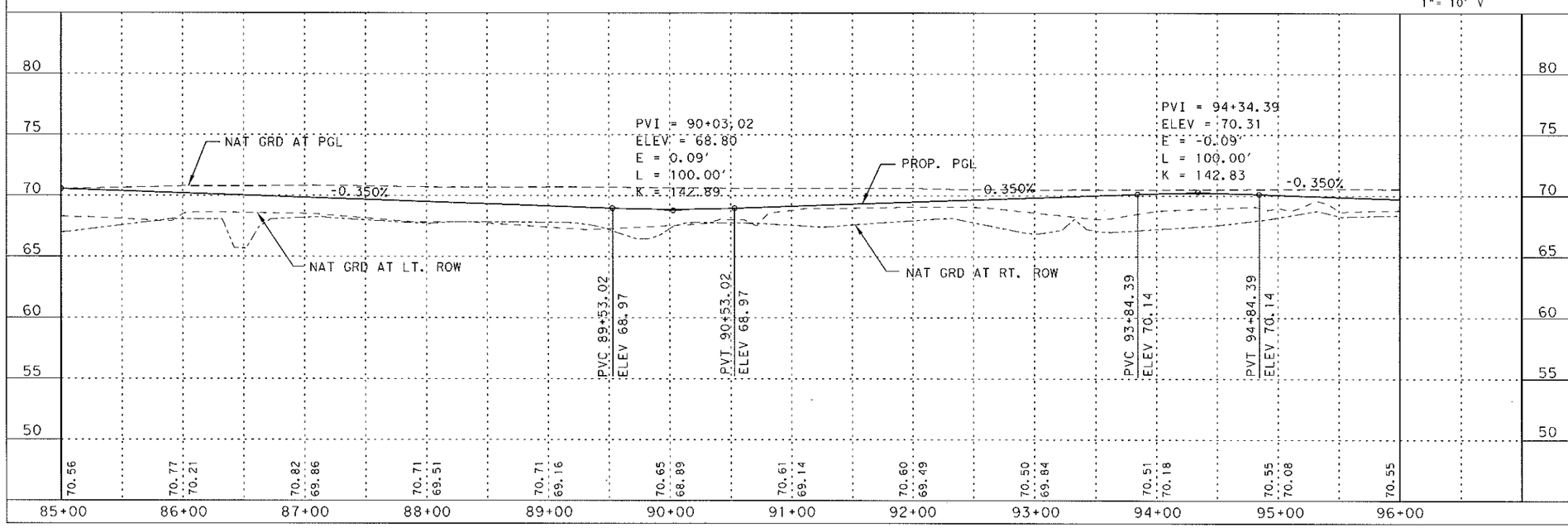

0 50 100
SCALE: 1"=100' H
1"= 10' V

STATE OF TEXAS
MICHAEL G. JACKSON
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TRAMMEL FRESNO ROAD

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STA. 85+00 TO STA. 96+00

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DRAWN:	DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CHECKED:	HOU	FORT BEND	0912	34	144	

LEGEND

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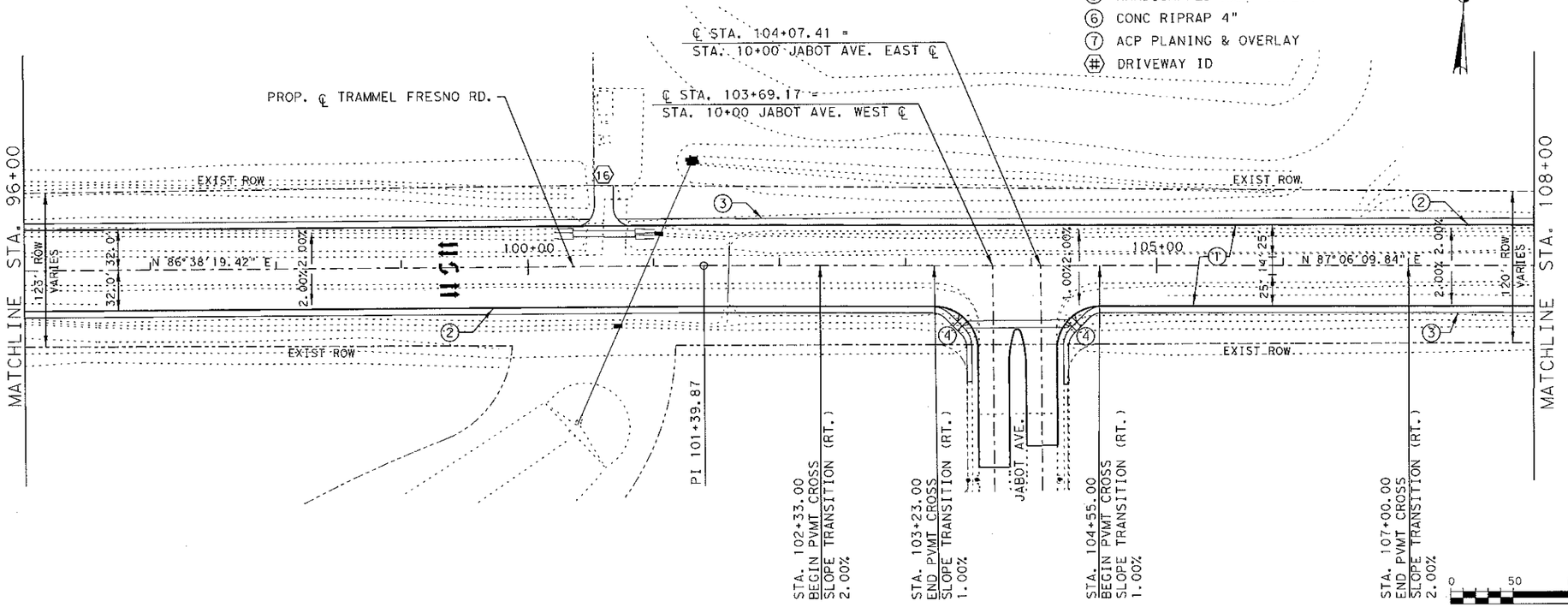

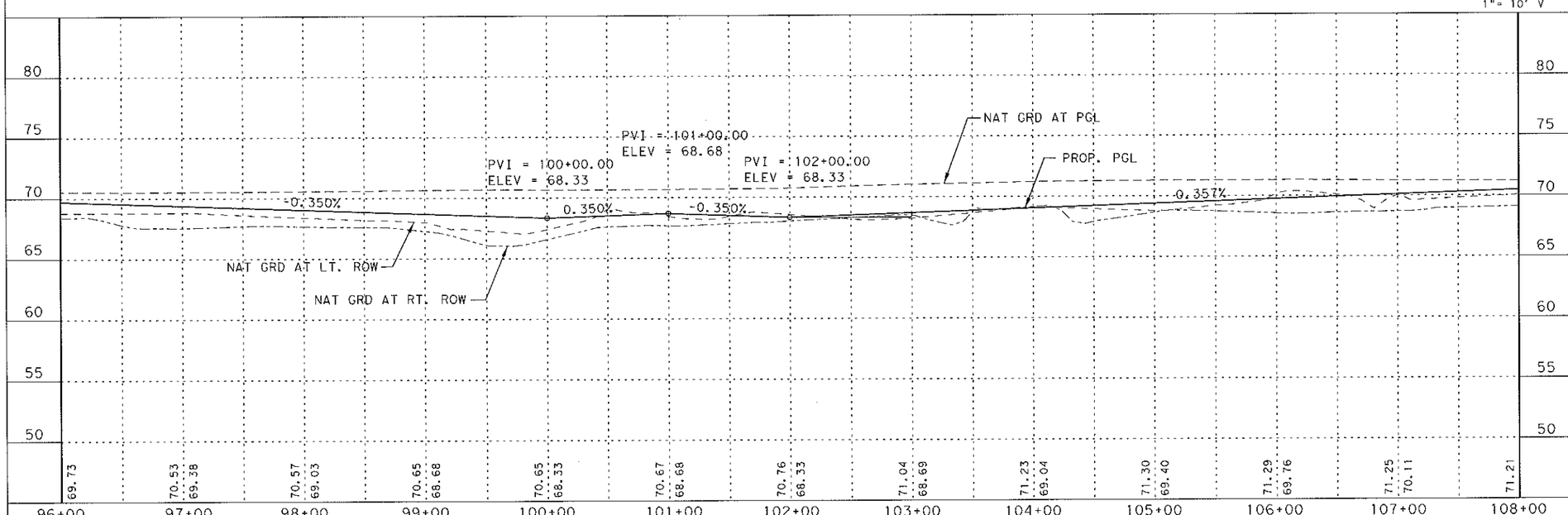

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TRAMMEL FRESNO ROAD

PLAN & PROFILE
STA. 96+00 TO STA. 108+00

SHEET 5 OF 15

DESIGNED:	FED. RD. DIV. RD.	STATE	PROJECT NO.			HIGHWAY NO.
CHECKED:	06	TEXAS	STP ( ) MM			CS
DRAWN:	DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CHECKED:	HOU	FORT BEND	0912	34	144	

LEGEND

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(#) DRIVEWAY ID

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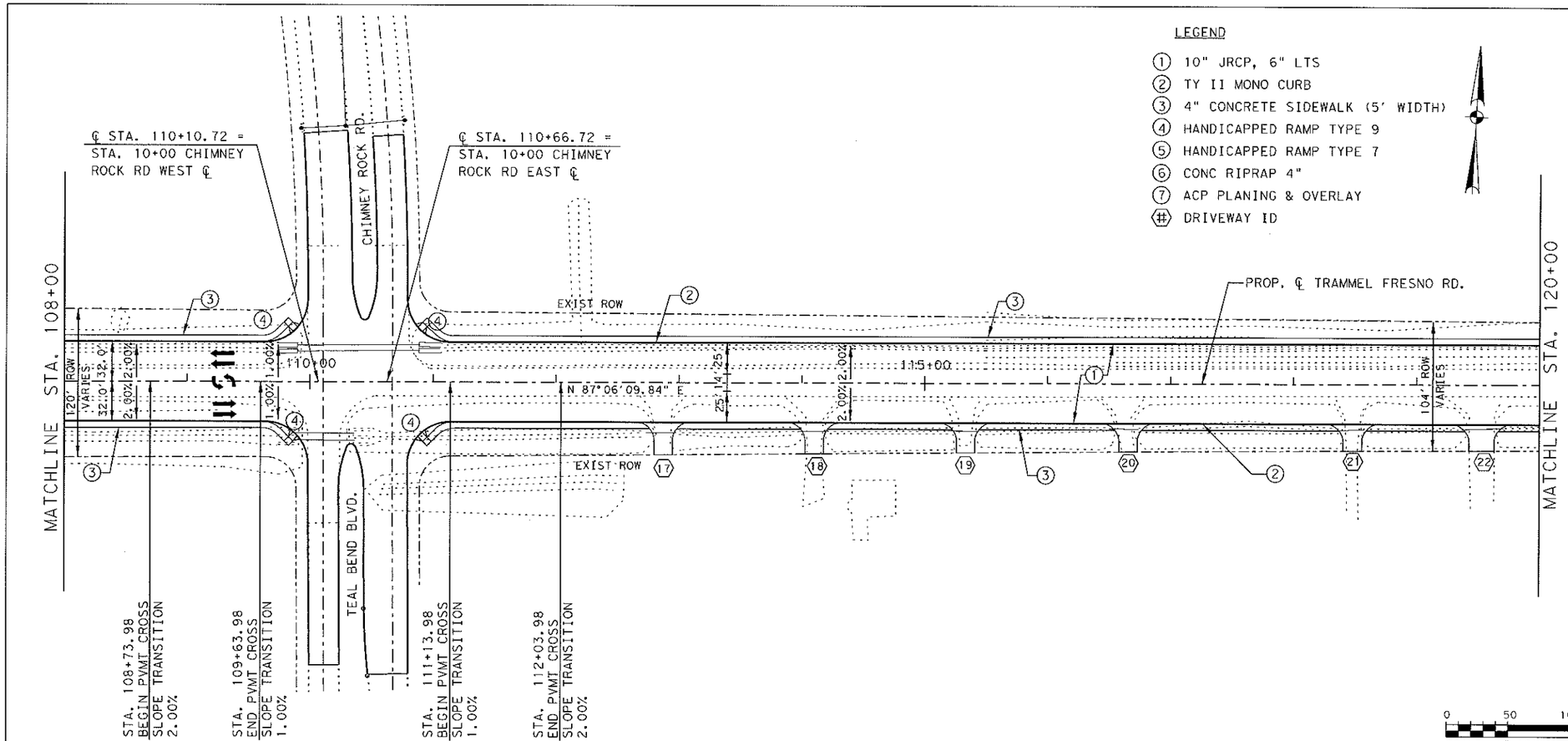

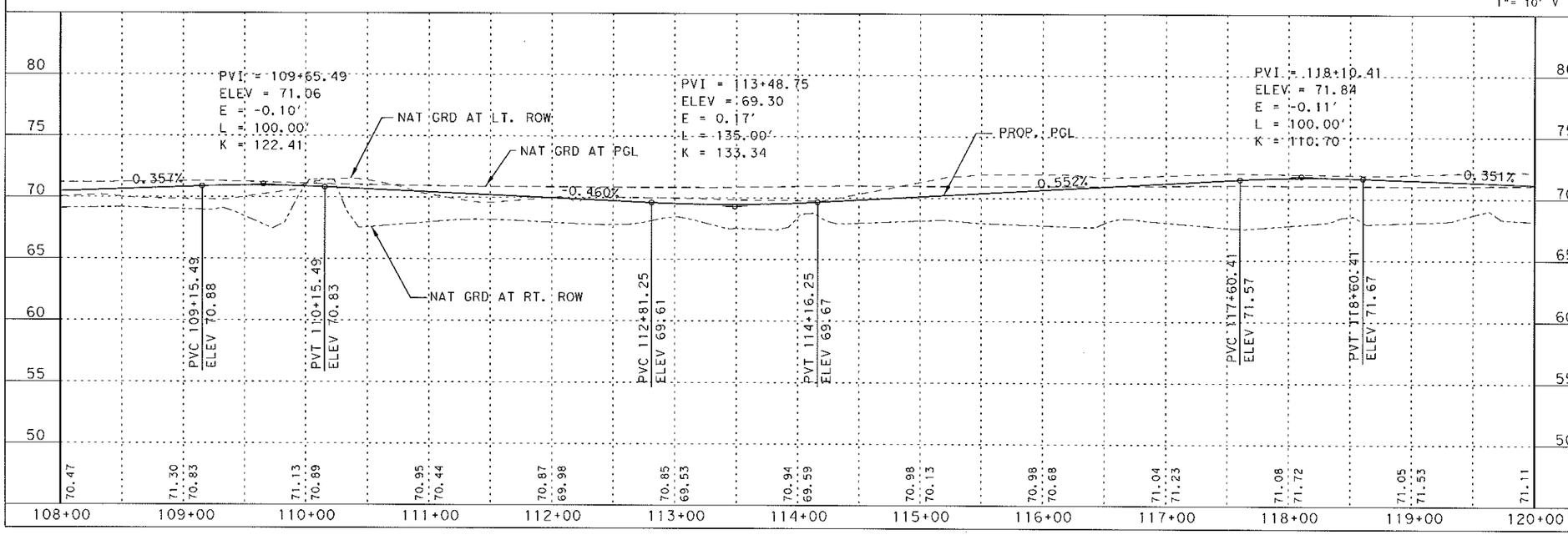

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0 50 100
SCALE: 1"=100' H
1"= 10' V

REV	DATE	BY	DESCRIPTION

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TRAMMEL FRESNO ROAD

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STA. 108+00 TO STA. 120+00

SHEET 6 OF 15

DESIGNED:	FED. RD. DIV. RD.	STATE	PROJECT NO.			HIGHWAY NO.
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DRAWN:	DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CHECKED:	HOU	FORT BEND	0912	34	144	

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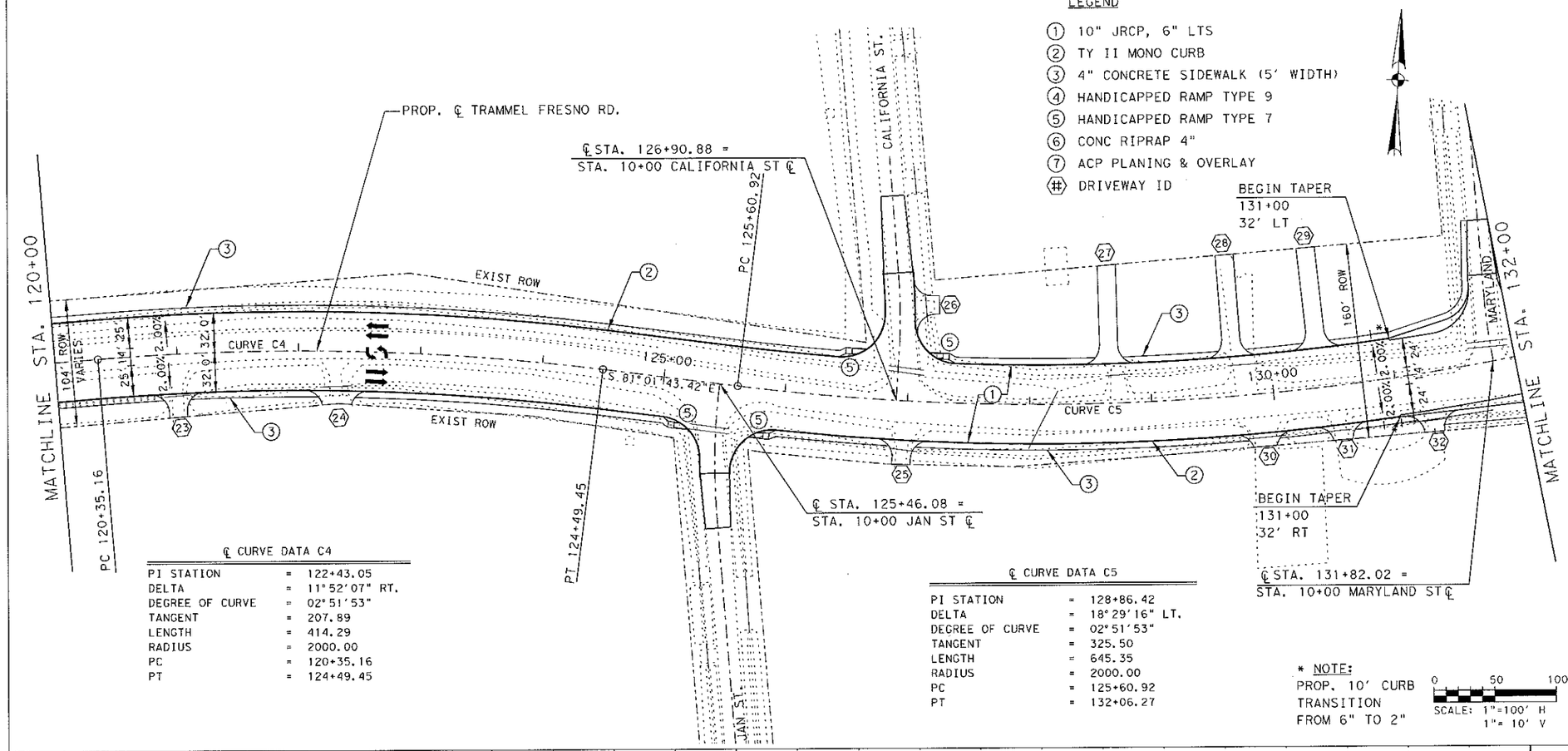


℄ CURVE DATA C4

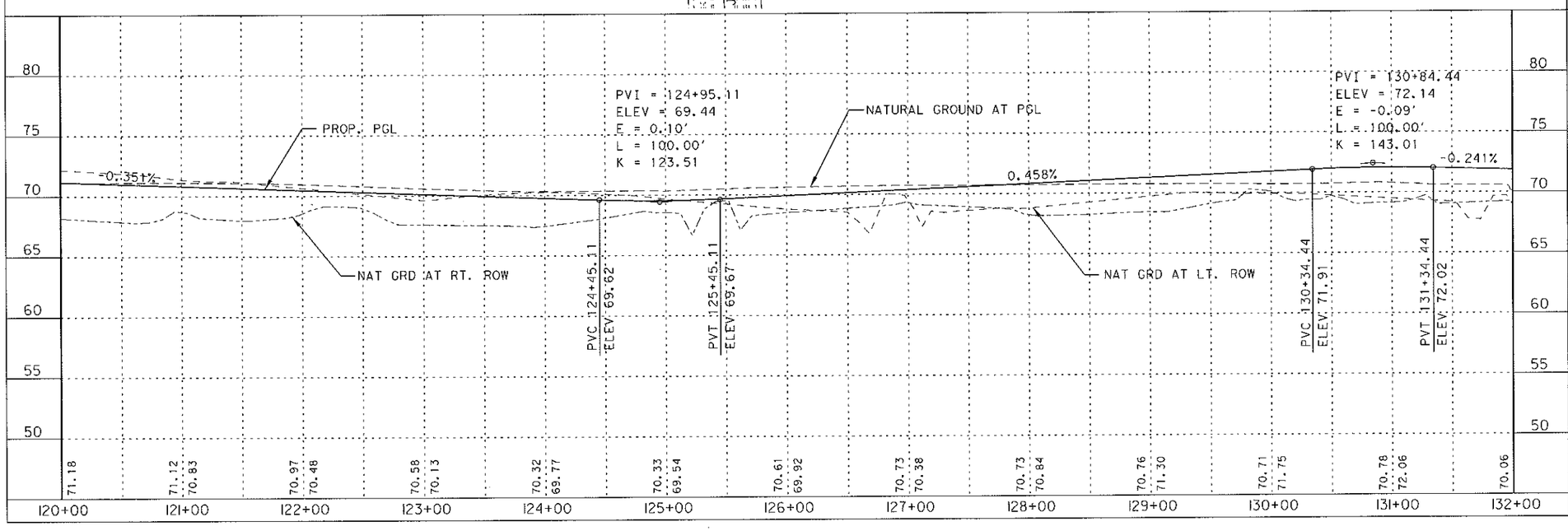
PI STATION	=	122+43.05
DELTA	=	11°52'07" RT.
DEGREE OF CURVE	=	02°51'53"
TANGENT	=	207.89
LENGTH	=	414.29
RADIUS	=	2000.00
PC	=	120+35.16
PT	=	124+49.45

℄ CURVE DATA C5

PI STATION	=	128+86.42
DELTA	=	18°29'16" LT.
DEGREE OF CURVE	=	02°51'53"
TANGENT	=	325.50
LENGTH	=	645.35
RADIUS	=	2000.00
PC	=	125+60.92
PT	=	132+06.27

* NOTE:
PROP. 10' CURB TRANSITION FROM 6" TO 2"

0 50 100
SCALE: 1"=100' H
1"= 10' V



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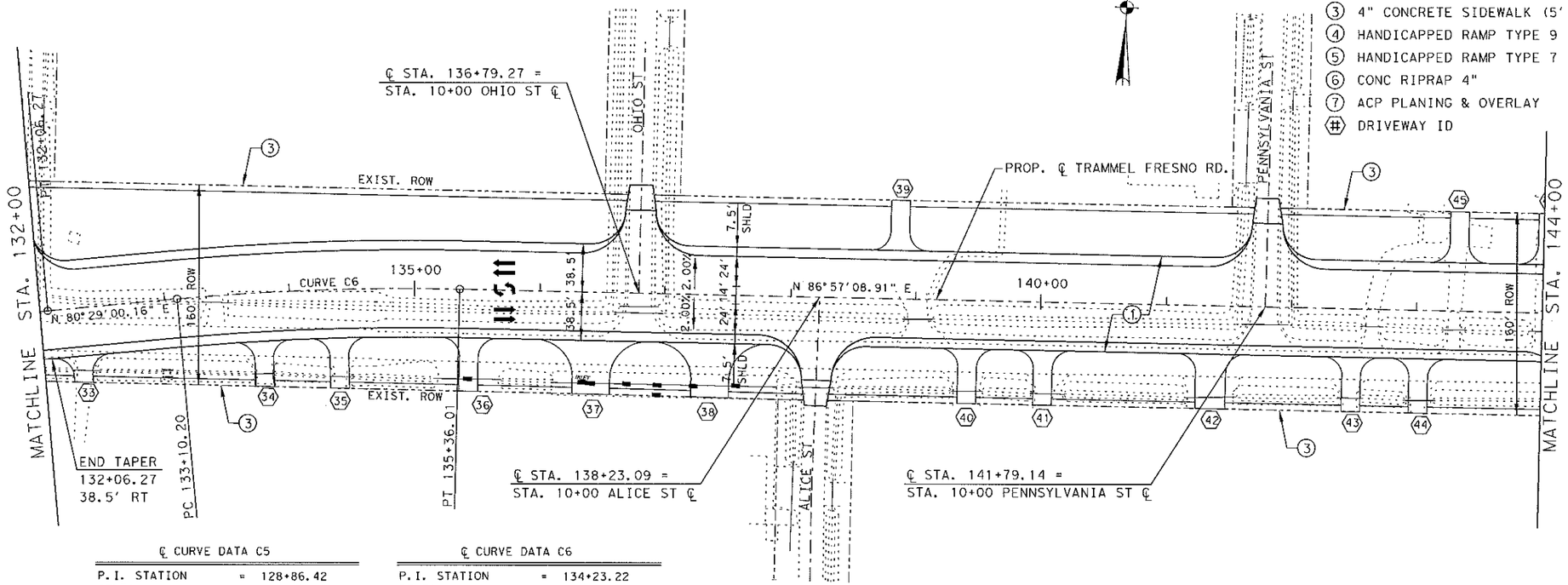
TRAMMEL FRESNO ROAD

PLAN & PROFILE
STA. 120+00 TO STA. 132+00

SHEET 7 OF 15

DESIGNED:	FED. RD. DIV. RD.	STATE	PROJECT NO.			HIGHWAY NO.
CHECKED:	06	TEXAS	STP ( ) MM			CS
DRAWN:	DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CHECKED:	HOU	FORT BEND	0912	34	144	



LEGEND

1. 10" JRCP, 6" LTS
2. TY II MONO CURB
3. 4" CONCRETE SIDEWALK (5' WIDTH)
4. HANDICAPPED RAMP TYPE 9
5. HANDICAPPED RAMP TYPE 7
6. CONC RIPRAP 4"
7. ACP PLANING & OVERLAY
- # DRIVEWAY ID

NOTES:

1. SEE INTERSECTION LAYOUTS FOR INTERSECTION DETAILS.
2. SEE SUMMARY OF DRIVEWAYS AND MISC. DRIVEWAY DETAIL SHEETS.
3. SEE DRAINAGE PLAN & PROFILE FOR DRAINAGE INFORMATION.
4. SEE SURVEY CONTROL LAYOUTS FOR CONTROL POINT INFORMATION.
5. ALL DIMENSIONS ARE TO FACE OF CURB.
6. SEE EXIST UTILITY LAYOUT FOR EXIST UTILITY LOCATIONS.

STATE OF TEXAS
MICHAEL G. JACKSON
85146
LICENSED
PROFESSIONAL ENGINEER

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY MICHAEL G. JACKSON, P.E., No. 85146 ON 9/7/12.
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℄ CURVE DATA C5

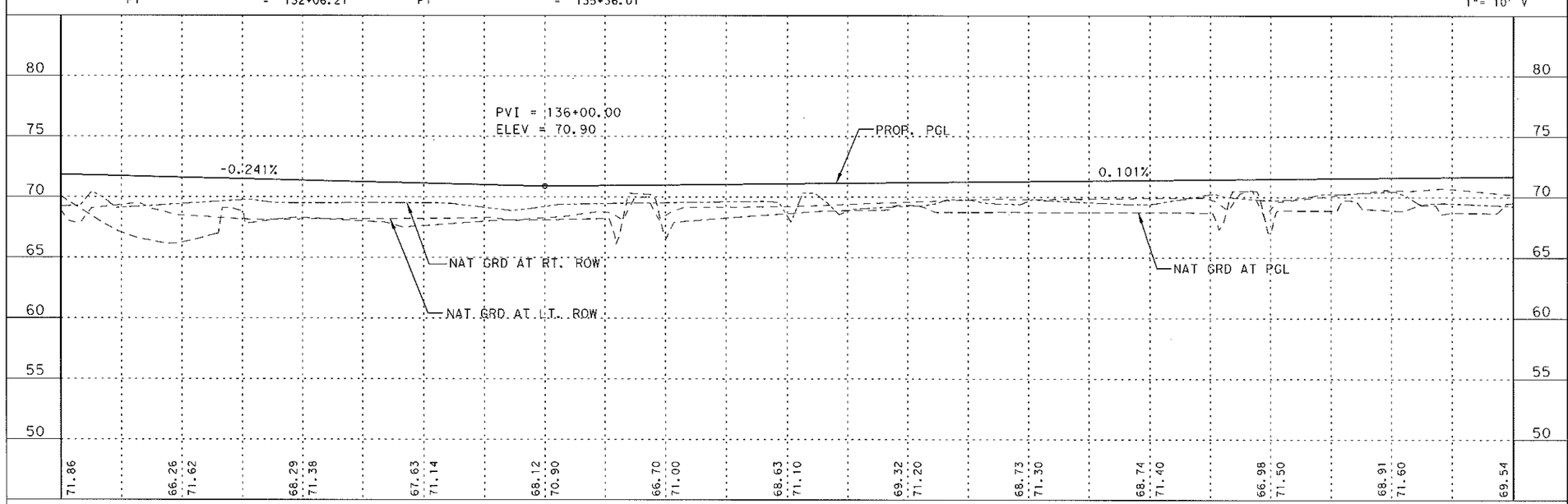
P.I. STATION	=	128+86.42
DELTA	=	18°29'16" LT.
DEGREE OF CURVE	=	02°51'53"
TANGENT	=	325.50
LENGTH	=	645.35
RADIUS	=	2000.00
PC	=	125+60.92
PT	=	132+06.27

℄ CURVE DATA C6

P.I. STATION	=	134+23.22
DELTA	=	06°28'09" RT.
DEGREE OF CURVE	=	02°51'53"
TANGENT	=	113.03
LENGTH	=	225.81
RADIUS	=	2000.00
PC	=	133+10.20
PT	=	135+36.01

0 50 100
SCALE: 1"=100' H
1"= 10' V

REV	DATE	BY	DESCRIPTION



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Engineers, Architects, Planners, Environmental Scientists
FIRM REG. No. F-3427

FORT BEND COUNTY

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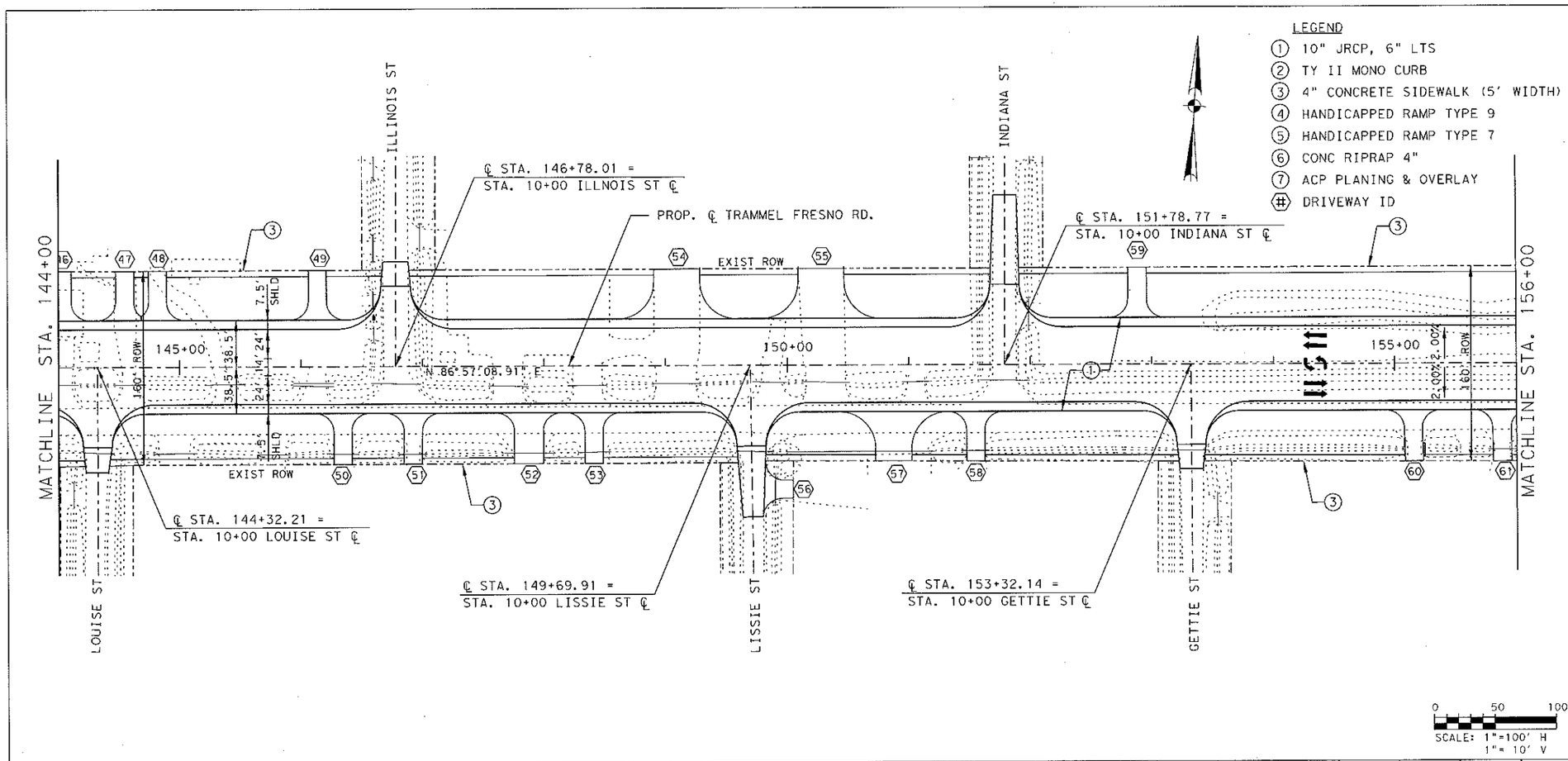
TRAMMEL FRESNO ROAD

PLAN & PROFILE
STA. 132+00 TO STA. 144+00

SHEET 8 OF 15

DESIGNED:	FED. RD. DIV. RD.	STATE	PROJECT NO.			HIGHWAY NO.
CHECKED:	06	TEXAS	STP ( ) MM			CS
DRAWN:	DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CHECKED:	HOU	FORT BEND	0912	34	144	



LEGEND

1. 10" JRCP, 6" LTS
2. TY II MONO CURB
3. 4" CONCRETE SIDEWALK (5' WIDTH)
4. HANDICAPPED RAMP TYPE 9
5. HANDICAPPED RAMP TYPE 7
6. CONC RIPRAP 4"
7. ACP PLANING & OVERLAY
8. DRIVEWAY ID

NOTES:

1. SEE INTERSECTION LAYOUTS FOR INTERSECTION DETAILS.
2. SEE SUMMARY OF DRIVEWAYS AND MISC. DRIVEWAY DETAIL SHEETS.
3. SEE DRAINAGE PLAN & PROFILE FOR DRAINAGE INFORMATION.
4. SEE SURVEY CONTROL LAYOUTS FOR CONTROL POINT INFORMATION.
5. ALL DIMENSIONS ARE TO FACE OF CURB.
6. SEE EXIST UTILITY LAYOUT FOR EXIST UTILITY LOCATIONS.

STATE OF TEXAS
MICHAEL G. JACKSON
85146
LICENSED
PROFESSIONAL ENGINEER

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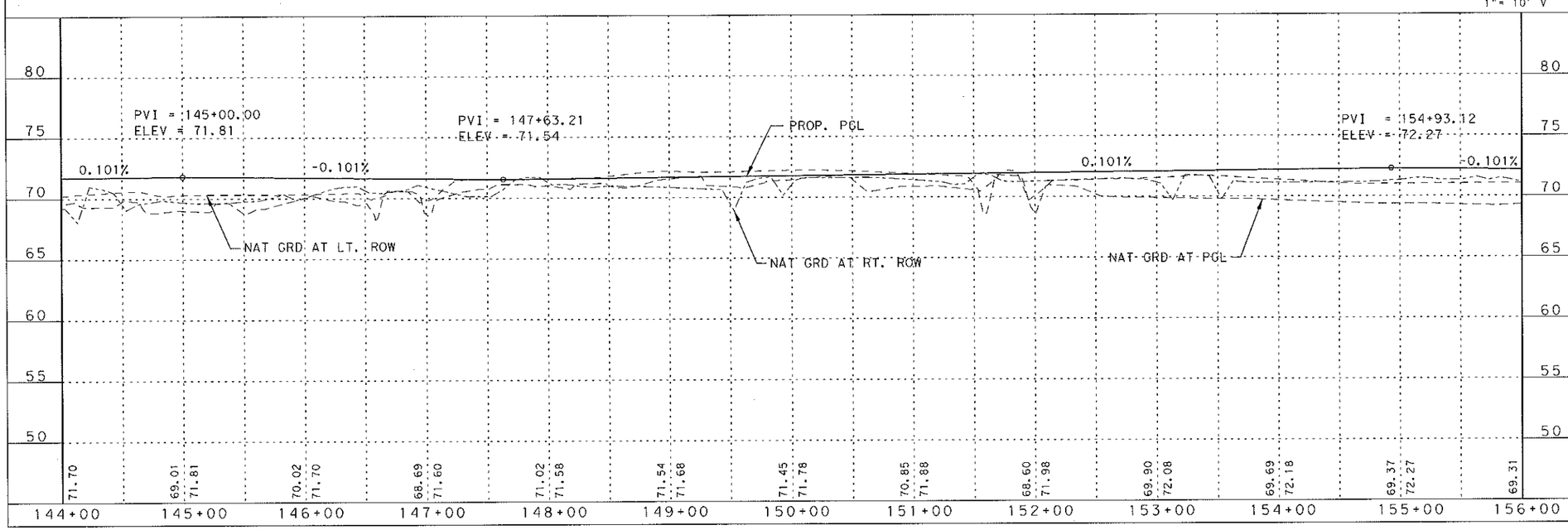
0 50 100
SCALE: 1"=100' H
1"= 10' V

REV	DATE	BY	DESCRIPTION



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FORT BEND COUNTY

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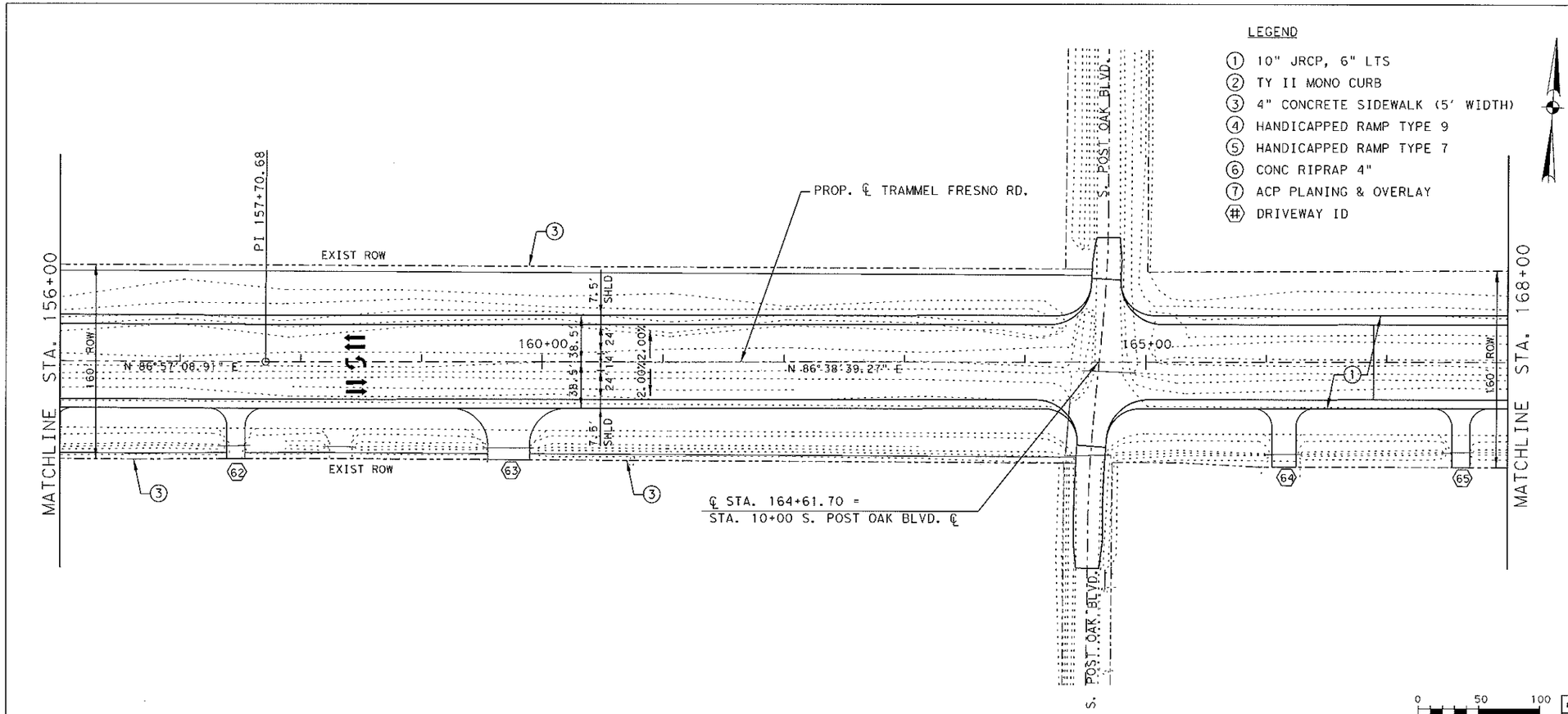
TRAMMEL FRESNO ROAD

PLAN & PROFILE
STA. 144+00 TO STA. 156+00

SHEET 9 OF 15

DESIGNED:	FED. RD. DIV. RD.	STATE	PROJECT NO.			HIGHWAY NO.
CHECKED:	06	TEXAS	STP ( ) MM			CS
DRAWN:	DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CHECKED:	HOU	FORT BEND	0912	34	144	



LEGEND

1. 10" JRCP, 6" LTS
2. TY II MONO CURB
3. 4" CONCRETE SIDEWALK (5' WIDTH)
4. HANDICAPPED RAMP TYPE 9
5. HANDICAPPED RAMP TYPE 7
6. CONC RIPRAP 4"
7. ACP PLANING & OVERLAY
- # DRIVEWAY ID

NOTES:

1. SEE INTERSECTION LAYOUTS FOR INTERSECTION DETAILS.
2. SEE SUMMARY OF DRIVEWAYS AND MISC. DRIVEWAY DETAIL SHEETS.
3. SEE DRAINAGE PLAN & PROFILE FOR DRAINAGE INFORMATION.
4. SEE SURVEY CONTROL LAYOUTS FOR CONTROL POINT INFORMATION.
5. ALL DIMENSIONS ARE TO FACE OF CURB.
6. SEE EXIST UTILITY LAYOUT FOR EXIST UTILITY LOCATIONS.

STATE OF TEXAS
MICHAEL G. JACKSON
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LICENSED
PROFESSIONAL ENGINEER

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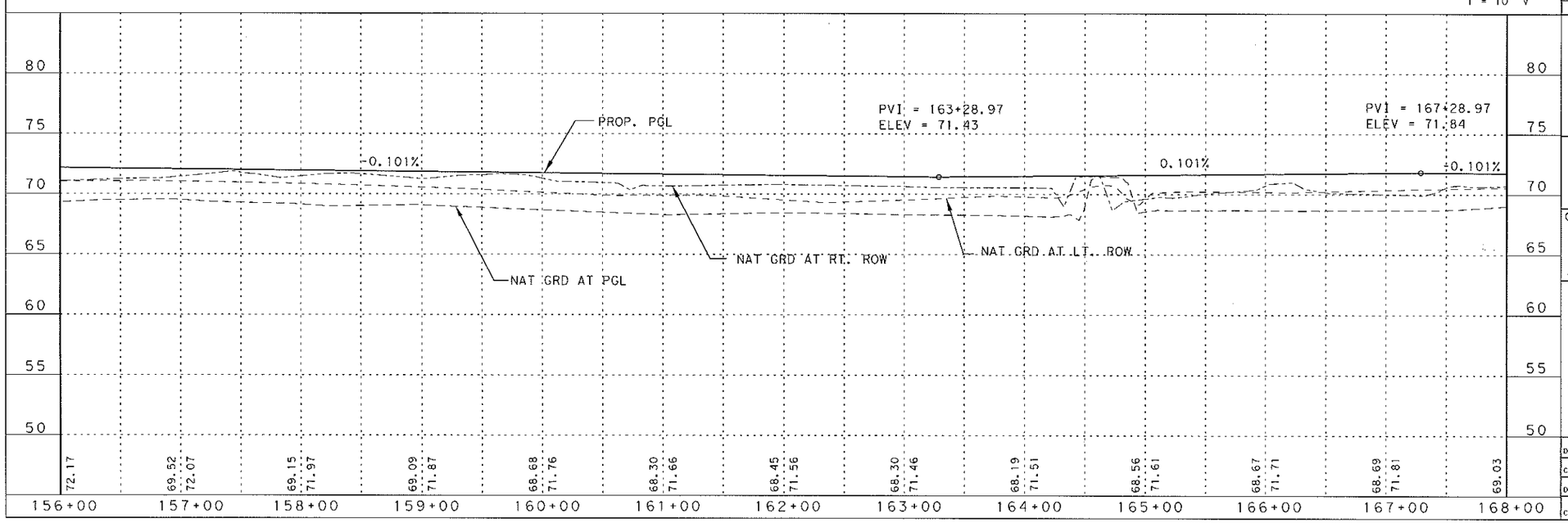
REV	DATE	BY	DESCRIPTION



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TRAMMEL FRESNO ROAD

PLAN & PROFILE
STA. 156+00 TO STA. 168+00

SHEET 10 OF 15

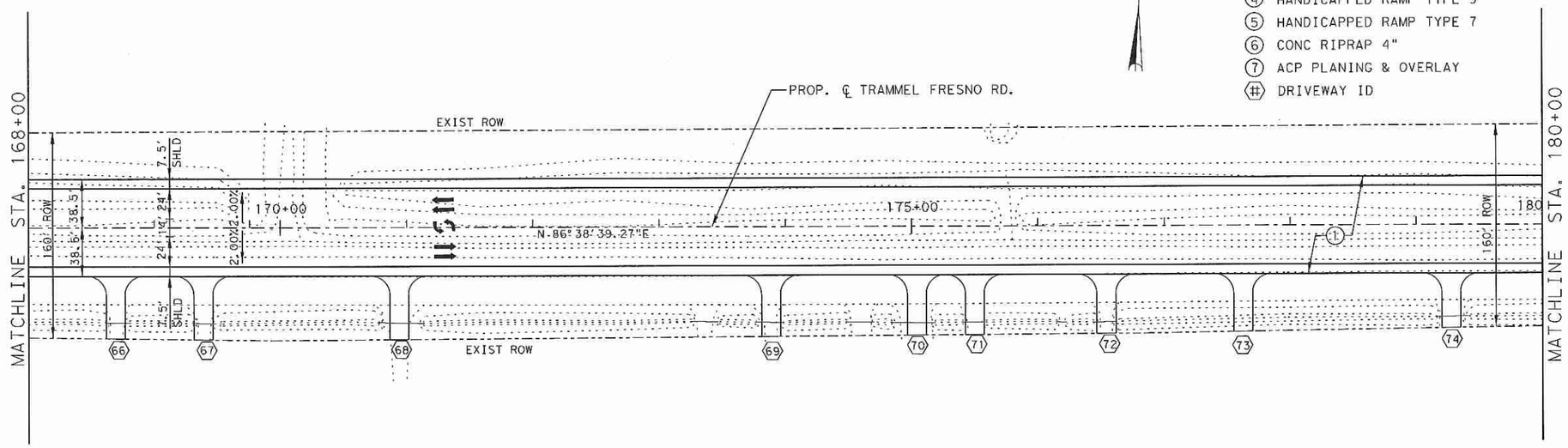
DESIGNED:	FED. RD. DIV. RD.	STATE	PROJECT NO.			HIGHWAY NO.
CHECKED:	06	TEXAS	STP ( ) MM			CS
DRAWN:	DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CHECKED:	HOU	FORT BEND	0912	34	144	

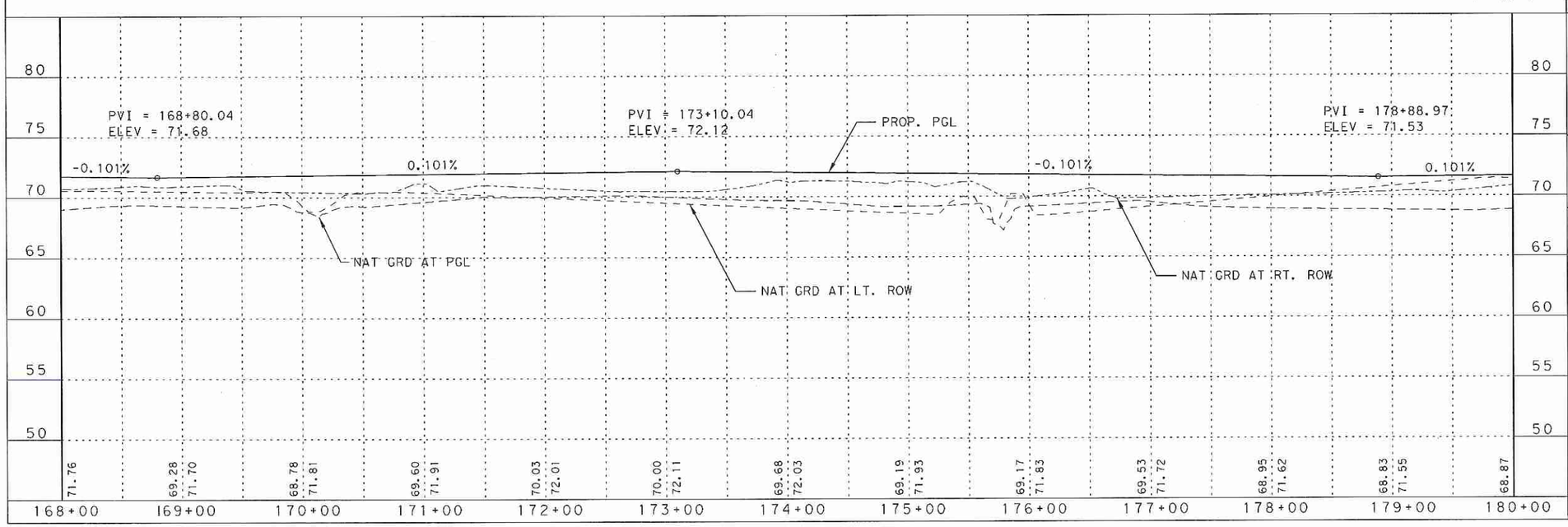
LEGEND

1. 10" JRCP, 6" LTS
2. TY II MONO CURB
3. 4" CONCRETE SIDEWALK (5' WIDTH)
4. HANDICAPPED RAMP TYPE 9
5. HANDICAPPED RAMP TYPE 7
6. CONC RIPRAP 4"
7. ACP PLANING & OVERLAY
- (#) DRIVEWAY ID

NOTES:

1. SEE INTERSECTION LAYOUTS FOR INTERSECTION DETAILS.
2. SEE SUMMARY OF DRIVEWAYS AND MISC. DRIVEWAY DETAIL SHEETS.
3. SEE DRAINAGE PLAN & PROFILE FOR DRAINAGE INFORMATION.
4. SEE SURVEY CONTROL LAYOUTS FOR CONTROL POINT INFORMATION.
5. ALL DIMENSIONS ARE TO FACE OF CURB.
6. SEE EXIST UTILITY LAYOUT FOR EXIST UTILITY LOCATIONS.





0 50 100
SCALE: 1"=100' H
1"= 10' V

STATE OF TEXAS
MICHAEL G. JACKSON
85146
LICENSED
PROFESSIONAL ENGINEER

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REV	DATE	BY	DESCRIPTION

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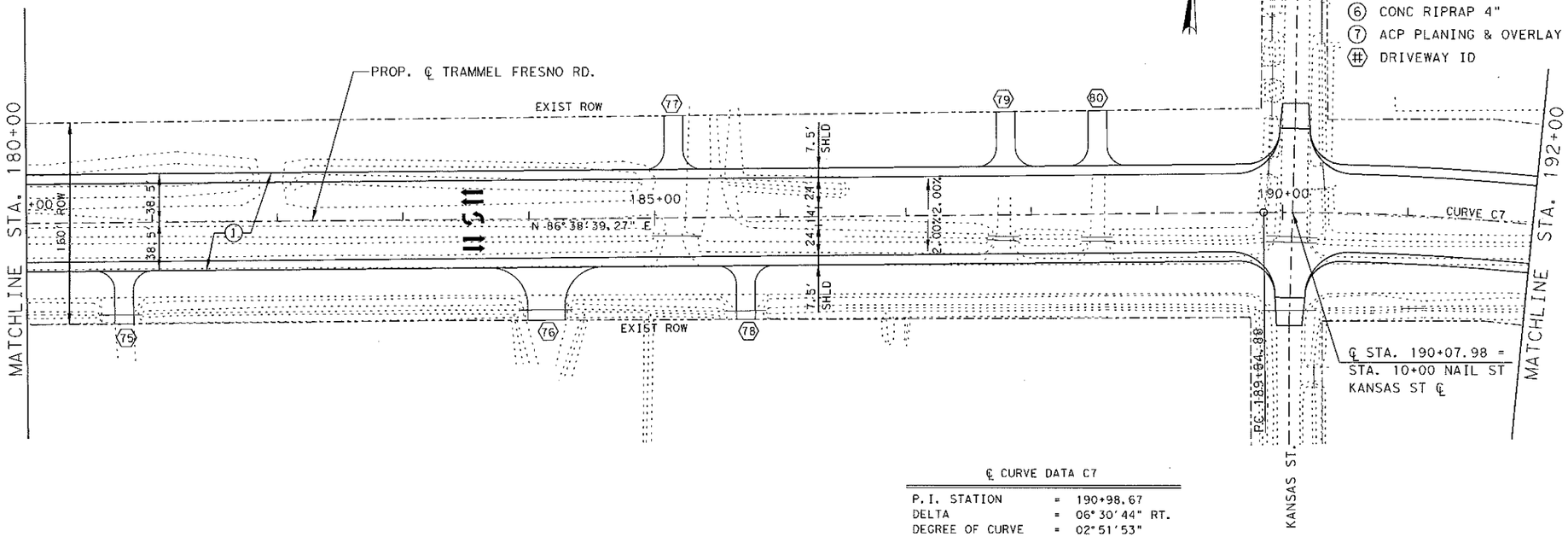
TRAMMEL FRESNO ROAD

PLAN & PROFILE
STA. 168+00 TO STA. 180+00

SHEET 11 OF 15

DESIGNED:	FED. RD. DIV. RD.	STATE	PROJECT NO.			HIGHWAY NO.
CHECKED:	06	TEXAS	STP ( ) MM			CS
DRAWN:	DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CHECKED:	HOU	FORT BEND	0912	34	144	



LEGEND

1. 10" JRCP, 6" LTS
2. TY II MONO CURB
3. 4" CONCRETE SIDEWALK (5' WIDTH)
4. HANDICAPPED RAMP TYPE 9
5. HANDICAPPED RAMP TYPE 7
6. CONC RIPRAP 4"
7. ACP PLANING & OVERLAY
DRIVEWAY ID

NOTES:

1. SEE INTERSECTION LAYOUTS FOR INTERSECTION DETAILS.
2. SEE SUMMARY OF DRIVEWAYS AND MISC. DRIVEWAY DETAIL SHEETS.
3. SEE DRAINAGE PLAN & PROFILE FOR DRAINAGE INFORMATION.
4. SEE SURVEY CONTROL LAYOUTS FOR CONTROL POINT INFORMATION.
5. ALL DIMENSIONS ARE TO FACE OF CURB.
6. SEE EXIST UTILITY LAYOUT FOR EXIST UTILITY LOCATIONS.

℄ CURVE DATA C7

P.I. STATION	=	190+98.67
DELTA	=	06°30'44" RT.
DEGREE OF CURVE	=	02°51'53"
TANGENT	=	113.78
LENGTH	=	227.32
RADIUS	=	2000.00
P.C.	=	189+84.88
P.T.	=	192+12.20

0 50 100
SCALE: 1"=100' H
1"= 10' V

STATE OF TEXAS
MICHAEL G. JACKSON
85146
LICENSED
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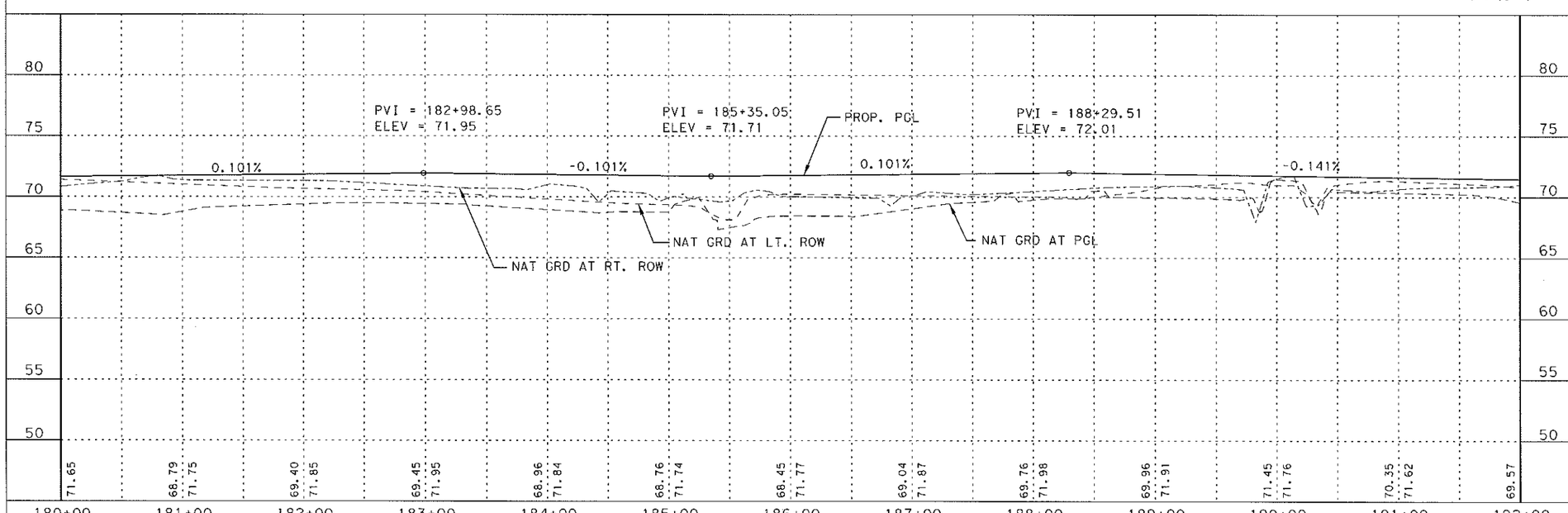
REV	DATE	BY	DESCRIPTION



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FORT BEND COUNTY

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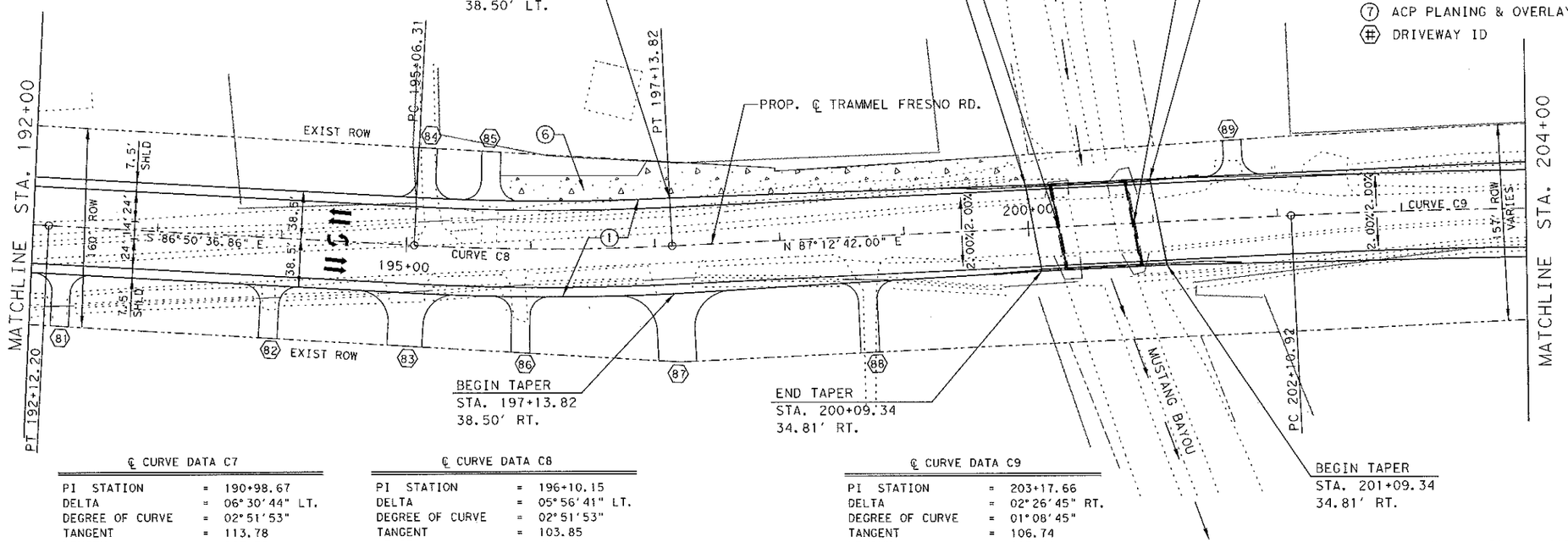
TRAMMEL FRESNO ROAD

PLAN & PROFILE
STA. 180+00 TO STA. 192+00

SHEET 12 OF 15

DESIGNED:	FED. RD. DIV. RD.	STATE	PROJECT NO.			HIGHWAY NO.
CHECKED:	06	TEXAS	STP ( ) MM			CS
DRAWN:	DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CHECKED:	HOU	FORT BEND	0912	34	144	



NOTES:

1. SEE INTERSECTION LAYOUTS FOR INTERSECTION DETAILS.
2. SEE SUMMARY OF DRIVEWAYS AND MISC. DRIVEWAY DETAIL SHEETS.
3. SEE DRAINAGE PLAN & PROFILE FOR DRAINAGE INFORMATION.
4. SEE SURVEY CONTROL LAYOUTS FOR CONTROL POINT INFORMATION.
5. ALL DIMENSIONS ARE TO FACE OF CURB.
6. SEE EXIST UTILITY LAYOUT FOR EXIST UTILITY LOCATIONS.

STATE OF TEXAS
MICHAEL G. JACKSON
85146
LICENSED
PROFESSIONAL ENGINEER

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℄ CURVE DATA C7

PI STATION	=	190+98.67
DELTA	=	06°30'44" LT.
DEGREE OF CURVE	=	02°51'53"
TANGENT	=	113.78
LENGTH	=	227.32
RADIUS	=	2000.00
PC	=	189+84.88
PT	=	192+12.20

℄ CURVE DATA C8

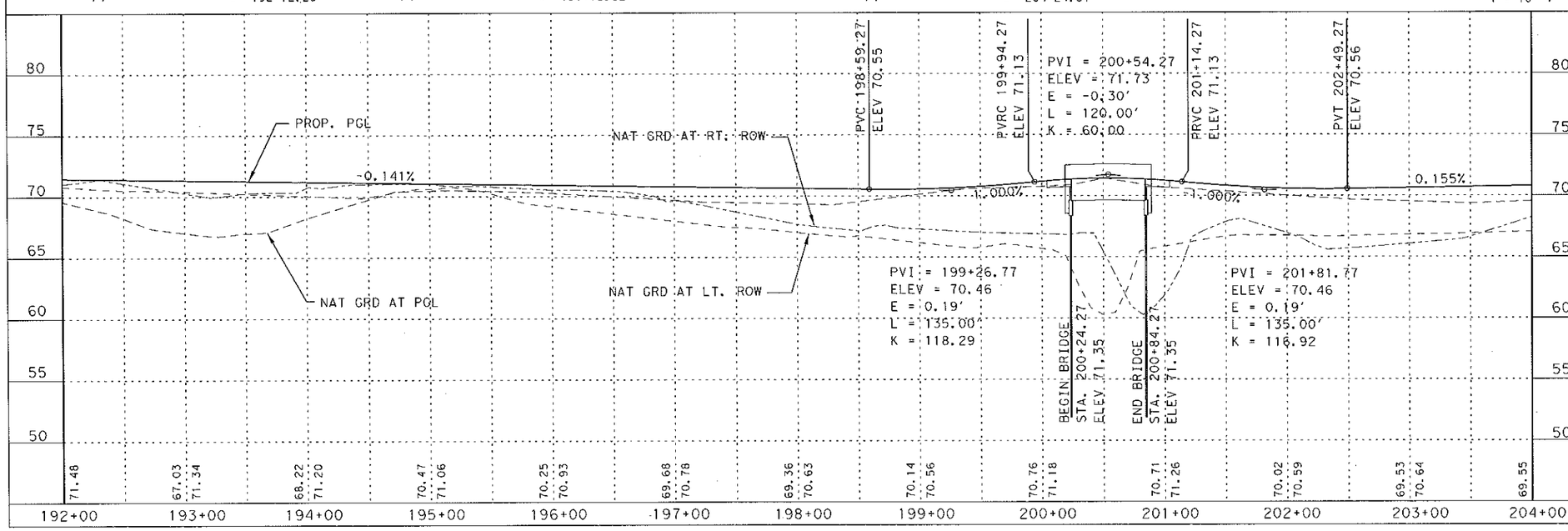
PI STATION	=	196+10.15
DELTA	=	05°56'41" LT.
DEGREE OF CURVE	=	02°51'53"
TANGENT	=	103.85
LENGTH	=	207.51
RADIUS	=	2000.00
PC	=	195+06.31
PT	=	197+13.82

℄ CURVE DATA C9

PI STATION	=	203+17.66
DELTA	=	02°26'45" RT.
DEGREE OF CURVE	=	01°08'45"
TANGENT	=	106.74
LENGTH	=	213.44
RADIUS	=	5000.00
PC	=	202+10.92
PT	=	204+24.37

0 50 100
SCALE: 1"=100' H
1"= 10' V

REV	DATE	BY	DESCRIPTION



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FIRM REG. No. F-3427

FORT BEND COUNTY

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TRAMMEL FRESNO ROAD

PLAN & PROFILE
STA. 192+00 TO STA. 204+00

SHEET 13 OF 15

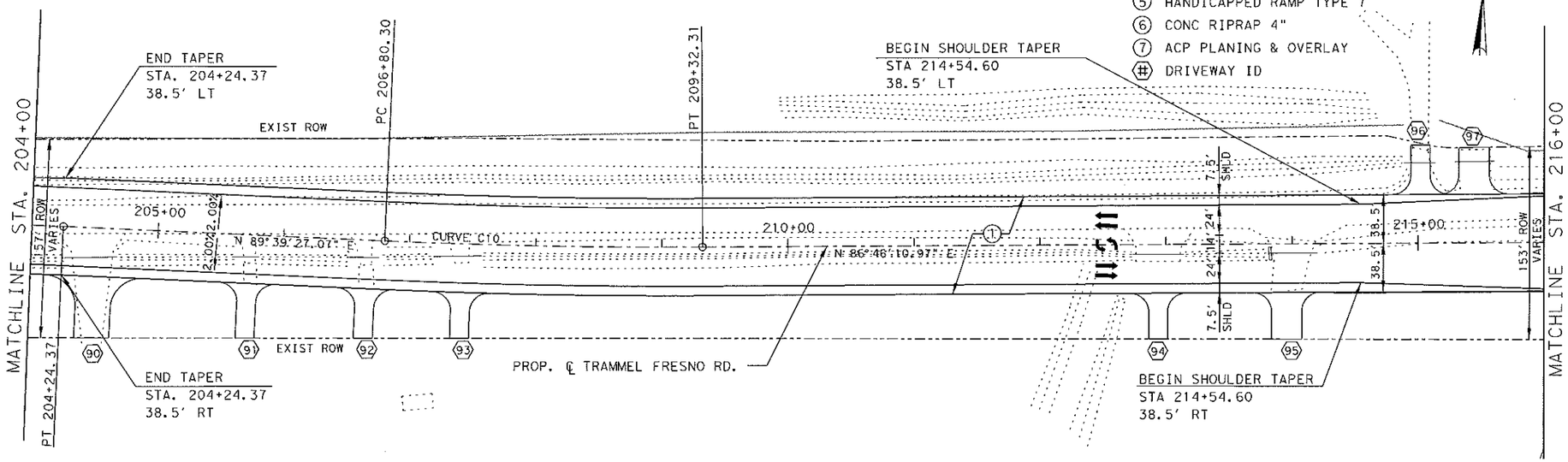
DESIGNED:	FED. RD. DIV. RD.	STATE	PROJECT NO.			HIGHWAY NO.
CHECKED:	06	TEXAS	STP ( ) MM			CS
DRAWN:	DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CHECKED:	HOU	FORT BEND	0912	34	144	

LEGEND

1. 10" JRCP, 6" LTS
2. TY II MONO CURB
3. 4" CONCRETE SIDEWALK (5' WIDTH)
4. HANDICAPPED RAMP TYPE 9
5. HANDICAPPED RAMP TYPE 7
6. CONC RIPRAP 4"
7. ACP PLANING & OVERLAY
8. DRIVEWAY ID

NOTES:

1. SEE INTERSECTION LAYOUTS FOR INTERSECTION DETAILS.
2. SEE SUMMARY OF DRIVEWAYS AND MISC. DRIVEWAY DETAIL SHEETS.
3. SEE DRAINAGE PLAN & PROFILE FOR DRAINAGE INFORMATION.
4. SEE SURVEY CONTROL LAYOUTS FOR CONTROL POINT INFORMATION.
5. ALL DIMENSIONS ARE TO FACE OF CURB.
6. SEE EXIST UTILITY LAYOUT FOR EXIST UTILITY LOCATIONS.



℄ CURVE DATA C9

PI STATION	=	203+17.66
DELTA	=	02°26'45" RT.
DEGREE OF CURVE	=	01°08'45"
TANGENT	=	106.74
LENGTH	=	213.44
RADIUS	=	5000.00
PC	=	202+10.92
PT	=	204+24.37

℄ CURVE DATA C10

PI STATION	=	208+06.33
DELTA	=	02°53'16" LT.
DEGREE OF CURVE	=	01°08'45"
TANGENT	=	126.03
LENGTH	=	252.01
RADIUS	=	5000.00
PC	=	206+80.30
PT	=	209+32.31

0 50 100
SCALE: 1"=100' H
1"= 10' V

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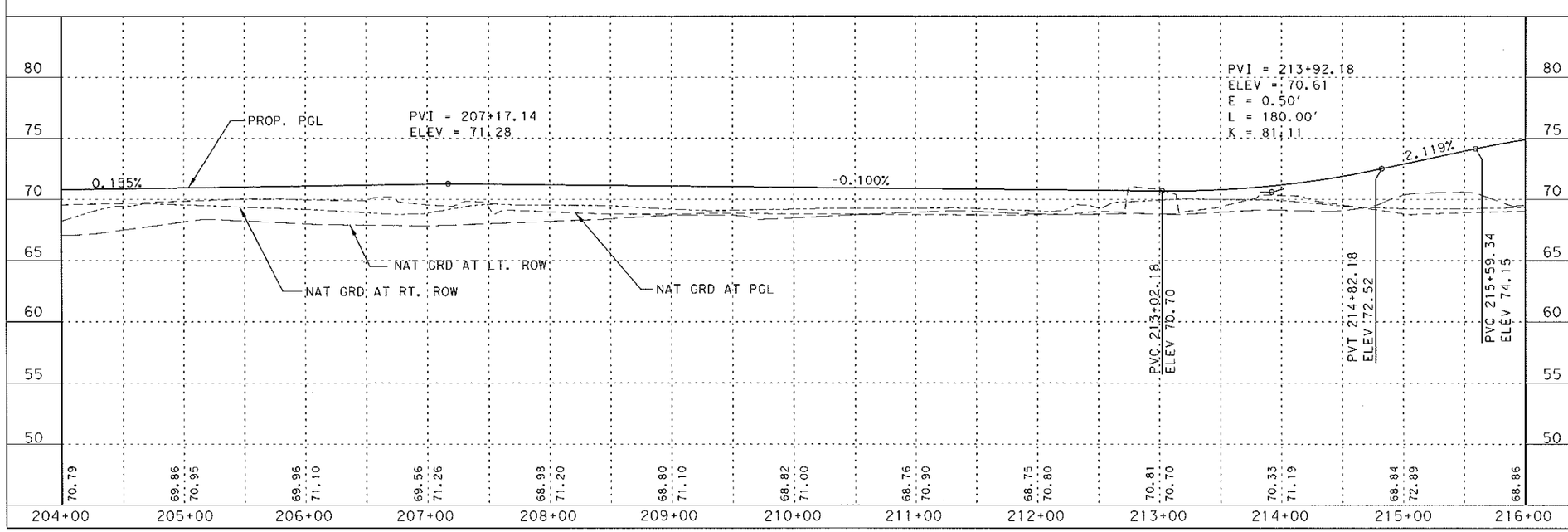
REV	DATE	BY	DESCRIPTION



STATE OF TEXAS
MICHAEL G. JACKSON
85146
LICENSED
PROFESSIONAL ENGINEER

BKI

BURK-KLEINPETER, INC.
Engineers, Architects, Planners, Environmental Scientists
FIRM REG. No. F-3427

FORT BEND COUNTY

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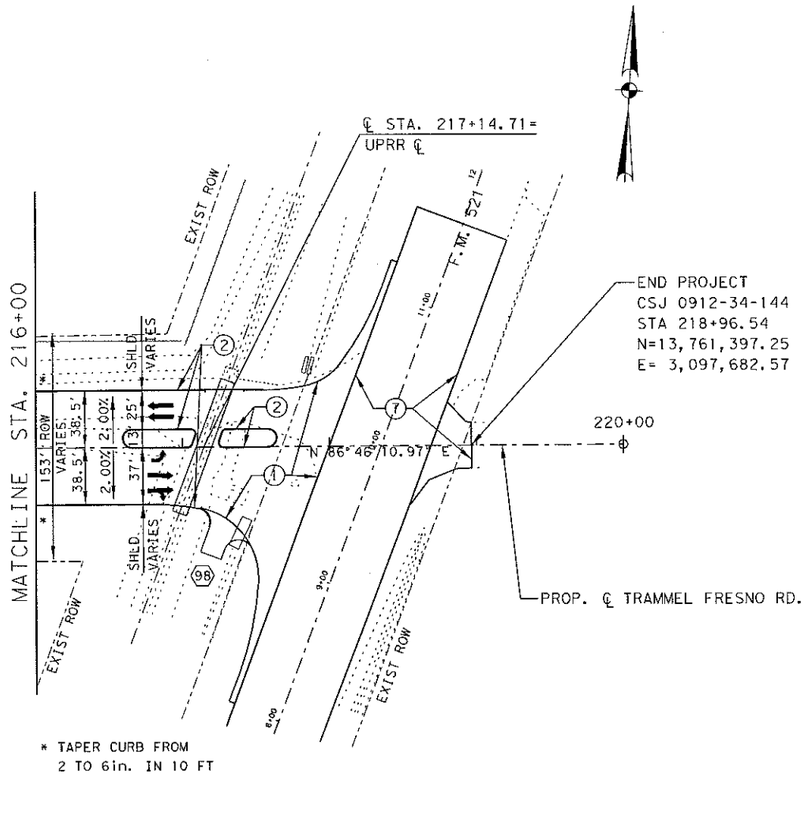
TRAMMEL FRESNO ROAD

PLAN & PROFILE
STA. 204+00 TO STA. 216+00

SHEET 14 OF 15

DESIGNED:	FED. RD. DIV. RD.	STATE	PROJECT NO.			HIGHWAY NO.
CHECKED:	06	TEXAS	STP ( ) MM			CS
DRAWN:	DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CHECKED:	HOU	FORT BEND	0912	34	144	



* TAPER CURB FROM
2 TO 6in. IN 10 FT

LEGEND

1. 10" JRCP, 6" LTS
2. TY II MONO CURB
3. 4" CONCRETE SIDEWALK (5' WIDTH)
4. HANDICAPPED RAMP TYPE 9
5. HANDICAPPED RAMP TYPE 7
6. CONC RIPRAP 4"
7. ACP PLANING & OVERLAY
- (#) DRIVEWAY ID

NOTES:

1. SEE INTERSECTION LAYOUTS FOR INTERSECTION DETAILS.
2. SEE SUMMARY OF DRIVEWAYS AND MISC. DRIVEWAY DETAIL SHEETS.
3. SEE DRAINAGE PLAN & PROFILE FOR DRAINAGE INFORMATION.
4. SEE SURVEY CONTROL LAYOUTS FOR CONTROL POINT INFORMATION.
5. ALL DIMENSIONS ARE TO FACE OF CURB.
6. SEE EXIST UTILITY LAYOUT FOR EXIST UTILITY LOCATIONS.

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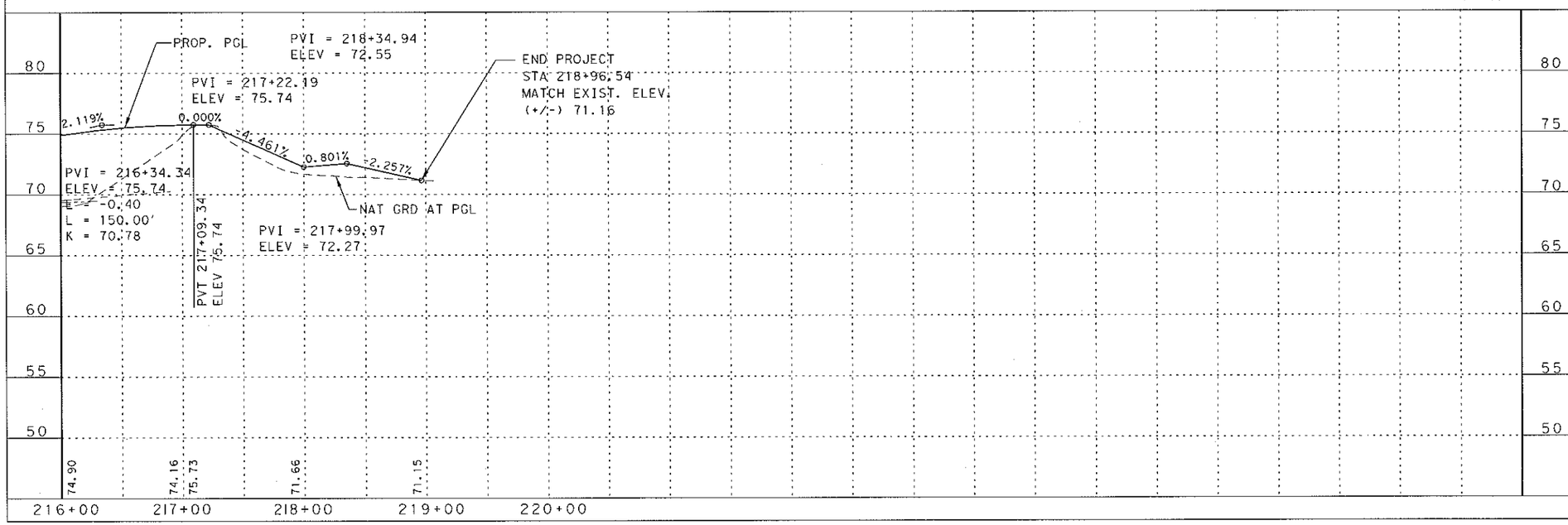
0 50 100
SCALE: 1"=100' H
1"= 10' V

REV	DATE	BY	DESCRIPTION



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Engineers, Architects, Planners, Environmental Scientists
FIRM REG. No. F-3427

FORT BEND COUNTY

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TRAMMEL FRESNO ROAD

PLAN & PROFILE
STA. 216+00 TO EOP

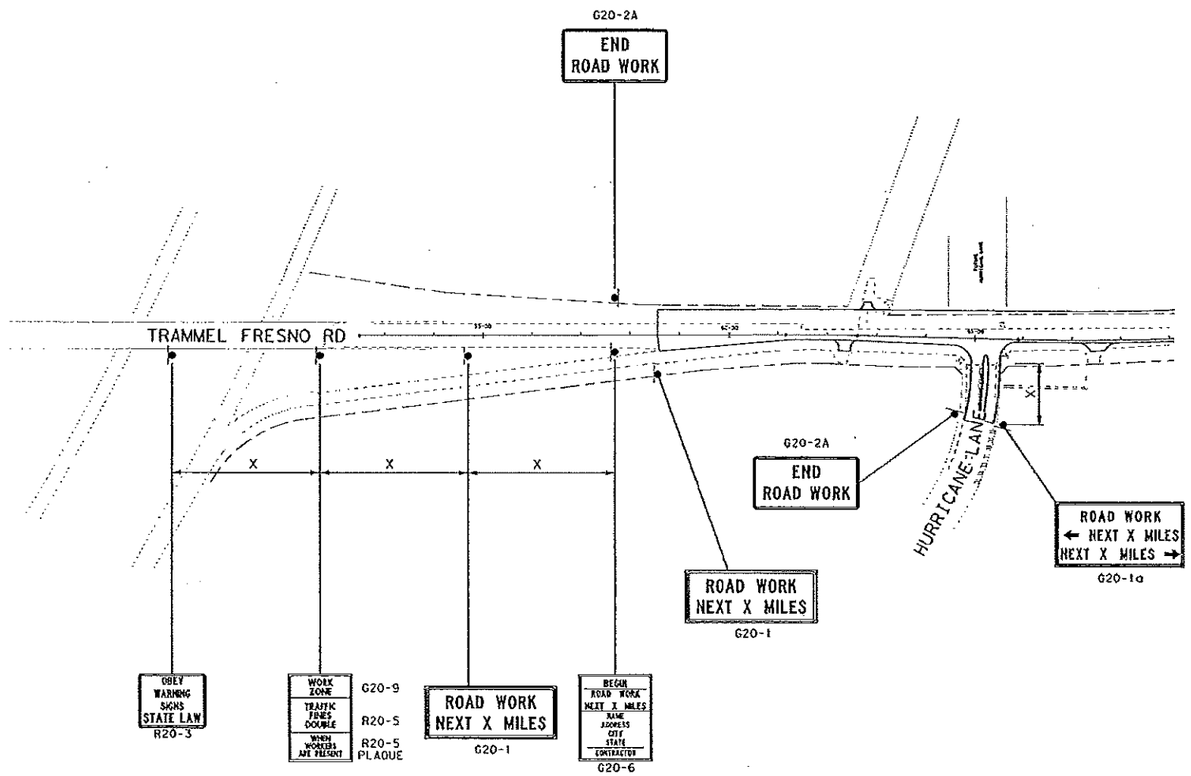
SHEET 15 OF 15

DESIGNED:	FED. RD. DIV. RD.	STATE	PROJECT NO.			HIGHWAY NO.
CHECKED:	06	TEXAS	STP ( ) MM			CS
DRAWN:	DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CHECKED:	HOU	FORT BEND	0912	34	144	

NOTES:

1. CONTRACTOR SHALL PROVIDE AND INSTALL TRAFFIC CONTROL DEVICES IN CONFORMANCE WITH PART VI OF TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD-LATEST EDITION WITH REVISIONS) DURING CONSTRUCTION.

2. SPEED LIMIT SHALL REMAIN AS POSTED. CONSTRUCTION WARNING SIGN SPACING (X) SHALL BE DETERMINED FROM TXDOT STANDARD BC(2)-07.



0 150 300
SCALE: 1"=300' H

STATE OF TEXAS
JAMES D. SPACKMAN
79337
REGISTERED PROFESSIONAL ENGINEER
3-8-12

REV	DATE	BY	DESCRIPTION

LJA Engineering, Inc.
FRN - F-1386

FORT BEND COUNTY

Texas Department of Transportation

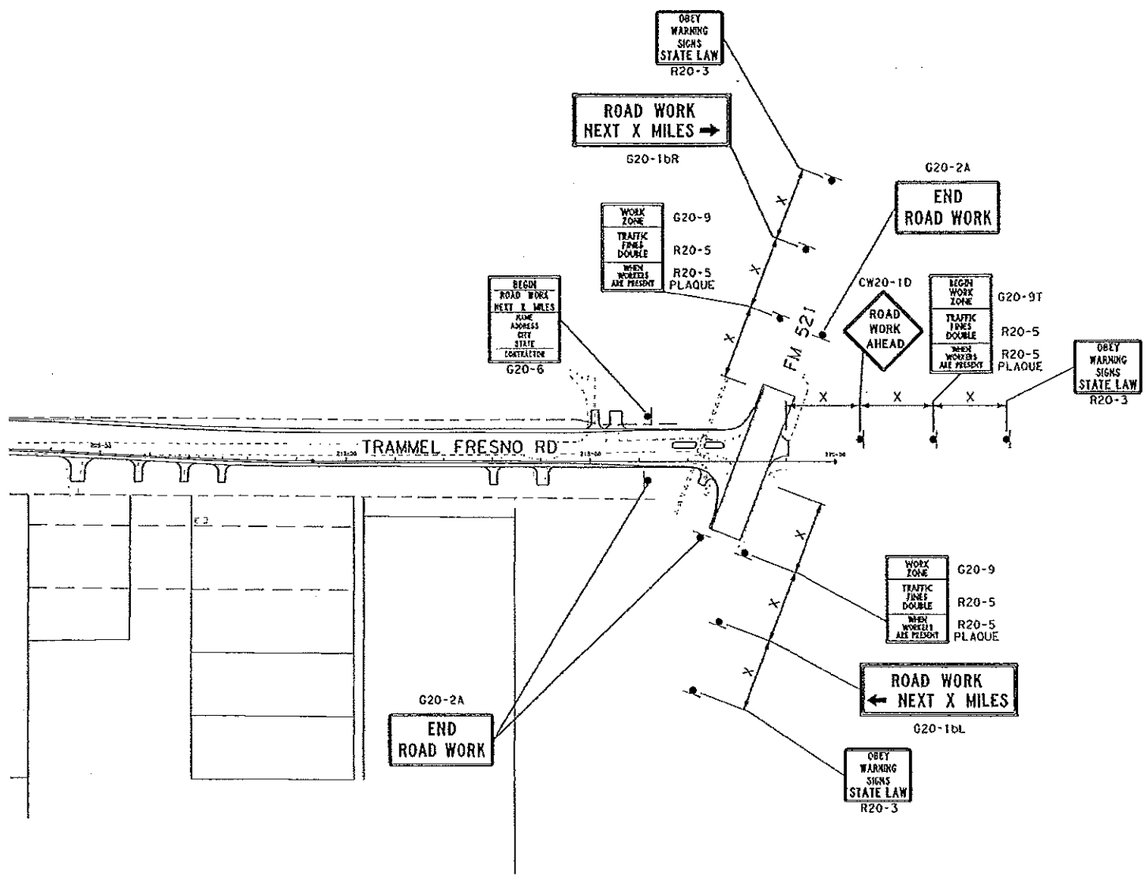
TRAMMEL FRESNO ROAD

TRAFFIC CONTROL PLAN
ADVANCED WARNING SIGNS

DESIGNED: AL	FED. RD. DIV. RD.	STATE	PROJECT NO.				HIGHWAY NO.
CHECKED: DB	06	TEXAS					
DRAWN: AL	STATE DIST. NO.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.		SHEET NO.
CHECKED: DB	HOUSTON, TX 12	FORT BEND	0192	34	144		18

Mar. 07, 2012

BKI PROJ. NO. XXXX-XXX-XX j:\1368\0408\cadd\tcp\TF*AWS*01.dgn



NOTES:

1. CONTRACTOR SHALL PROVIDE AND INSTALL TRAFFIC CONTROL DEVICES IN CONFORMANCE WITH PART VI OF TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD-LATEST EDITION WITH REVISIONS) DURING CONSTRUCTION.

2. SPEED LIMIT SHALL REMAIN AS POSTED. CONSTRUCTION WARNING SIGN SPACING (X) SHALL BE DETERMINED FROM TXDOT STANDARD BC(2)-07.

0 150 300
SCALE: 1"=300' H

STATE OF TEXAS
JAMES D. SPACKMAN
79337
REGISTERED PROFESSIONAL ENGINEER
3-7-12

REV	DATE	BY	DESCRIPTION

LJA Engineering, Inc.
FRN-F-1386

FORT BEND COUNTY

Texas Department of Transportation

TRAMMEL FRESNO ROAD

TRAFFIC CONTROL PLAN
ADVANCED WARNING SIGNS

DESIGNED: AL	FED. RD. DIV. RD.	STATE	PROJECT NO.			HIGHWAY NO.
CHECKED: DB	06	TEXAS				
DRAWN: AL	STATE DIST. NO.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CHECKED: DB	HOUSTON,TP 12	FORT BEND	0192	34	144	19

Mar. 07, 2012

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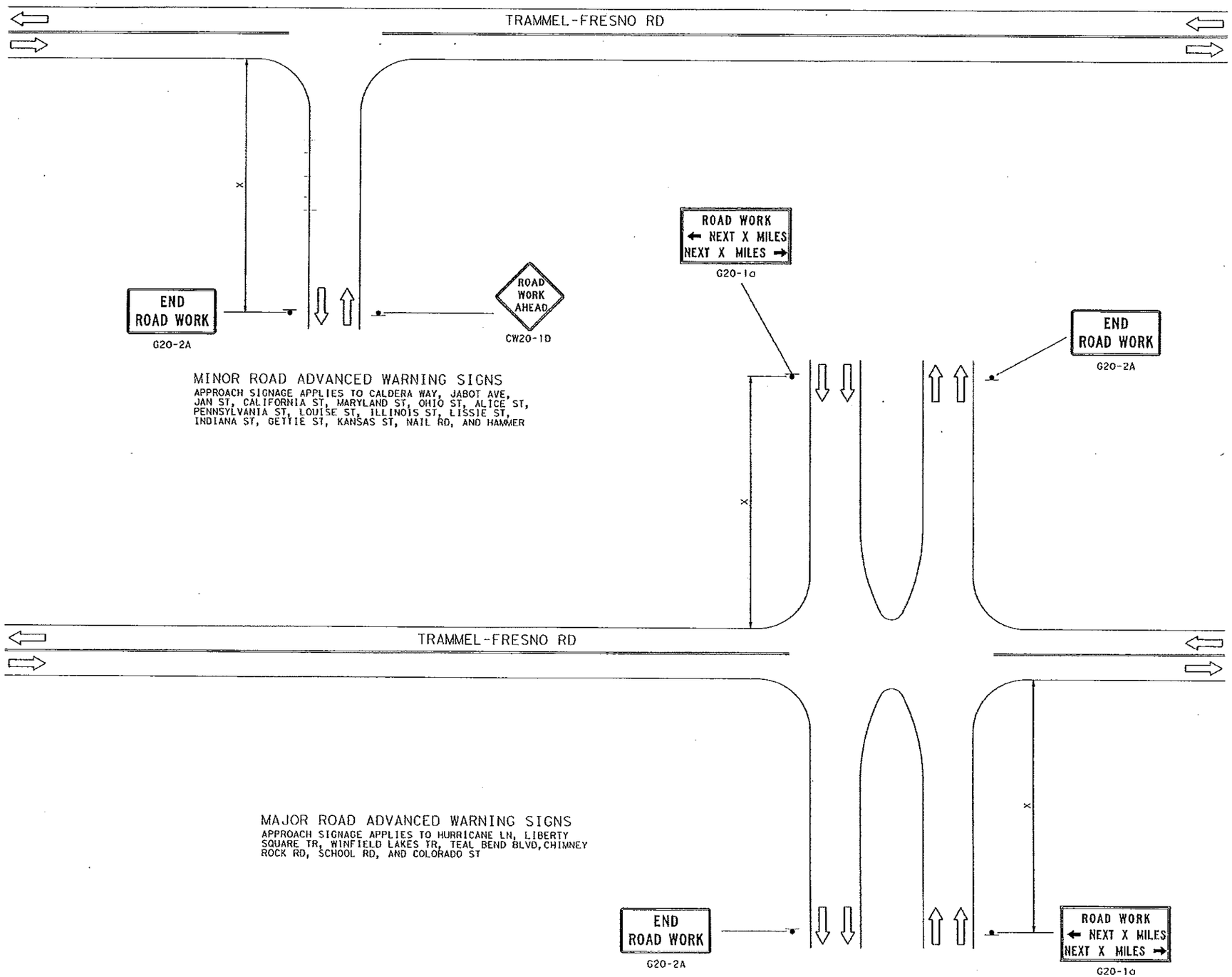

LEGEND

- PROP SIGN
- EXIST TRAFFIC FLOW
- PROP TRAFFIC FLOW
- (E) EXIST SMALL SIGN TO REMAIN
- (R) EXIST SMALL SIGN TO BE REMOVED
- (#) PROP SMALL SIGN NUMBER
- (S) EXIST SMALL SIGN TO BE RELOCATED

PAVEMENT MARKINGS

WHITE/YELLOW/CONTRAST
WIDTH (IN)
[4 Y S]
SOLID/BROKEN/DOT/YLD TRI

- [A] PREFAB PAV MRK TY C (W) (ARROW)
- [B] PREFAB PAV MRK TY C (W) (WORD)
- [C] PREFAB PAV MRK TY C (W) (DBLARROW)
- [D] ELIMINATE EXIST PAV MRK
- [E] REFL PAV MRKR TY I-C
- [F] REFL PAV MRKR TY II-A-A
- [G] REFL PAV MRKR TY II-C-R
- [H] REFL PAV MRK TY II (Y) (MED NOSE)

STATE OF TEXAS
JAMES D. SPACKMAN
79337
REGISTERED PROFESSIONAL ENGINEER
3-8-12

REV	DATE	BY	DESCRIPTION

LJA Engineering, Inc.
FRN-F-1386

FORT BEND COUNTY

Texas Department of Transportation

TRAMMEL FRESNO ROAD

TRAFFIC CONTROL PLAN
ADVANCED WARNING SIGNS

DESIGNED: AL	FED. RD. DIV. RD.	STATE	PROJECT NO.				HIGHWAY NO.
CHECKED: DB	06	TEXAS					
DRAWN: AL	STATE DIST. NO.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.	
CHECKED: DB	HOUSTON, TX 12	FORT BEND	0192	34	144	20	

MAR. 07, 2012

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BKI PROJ. NO. XXXX-XXX-XX

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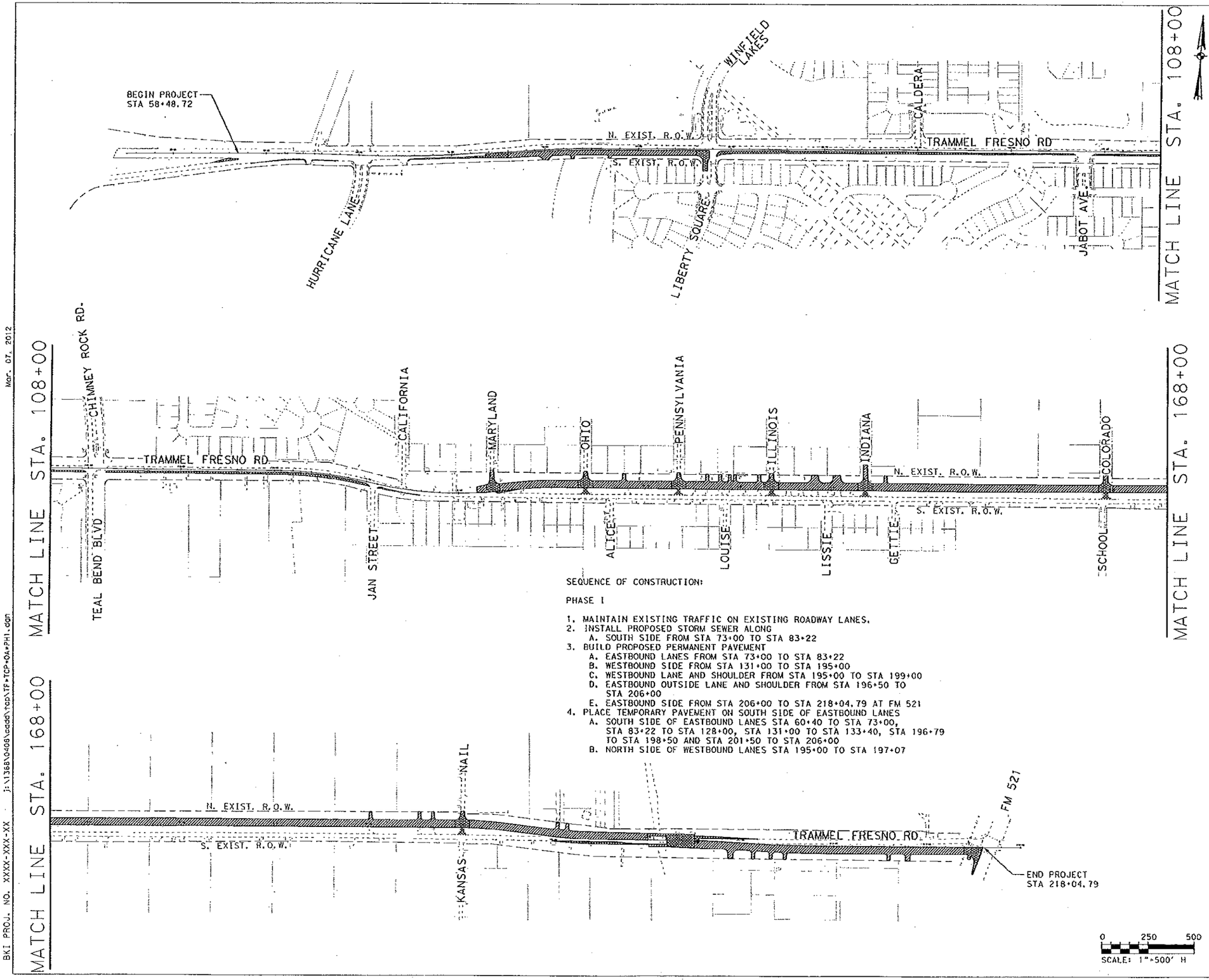

SEQUENCE OF CONSTRUCTION:

PHASE I

1. MAINTAIN EXISTING TRAFFIC ON EXISTING ROADWAY LANES.
2. INSTALL PROPOSED STORM SEWER ALONG
   A. SOUTH SIDE FROM STA 73+00 TO STA 83+22
3. BUILD PROPOSED PERMANENT PAVEMENT
   A. EASTBOUND LANES FROM STA 73+00 TO STA 83+22
   B. WESTBOUND SIDE FROM STA 131+00 TO STA 195+00
   C. WESTBOUND LANE AND SHOULDER FROM STA 195+00 TO STA 199+00
   D. EASTBOUND OUTSIDE LANE AND SHOULDER FROM STA 196+50 TO STA 206+00
   E. EASTBOUND SIDE FROM STA 206+00 TO STA 218+04.79 AT FM 521
4. PLACE TEMPORARY PAVEMENT ON SOUTH SIDE OF EASTBOUND LANES
   A. SOUTH SIDE OF EASTBOUND LANES STA 60+40 TO STA 73+00, STA 83+22 TO STA 128+00, STA 131+00 TO STA 133+40, STA 196+79 TO STA 198+50 AND STA 201+50 TO STA 206+00
   B. NORTH SIDE OF WESTBOUND LANES STA 195+00 TO STA 197+07

LEGEND

- PERMANENT PAVEMENT THIS PHASE
- TEMPORARY PAVEMENT
- PROPOSED TRAFFIC ARROW
- EXISTING TRAFFIC ARROW

STATE OF TEXAS
JAMES D. SPACKMAN
79337
REGISTERED PROFESSIONAL ENGINEER
3-8-12

REV	DATE	BY	DESCRIPTION

LJA Engineering, Inc.
FRN-F-1386

FORT BEND COUNTY

Texas Department of Transportation

TRAMMEL FRESNO ROAD

TRAFFIC CONTROL PLAN
PHASE I - OVERVIEW

DESIGNED:	FED. RD. DIV. RD.	STATE	PROJECT NO.			HIGHWAY NO.
CHECKED:	06	TEXAS				
DRAWN:	STATE DIST. NO.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CHECKED:	HOUSTON, TX 12	FORT BEND	0192	34	144	21

Mar. 07, 2012

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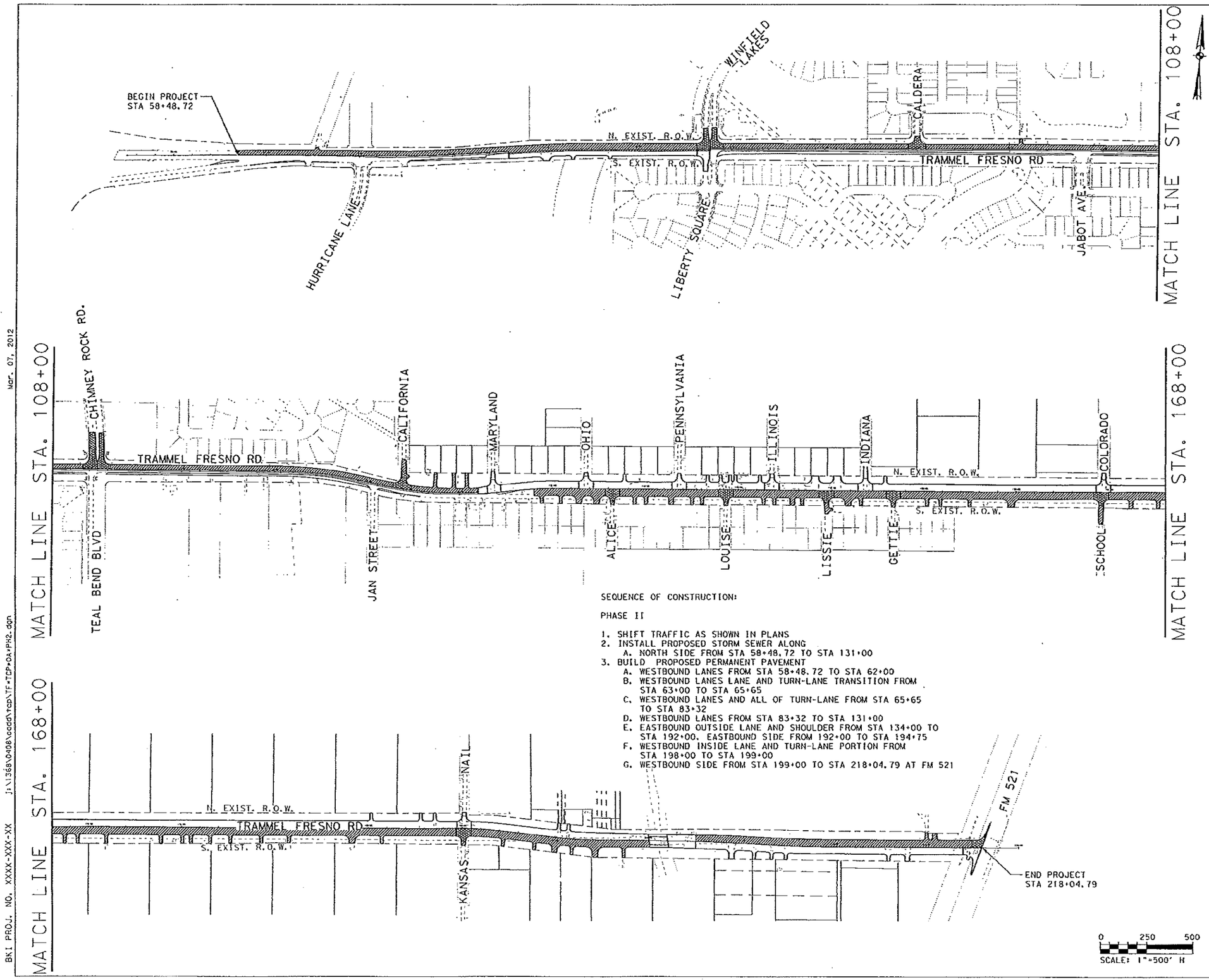

SEQUENCE OF CONSTRUCTION:

PHASE II

1. SHIFT TRAFFIC AS SHOWN IN PLANS
2. INSTALL PROPOSED STORM SEWER ALONG
   A. NORTH SIDE FROM STA 58+48.72 TO STA 131+00
3. BUILD PROPOSED PERMANENT PAVEMENT
   A. WESTBOUND LANES FROM STA 58+48.72 TO STA 62+00
   B. WESTBOUND LANES LANE AND TURN-LANE TRANSITION FROM STA 63+00 TO STA 65+65
   C. WESTBOUND LANES AND ALL OF TURN-LANE FROM STA 65+65 TO STA 83+32
   D. WESTBOUND LANES FROM STA 83+32 TO STA 131+00
   E. EASTBOUND OUTSIDE LANE AND SHOULDER FROM STA 134+00 TO STA 192+00. EASTBOUND SIDE FROM 192+00 TO STA 194+75
   F. WESTBOUND INSIDE LANE AND TURN-LANE PORTION FROM STA 198+00 TO STA 199+00
   G. WESTBOUND SIDE FROM STA 199+00 TO STA 218+04.79 AT FM 521

LEGEND

- PERMANENT PAVEMENT THIS PHASE
- TEMPORARY PAVEMENT
- PROPOSED TRAFFIC ARROW
- EXISTING TRAFFIC ARROW

STATE OF TEXAS
JAMES D. SPACKMAN
79337
REGISTERED PROFESSIONAL ENGINEER
7-8-12

REV	DATE	BY	DESCRIPTION

LJA Engineering, Inc.
FRN-F-1386

FORT BEND COUNTY

Texas Department of Transportation

TRAMMEL FRESNO ROAD

TRAFFIC CONTROL PLAN
PHASE II - OVERVIEW

DESIGNED:	FED. RD. DIV. RD.	STATE	PROJECT NO.			HIGHWAY NO.
CHECKED:	06	TEXAS				
DRAWN:	STATE DIST. NO.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CHECKED:	HOUSTON, TX 12	FORT BEND	0192	34	144	22

BKI PROJ. NO. XXXX-XXX-XX
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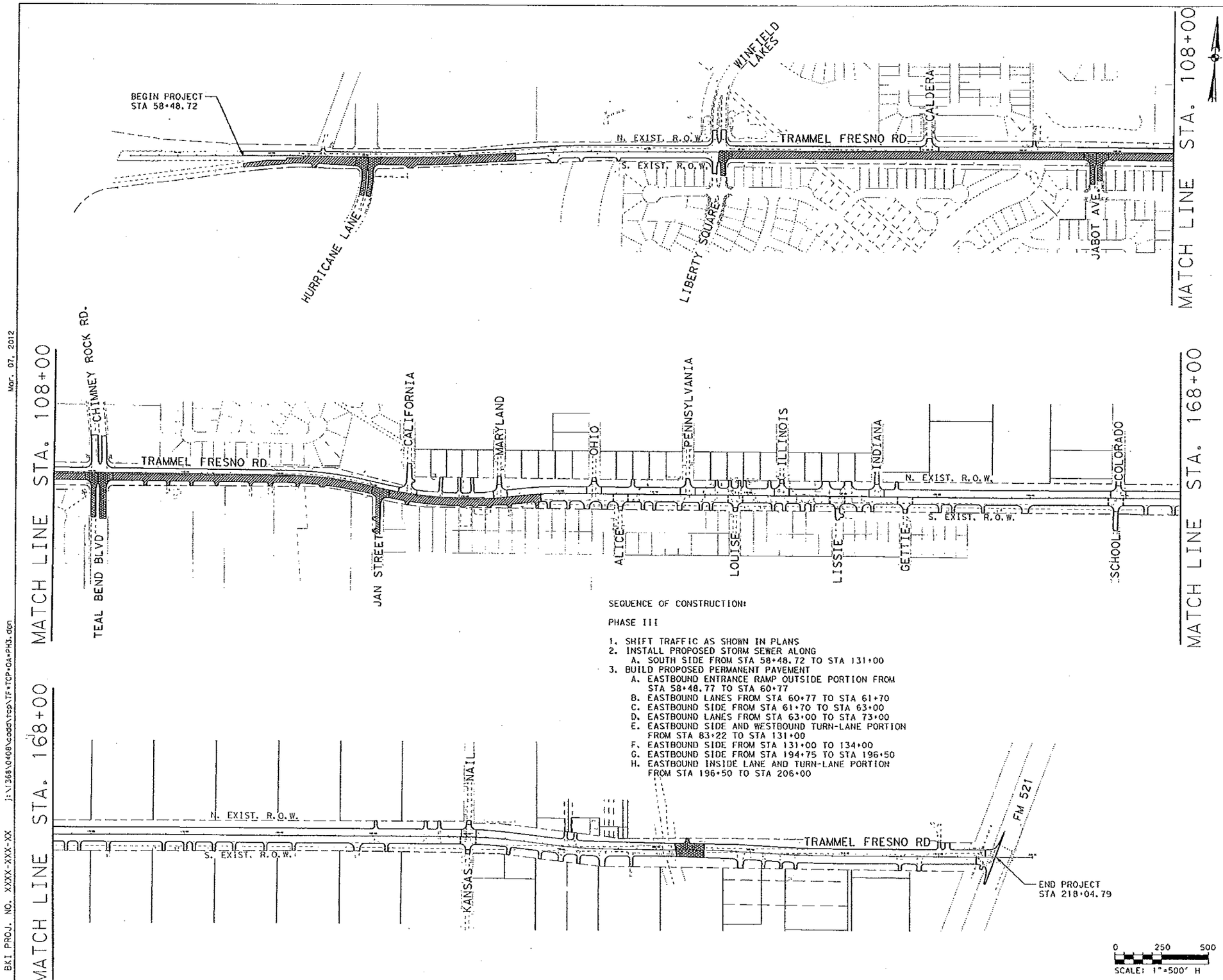
Mar. 07, 2012



SEQUENCE OF CONSTRUCTION:

PHASE III

1. SHIFT TRAFFIC AS SHOWN IN PLANS
2. INSTALL PROPOSED STORM SEWER ALONG
   A. SOUTH SIDE FROM STA 58+48.72 TO STA 131+00
3. BUILD PROPOSED PERMANENT PAVEMENT
   A. EASTBOUND ENTRANCE RAMP OUTSIDE PORTION FROM STA 58+48.77 TO STA 60+77
   B. EASTBOUND LANES FROM STA 60+77 TO STA 61+70
   C. EASTBOUND SIDE FROM STA 61+70 TO STA 63+00
   D. EASTBOUND LANES FROM STA 63+00 TO STA 73+00
   E. EASTBOUND SIDE AND WESTBOUND TURN-LANE PORTION FROM STA 83+22 TO STA 131+00
   F. EASTBOUND SIDE FROM STA 131+00 TO 134+00
   G. EASTBOUND SIDE FROM STA 194+75 TO STA 196+50
   H. EASTBOUND INSIDE LANE AND TURN-LANE PORTION FROM STA 196+50 TO STA 206+00

LEGEND

- PERMANENT PAVEMENT THIS PHASE
- TEMPORARY PAVEMENT
- PROPOSED TRAFFIC ARROW
- EXISTING TRAFFIC ARROW

STATE OF TEXAS
JAMES D. SPACKMAN
79337
REGISTERED PROFESSIONAL ENGINEER
3-8-12

REV	DATE	BY	DESCRIPTION

LJA Engineering, Inc.
FRN-F-1386

FORT BEND COUNTY

Texas Department of Transportation

TRAMMEL FRESNO ROAD

TRAFFIC CONTROL PLAN
PHASE III - OVERVIEW

DESIGNED:	FED. RD. DIV. RD.	STATE	PROJECT NO.			HIGHWAY NO.
CHECKED:	06	TEXAS				
DRAWN:	STATE DIST. NO.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CHECKED:	HOUSTON,TX 12	FORT BEND	0192	34	144	23

Mar. 07, 2012

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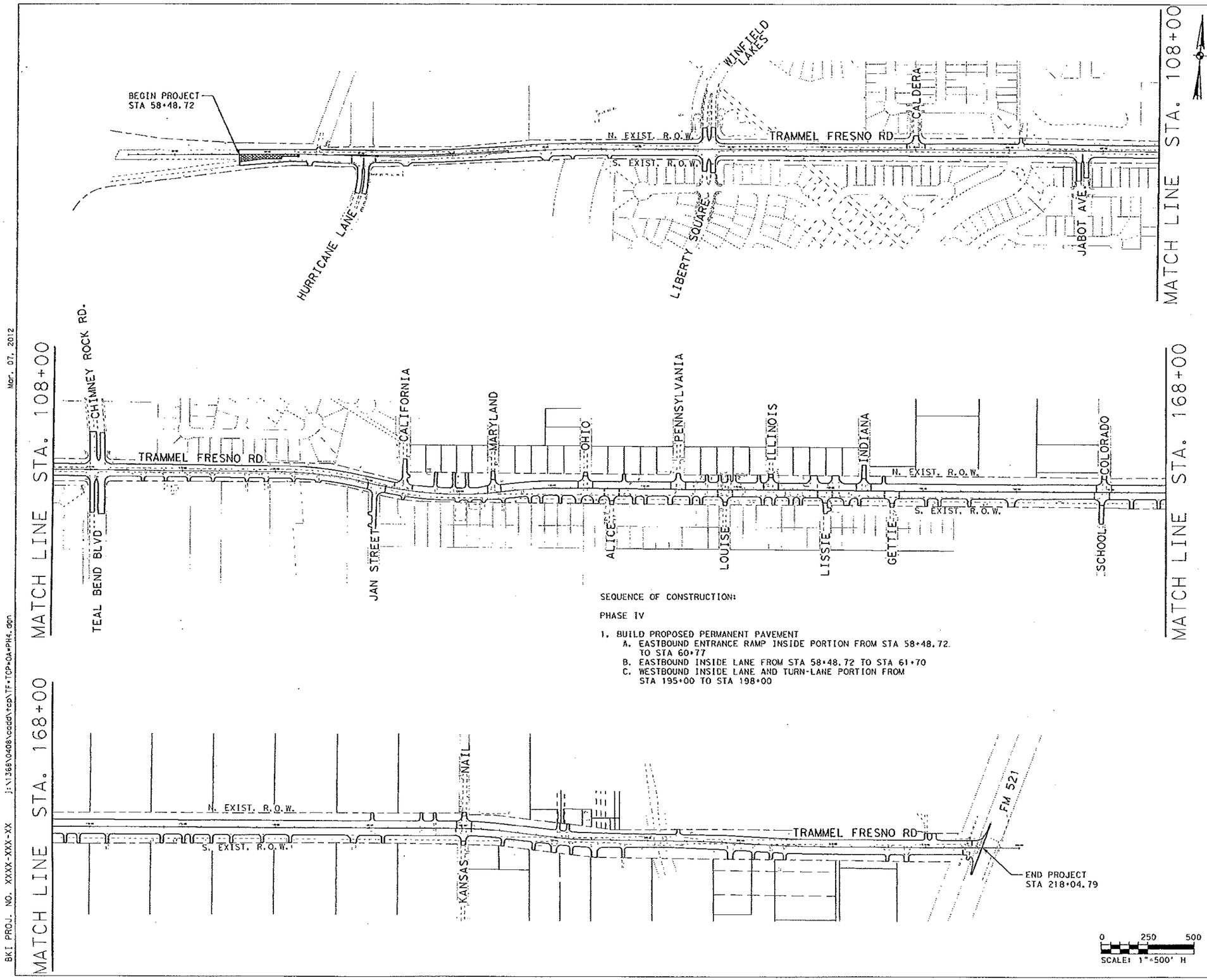

SEQUENCE OF CONSTRUCTION:

PHASE IV

1. BUILD PROPOSED PERMANENT PAVEMENT
   A. EASTBOUND ENTRANCE RAMP INSIDE PORTION FROM STA 58+48.72 TO STA 60+77
   B. EASTBOUND INSIDE LANE FROM STA 58+48.72 TO STA 61+70
   C. WESTBOUND INSIDE LANE AND TURN-LANE PORTION FROM STA 195+00 TO STA 198+00

LEGEND

- PERMANENT PAVEMENT THIS PHASE
- TEMPORARY PAVEMENT
- PROPOSED TRAFFIC ARROW
- EXISTING TRAFFIC ARROW

STATE OF TEXAS
JAMES D. SPACKMAN
79337
REGISTERED PROFESSIONAL ENGINEER
3-12

REV	DATE	BY	DESCRIPTION

LJA Engineering, Inc.
FRN-F-1386

FORT BEND COUNTY

Texas Department of Transportation

TRAMMEL FRESNO ROAD

TRAFFIC CONTROL PLAN
PHASE IV - OVERVIEW

DESIGNED:	FED. RD. DIV. NO.	STATE	PROJECT NO.			HIGHWAY NO.
CHECKED:	06	TEXAS				
DRAWN:	STATE DIST. NO.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CHECKED:	HOUSTON, TX 12	FORT BEND	0192	34	144	24

Mar. 07, 2012

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Appendix B:
Site Photographs

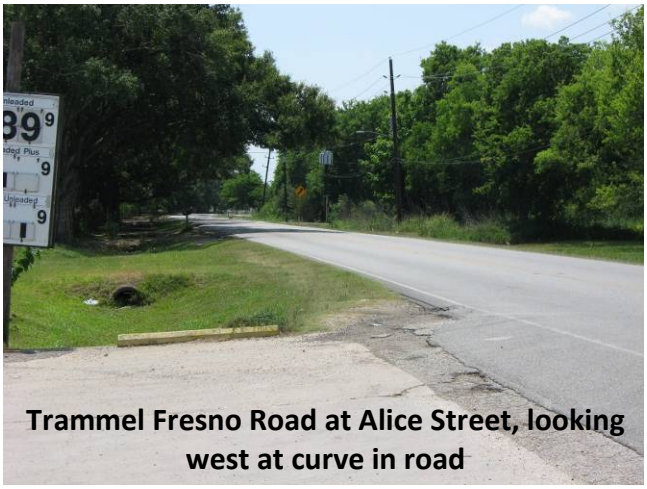


Photo date: June 18, 2008, unless otherwise noted

Trammel Fresno Road at Alice Street, looking east toward FM 521

Trammel Fresno Road at Alice Street, looking east

Trammel Fresno Road, La Fresno Market, near Illinois Road

Trammel Fresno Road, La Fresno Market, near Illinois Road, looking west

Trammel Fresno Road east of Louise Street, looking east toward FM 521

Trammel Fresno Road east of Illinois Road, looking east toward FM 521

Photo date: June 18, 2008, unless otherwise noted

Trammel Fresno Road at S. Post Oak Boulevard, looking west

Photo date: March 8, 2010

Trammel Fresno Road at Mustang Bayou, looking west

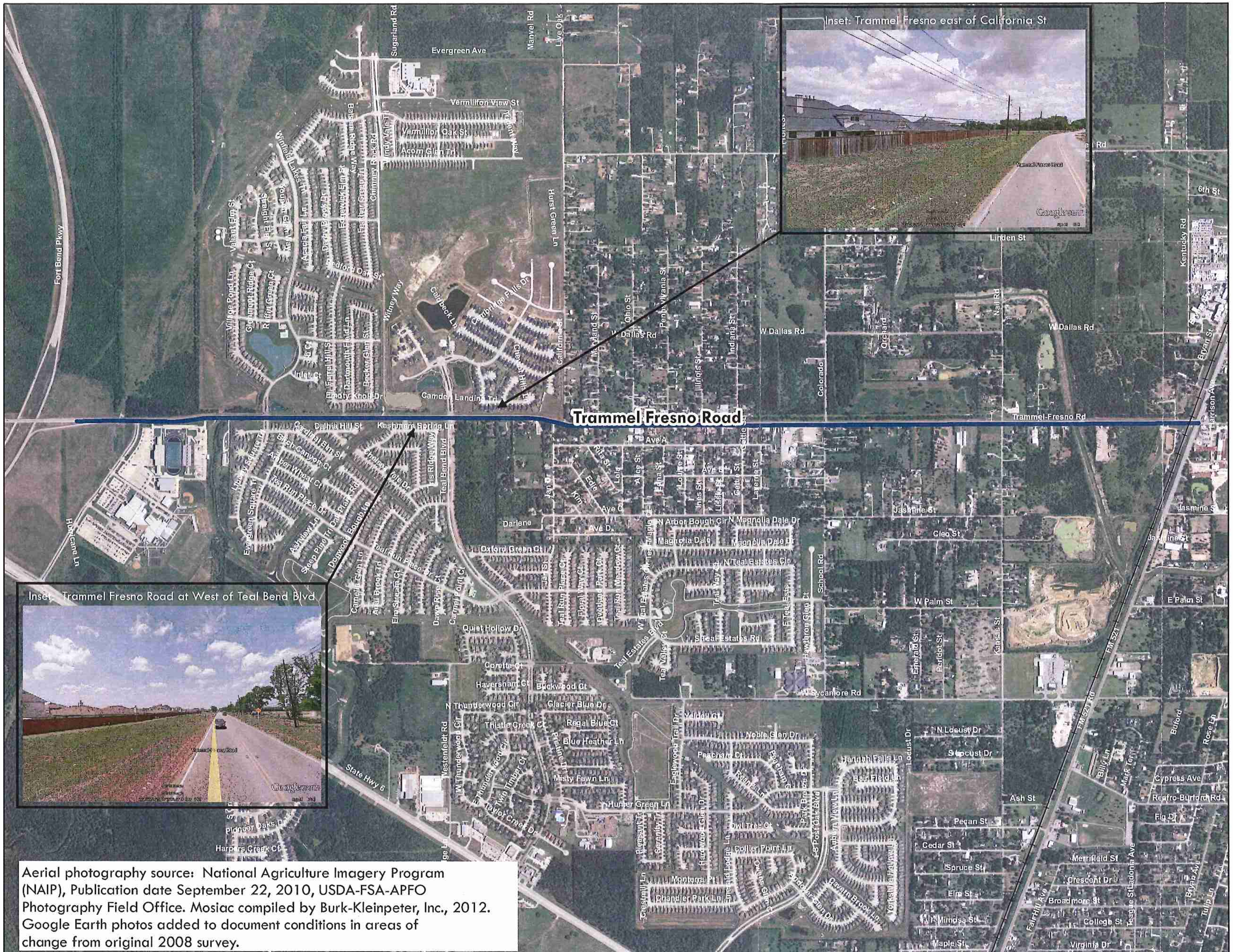
South side of Mustang Bayou bridge, Trammel Fresno Road

Trammel Fresno Road, looking east from Mustang Bayou

South side of Trammel Fresno Road, near FM 521 and UPRR rail crossing

Trammel Fresno Road at FM 521, Looking west, eastern end of project

Photo date: June 18, 2008, unless otherwise noted



Aerial photography source: National Agriculture Imagery Program (NAIP), Publication date September 22, 2010, USDA-FSA-APFO Photography Field Office. Mosiac compiled by Burk-Kleinpeter, Inc., 2012. Google Earth photos added to document conditions in areas of change from original 2008 survey.

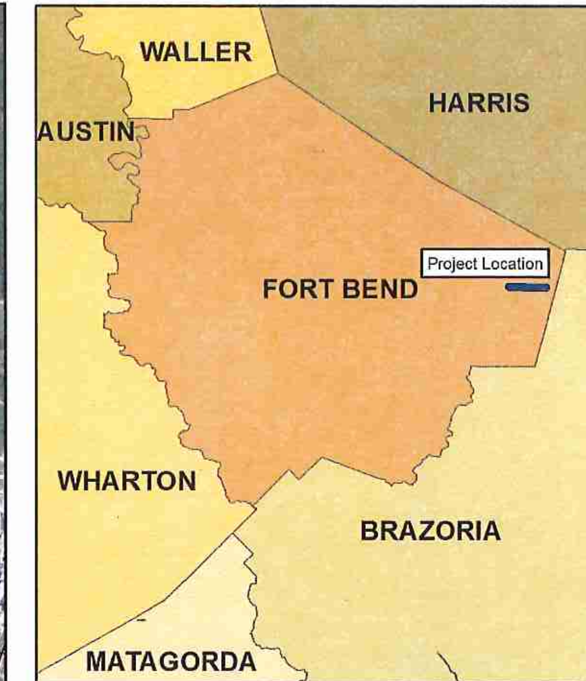


Exhibit B-1
Project Area (2010)
Trammel Fresno Road
Fort Bend Parkway to FM521
CSJ 0912-34-144

N

0 0.125 0.25 0.5 Miles

Texas Department of Transportation

THE STATE OF TEXAS · FORT BEND COUNTY

BKI Job No. 4041-02 February 2012

Appendix C:

2013-2016 Transportation Improvement Program
(TIP) for the Houston-Galveston Transportation Management Area
Publication Date: Friday, April 27, 2012
Amendment #30, May 23, 2013.

2035 Regional Transportation Plan Update Listing
from Fort Bend County project list

www.h-gac.com/HGAC/departments/transportation

Amendment # 30

Modify existing TIP projects (schedule, scope and funding) at sponsor request and to encumber Prop 12 V2 funds in FY 2013

	Project Details						Proposed Changes	
Action	MPOID	CSJ	Fiscal Year	Sponsor	Description	Funding	Change	Comments
Modify	7803	0912-34-144	2014	FORT BEND COUNTY	Facility: TRAMMEL FRESNO RD From: FORT BEND PKWY To: FM 521 Description: WIDEN EXISTING ROADWAY FROM 2 TO 4-LANES RURAL ROADWAY	Federal: $8,721,419 State: $0 Local: $10,466,215 Categories: 7-STP-MM, 3-LOCAL CONT	Delay to FY 2015 and modify funding as follows: Federal: $0 State: $8,721,419 Local: $10,466,215 Categories: 3-TMF, 3-LOCAL CONT	Use TMF funds instead of federal STP-MM funds.
Modify	15325	0027-12-137	2013	FORT BEND COUNTY	Facility: US 59 and FM 762 From: FM 762 EB To: FM 762 WE Description: LANDSCAPE 44 ACRES WITH NATIVE AND NATURAL VEGETATION, INSTALL SOLAR IRRIGATION, SIDEWALKS, TRAFFIC RAIL AND UPGRADE PEDESTRIAN SIGNALS	Federal: $1,284,085 State: $0 Local: $321,021 Categories: 9-STP-ENH	Delay project to FY 2014.	Enhancement project scope to be included in TxDOT's construction letting of US 59S widening project.
Modify	10347	0912-71-797	2013	GREATER GREENSPOINT MANAGEMEN T DISTRICT	Facility: GREENS BAYOU TRAIL From: KNOBCREST DR TO GREENS RD To: IMPERIAL VALLEY DR TO BRADFIELD RD Description: 12' WIDE CONCRETE SHARED USE PATH IN GREATER GREENSPOINT MANAGEMENT DISTRICT	Federal: $1,600,000 State: $0 Local: $400,000 Categories: 9-STP-ENH	Delay project to FY 2014. Modify let date from 6/13 to 9/13.	
Modify	620	0912-71-894	2014	HARRIS COUNTY	Facility: BEAMER RD From: DIXIE FARM RD To: W BAY AREA BLVD Description: WIDEN TO 4-LANE CONCRETE BLVD W/ BRIDGES & DRAINAGE	Federal: $13,913,470 State: $0 Local: $4,330,568 Categories: 7-STP-MM, 3-LOCAL CONT	Modify description and funding as follows: From: W OF TALL SHIPS LN To: W BAY AREA BLVD Description: CONSTRUCT 4-LANE BLVD Federal: $0 State: $5,565,388 Local: $1,391,347 Categories: 3-TMF	Split project at sponsor request due to utility relocation timelines. Southern section will proceed on schedule (FY 2014). Use TMF funds instead of federal STP-MM funds.
Add	16181	0912-71-894	2016	HARRIS COUNTY	Facility: BEAMER RD From: DIXIE FARM RD To: W OF TALL SHIPS LN Description: WIDEN TO 4-LANE CONCRETE BLVD W/ BRIDGES & DRAINAGE	Federal: $8,348,082 State: $0 Local: $2,087,021 Categories: 7-STP-MM, 3-LOCAL CONT	Add to TIP.	Split project at sponsor request due to utility relocation timelines.

Fort Bend County Projects in the 2035 RTP Update - 'Phase III' Conformity

MPOID Fiscal Yr Status Sponsor	CSJ # CIP ID	Street From Limit To Limit	Project Description	Total Project Cost Conformity Year Length Lanes*
13735 2012 TIP CITY OF MISSOURI CITY	I-4	**TEXAS PKWY/FM 2234** AT COURT RD	ADDITION OF ONE EB LEFT TURN LANE	$290,000 N/A 0.001 (4, 4) , (0, 0)
13736 2012 TIP CITY OF MISSOURI CITY	I-5	**TEXAS PKWY/FM 2234** AT CARTWRIGHT	ADDITION OF ON SB THROUGH LANE	$290,000 N/A 0.001 (4, 4) , (0, 0)
13737 [2011] Let CITY OF MISSOURI CITY	I-2	**TEXAS PKWY/FM 2234** AT BUFFALO RUN	RESTRIPE WB BUFFALO RUN LANES TO INCLUDE 2 LEFT TURN ONLY LANES AND ONE SHARED THROUGH RIGHT LANE	$330,000 N/A 0.001 (4, 4) , (0, 0)
656 2018 RTP CITY OF MISSOURI CITY		**TRAMMEL FRESNO RD** SIENNA PKWY SH 6	CONSTRUCT 4-LANE UNDIVIDED ROAD	$2,737,939 2025 0.99 (2, 4) , (0, 0)
408 2014 TIP CI[redacted]ISSOU[redacted]	0912-34-143	**TRAMMEL FRESNO RD** VICKSBURG BLVD FORT BEND PKWY	CONSTRUCT 4-LANE CONCRETE DIVIDED W/ STORM SEWERS, ESPLANADES, CURB & GUTTER, STREET LIGHTS & LANDSCAPING	$2,155,471 2017 0.75 [redacted](0, 0)
7803 2015 TIP FORT BEND COUNTY	0912-34-144 40	**TRAMMEL FRESNO RD** FORT BEND PKWY FM 521	WIDEN EXISTING ROADWAY FROM 2 TO 4-LANES RURAL ROADWAY	$25,435,300 2017 2.97 (2, 4) , (0, 0)
[redacted] 2023 RTP FORT BEND COUNTY		**TRINITY RD** AT BIG CREEK	REPL[redacted]DGE	$86,[redacted] N/A 0.001 (2, 2) , (0, 0)
7051 2023 RTP CITY OF SUGAR LAND	ST9813	**UNIVERSITY BLVD** US 59 COMMONWEALTH BLVD	PH 2: WIDEN TO 6 & 8-LANE DIVIDED RDWY (IN SECTIONS)	$4,500,000 2025 1.5 (4, 8) , (0, 0)
7052 [2011] Let CITY OF SUGAR LAND	ST-0106	**UNIVERSITY BLVD** COMMONWEALTH BLVD SE CORNER OF BRAZOS LANDING SUBDIVISON	CONSTRUCT NEW 4-LANE CURB & GUTTER SECTION	$23,581,900 2014 4.1 (0, 4) , (0, 0)
7053 2025 RTP CITY OF SUGAR LAND		**UNIVERSITY BLVD** COMMONWEALTH BLVD SH 6	WIDEN TO 5-LANE & 6-LANE (PHASE 2)	$8,600,000 2035 4.1 (4, 6) , (0, 0)
11196 2026 RTP CITY OF SUGAR LAND		**UNIVERSITY BLVD** US 59 SH 6	WIDEN 4-LANE TO 6-LANE (PHASE 2)	$4,300,000 2035 2 (4, 6) , (0, 0)
13803 [2011] Let CITY OF SUGAR LAND	P-10	**UNIVERSITY BLVD** SE CORNER OF BRAZOS LANDING SUBDIVISION SCENIC RIVER DR	EXTEND 4-LANE ROADWAY	$14,591,259 2014 4.5 (0, 4) , (0, 0)

* (Existing, Proposed) Main Lanes then Frontage Roads. Sorted by: Street, CSJ Number, then MPOID

Houston-Galveston Area Council Page 27 of 121 07/16/2013

Appendix D:
Agency Coordination

MEMORANDUM

Texas Department of Transportation

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

FROM: Scott Pletka, Ph.D. **DATE:** June 24, 2009

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

---

Attached are the lists of projects reviewed internally by qualified TxDOT archeologists from 6/18/09 to 6/24/09. 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 Scott Pletka Date June 25, 2009
For FHWA and TxDOT

Attachment

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

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ETS

ARCHEOLOGICAL COORDINATION

Archeological Surveys, No Further Work Recommended

(Section 106 and ANTIQUITIES CODE OF TEXAS)

From : 6/18/2009 To: 6/24/2009

COUNTY	DISTRICT	PROJECT	CSJ	*F30/T20 Concur, no further work	*F10/T10 Unable to Concur
Fayette	Yoakum	US 90	0026-03-039		
Fort Bend	Houston	Trammel Fresno Road	0912-34-143		

Number of Projects: 2

Signature Scott Pe Date June 25, 2009
For FHWA and TxDOT

HOUSTON-GALVESTON AREA COUNCIL

P. O. Box 22777 • 3555 Timmons Lane • Houston, Texas 77227-2777• 713/627-3200

September 30th, 2010

Jason Vaughn
Fort Bend County
P. O. Box 1449
Rosenberg, TX 77471

REF. Letter of Waiver of Congestion Mitigation Analysis (CMA)
Project: Trammel Fresno Road from Vicksburg Boulevard till FM 521
CSJ ID #: 0912-34-144 / CIP ID #: 40 / MPO ID #: 7803

Dear Mr. Vaughn:

The Congestion Management Process (CMP) Roadway Network is defined as roadways classified as principal or major arterials and higher roadway facilities in the urban areas (meaning after principal arterial, State Highways, FM roads, Freeways, etc.); while minor arterial and higher roadway facilities in the rural area, as defined in the TxDOT Roadway Inventory Log (RI-2) and other roadways designated by the TPC. Added capacity roadway projects, NOT on the adopted CMP network, are not subject to Congestion Mitigation Analysis (CMA) requirements. In addition, added capacity projects on the adopted CMP network, which have current environmental findings (FONSI/ROD) are also exempt from CMA. Currents FONSI/ROD should be within the last three years. Also added-capacity projects equal to or less than 1-Mile are considered insignificant and again exempt from CMA.

H-GAC is issuing this Letter of Waiver (LOW) of CMA for the above referenced project because it is "a major collector in suburban area" and as such not on the CMP roadway network. Please include this LOW in the Environmental Assessment (EA) document of this project for Transportation Improvement Plan (TIP) &/or other submittals.

If you have any questions about this CMA waiver and the CMP, please contact me at (713) 993-4564 or E-Mail to ILyas.Choudry@H-GAC.Com

Sincerely.

ILyas Choudry

ILyas Choudry
Transportation Department H-GAC

FORT BEND COUNTY ENGINEERING

Fort Bend County, Texas

D. Jesse Hegemier
County Engineer

October 5, 2011

Pat Henry, P.E.TxDOT Houston District
7600 Washington Avenue
Houston, Texas 77251

Reference: ***Trammel Fresno Road from Ft Bend Pkwy to FM 521***
CSJ: 0912-34-144
Fort Bend County

Dear Mr. Henry:

I am writing to you regarding the acquisition of right-of-way for improvements to Trammel Fresno Road between FM 521 and Hurricane Lane. All right-of-way required for the proposed roadway improvements was obtained in accordance with the Uniform Relocation Assistance Act

The Trammel Fresno Road project was first identified as a significant need in the 2001 Fort Bend Mobility Bond Program and was funded to widen as a four-lane roadway. A Preliminary Engineering Report was prepared in 2003 that evaluated several widening alternatives. The recommendation of the PER included a preferred alignment with an open-ditch typical section requiring a 160' wide right-of-way between California Street and FM 521.

Subsequent to the completion of the Trammel Fresno PER, the Fort Bend Fresh Water Supply District #1 received a Federal Grant to install a water line along Trammel Fresno to provide water service to the adjacent residential neighborhoods which were served only by local well systems. Fort Bend County decided at that time to acquire all of the right-of-way required for the proposed improvements to Trammel Fresno so that the new water line could be installed in a location that would not have to be relocated when the roadway improvements would be constructed.

Right-of-way acquisition began in 2005. A total of 80 feet of right-of-way was acquired along the north side of the existing Trammel Fresno right-of-way which affected a total of 46 parcels. Of these, 4 structures were impacted. The total number of displacements was 0. The total number of parcels that went to condemnation was 3. The County performed the following process to acquire each of these parcels:

P.O. Box 1449 • 1124 Blume Road • Rosenberg, Texas 77471 • (281) 633-7500 • Fax (281) 342-7366

First the County ordered title on all impacted tracts. Then the County sent out letters of intent with metes and bounds attached. Next the County ordered appraisals and made offers. The County then closed all accepted offers or sent rejected offers to the County Attorney's office for Eminent Domain.

The right-of-way acquisition was completed in 2007. The new waterline was installed and operational in May 2008.

In 2007, the Trammel Fresno roadway widening project was submitted to HGAC in a call-for-projects to receive federal funding. The project was subsequently selected for funding and the NEPA process was initiated in 2008 All right-of-way required to construct the proposed improvements was acquired prior to selection of the project for federal funding.

I am hereby certifying that all right-of-way acquired for the widening of Trammel Fresno Road between FM 521 and Hurricane Lane was performed in accordance with the Uniform Relocation Assistant Act.

If you have any questions or require any additional information, please call me at 281-633-7508.

Sincerely,

D. Jesse Hegemier

D. Jesse Hegemier, P.E.
Fort Bend County Engineer

cc: Commissioner Grady Prestage, Precinct 2 – Fort Bend County

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

Texas Division Office

300 E 8th Street, Rm 826
Austin, Texas 78701
Phone: 512-536-5900
Fax: 512-536-5990

October 19, 2011

In Reply Refer To:
HB-TX

Request for Environmental Classification
Fort Bend County
Trammel Fresno Road: Fort Bend Parkway to FM 521
CSJ: 0912-34-144

Melissa Neeley
Director of Project Delivery Management
Environmental Affairs Division
Texas Department of Transportation
Austin, TX 78701

Dear Ms. Neeley:

The Federal Highway Administration (FHWA) has reviewed the Texas Department of Transportation Environmental Affairs Division (TxDOT ENV) Request for Environmental Classification, dated October 29, 2010, for the proposed Trammel Fresno Road project. We have also reviewed the additional information provided by the Houston District on October 18, 2011. The proposed project will widen the existing roadway to four lanes with a continuous left turn lane and construct sidewalks from Hurricane Lane to Chimney Rock Road within the existing right-of-way. The project would begin just east of Fort Bend Parkway and extend to FM 521 with a length of approximately three miles.

The project is located in a suburban area that is developed with mostly residential properties. After preliminary research, there appears to be a low potential for impacts to section 4(f) properties or Threatened and Endangered Species. It does appear there may be impacts to hazardous materials, jurisdictional wetlands and floodplains. No right-of-way is required for this project and no displacements are expected. Also, no disproportionate impacts to low-income or minority populations are expected. A noise analysis and an Indirect and Cumulative Impacts analysis will be conducted as part of the document preparation. This project is adding capacity and requires, at a minimum, a Notice Affording an Opportunity for a Public Hearing (NAOPH) to be published (43 TAC §2.8).

FHWA has determined it is appropriate to classify the Trammel Fresno Road environmental document as a Categorical Exclusion (CE). This decision is based on the information provided in the TxDOT ENV Request for Environmental Classification and discussions with the TxDOT Houston District concerning the proposed project.

Therefore, the preparation of an Environmental Assessment (EA) is not required at this time since, based on past experience, this action is not expected to involve significant environmental impacts. This decision, however, is based on what is known to date and should significant environmental impacts be identified during the environmental process, FHWA will require that an EIS be prepared in accordance with 23 CFR 771.119.

Should you have any questions regarding this determination, please contact me at 512-536-5964 or Mr. Randy Paulk at 512-536-5961.

Sincerely,

Daniel Mott
Houston Major Projects Engineer

cc: Mr. Pat Henry, P.E., TxDOT Houston District

Ed Elam

From: Texas Natural Diversity Database <txndd@tpwd.state.tx.us>
Sent: Monday, February 20, 2012 10:35 AM
To: Ed Elam
Subject: RE: Trammel Fresno Road Corridor CE NDD Request (BKI 4041-0200)
Attachments: elam_20120213.zip

Mr. Elam,

Your information request area contains known ecologically significant stream segments. Use the link below to obtain that data.

The Texas Natural Diversity Database (TXNDD) includes federal, and state listed and tracked Threatened, Endangered, and Rare species. The attached .zip file contains documents that will guide you in appropriate use, restrictions, and shapefile interpretation of Texas NDD data as well as a request for adding data to the TXNDD. Also included is a shapefile of the T&E and Rare species element occurrences, information the TXNDD has available presently, within and touching the requested quads along with a companion EO **report**; areas where EO data are absent **do not mean** absence of occurrence for Threatened, Endangered, and Rare species. Included is an **EO List** of the T&E and Rare species element occurrences that are on the quads adjacent to your request area. The **EO List** is to inform you of other potential federal, and state listed and tracked Threatened, Endangered, and Rare species within the area. To round out your review, please use the Rare, Threatened, and Endangered Species of Texas by County application found here. For questions regarding the application please contact Julie Wicker at julie.wicker@tpwd.state.tx.us or (512)389-4579.

- If your project area is in Travis, Williamson, or Bexar county it is highly recommended that you download the GIS shapefiles for the Karst Zones from the USFWS website http://www.fws.gov/southwest/es/austintexas/ and/or contact Jenny Wilson – USFWS at (512)490-0057 x 231 for a review of the project location. All three counties are known to have multiple important karst features.
- If your information request includes one or more records for **Bald Eagle** or **colonial waterbirds**, contact Brent Ortego at brent.ortego@tpwd.state.tx.us or (361) 576-0022 for more up-to-date information on the **Bald Eagle** or **colonial waterbirds**.
- **For communication towers**, in addition to the USFWS guidelines in the attachment and the links at towerkill.com, there is research identifying a simple way to reduce bird strike and high bird mortality at towers. Gehring J., P. Kerlinger, A.M. Manville II. (2009) Communication towers, lights, and birds: successful methods of reducing the frequency of avian collisions. Ecological Applications: Vol. 19, No. 2, pp. 505-514.doi: 10.1890/07-1708.1
- For **wind energy or transmission related projects**, to obtain the Department's guidelines it is also recommended to contact Kathy Boydston, the Department lead, at kathy.boydston@tpwd.state.tx.us or 512/389-4638. In addition, the U.S. Fish and Wildlife Service's Interim Guidance on Avoiding and Minimizing Wildlife Impacts from Wind Turbines, along with other helpful links and information, can be accessed at: http://www.fws.gov/habitatconservation/wind.html.
- If your information request contains records for **Texas trailing phlox** you should contact Jason Singhurst at jason.singhurst@tpwd.state.tx.us or (512) 389-8726.

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

Additional sources of data:
TPWD Annotated County Lists: http://www.tpwd.state.tx.us/landwater/land/maps/gis/ris/endangered_species/
USFWS species lists: http://ecos.fws.gov/tess_public/servlet/gov.doi.tess_pulic.servlets.EntryPage
USFWS CRITICAL HABITAT: http://criticalhabitat.fws.gov/
Ecologically Significant Stream Segments: http://www.tpwd.state.tx.us/landwater/land/maps/gis/data_downloads/
Ecologically Significant Stream Segment Information:
http://www.tpwd.state.tx.us/landwater/water/environconcerns/water_quality/sigsegs/

Bob Gottfried
Texas Natural Diversity Database Administrator
Texas Parks and Wildlife - Wildlife Division
4200 Smith School Rd
Austin, TX 78744

512-389-8744

From: Ed Elam [mailto:eelam@bkiusa.com]
Sent: Monday, February 13, 2012 8:45 AM
To: Texas Natural Diversity Database
Subject: Trammel Fresno Road Corridor CE NDD Request (BKI 4041-0200)

Burk-Kleinpeter, Inc., a planning and engineering firm, is currently updating an draft Categorical Exclusion document for the widening of the Trammel Fresno Road corridor in Fort Bend County. We had requested information from the NDD in 2010, but have been asked by TxDOT to update this information.

Details of the project area and project include:

- The project is located within Fort Bend County.
- It is covered by the USGS quadrangles: Missouri City, TX; Almeda, TX.
- The scope of the project occurring on Trammel-Fresno Road is a widening of the existing road, between Fort Bend Parkway (Toll Road) and the FM 521 intersection (approximately 3 miles).

If this request generates any follow-up questions, please feel free to return those via email. Thanks!

Ed E. Elam, III, AICP
Associate - Planner
BK BURK-KLEINPETER, INC.
4176 Canal Street, New Orleans, LA 70119
Office: 504-486-5901 Fax: 504-488-1714
Direct: 504-483-6281 Cell: 504-812-6347
www.bkiusa.com

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FORT BEND COUNTY ENGINEERING

Fort Bend County, Texas

Richard W. Stolleis, P.E.
County Engineer

September 5, 2012

Amy Turner, PhD
Wildlife Habitat Assessment Program, Wildlife Division
Texas Parks and Wildlife
4200 Smith School Road
Austin, Texas 78744-3291

Re: Response, TPWD response letter on proposed Road Widening on Trammel Fresno Road, Fort Bend Parkway to FM 521, Fort Bend County (CSJ 0912-34-144)
Dated May 29, 2012 • TWPD Project ERCS-990

Dear Dr. Turner,
Thank you for your letter in response to the proposed Trammel Fresno Road widening project in Fort Bend County. We have reviewed the recommendations from the department and would like to offer the following formal response:

Forested/Riparian Habitat

The letter of May 29th contained the following recommendation from TWPD for the project:

TWPD recommends that clearing of mature, native trees be avoided. Loss of vegetation should be minimized using site planning and construction techniques to avoid and preserve trees, shrubs, grasses and forbs. For impacts which are unavoidable, TPWD recommends transplanting the existing trees or replacing them at a ratio of 3 saplings for every tree lost. Whether transplanted or replaced, a survival of 85% should be achieved. TPWD recommends that native plant and forage species that are beneficial to wildlife endemic to the area be used in mitigation and landscaped areas.

TPWD recommends that all impacts to forested/riparian areas be mitigated. Per Provision (4)(B) of the TxDOT-TPWD MOU, if TxDOT considers mitigation for permanent impacts to riparian vegetation be unfeasible, TPWD requests an explanation be provided.

Response: In order to minimize impacts on these areas, the design and scope of the project is limited to that necessary to support project construction. Clearing of vegetation for the project will be required in order to facilitate the roadway widening and associated drainage improvements. The County will work with the contractor to identify and avoid, to the extent practicable, the removal of any mature, native trees from the project site as long as such trees do not present a hazard to general visibility along the corridor or the roadside safety zone. Best Management Practices (BMPs) will be used to manage movement of earth and equipment around any trees which will be identified as preserved.

No other unusual vegetation or special habitat features exist within the project area. The riparian and fence row vegetation is not considered a prime species habitat and therefore no compensatory mitigation is proposed for this area. The proposed project will include replacement of grasses and shrub vegetation in roadside areas with species that are consistent with the plant types found in this section of Fort Bend County. Replacement of trees as recommended is beyond the scope and budget for this project activity.

Wetland Resources:

The letter of May 29th contained the following recommendation from TWPD for the project:

> *TWPD recommends mitigation for all impacts to aquatic resources. The wetland and stream mitigation plan should be developed in consultation with TPWD. Mitigation of all impacts to the aquatic resources, regulated and non-regulated, should be coordinated with Rebecca Hensley with our Coastal Program; she can be reached at 281-534-0108.*

Response: Fort Bend County is currently in the process of applying for a wetlands permit for the project with the US Army Corps of Engineers, Galveston District (USACE). The USACE issued a preliminary jurisdictional determination (SWG-2012-00170) on April 9, 2012. This project would require a Section 404 Individual Permit prior to the discharge any dredge of fill material into wetlands and tributaries. This process will be used to address the requirement for mitigation of wetland impacts. Project will include opportunity for consultation with TPWD during the process of finalizing the wetland and mitigation plan.

Revegetation:

The letter of May 29th contained the following recommendation from TWPD for the project:

> *TWPD recommends that TXDOT reseed disturbed soils with a mixture of grasses and forbs native to Fort Bend County. To enhance native grasses, available to wildlife in the project area, TPWD recommends that Bermuda grass be avoided to the extent possible in reseeding efforts, though TPWD understands that slopes may require certain grasses to control erosion. As an introduced species that can be extremely invasive, its use in federally funded projects may be inconsistent with Executive Order 13112 on Invasive Species.*

Response: Ground covers along the corridor will be replaced as part of the project. Vegetation plans will include primarily native materials (grasses) for restoration in the corridor. All landscaping plans associated with this project would be in compliance with the Executive Order 13112 on beneficial landscaping. To the extent possible, Bermuda grass will be avoided on slopes in ditches and drainage features.

Thanks again for your response. Any questions on this project and implementation process can be directed to either the County Engineer at 281-633-7506 or TxDOT's project manager Ms. Linda Lindsey, PE at 713-802-5509.

Sincerely,

Richard W. Stolleis, PE
County Engineer, Fort Bend County, TX

CSJ 0912-34-144/ERCS-990/bki
cc: Brandon Hobbs, TxDOT Houston Environmental

DEPARTMENT OF THE ARMY
GALVESTON DISTRICT, CORPS OF ENGINEERS
P. O. BOX 1229
GALVESTON TX 77553-1229

April 9, 2012

Compliance Section

SUBJECT: **SWG-2012-00170**; Burk-Kleinpeter, Inc., Preliminary Jurisdictional Determination, Trammel-Fresno Road, Fresno, Fort Bend County, Texas

Mr. Shanon Mathis
Berg Oliver Associates, Inc.
14701 St. Mary's Lane, Suite 400
Houston, Texas 77049

Dear Mr. Mathis:

This letter is in response to your February 16, 2012 preliminary jurisdictional determination (PJD) request on behalf of Burk-Kleinpeter, Inc. for the proposed expansion of Trammel-Fresno Road and associated detention ponds. The site is located on Trammel Fresno Road, from Fort Bend Parkway to Farm-to-Market 521, in Fresno, Fort Bend County, Texas.

Based on the review of the information associated with this request, we determined that the delineation map received on March 29, 2012 is a reasonable depiction of the approximate locations of the aquatic resources within the tract, see attached map. Computation of impacts made on the basis of this PJD will treat all waters, including wetlands, on the approximate 63-acre project site as if they are jurisdictional waters of the United States. Wetlands were identified on the tract using the Atlantic and Gulf Coast Plain Region Supplement to the 1987 Corps of Engineers Wetland Delineation Manual which requires, under normal conditions, that wetland areas contain the three criteria (wetland hydrology, hydric soils and hydrophytic vegetation). As such, all aquatic resources, including 2.52 acres of wetlands and 0.73 acre of tributaries, are subject to Section 404 of the Clean Water Act and will require a Department of the Army permit prior to discharging any dredged and/or fill material into these aquatic resources.

This determination has been conducted to identify the limits of the Corps' Clean Water Act jurisdiction for the particular site identified in this request. This determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985, as amended. If you or your tenant are USDA program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service prior to starting work.

CSJ(0912-34-144)
Trammel Fresno Road
Widen from Fort Bend Parkway
to FM 521, Fort Bend County,TX

This preliminary jurisdictional determination is valid for 5 years from the date of this letter, unless new information warrants a revision prior to the expiration date. Per Regulatory Guidance Letter 08-02, dated 26 June 2008, a preliminary JD indicates that there "may be waters of the United States, including wetlands" on a particular site, and that "a preliminary JD will treat all waters and wetlands that would be affected in any way by [a] permitted activity on the site as if they are jurisdictional waters of the U.S." An approved jurisdictional determination can be requested at any time.

If you have any questions concerning this matter, please reference file number **SWG-2012-00170** and contact Ms. Kristin Shivers at the letterhead address or by telephone at 409-766-3991. To assist us in improving our service to you, please complete the survey found at http://per2.nwp.usace.army mil/survey.html. If you would prefer a hard copy of the survey form, please let us know and one will be mailed to you.

Sincerely,

John Davidson
Team Leader

Enclosure

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant:	File Number:	Date:
BURK-KLEINPETER, INC.	**SWG 2011-00875**	**04/2/09/2012**

Attached is:		See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of Permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of Permission)	B
	PERMIT DENIAL	C
	APPROVED JURISDICTIONAL DETERMINATION	D
X	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/inet/functions/cw/cecwo/reg/ or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved jurisdictional determination (JD) or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.

- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:

Ms. Kristin Shivers
Project Manager, Compliance Section
CESWG-PE-RC
U.S. Army Corps of Engineers
P.O. Box 1229
Galveston, Texas 77553-1229
409-766-3991; FAX: 409-766-3931

If you only have questions regarding the appeal process you may also contact:

Mr. Elliott Carman
Regulatory Appeal Review Officer, (CESWD-PD-O)
Southwestern Division USACE
1100 Commerce Street, Suite 831
Dallas, Texas 75242-1731
469-487-7061, FAX: 469-487-7199

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

Signature of appellant or authorized agent.	Date:	Telephone number:

Ed Elam

From: Shanon Mathis <smathis@BergOliver.com>
Sent: Friday, May 11, 2012 9:43 AM
To: Ed Elam; Ken Stanley
Cc: salford@BergOliver.com
Subject: PJD APPROVED
Attachments: 7403 pjd 2.pdf; 7403 pjd.pdf

Gentlemen

Please find attached the approved Preliminary Jurisdictional Determination received yesterday from the Corps. Thank you for allowing Berg Oliver the opportunity to provide you with the services to meet your environmental needs. Feel free to contact me at your earliest convenience should you have any questions or concerns. I would be happy to assist you in the planning of the proposed roadway extension in any way I can.

Shanon Mathis
Berg Oliver Associates, Inc.
Project Manager
281-589-0898 x-47

Follow us on Facebook: http://www.facebook.com/BergOliverAssociates
Follow us on Twitter: http://twitter.com/BergOliverAssoc

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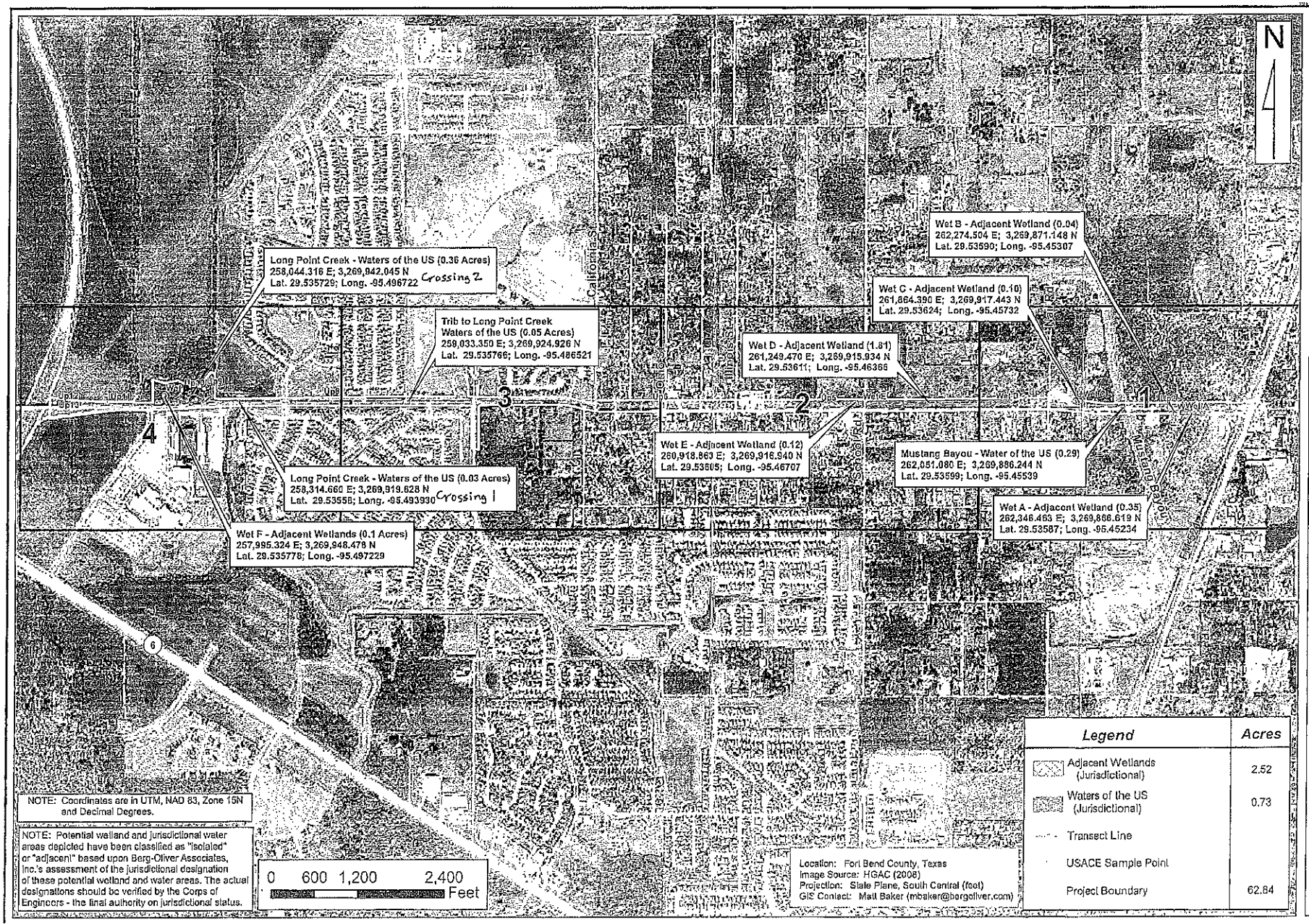


NOTE: Coordinates are in UTM, NAD 83, Zone 15N and Decimal Degrees.

NOTE: Potential wetland and jurisdictional water areas depicted have been classified as "isolated" or "adjacent" based upon Berg-Oliver Associates, Inc.'s assessment of the jurisdictional designation of these potential wetland and water areas. The actual designations should be verified by the Corps of Engineers - the final authority on jurisdictional status.

Legend	Acres
Adjacent Wetlands (Jurisdictional)	2.52
Waters of the US (Jurisdictional)	0.73
Transect Line	
USACE Sample Point	
Project Boundary	62.84

WETLAND DETERMINATION AND CLASSIFICATION

OVERVIEW

SWG-2012-00170

REVISIONS
March 26, 2012 by MDB

BERG•OLIVER ASSOCIATES, INC.
ENVIRONMENTAL SCIENCE, ENGINEERING & LAND USE CONSULTANTS
14701 ST. MARY'S LANE, SUITE 400
HOUSTON, TEXAS 77079 PHONE (281)589-0898 http://www.bergoliver.com

Project #: 7403
For: Burk-Kleinpeter
Location: FM 521 & Fort Bend Parkway
Fort Bend County, Texas

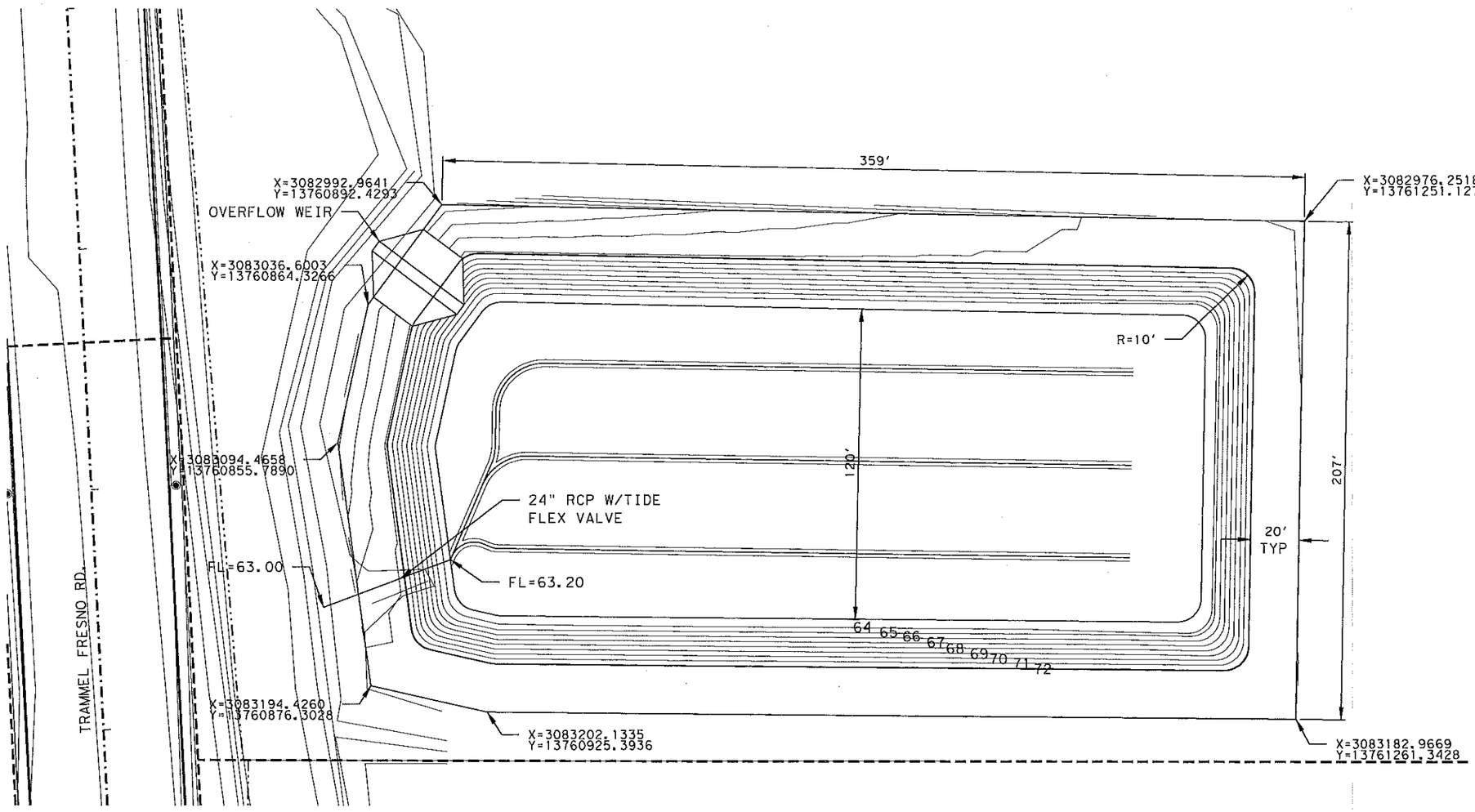
Appendix E:

Plan for Proposed Retention Ponds
Trammel Fresno Road

DRAINAGE LEGEND

DIRECTION OF FLOW

DRAINAGE BOUNDARY



DETENTION POND LAYOUT

0 25 50

STATE OF TEXAS
KEN STANLEY
69701
LICENSED
PROFESSIONAL ENGINEER

THE SEAL APPEARING ON THIS DOCUMENT WAS AUTHORIZED BY KEN STANLEY P.E. 69701, ON 2/10/2012

REV	DATE	BY	DESCRIPTION

BKI

BURK-KLEINPETER, INC.

Engineers, Architects, Planners, Environmental Scientists

FIRM REG. No. F-3427

FORT BEND COUNTY

© 2009

Texas Department of Transportation

TRAMMEL FRESNO ROAD

HURRICANE LANE
DETENTION POND
LAYOUT PLAN

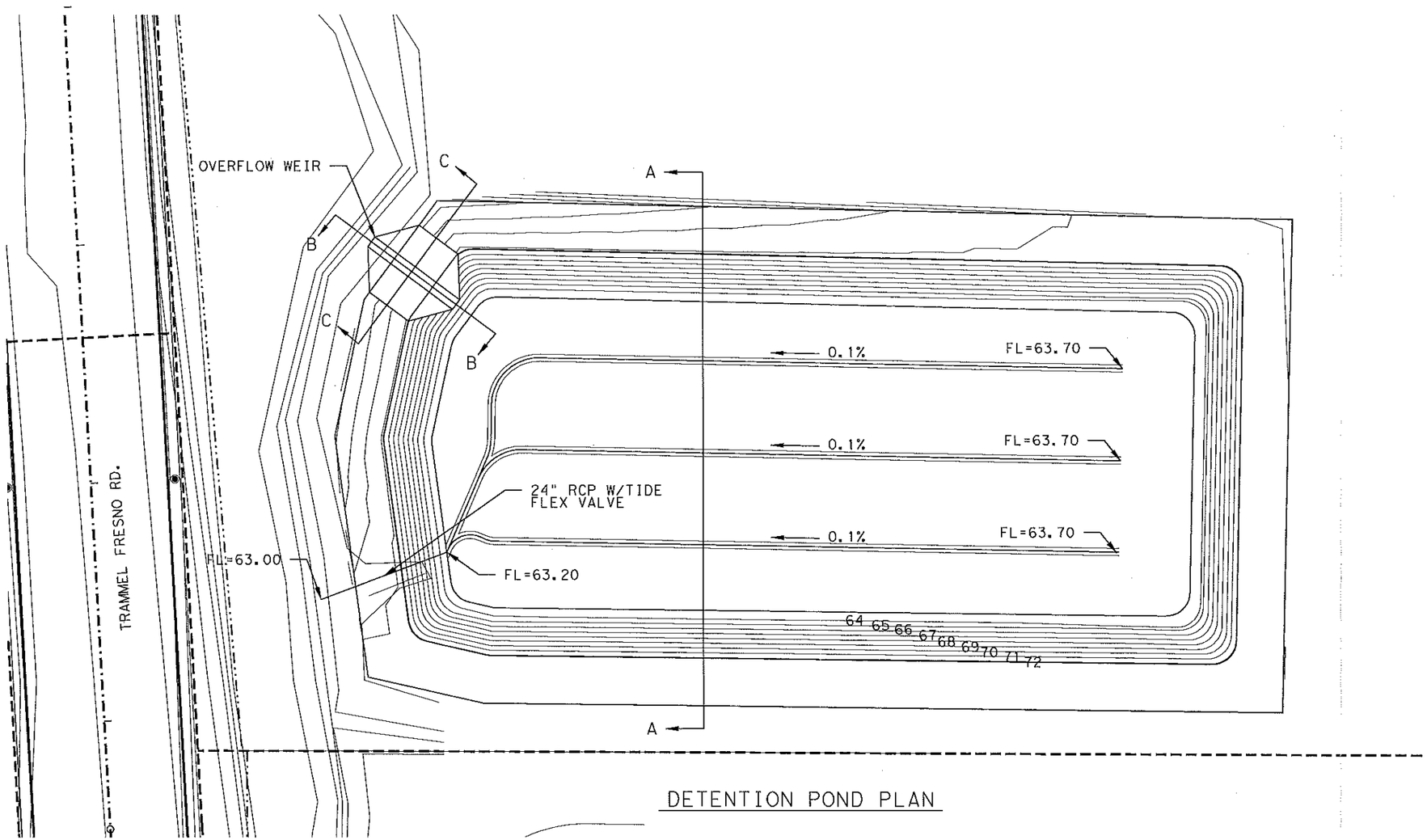
SHEET 1 OF 2

DESIGNED:	FED. RD. DIV. RD.	STATE	PROJECT NO.			HIGHWAY NO.
CHECKED:	06	TEXAS	STP ( ) MM			CS
DRAWN:	DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CHECKED:	HOU	FORT BEND	0912	34	144	

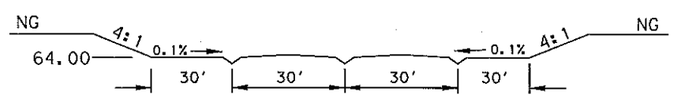
DRAINAGE LEGEND

DIRECTION OF FLOW

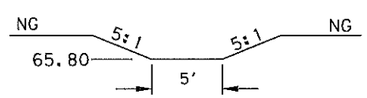
DRAINAGE BOUNDARY



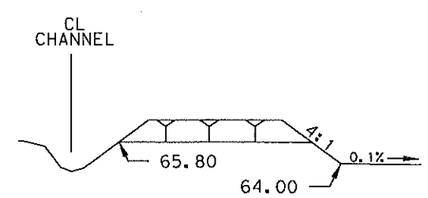
DETENTION POND PLAN



SECTION A-A



SECTION B-B



SECTION C-C

0 25 50

INTERIM REVIEW ONLY

DOCUMENT IS NOT TO BE USED FOR CONSTRUCTION, BIDDING, OR PERMIT PURPOSES

ENGINEER: KEN STANLEY

P.E. SERIAL NO: 69701

DATE: 2/10/2012

REV	DATE	BY	DESCRIPTION

BKI

BURK-KLEINPETER, INC.

Engineers, Architects, Planners, Environmental Scientists

FIRM REG. No. F-3427

FORT BEND COUNTY

© 2009

Texas Department of Transportation

TRAMMEL FRESNO ROAD

HURRICANE LANE DETENTION POND GRADING PLAN

SHEET 2 OF 2

DESIGNED:	FED. RD. DIV. RD.	STATE	PROJECT NO.			HIGHWAY NO.
CHECKED:	06	TEXAS	STP ( ) MM			CS
DRAWN:	DISTRICT	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CHECKED:	HOU	FORT BEND	0912	34	144	

0 50 100
SCALE: 1"=100'

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DAVID H. ZUHLKE, P.E.
TEXAS P.E. #83450

ISSUED ON:
Feb. 09, 2011

REV	DATE	BY	DESCRIPTION

LJA Engineering & Surveying, Inc.
2929 Briarpark Drive
Suite 600
Houston, Texas 77042-3703
Phone 713.953.5200
Fax 713.953.5028
Firm Registration Number F1386

FORT BEND COUNTY

Texas Department of Transportation

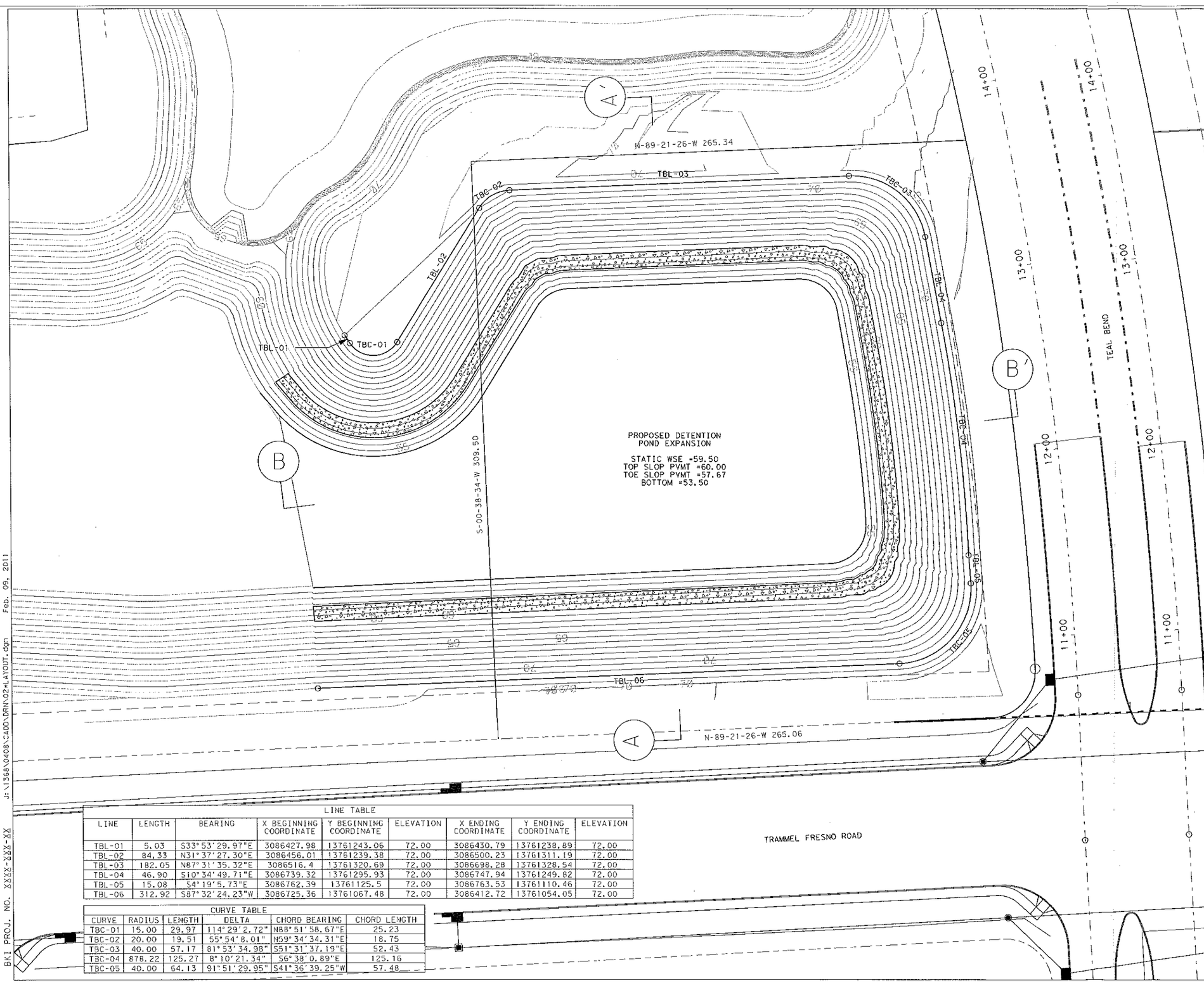
TRAMMEL FRESNO ROAD

CAMBRIDGE FALLS
EXPANDED DETENTION BASIN

OVERALL LAYOUT

DESIGNED: AL	FED. RD. DIV. RD.	STATE	PROJECT NO.			HIGHWAY NO.
CHECKED: DB	06	TEXAS				
DRAWN: AL	STATE DIST. NO.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CHECKED: DB	HOUSTON, TX 12	FORT BEND	0192	34	144	

BKI PROJ. NO. XXXX-XXX-XX J:\1368\0408\CADD\DRN\01#OVERALL#LAYOUT, Feb. 09, 2011



LINE TABLE								
LINE	LENGTH	BEARING	X BEGINNING COORDINATE	Y BEGINNING COORDINATE	ELEVATION	X ENDING COORDINATE	Y ENDING COORDINATE	ELEVATION
TBL-01	5.03	S33°53'29.97"E	3086427.98	13761243.06	72.00	3086430.79	13761238.89	72.00
TBL-02	84.33	N31°37'27.30"E	3086456.01	13761239.38	72.00	3086500.23	13761311.19	72.00
TBL-03	182.05	N87°31'35.32"E	3086516.4	13761320.69	72.00	3086698.28	13761328.54	72.00
TBL-04	46.90	S10°34'49.71"E	3086739.32	13761295.93	72.00	3086747.94	13761249.82	72.00
TBL-05	15.08	S4°19'5.73"E	3086762.39	13761125.5	72.00	3086763.53	13761110.46	72.00
TBL-06	312.92	S87°32'24.23"W	3086725.36	13761067.48	72.00	3086412.72	13761054.05	72.00

CURVE TABLE					
CURVE	RADIUS	LENGTH	DELTA	CHORD BEARING	CHORD LENGTH
TBC-01	15.00	29.97	114°29'2.72"	N88°51'58.67"E	25.23
TBC-02	20.00	19.51	55°54'8.01"	N59°34'34.31"E	18.75
TBC-03	40.00	57.17	81°53'34.98"	S51°31'37.19"E	52.43
TBC-04	878.22	125.27	8°10'21.34"	S6°38'0.89"E	125.16
TBC-05	40.00	64.13	91°51'29.95"	S41°36'39.25"W	57.48

0 25 50
SCALE: 1"=50'

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DAVID H. ZUHLKE, P.E.
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FORT BEND COUNTY

Texas Department of Transportation

TRAMMEL FRESNO ROAD

CAMBRIDGE FALLS
EXPANDED DETENTION BASIN

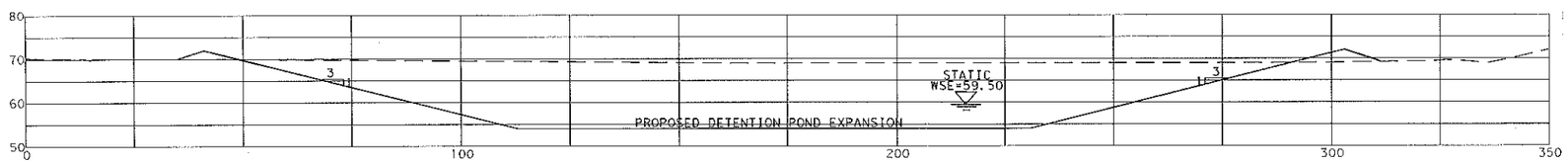
BASIN LAYOUT
& GRADING PLAN

DESIGNED: AL	FED. RD. DIV. RD.	STATE	PROJECT NO.			HIGHWAY NO.
CHECKED: DB	06	TEXAS				
DRAWN: AL	STATE DIST. NO.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CHECKED: DB	HOUSTON,TX 12	FORT BEND	0192	34	144	

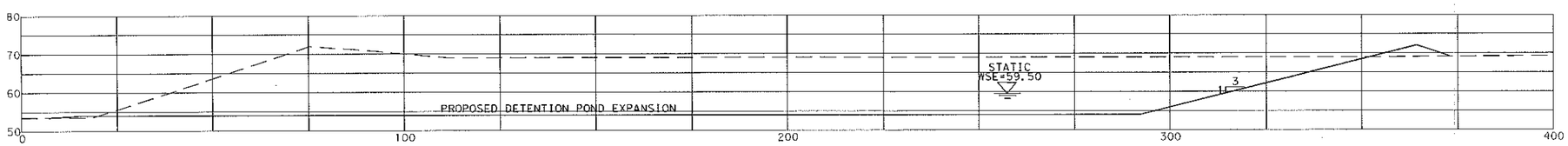
J:\1368\0408\CADD\DRN\02*LAYOUT.dgn Feb. 09, 2011

BKI PROJ. NO. XXXX-XXX-XX

A - A'



B - B'



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DAVID H. ZUHLKE, P.E.
TEXAS P.E. #83450

ISSUED ON:
Feb. 09, 2011

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LJA Engineering & Surveying, Inc.
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Firm Registration Number F-1386

FORT BEND COUNTY

Texas Department of Transportation

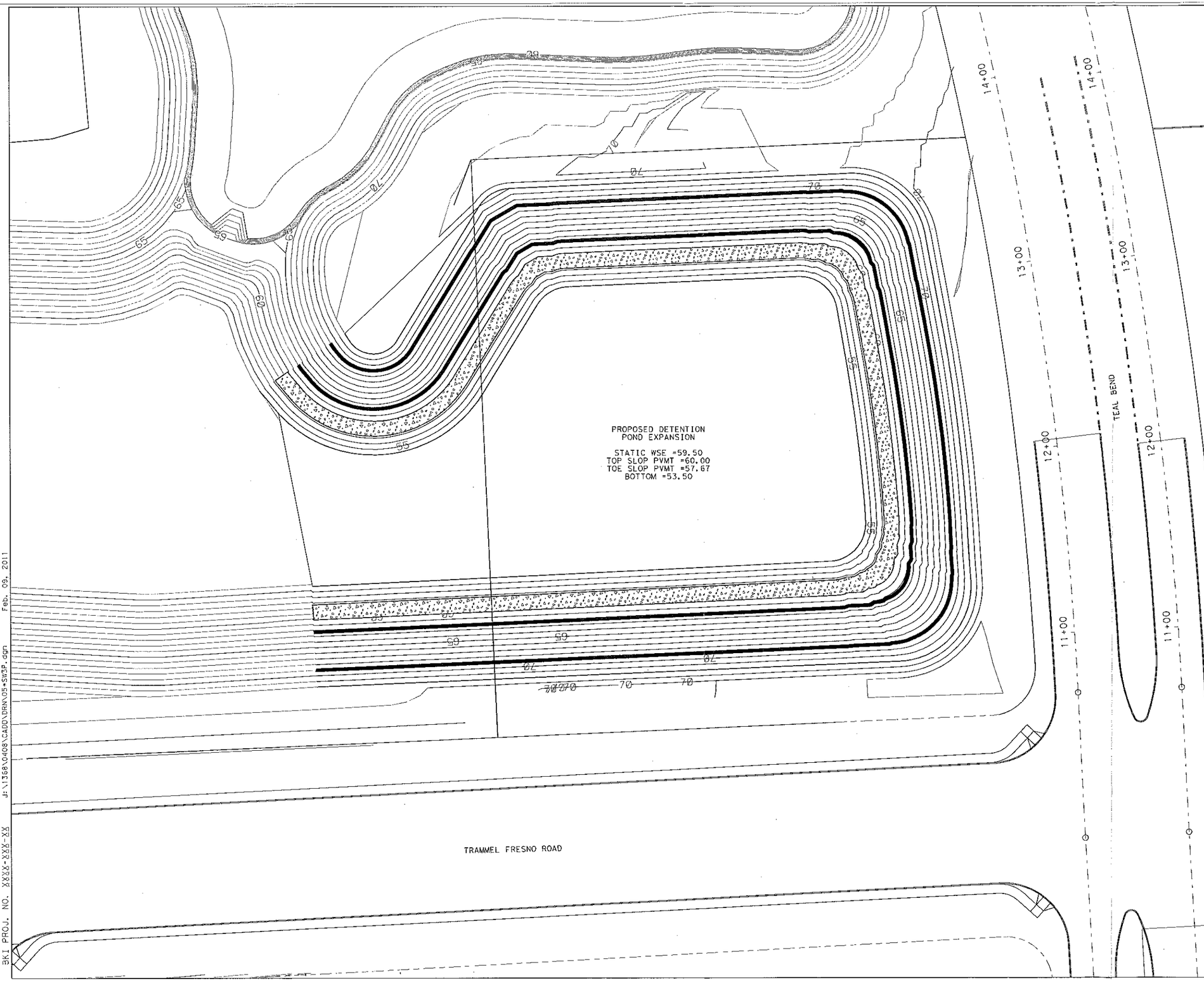
TRAMMEL FRESNO ROAD

CAMBRIDGE FALLS
EXPANDED DETENTION BASIN

CROSS SECTIONS

DESIGNED: AL	FED. RD. DIV. RD.	STATE	PROJECT NO.			HIGHWAY NO.
CHECKED: DB	06	TEXAS				
DRAWN: AL	STATE DIST. NO.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CHECKED: DB	HOUSTON,TX 12	FORT BEND	0192	34	144	

BKI PROJ. NO. XXXX-XXX-XX J:\1368\0408\CADD\DRN\04*CROSS*SECTIONS.dgn, 09, 2011



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SCALE: 1"=50'

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DAVID H. ZUHLKE, P.E.
TEXAS P.E. #83450

ISSUED ON:
Feb. 09, 2011

REV	DATE	BY	DESCRIPTION

LJA Engineering & Surveying, Inc.
2929 Briarpark Drive
Suite 600
Houston, Texas 77042-3703
Phone 713.953.5200
Fax 713.953.5026
Firm Registration Number F-1386

FORT BEND COUNTY

Texas Department of Transportation

TRAMMEL FRESNO ROAD

CAMBRIDGE FALLS
EXPANDED DETENTION BASIN

SW3P PLAN

DESIGNED: AL	FED. RD. DIV. RD.	STATE	PROJECT NO.			HIGHWAY NO.
CHECKED: DB	06	TEXAS				
DRAWN: AL	STATE DIST. NO.	COUNTY	CONTROL NO.	SECTION NO.	JOB NO.	SHEET NO.
CHECKED: DB	HOUSTON, TX 12	FORT BEND	0192	34	144	

J:\1368\0408\CADD\DRN\05-SW3P.dgn Feb. 09, 2011

BKI PROJ. NO. XXXX-XXX-XX

Appendix F:

Wetland Determination and Classification Maps

BERG ◆ OLIVER ASSOCIATES, INC.

Environmental Science, Engineering & Land Use Consultants

14701 St. Mary's Lane, Suite 400
Houston, Texas 77079
(281) 589-0898 fax: (281) 589-0007

February 16, 2012

Mr. John Davidson
Compliance Unit
U.S. Army Corps of Engineers
P.O. Box 1229
Galveston, Texas 77553-1229

RE: Preliminary Jurisdictional Determination –Fort Bend Parkway Expansion and Associated Detention Basins, Fort Bend County, Fort Bend, Texas

Dear Mr. Davidson,

The applicant, Berg Oliver Associates, Inc. on behalf of Burk-Kleinpeter, Inc., is requesting a Preliminary Jurisdictional Determination of 0.65 acres of jurisdictional waters of the United States and 2.52 acres of adjacent wetlands of the United States for the construction of an expansion of Fort Bend Parkway to FM 521, located in Fort Bend County, Texas. (Please find attached maps in Appendices of Delineation Report.)

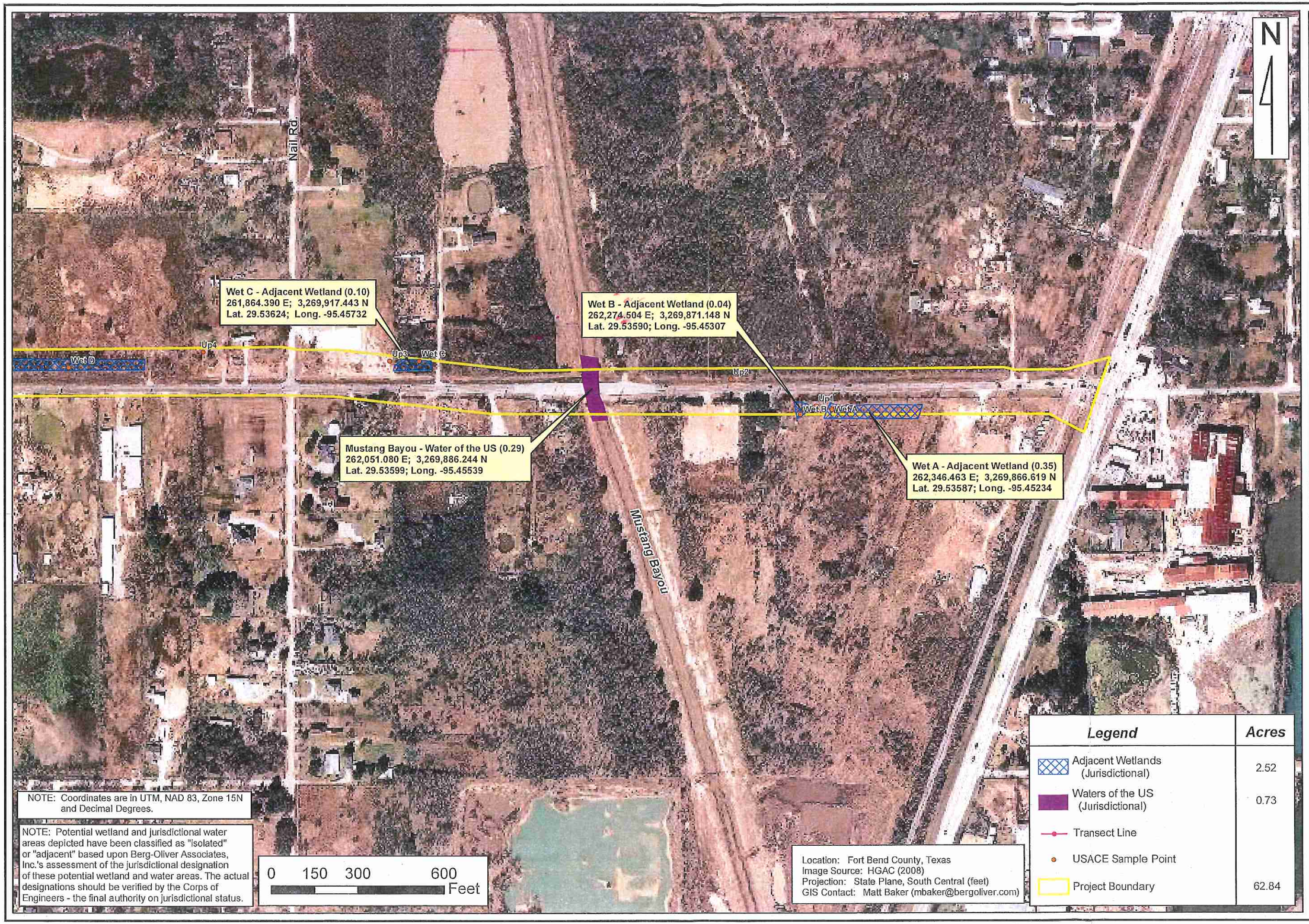
The site was visited throughout January and October of 2010 by personnel from Berg◆Oliver Associates, Inc. The subject property was evaluated for its content of jurisdictional wetlands; based on criteria set forth in the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region* to the Corps of Engineers Wetland Delineation Manual – Technical Report Y-87-1. Using interpretation of historical aerial photography, topographic maps, hydrology indicators, and field evaluation of hydric soils, hydrology, and hydrophytic vegetation, wetlands were identified and delineated as accurately as possible.

Copies of the Wetland Delineation reports have been included for your convenience.

If you have any questions or concerns please feel free to contact me at the above number.

Sincerely,

Shanon Mathis
Project Manager



NOTE: Coordinates are in UTM, NAD 83, Zone 15N and Decimal Degrees.

NOTE: Potential wetland and jurisdictional water areas depicted have been classified as "isolated" or "adjacent" based upon Berg-Oliver Associates, Inc.'s assessment of the jurisdictional designation of these potential wetland and water areas. The actual designations should be verified by the Corps of Engineers - the final authority on jurisdictional status.

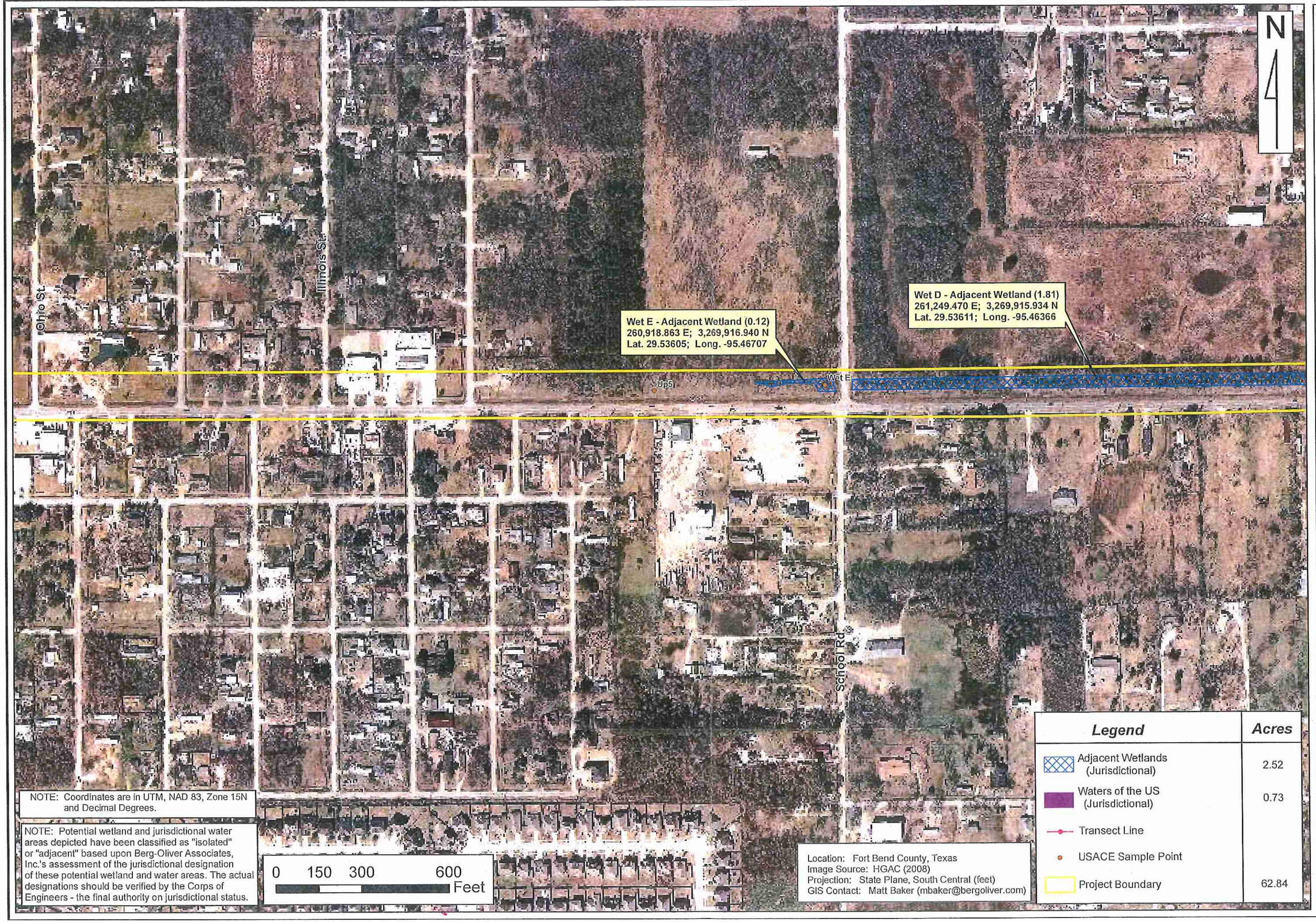
WETLAND DETERMINATION AND CLASSIFICATION

SHEET 1

REVISIONS
March 26, 2012 by MDB

BERG•OLIVER ASSOCIATES, INC.
ENVIRONMENTAL SCIENCE, ENGINEERING
& LAND USE CONSULTANTS
14701 ST. MARY'S LANE, SUITE 400
HOUSTON, TEXAS 77079 PHONE (281)589-0898 http://www.bergoliver.com

Project #: 7403
For: Burk-Kleinpeter
Location: FM 521 & Fort Bend Parkway
Fort Bend County, Texas



NOTE: Coordinates are in UTM, NAD 83, Zone 15N and Decimal Degrees.

NOTE: Potential wetland and jurisdictional water areas depicted have been classified as "isolated" or "adjacent" based upon Berg-Oliver Associates, Inc.'s assessment of the jurisdictional designation of these potential wetland and water areas. The actual designations should be verified by the Corps of Engineers - the final authority on jurisdictional status.

Location: Fort Bend County, Texas
Image Source: HGAC (2008)
Projection: State Plane, South Central (feet)
GIS Contact: Matt Baker (mbaker@bergoliver.com)

Legend	Acres
Adjacent Wetlands (Jurisdictional)	2.52
Waters of the US (Jurisdictional)	0.73
Transect Line	
USACE Sample Point	
Project Boundary	62.84

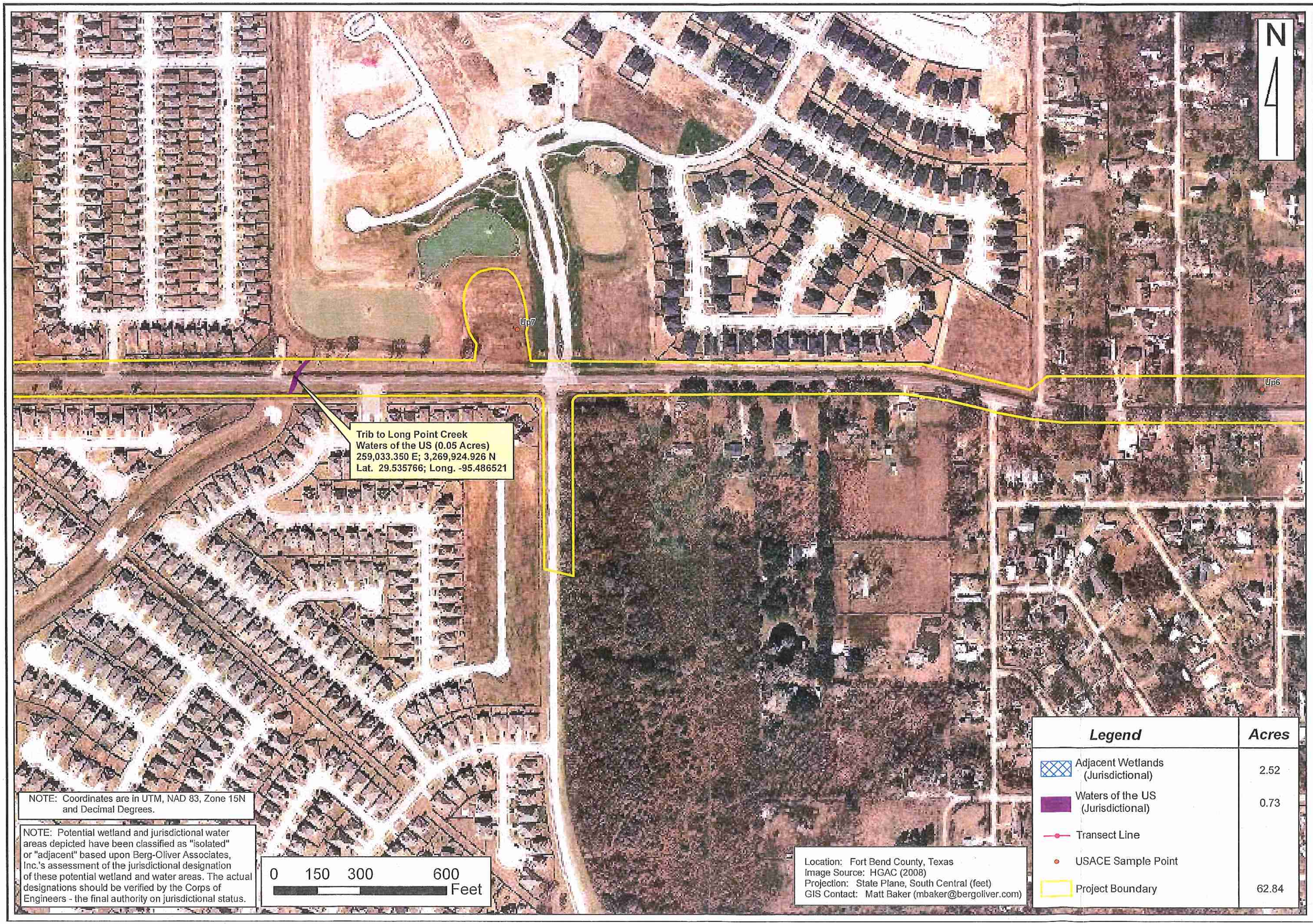
WETLAND DETERMINATION AND CLASSIFICATION

SHEET 2

REVISIONS
March 26, 2012 by MDB

BERG•OLIVER ASSOCIATES, INC.
ENVIRONMENTAL SCIENCE, ENGINEERING & LAND USE CONSULTANTS
14701 ST. MARY'S LANE, SUITE 400
HOUSTON, TEXAS 77079 PHONE (281)589-0898 http://www.bergoliver.com

Project #: 7403
For: Burk-Kleinpeter
Location: FM 521 & Fort Bend Parkway
Fort Bend County, Texas



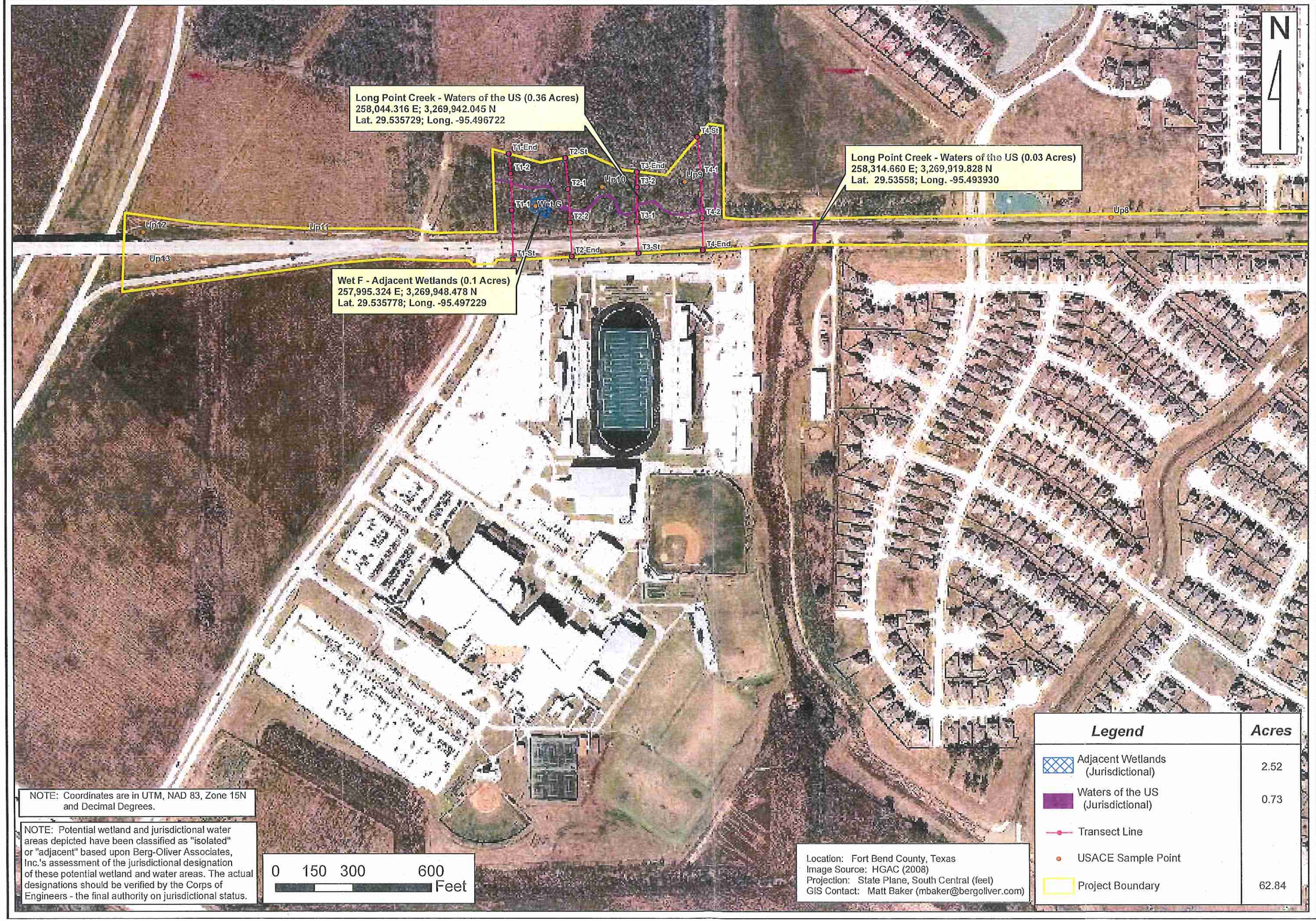
WETLAND DETERMINATION AND CLASSIFICATION

SHEET 3

REVISIONS
March 26, 2012 by MDB

Project #: 7403
For: Burk-Kleinpeter
Location: FM 521 & Fort Bend Parkway
Fort Bend County, Texas

BERG•OLIVER ASSOCIATES, INC.
ENVIRONMENTAL SCIENCE, ENGINEERING
& LAND USE CONSULTANTS
14701 ST. MARY'S LANE, SUITE 400
HOUSTON, TEXAS 77079 PHONE (281)589-0898 http://www.bergoliver.com



NOTE: Coordinates are in UTM, NAD 83, Zone 15N and Decimal Degrees.

NOTE: Potential wetland and jurisdictional water areas depicted have been classified as "isolated" or "adjacent" based upon Berg-Oliver Associates, Inc.'s assessment of the jurisdictional designation of these potential wetland and water areas. The actual designations should be verified by the Corps of Engineers - the final authority on jurisdictional status.

WETLAND DETERMINATION AND CLASSIFICATION

SHEET 4

REVISIONS
March 26, 2012 by MDB

Project #: 7403
For: Burk-Kleinpeter
Location: FM 521 & Fort Bend Parkway
Fort Bend County, Texas

BERG•OLIVER ASSOCIATES, INC.
ENVIRONMENTAL SCIENCE, ENGINEERING
& LAND USE CONSULTANTS
14701 ST. MARY'S LANE, SUITE 400
HOUSTON, TEXAS 77079 PHONE (281)589-0898 http://www.bergoliver.com

BERG-OLIVER ASSOCIATES, INC.

ROUTINE WETLAND DETERMINATION DATA FORM

Project Site: Fort Bend Parkway to FM 521 City/County Fort Bend Sampling Date: 1/12/2010
Applicant/Owner: Burk-Kleinpeter State: TX Sampling Point: WET A
Investigator: Berg-Oliver Associates, Inc. Section/Range:
Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):
Subregion (LRR or MLRA): Lat: 29.53587 Long: -95.45234 Datum: NAD 83
Soil Map Unit Name: NWI classification:
Are climatic/hydrologic conditions on the site typical for this time of year? Yes x No (If no, explain in Remarks)
Are Vegetation Soil or Hydrology significantly disturber?
Are Vegetation Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks)
Are "Normal Circumstances" present? Yes x No

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

Hydrophytic Vegetation Present?	Yes x	No			
Hydric Soils Present?	Yes x	No	**Is the Sample Area within a Wetland?**	Yes x	
Wetland Hydrology Present?	Yes x	No		No	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required: check all that apply)				Secondary Indicators (minimum of two required)	
x	Surface Water (A1)	x	Water-Stained Leaves (B9)		Surface Soil Cracks (B6)
	High Water Table (A2)		Aquatic Fauna (B13)		Sparsely Vegetated Concave Surface (B8)
x	Saturation (A3)		Marl Deposits (B15) (LLR U)	x	Drainage Patterns (B10)
x	Water Marks (B1)		Hydrogen Sulfide Odor (C1)	x	Moss Trim Lines (B16)
	Sediment Deposits (B2)	x	Oxidized Rhizospheres on Living Roots (C3)		Dry-Season Water Table (C2)
	Drift Deposits (B3)		Presence of Reduced Iron (C4)	x	Crayfish Burrows (C8)
	Algal Mat or Crust (B4)		Recent Iron Reduction in Tilled Soils (C6)		Saturation Visible on Aerial Imagery (C9)
	Iron Deposits (B5)		Thin Muck Surface (C7)		Geomorphic Position (D2)
	Inundation Visible on Aerial Imagery (B7)		Other (Explain in Remarks)		Shallow Aquitard (D3)
					FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes x	No	Depth (inches	2	**Wetland Hydrology Present?**
Water Table Present?	Yes x	No	Depth (inches	1	Yes x
Saturation Present? (include cappillary fringe)	Yes x	No	Depth (inches	0	No

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

Remarks:

Vegetation- Use scientific names of plants

Tree Stratum (Plot Sizes:_____)		Absolute % Cover	Dominant Species?	Indicator Status
1				
2				
3				
4				
5				
6				
7				
	Total Cover			

Sapling Stratum (_____)		Absolute % Cover	Dominant Species?	Indicator Status
1	Triadica sebiferum	10		FACU
2				
3				
4				
5				
6				
7				
	Total Cover			

Shrub Stratum (_____)		Absolute % Cover	Dominant Species?	Indicator Status
1				
2				
3				
4				
5				
6				
7				
	Total Cover			

Herb Stratum (_____)		Absolute % Cover	Dominant Species?	Indicator Status
1	Juncus effusus	15		OBL
2	Eleocharis montana	15		OBL
3	Cyperus oderatus	15		FACW
4	Rubus trivialis	15		FAC
5				
6				
7				
8				
9				
10				
11				
12				
	Total Cover			

Woody Vine Stratum (_____)		Absolute % Cover	Dominant Species?	Indicator Status
1				
2				
3				
4				
5				
	Total Cover			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

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

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

Prevalance Index Worksheet:

Total % Cover of:			Multiply by:
OBL species	30	x 1 =	30
FACW species	15	x 2 =	30
FAC species	15	x 3 =	45
FACU species	10	x 4 =	40
UPL species		x 5 =	
Column Totals:	70	(A) (B)	145
Prevalence Index = B/A =			2.07

Hydrophytic Vegetation Indicators:

_____ Dominance Test is >50%

x Prevalence Index ≤ 3.0[1]

_____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes __X__ No ____

Remarks: (If observed, list morphological adaptations below).

SOIL

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Fetures Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR4/1	100					loam	

[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:

- ___ Histol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coastal Prarie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR p, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicator for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A, A)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **MLRA 153 B)**
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrolophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if observed):

Type: ___

Depth (inches): ___

Hydric Soil Present?

Yes X **No** ___

Remarks:

BERG-OLIVER ASSOCIATES, INC.

ROUTINE WETLAND DETERMINATION DATA FORM

Project Site: Fort Bend Parkway to FM 521 City/County Fort Bend Sampling Date: 1/12/2010
Applicant/Owner: Burk-Kleinpeter State: TX Sampling Point: WET B
Investigator: Berg-Oliver Associates, Inc. Section/Range:
Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):
Subregion (LRR or MLRA): Lat: 29.5359 Long: -95.45307 Datum: NAD 83
Soil Map Unit Name: NWI classification:
Are climatic/hydrologic conditions on the site typical for this time of year? Yes x No (If no, explain in Remarks)
Are Vegetation Soil or Hydrology significantly disturber?
Are Vegetation Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks)
Are "Normal Circumstances" present? Yes x No

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

Hydrophytic Vegetation Present?	Yes x	No			
Hydric Soils Present?	Yes x	No	**Is the Sample Area within a Wetland?**	Yes x	
Wetland Hydrology Present?	Yes x	No		No	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required: check all that apply)				Secondary Indicators (minimum of two required)	
x	Surface Water (A1)	x	Water-Stained Leaves (B9)		Surface Soil Cracks (B6)
	High Water Table (A2)		Aquatic Fauna (B13)		Sparsely Vegetated Concave Surface (B8)
x	Saturation (A3)		Marl Deposits (B15) (LLR U)	x	Drainage Patterns (B10)
x	Water Marks (B1)		Hydrogen Sulfide Odor (C1)	x	Moss Trim Lines (B16)
	Sediment Deposits (B2)	x	Oxidized Rhizospheres on Living Roots (C3)		Dry-Season Water Table (C2)
	Drift Deposits (B3)		Presence of Reduced Iron (C4)	x	Crayfish Burrows (C8)
	Algal Mat or Crust (B4)		Recent Iron Reduction in Tilled Soils (C6)		Saturation Visible on Aerial Imagery (C9)
	Iron Deposits (B5)		Thin Muck Surface (C7)		Geomorphic Position (D2)
	Inundation Visible on Aerial Imagery (B7)		Other (Explain in Remarks)		Shallow Aquitard (D3)
					FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes x	No	Depth (inches	2	
Water Table Present?	Yes x	No	Depth (inches	1	**Wetland Hydrology Present?**
Saturation Present? (include cappillary fringe)	Yes x	No	Depth (inches	0	Yes x
					No

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

Remarks:

Vegetation- Use scientific names of plants

Tree Stratum (Plot Sizes:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1			
2			
3			
4			
5			
6			
7			
Total Cover			

Sapling Stratum (_____)	Absolute % Cover	Dominant Species?	Indicator Status
1 Triadica sebiferum	10		FACU
2			
3			
4			
5			
6			
7			
Total Cover			

Shrub Stratum (_____)	Absolute % Cover	Dominant Species?	Indicator Status
1			
2			
3			
4			
5			
6			
7			
Total Cover			

Herb Stratum (_____)	Absolute % Cover	Dominant Species?	Indicator Status
1 Juncus effusus	15		OBL
2 Eleocharis montana	15		OBL
3 Cyperus oderatus	15		FACW
4 Rubus trivialis	15		FAC
5			
6			
7			
8			
9			
10			
11			
12			
Total Cover			

Woody Vine Stratum (_____)	Absolute % Cover	Dominant Species?	Indicator Status
1			
2			
3			
4			
5			
Total Cover			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

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

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

Prevalance Index Worksheet:

Total % Cover of:			Multiply by:
OBL species	30	x 1 =	30
FACW species	15	x 2 =	30
FAC species	15	x 3 =	45
FACU species	10	x 4 =	40
UPL species		x 5 =	
Column Totals:	70	(A) (B)	145
Prevalence Index = B/A =			2.07

Hydrophytic Vegetation Indicators:

_____ Dominance Test is >50%

x Prevalence Index ≤ 3.0[1]

_____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes __X__ No ____

[1]Remarks: (If observed, list morphological adaptations below).

SOIL

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Fetures Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR4/1	100					loam	

[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:

- ___ Histol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coastal Prarie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR p, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicator for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A, A)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **MLRA 153 B)**
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrolophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if observed):

Type: ___

Depth (inches): ___

Hydric Soil Present?

Yes x **No** ___

Remarks:

BERG-OLIVER ASSOCIATES, INC.

ROUTINE WETLAND DETERMINATION DATA FORM

Project Site: Fort Bend Parkway to FM 521 City/County Fort Bend Sampling Date: 1/12/2010
Applicant/Owner: Burk-Kleinpeter State: TX Sampling Point: WET D
Investigator: Berg-Oliver Associates, Inc. Section/Range:
Landform (hillslope, terrace, etc.): Local relief (concave, convex, none) concave Slope (%):
Subregion (LRR or MLRA): Lat: 29.53624 Long: -95.45732 Datum: NAD 83
Soil Map Unit Name: NWI classification:
Are climatic/hydrologic conditions on the site typical for this time of year? Yes x No (If no, explain in Remarks)
Are Vegetation Soil or Hydrology significantly disturber?
Are Vegetation Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks)
Are "Normal Circumstances" present? Yes x No

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

Hydrophytic Vegetation Present?	Yes x	No			
Hydric Soils Present?	Yes x	No	**Is the Sample Area within a Wetland?**	Yes x	
Wetland Hydrology Present?	Yes x	No		No	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required: check all that apply)				Secondary Indicators (minimum of two required)	
					Surface Soil Cracks (B6)
x	Surface Water (A1)	x	Water-Stained Leaves (B9)		Sparsely Vegetated Concave Surface (B8)
x	High Water Table (A2)		Aquatic Fauna (B13)	x	Drainage Patterns (B10)
x	Saturation (A3)		Marl Deposits (B15) (LLR U)	x	Moss Trim Lines (B16)
x	Water Marks (B1)		Hydrogen Sulfide Odor (C1)		Dry-Season Water Table (C2)
	Sediment Deposits (B2)	x	Oxidized Rhizospheres on Living Roots (C3)		Crayfish Burrows (C8)
	Drift Deposits (B3)		Presence of Reduced Iron (C4)		Saturation Visible on Aerial Imagery (C9)
	Algal Mat or Crust (B4)		Recent Iron Reduction in Tilled Soils (C6)	x	Geomorphic Position (D2)
	Iron Deposits (B5)		Thin Muck Surface (C7)		Shallow Aquitard (D3)
	Inundation Visible on Aerial Imagery (B7)		Other (Explain in Remarks)		FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes x	No	Depth (inches 3	**Wetland Hydrology Present?**
Water Table Present?	Yes x	No	Depth (inches 0	Yes x
Saturation Present? (include capillary fringe)	Yes x	No	Depth (inches 0	No

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

Remarks:

Vegetation- Use scientific names of plants

Tree Stratum (Plot Sizes:_____)		Absolute % Cover	Dominant Species?	Indicator Status
1	Celtis laevigata	20		FAC
2				
3				
4				
5				
6				
7				
	Total Cover			

Sapling Stratum (_____)		Absolute % Cover	Dominant Species?	Indicator Status
1				
2				
3				
4				
5				
6				
7				
	Total Cover			

Shrub Stratum (_____)		Absolute % Cover	Dominant Species?	Indicator Status
1				
2				
3				
4				
5				
6				
7				
	Total Cover			

Herb Stratum (_____)		Absolute % Cover	Dominant Species?	Indicator Status
1	Juncus effusus	15		OBL
2	Eleocharis montana	15		OBL
3	Cyperus oderatus	10		FACW
4	Rubus trivialis	15		FAC
5				
6				
7				
8				
9				
10				
11				
12				
	Total Cover			

Woody Vine Stratum (_____)		Absolute % Cover	Dominant Species?	Indicator Status
1				
2				
3				
4				
5				
	Total Cover			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

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

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

Prevalance Index Worksheet:

Total % Cover of:			Multiply by:
OBL species	30	x 1 =	30
FACW species	10	x 2 =	20
FAC species	35	x 3 =	105
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	75	(A) (B)	155
Prevalence Index = B/A =			2.06

Hydrophytic Vegetation Indicators:

_____ Dominance Test is >50%

x Prevalence Index ≤ 3.0[1]

_____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes __X__ No ____

Remarks: (If observed, list morphological adaptations below).

SOIL

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

Depth (inches)	Matrix Color (moist)	%	Redox Fetures Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR4/2	95	10YR5/8	5	C	M	Sandy loam	

[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:

- ___ Histol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coastal Prarie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR p, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicator for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A, A)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **MLRA 153 B)**
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrolophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if observed):

Type: ___

Depth (inches): ___

Hydric Soil Present?

Yes X **No** ___

Remarks:

BERG-OLIVER ASSOCIATES, INC.

ROUTINE WETLAND DETERMINATION DATA FORM

Project Site: Fort Bend Parkway to FM 521 City/County Fort Bend Sampling Date: 1/12/2010
Applicant/Owner: Burk-Kleinpeter State: TX Sampling Point: WET E
Investigator: Berg-Oliver Associates, Inc. Section/Range:
Landform (hillslope, terrace, etc.): Local relief (concave, convex, none) concave Slope (%):
Subregion (LRR or MLRA): Lat: 29.53611 Long: -95.46366 Datum: NAD 83
Soil Map Unit Name: NWI classification:
Are climatic/hydrologic conditions on the site typical for this time of year? Yes x No (If no, explain in Remarks)
Are Vegetation Soil or Hydrology significantly disturber?
Are Vegetation Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks)
Are "Normal Circumstances" present? Yes x No

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

Hydrophytic Vegetation Present?	Yes x	No			
Hydric Soils Present?	Yes x	No	**Is the Sample Area within a Wetland?**	Yes x	
Wetland Hydrology Present?	Yes x	No		No	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required: check all that apply)				Secondary Indicators (minimum of two required)	
x	Surface Water (A1)	x	Water-Stained Leaves (B9)		Surface Soil Cracks (B6)
x	High Water Table (A2)		Aquatic Fauna (B13)		Sparsely Vegetated Concave Surface (B8)
x	Saturation (A3)		Marl Deposits (B15) (LLR U)	x	Drainage Patterns (B10)
x	Water Marks (B1)		Hydrogen Sulfide Odor (C1)	x	Moss Trim Lines (B16)
	Sediment Deposits (B2)	x	Oxidized Rhizospheres on Living Roots (C3)		Dry-Season Water Table (C2)
x	Drift Deposits (B3)		Presence of Reduced Iron (C4)		Crayfish Burrows (C8)
	Algal Mat or Crust (B4)		Recent Iron Reduction in Tilled Soils (C6)		Saturation Visible on Aerial Imagery (C9)
	Iron Deposits (B5)		Thin Muck Surface (C7)	x	Geomorphic Position (D2)
	Inundation Visible on Aerial Imagery (B7)		Other (Explain in Remarks)		Shallow Aquitard (D3)
					FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes x	No	Depth (inches 3	**Wetland Hydrology Present?**	
Water Table Present?	Yes x	No	Depth (inches 0		Yes x
Saturation Present? (include cappillary fringe)	Yes x	No	Depth (inches 0		No

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

Remarks:

Vegetation- Use scientific names of plants

Tree Stratum (Plot Sizes:_____)		Absolute % Cover	Dominant Species?	Indicator Status
1	Celtis laevigata	10		FAC
2	Triadica Sebiferum	10		FACU
3				
4				
5				
6				
7				
	Total Cover			

Sapling Stratum (_____)		Absolute % Cover	Dominant Species?	Indicator Status
1				
2				
3				
4				
5				
6				
7				
	Total Cover			

Shrub Stratum (_____)		Absolute % Cover	Dominant Species?	Indicator Status
1	Baccharis halimifolia	10		FAC
2	Sesbania drumondii	10		FACW
3				
4				
5				
6				
7				
	Total Cover			

Herb Stratum (_____)		Absolute % Cover	Dominant Species?	Indicator Status
1	Juncus effusus	10		OBL
2	Eleocharis montana	15		OBL
3	Cyperus oderatus	10		FACW
4	Rubus trivialis	10		FAC
5				
6				
7				
8				
9				
10				
11				
12				
	Total Cover			

Woody Vine Stratum (_____)		Absolute % Cover	Dominant Species?	Indicator Status
1				
2				
3				
4				
5				
	Total Cover			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

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

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

Prevalance Index Worksheet:

Total % Cover of:			Multiply by:
OBL species	25	x 1 =	25
FACW species	20	x 2 =	40
FAC species	30	x 3 =	90
FACU species	10	x 4 =	40
UPL species		x 5 =	
Column Totals:	85	(A) (B)	195
Prevalence Index = B/A =			2.29

Hydrophytic Vegetation Indicators:

_____ Dominance Test is >50%

x Prevalence Index ≤ 3.0[1]

_____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes __X__ No ____

Remarks: (If observed, list morphological adaptations below).

SOIL

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Fetures Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-15	10YR4/1	100					Loamy clay	
15-20	10YR5/1	100					Loamy 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:

- ___ Histol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coastal Prarie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR p, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicator for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A, A)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **MLRA 153 B)**
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrolophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if observed):

Type: ___

Depth (inches): ___

Hydric Soil Present?

Yes X **No** ___

Remarks:

BERG-OLIVER ASSOCIATES, INC.

ROUTINE WETLAND DETERMINATION DATA FORM

Project Site: Fort Bend Parkway to FM 521 City/County Fort Bend Sampling Date: 1/12/2010
Applicant/Owner: Burk-Kleinpeter State: TX Sampling Point: WET F
Investigator: Berg-Oliver Associates, Inc. Section/Range:
Landform (hillslope, terrace, etc.): Local relief (concave, convex, none) concave Slope (%):
Subregion (LRR or MLRA): Lat: 29.53605 Long: -95.46707 Datum: NAD 83
Soil Map Unit Name: NWI classification:
Are climatic/hydrologic conditions on the site typical for this time of year? Yes x No (If no, explain in Remarks)
Are Vegetation Soil or Hydrology significantly disturber?
Are Vegetation Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks)
Are "Normal Circumstances" present? Yes x No

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

Hydrophytic Vegetation Present?	Yes x	No	**Is the Sample Area within a Wetland?**	Yes x	
Hydric Soils Present?	Yes x	No		No	
Wetland Hydrology Present?	Yes x	No			

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required: check all that apply)				Secondary Indicators (minimum of two required)	
	Surface Water (A1)	x	Water-Stained Leaves (B9)		Surface Soil Cracks (B6)
	High Water Table (A2)		Aquatic Fauna (B13)		Sparsely Vegetated Concave Surface (B8)
x	Saturation (A3)		Marl Deposits (B15) (LLR U)	x	Drainage Patterns (B10)
	Water Marks (B1)		Hydrogen Sulfide Odor (C1)		Moss Trim Lines (B16)
	Sediment Deposits (B2)	x	Oxidized Rhizospheres on Living Roots (C3)		Dry-Season Water Table (C2)
	Drift Deposits (B3)		Presence of Reduced Iron (C4)	x	Crayfish Burrows (C8)
	Algal Mat or Crust (B4)		Recent Iron Reduction in Tilled Soils (C6)		Saturation Visible on Aerial Imagery (C9)
	Iron Deposits (B5)		Thin Muck Surface (C7)		Geomorphic Position (D2)
	Inundation Visible on Aerial Imagery (B7)		Other (Explain in Remarks)		Shallow Aquitard (D3)
					FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	No x	Depth (inches)	**Wetland Hydrology Present?**	
Water Table Present?	Yes	No x	Depth (inches)		Yes x
Saturation Present? (include capillary fringe)	Yes x	No	Depth (inches 0		No

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

Remarks:

Vegetation- Use scientific names of plants

Tree Stratum (Plot Sizes:_____)		Absolute % Cover	Dominant Species?	Indicator Status
1				
2				
3				
4				
5				
6				
7				
	Total Cover			

Sapling Stratum (_____)		Absolute % Cover	Dominant Species?	Indicator Status
1				
2				
3				
4				
5				
6				
7				
	Total Cover			

Shrub Stratum (_____)		Absolute % Cover	Dominant Species?	Indicator Status
1	Sesbania drumondii	5		FACW
2				
3				
4				
5				
6				
7				
	Total Cover	5		

Herb Stratum (_____)		Absolute % Cover	Dominant Species?	Indicator Status
1	Juncus effusus	12		OBL
2	Eleocharis montevidensis	12		FACW
3	Cyperus oderatus	15		FACW
4	Rubus trivialis	15		FAC
5	Eleocharis quadrangulata	20		OBL
6				
7				
8				
9				
10				
11				
12				
	Total Cover	74		

Woody Vine Stratum (_____)		Absolute % Cover	Dominant Species?	Indicator Status
1				
2				
3				
4				
5				
	Total Cover			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

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

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

Prevalance Index Worksheet:

Total % Cover of:			Multiply by:
OBL species	32	x 1 =	32
FACW species	32	x 2 =	64
FAC species	15	x 3 =	45
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	79 (A)	(B)	141
Prevalence Index = B/A =			1.78

Hydrophytic Vegetation Indicators:

_____ Dominance Test is >50%

x Prevalence Index ≤ 3.0[1]

_____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes __X__ No ____

Remarks: (If observed, list morphological adaptations below).

BERG-OLIVER ASSOCIATES, INC.

ROUTINE WETLAND DETERMINATION DATA FORM

Project Site: Fort Bend Parkway to FM 521 City/County Fort Bend Sampling Date 1/12/2010
Applicant/Owner: Burk-Kleinpeter State: TX Sampling Point Up2
Investigator: Berg-Oliver Associates, Inc. Section/Range: _____
Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): _____
Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: NAD 83
Soil Map Unit Name: _____ NWI classification: _____
Are climatic/hydrologic conditions on the site typical for this time of year? Yes x No _____ (If no, explain in Remarks)
Are Vegetation _____ Soil _____ or Hydrology _____ significantly disturber?
Are Vegetation _____ Soil _____ or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks)
Are "Normal Circumstances" present? Yes x No _____

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

Hydrophytic Vegetation Present?	Yes	No x	**Is the Sample Area within a Wetland?**	Yes	
Hydric Soils Present?	Yes	No x		No	x
Wetland Hydrology Present?	Yes	No x			

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

	Surface Water (A1)		Water-Stained Leaves (B9)		Surface Soil Cracks (B6)
	High Water Table (A2)		Aquatic Fauna (B13)		Sparsely Vegetated Concave Surface (B8)
	Saturation (A3)		Marl Deposits (B15) (LLR U)		Drainage Patterns (B10)
	Water Marks (B1)		Hydrogen Sulfide Odor (C1)		Moss Trim Lines (B16)
	Sediment Deposits (B2)		Oxidized Rhizospheres on Living Roots (C3)		Dry-Season Water Table (C2)
	Drift Deposits (B3)		Presence of Reduced Iron (C4)		Crayfish Burrows (C8)
	Algal Mat or Crust (B4)		Recent Iron Reduction in Tilled Soils (C6)		Saturation Visible on Aerial Imagery (C9)
	Iron Deposits (B5)		Thin Muck Surface (C7)		Geomorphic Position (D2)
	Inundation Visible on Aerial Imagery (B7)		Other (Explain in Remarks)		Shallow Aquitard (D3)
					FAC-Neutral Test (D5)

Secondary Indicators (minimum of two required)

Field Observations:

Surface Water Present?	Yes	No x	Depth (inches)	**Wetland Hydrology Present?**	Yes
Water Table Present?	Yes	No x	Depth (inches)		
Saturation Present? (include capillary fringe)	Yes	No x	Depth (inches)		No x

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

Remarks:

Vegetation- Use scientific names of plants

Tree Stratum (Plot Sizes:_____)		Absolute % Cover	Dominant Species?	Indicator Status
1				
2				
3				
4				
5				
6				
7				
	Total Cover			

Sapling Stratum (_____)		Absolute % Cover	Dominant Species?	Indicator Status
1				
2				
3				
4				
5				
6				
7				
	Total Cover			

Shrub Stratum (_____)		Absolute % Cover	Dominant Species?	Indicator Status
1				
2				
3				
4				
5				
6				
7				
	Total Cover			

Herb Stratum (_____)		Absolute % Cover	Dominant Species?	Indicator Status
1	Cynodon dactylon	50		FACU
2	Lolium perenne	25		FACU
3	Rubus trivialis	15		FAC
4				
5				
6				
7				
8				
9				
10				
11				
12				
	Total Cover			

Woody Vine Stratum (_____)		Absolute % Cover	Dominant Species?	Indicator Status
1				
2				
3				
4				
5				
	Total Cover			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

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

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

Prevalance Index Worksheet:

Total % Cover of:			Multiply by:
OBL species		x 1 =	
FACW species		x 2 =	
FAC species	15	x 3 =	45
FACU species	75	x 4 =	300
UPL species		x 5 =	
Column Totals:	90	(A) (B)	345
Prevalence Index = B/A =			3.83

Hydrophytic Vegetation Indicators:

_____ Dominance Test is >50%

_____ Prevalence Index $\leq 3.0^1$

_____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes _____ No __x__

Remarks: (If observed, list morphological adaptations below).

SOIL

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Fetures Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR4/2	100					sandy loam	

[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:

- ____ Histol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ Organic Bodies (A6) **(LRR P, T, U)**
- ____ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ____ Muck Presence (A8) **(LRR U)**
- ____ 1 cm Muck (A9) **(LRR P, T)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Coastal Prarie Redox (A16) **(MLRA 150A)**
- ____ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Dark Surface (S7) **(LRR p, S, T, U)**
- ____ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ____ Thin Dark Surface (S9) **(LRR S, T, U)**
- ____ Loamy Mucky Mineral (F1) **(LRR**
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Marl (F10) **(LRR U)**
- ____ Depleted Ochric (F11) **(MLRA 151)**
- ____ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ____ Umbric Surface (F13) **(LRR P, T, U)**
- ____ Delta Ochric (F17) **(MLRA 151)**
- ____ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ____ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ____ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicator for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) **(LRR O)**
- ____ 2 cm Muck (A10) **(LRR S)**
- ____ Reduced Vertic (F18) **(outside MLRA 150A, A)**
- ____ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ____ Anomalous Bright Loamy Soils (F20) **MLRA 153 B)**
- ____ Red Parent Material (TF2)
- ____ Other (Explain in Remarks)

[3]Indicators of hydrolophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if observed):

Type: ____

Depth (inches): ____

Hydric Soil Present?

Yes ____ **No** x

Remarks: Uplnad plot taken in residential yard.

BERG-OLIVER ASSOCIATES, INC.

ROUTINE WETLAND DETERMINATION DATA FORM

Project Site: Fort Bend Parkway to FM 521 City/County Fort Bend Sampling Date 1/12/2010
Applicant/Owner: Burk-Kleinpeter State: TX Sampling Point Up3
Investigator: Berg-Oliver Associates, Inc. Section/Range:
Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):
Subregion (LRR or MLRA): Lat: Long: Datum: NAD 83
Soil Map Unit Name: NWI classification:
Are climatic/hydrologic conditions on the site typical for this time of year? Yes x No (If no, explain in Remarks)
Are Vegetation Soil or Hydrology significantly disturber?
Are Vegetation Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks)
Are "Normal Circumstances" present? Yes x No

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

Hydrophytic Vegetation Present?	Yes	No x			
Hydric Soils Present?	Yes x	No	**Is the Sample Area**	Yes	
Wetland Hydrology Present?	Yes	No x	**within a Wetland?**	No	x

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

	Surface Water (A1)		Water-Stained Leaves (B9)		Surface Soil Cracks (B6)
	High Water Table (A2)		Aquatic Fauna (B13)		Sparsely Vegetated Concave Surface (B8)
	Saturation (A3)		Marl Deposits (B15) (LLR U)		Drainage Patterns (B10)
	Water Marks (B1)		Hydrogen Sulfide Odor (C1)		Moss Trim Lines (B16)
	Sediment Deposits (B2)		Oxidized Rhizospheres on Living Roots (C3)		Dry-Season Water Table (C2)
	Drift Deposits (B3)		Presence of Reduced Iron (C4)		Crayfish Burrows (C8)
	Algal Mat or Crust (B4)		Recent Iron Reduction in Tilled Soils (C6)		Saturation Visible on Aerial Imagery (C9)
	Iron Deposits (B5)		Thin Muck Surface (C7)		Geomorphic Position (D2)
	Inundation Visible on Aerial Imagery (B7)		Other (Explain in Remarks)		Shallow Aquitard (D3)
					FAC-Neutral Test (D5)

Secondary Indicators (minimum of two required)

Field Observations:

Surface Water Present?	Yes	No x	Depth (inches)		
Water Table Present?	Yes	No x	Depth (inches)	**Wetland Hydrology Present?**	
Saturation Present?	Yes	No x	Depth (inches)	Yes	
(include cappillary fringe)				No	x

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

Remarks:

Vegetation- Use scientific names of plants

Tree Stratum (Plot Sizes:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1			
2			
3			
4			
5			
6			
7			
Total Cover			

Sapling Stratum (_____)	Absolute % Cover	Dominant Species?	Indicator Status
1 Triadica sebiferum	10		FACU
2			
3			
4			
5			
6			
7			
Total Cover			

Shrub Stratum (_____)	Absolute % Cover	Dominant Species?	Indicator Status
1			
2			
3			
4			
5			
6			
7			
Total Cover			

Herb Stratum (_____)	Absolute % Cover	Dominant Species?	Indicator Status
1 Cynodon dactylon	50		FACU
2 Rosa bracteata	15		FACU
3 Rubus trivialis	15		FAC
4			
5			
6			
7			
8			
9			
10			
11			
12			
Total Cover	80		

Woody Vine Stratum (_____)	Absolute % Cover	Dominant Species?	Indicator Status
1			
2			
3			
4			
5			
Total Cover			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

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

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

Prevalance Index Worksheet:

Total % Cover of:			Multiply by:
OBL species		x 1 =	
FACW species		x 2 =	
FAC species	15	x 3 =	45
FACU species	75	x 4 =	300
UPL species		x 5 =	
Column Totals:	90	(A) (B)	345
Prevalence Index = B/A =			3.83

Hydrophytic Vegetation Indicators:

_____ Dominance Test is >50%

_____ Prevalence Index ≤ 3.0[1]

_____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No __x__

Remarks: (If observed, list morphological adaptations below).

SOIL

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Fetures Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR4/2	95	10YR6/8	5	C	M	loamy 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:

- ___ Histol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coastal Prarie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR p, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicator for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A, A)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **MLRA 153 B)**
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrolophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if observed):

Type: ___

Depth (inches): ___

Hydric Soil Present?

Yes x **No** ___

Remarks:

BERG-OLIVER ASSOCIATES, INC.

ROUTINE WETLAND DETERMINATION DATA FORM

Project Site: Two Detention Sites City/County Fort Bend Sampling Date 10/5/2010
Applicant/Owne Burk-Kleinpeter State: TX Sampling Point UP 1
Investigator: Berg-Oliver Associates, Inc. Section/Range:
Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):
Subregion (LRR or MLRA): LRR T Lat: 29.53609 Long: -95.4955 Datum: NAD 83
Soil Map Unit Name: Lake Charles clay, 0-1% slopes NWI classification: U
Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks)
Are Vegetation Soil or Hydrology significantly disturber?
Are Vegetation Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks)
Are "Normal Circumstances" present? Yes X No

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

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

	Surface Water (A1)		Water-Stained Leaves (B9)		Surface Soil Cracks (B6)
	High Water Table (A2)		Aquatic Fauna (B13)		Sparsely Vegetated Concave Surface (B8)
	Saturation (A3)		Marl Deposits (B15) **(LLR U)**		Drainage Patterns (B10)
	Water Marks (B1)		Hydrogen Sulfide Odor (C1)		Moss Trim Lines (B16)
	Sediment Deposits (B2)		Oxidized Rhizospheres on Living Roots (C3)		Dry-Season Water Table (C2)
	Drift Deposits (B3)		Presence of Reduced Iron (C4)		Crayfish Burrows (C8)
	Algal Mat or Crust (B4)		Recent Iron Reduction in Tilled Soils (C6)		Saturation Visible on Aerial Imagery (C9)
	Iron Deposits (B5)		Thin Muck Surface (C7)		Geomorphic Position (D2)
	Inundation Visible on Aerial Imagery (B7)		Other (Explain in Remarks)		Shallow Aquitard (D3)
					FAC-Neutral Test (D5)

Secondary Indicators (minimum of two required)

Field Observations:

Surface Water Present?	Yes	No X	Depth (inches)	**Wetland Hydrology Present?**	
Water Table Present?	Yes	No X	Depth (inches)	Yes	
Saturation Present? (include cappillary fringe)	Yes	No X	Depth (inches)	No	X

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

Remarks:

Vegetation- Use scientific names of plants

Tree Stratum (Plot Sizes:_____)		Absolute % Cover	Dominant Species?	Indicator Status
1				
2				
3				
4				
5				
6				
7				
	Total Cover			

Sapling Stratum (_____)		Absolute % Cover	Dominant Species?	Indicator Status
1	Crataegus marshallii	30		FAC
2	Ulmus crassifolia	20		FAC
3				
4				
5				
6				
7				
	Total Cover	50		

Shrub Stratum (_____)		Absolute % Cover	Dominant Species?	Indicator Status
1				
2				
3				
4				
5				
6				
7				
	Total Cover			

Herb Stratum (_____)		Absolute % Cover	Dominant Species?	Indicator Status
1	Iva annua	15		FAC
2	Carex cherokeensis	10		FACW
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
	Total Cover	25		

Woody Vine Stratum (_____)		Absolute % Cover	Dominant Species?	Indicator Status
1	Toxicondendron radicans	10		FAC
2				
3				
4				
5				
	Total Cover	10		

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

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

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

Prevalance Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species	10	x 2 =	20
FAC species	75	x 3 =	225
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	85 (A)	(B)	245
Prevalence Index = B/A =			2.8

Hydrophytic Vegetation Indicators:

_____ Dominance Test is >50%

X Prevalence Index ≤ 3.0[1]

_____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (If observed, list morphological adaptations below).

SOIL

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Fetures Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR 3/2	100					S.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:

- ____ Histol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ Organic Bodies (A6) **(LRR P, T, U)**
- ____ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ____ Muck Presence (A8) **(LRR U)**
- ____ 1 cm Muck (A9) **(LRR P, T)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Coastal Prarie Redox (A16) **(MLRA 150A)**
- ____ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Dark Surface (S7) **(LRR p, S, T, U)**
- ____ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ____ Thin Dark Surface (S9) **(LRR S, T, U)**
- ____ Loamy Mucky Mineral (F1) **(LRR**
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Marl (F10) **(LRR U)**
- ____ Depleted Ochric (F11) **(MLRA 151)**
- ____ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ____ Umbric Surface (F13) **(LRR P, T, U)**
- ____ Delta Ochric (F17) **(MLRA 151)**
- ____ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ____ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ____ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicator for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) **(LRR O)**
- ____ 2 cm Muck (A10) **(LRR S)**
- ____ Reduced Vertic (F18) **(outside MLRA 150A, A)**
- ____ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ____ Anomalous Bright Loamy Soils (F20) **MLRA 153 B)**
- ____ Red Parent Material (TF2)
- ____ Other (Explain in Remarks)

[3]Indicators of hydrolophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if observed):

Type: ____

Depth (inches): ____

Hydric Soil Present?

Yes ____ **No** X

Remarks:

BERG-OLIVER ASSOCIATES, INC.

ROUTINE WETLAND DETERMINATION DATA FORM

Project Site: Two Detention Sites City/County Fort Bend Sampling Date 10/1/2010
Applicant/Owne Burk-Kleinpeter State: TX Sampling Point UP 2
Investigator: Berg-Oliver Associates, Inc. Section/Range:
Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):
Subregion (LRR or MLRA): LRR T Lat: 29.53628 Long: -95.4841 Datum: NAD 83
Soil Map Unit Name: Bernard-Edna complex, 0-1% slopes NWI classification: U
Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks)
Are Vegetation Soil or Hydrology significantly disturber?
Are Vegetation Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks)
Are "Normal Circumstances" present? Yes X No

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

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required: check all that apply)		Secondary Indicators (minimum of two required)
Surface Water (A1)	Water-Stained Leaves (B9)	Surface Soil Cracks (B6)
High Water Table (A2)	Aquatic Fauna (B13)	Sparsely Vegetated Concave Surface (B8)
Saturation (A3)	Marl Deposits (B15) **(LRR U)**	Drainage Patterns (B10)
Water Marks (B1)	Hydrogen Sulfide Odor (C1)	Moss Trim Lines (B16)
Sediment Deposits (B2)	Oxidized Rhizospheres on Living Roots (C3)	Dry-Season Water Table (C2)
Drift Deposits (B3)	Presence of Reduced Iron (C4)	Crayfish Burrows (C8)
Algal Mat or Crust (B4)	Recent Iron Reduction in Tilled Soils (C6)	Saturation Visible on Aerial Imagery (C9)
Iron Deposits (B5)	Thin Muck Surface (C7)	Geomorphic Position (D2)
Inundation Visible on Aerial Imagery (B7)	Other (Explain in Remarks)	Shallow Aquitard (D3)
		FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	No X	Depth (inches)	**Wetland Hydrology Present?**
Water Table Present?	Yes	No X	Depth (inches)	Yes
Saturation Present? (include cappillary fringe)	Yes	No X	Depth (inches)	No X

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

Remarks:

Vegetation- Use scientific names of plants

Tree Stratum (Plot Sizes:_____)		Absolute % Cover	Dominant Species?	Indicator Status
1				
2				
3				
4				
5				
6				
7				
	Total Cover			

Sapling Stratum (_____)		Absolute % Cover	Dominant Species?	Indicator Status
1				
2				
3				
4				
5				
6				
7				
	Total Cover			

Shrub Stratum (_____)		Absolute % Cover	Dominant Species?	Indicator Status
1				
2				
3				
4				
5				
6				
7				
	Total Cover			

Herb Stratum (_____)		Absolute % Cover	Dominant Species?	Indicator Status
1	Cynodon dactylon	100	Y	FACU
2	Paspalum notatum	20	Y	FAC
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
	Total Cover	120		

Woody Vine Stratum (_____)		Absolute % Cover	Dominant Species?	Indicator Status
1				
2				
3				
4				
5				
	Total Cover			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

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

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

Prevalance Index Worksheet:

Total % Cover of:			Multiply by:
OBL species		x 1 =	
FACW species		x 2 =	
FAC species	20	x 3 =	60
FACU species	100	x 4 =	400
UPL species		x 5 =	
Column Totals:	120	(A) (B)	460
Prevalence Index = B/A =			3.83

Hydrophytic Vegetation Indicators:

_____ Dominance Test is >50%

_____ Prevalence Index $\leq 3.0^1$

_____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes No _X_

Remarks: (If observed, list morphological adaptations below).

SOIL

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Fetures Color (moist)	Redox Fetures %	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR 2/1	95	10YR 5/8	5	C	M	S.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:

- ____ Histol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ Organic Bodies (A6) **(LRR P, T, U)**
- ____ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ____ Muck Presence (A8) **(LRR U)**
- ____ 1 cm Muck (A9) **(LRR P, T)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Coastal Prarie Redox (A16) **(MLRA 150A)**
- ____ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Dark Surface (S7) **(LRR p, S, T, U)**
- ____ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ____ Thin Dark Surface (S9) **(LRR S, T, U)**
- ____ Loamy Mucky Mineral (F1) **(LRR**
- ____ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Marl (F10) **(LRR U)**
- ____ Depleted Ochric (F11) **(MLRA 151)**
- ____ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ____ Umbric Surface (F13) **(LRR P, T, U)**
- ____ Delta Ochric (F17) **(MLRA 151)**
- ____ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ____ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ____ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicator for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) **(LRR O)**
- ____ 2 cm Muck (A10) **(LRR S)**
- ____ Reduced Vertic (F18) **(outside MLRA 150A, A)**
- ____ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ____ Anomalous Bright Loamy Soils (F20) **MLRA 153 B)**
- ____ Red Parent Material (TF2)
- ____ Other (Explain in Remarks)

[3]Indicators of hydrolophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if observed):

Type: ____

Depth (inches): ____

Hydric Soil Present?

Yes X **No** ____

Remarks:

BERG-OLIVER ASSOCIATES, INC.

ROUTINE WETLAND DETERMINATION DATA FORM

Project Site: Two Detention Sites City/County Fort Bend Sampling Date 10/1/2010
Applicant/Owne Burk-Kleinpeter State: TX Sampling Point Wet A
Investigator: Berg-Oliver Associates, Inc. Section/Range:
Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):
Subregion (LRR or MLRA): LRR T Lat: 29.53577 Long: -95.4973 Datum: NAD 83
Soil Map Unit Name: Lake Charles clay, 0-1% slopes NWI classification:
Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks)
Are Vegetation Soil or Hydrology significantly disturber?
Are Vegetation Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks)
Are "Normal Circumstances" present? Yes X No

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

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

	Surface Water (A1)	X	Water-Stained Leaves (B9)	X	Surface Soil Cracks (B6)
	High Water Table (A2)		Aquatic Fauna (B13)		Sparsely Vegetated Concave Surface (B8)
	Saturation (A3)		Marl Deposits (B15) **(LLR U)**	X	Drainage Patterns (B10)
	Water Marks (B1)		Hydrogen Sulfide Odor (C1)		Moss Trim Lines (B16)
	Sediment Deposits (B2)	X	Oxidized Rhizospheres on Living Roots (C3)		Dry-Season Water Table (C2)
	Drift Deposits (B3)		Presence of Reduced Iron (C4)		Crayfish Burrows (C8)
	Algal Mat or Crust (B4)		Recent Iron Reduction in Tilled Soils (C6)		Saturation Visible on Aerial Imagery (C9)
	Iron Deposits (B5)		Thin Muck Surface (C7)	X	Geomorphic Position (D2)
	Inundation Visible on Aerial Imagery (B7)		Other (Explain in Remarks)		Shallow Aquitard (D3)
					FAC-Neutral Test (D5)

Secondary Indicators (minimum of two required)

Field Observations:

Surface Water Present?	Yes	No X	Depth (inches)	**Wetland Hydrology Present?** Yes X
Water Table Present?	Yes	No X	Depth (inches)	No
Saturation Present? (include cappillary fringe)	Yes	No X	Depth (inches)	

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

Remarks:

Vegetation- Use scientific names of plants

Tree Stratum (Plot Sizes:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1 Quercus nigra	20		FAC
2 Celtis laevigata	15		FAC
3			
4			
5			
6			
7			
Total Cover	35		

Sapling Stratum (_____)	Absolute % Cover	Dominant Species?	Indicator Status
1			
2			
3			
4			
5			
6			
7			
Total Cover			

Shrub Stratum (_____)	Absolute % Cover	Dominant Species?	Indicator Status
1			
2			
3			
4			
5			
6			
7			
Total Cover			

Herb Stratum (_____)	Absolute % Cover	Dominant Species?	Indicator Status
1 Chasmanthium latifolium	15		FAC
2 Elymus virginicus	15		FAC
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
Total Cover	30		

Woody Vine Stratum (_____)	Absolute % Cover	Dominant Species?	Indicator Status
1 Smilax bona-nox	5		FAC
2 Toxicodendron radicans	5		FAC
3			
4			
5			
Total Cover	10		

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

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

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

Prevalance Index Worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species	75	x 3 =	225
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	75 (A)	(B)	225
Prevalence Index = B/A =			3

Hydrophytic Vegetation Indicators:

_____ Dominance Test is >50%

X Prevalence Index ≤ 3.0[1]

_____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (If observed, list morphological adaptations below).

SOIL

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Fetures Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR 3/1	85	10YR 5/8	15	RM	M	S.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:

- ____ Histol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ Organic Bodies (A6) **(LRR P, T, U)**
- ____ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ____ Muck Presence (A8) **(LRR U)**
- ____ 1 cm Muck (A9) **(LRR P, T)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Coastal Prarie Redox (A16) **(MLRA 150A)**
- ____ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Dark Surface (S7) **(LRR p, S, T, U)**
- ____ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ____ Thin Dark Surface (S9) **(LRR S, T, U)**
- ____ Loamy Mucky Mineral (F1) **(LRR**
- ____ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Marl (F10) **(LRR U)**
- ____ Depleted Ochric (F11) **(MLRA 151)**
- ____ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ____ Umbric Surface (F13) **(LRR P, T, U)**
- ____ Delta Ochric (F17) **(MLRA 151)**
- ____ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ____ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ____ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicator for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) **(LRR O)**
- ____ 2 cm Muck (A10) **(LRR S)**
- ____ Reduced Vertic (F18) **(outside MLRA 150A, A)**
- ____ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ____ Anomalous Bright Loamy Soils (F20) **MLRA 153 B)**
- ____ Red Parent Material (TF2)
- ____ Other (Explain in Remarks)

[3]Indicators of hydrolophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if observed):

Type: ____

Depth (inches): ____

Hydric Soil Present?

Yes X **No** ____

Remarks:

BERG-OLIVER ASSOCIATES, INC.

ROUTINE WETLAND DETERMINATION DATA FORM

Project Site: Two Detention Sites City/County Fort Bend Sampling Date 10/5/2010
Applicant/Owne Burk-Kleinpeter State: TX Sampling Point UP 1
Investigator: Berg-Oliver Associates, Inc. Section/Range:
Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):
Subregion (LRR or MLRA): LRR T Lat: 29.53609 Long: -95.4955 Datum: NAD 83
Soil Map Unit Name: Lake Charles clay, 0-1% slopes NWI classification: U
Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks)
Are Vegetation Soil or Hydrology significantly disturber?
Are Vegetation Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks)
Are "Normal Circumstances" present? Yes X No

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

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

	Surface Water (A1)		Water-Stained Leaves (B9)		Surface Soil Cracks (B6)
	High Water Table (A2)		Aquatic Fauna (B13)		Sparsely Vegetated Concave Surface (B8)
	Saturation (A3)		Marl Deposits (B15) **(LLR U)**		Drainage Patterns (B10)
	Water Marks (B1)		Hydrogen Sulfide Odor (C1)		Moss Trim Lines (B16)
	Sediment Deposits (B2)		Oxidized Rhizospheres on Living Roots (C3)		Dry-Season Water Table (C2)
	Drift Deposits (B3)		Presence of Reduced Iron (C4)		Crayfish Burrows (C8)
	Algal Mat or Crust (B4)		Recent Iron Reduction in Tilled Soils (C6)		Saturation Visible on Aerial Imagery (C9)
	Iron Deposits (B5)		Thin Muck Surface (C7)		Geomorphic Position (D2)
	Inundation Visible on Aerial Imagery (B7)		Other (Explain in Remarks)		Shallow Aquitard (D3)
					FAC-Neutral Test (D5)

Secondary Indicators (minimum of two required)

Field Observations:

Surface Water Present?	Yes	No X	Depth (inches)	**Wetland Hydrology Present?**	
Water Table Present?	Yes	No X	Depth (inches)	Yes	
Saturation Present? (include cappillary fringe)	Yes	No X	Depth (inches)	No	X

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

Remarks:

Vegetation- Use scientific names of plants

Tree Stratum (Plot Sizes:_____)		Absolute % Cover	Dominant Species?	Indicator Status
1				
2				
3				
4				
5				
6				
7				
	Total Cover			

Sapling Stratum (_____)		Absolute % Cover	Dominant Species?	Indicator Status
1	Crataegus marshallii	30		FAC
2	Ulmus crassifolia	20		FAC
3				
4				
5				
6				
7				
	Total Cover	50		

Shrub Stratum (_____)		Absolute % Cover	Dominant Species?	Indicator Status
1				
2				
3				
4				
5				
6				
7				
	Total Cover			

Herb Stratum (_____)		Absolute % Cover	Dominant Species?	Indicator Status
1	Iva annua	15		FAC
2	Carex cherokeensis	10		FACW
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
	Total Cover	25		

Woody Vine Stratum (_____)		Absolute % Cover	Dominant Species?	Indicator Status
1	Toxicondendron radicans	10		FAC
2				
3				
4				
5				
	Total Cover	10		

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

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

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

Prevalance Index Worksheet:

Total % Cover of:			Multiply by:
OBL species		x 1 =	
FACW species	10	x 2 =	20
FAC species	75	x 3 =	225
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	85	(A) (B)	245
Prevalence Index = B/A =			2.8

Hydrophytic Vegetation Indicators:

_____ Dominance Test is >50%

X Prevalence Index $\leq 3.0^1$

_____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (If observed, list morphological adaptations below).

SOIL

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Fetures Color (moist)	Redox Fetures %	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR 3/2	100					S.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:

- ____ Histol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ Organic Bodies (A6) **(LRR P, T, U)**
- ____ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ____ Muck Presence (A8) **(LRR U)**
- ____ 1 cm Muck (A9) **(LRR P, T)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Coastal Prarie Redox (A16) **(MLRA 150A)**
- ____ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Dark Surface (S7) **(LRR p, S, T, U)**
- ____ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ____ Thin Dark Surface (S9) **(LRR S, T, U)**
- ____ Loamy Mucky Mineral (F1) **(LRR**
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Marl (F10) **(LRR U)**
- ____ Depleted Ochric (F11) **(MLRA 151)**
- ____ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ____ Umbric Surface (F13) **(LRR P, T, U)**
- ____ Delta Ochric (F17) **(MLRA 151)**
- ____ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ____ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ____ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicator for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) **(LRR O)**
- ____ 2 cm Muck (A10) **(LRR S)**
- ____ Reduced Vertic (F18) **(outside MLRA 150A, A)**
- ____ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ____ Anomalous Bright Loamy Soils (F20) **MLRA 153 B)**
- ____ Red Parent Material (TF2)
- ____ Other (Explain in Remarks)

[3]Indicators of hydrolophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if observed):

Type: ____

Depth (inches): ____

Hydric Soil Present?

Yes ____ **No** X

Remarks:

BERG-OLIVER ASSOCIATES, INC.

ROUTINE WETLAND DETERMINATION DATA FORM

Project Site: Two Detention Sites City/County Fort Bend Sampling Date 10/1/2010
Applicant/Owne Burk-Kleinpeter State: TX Sampling Point UP 2
Investigator: Berg-Oliver Associates, Inc. Section/Range:
Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):
Subregion (LRR or MLRA): LRR T Lat: 29.53628 Long: -95.4841 Datum: NAD 83
Soil Map Unit Name: Bernard-Edna complex, 0-1% slopes NWI classification: U
Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks)
Are Vegetation Soil or Hydrology significantly disturber?
Are Vegetation Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks)
Are "Normal Circumstances" present? Yes X No

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

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

	Surface Water (A1)		Water-Stained Leaves (B9)		Surface Soil Cracks (B6)
	High Water Table (A2)		Aquatic Fauna (B13)		Sparsely Vegetated Concave Surface (B8)
	Saturation (A3)		Marl Deposits (B15) **(LLR U)**		Drainage Patterns (B10)
	Water Marks (B1)		Hydrogen Sulfide Odor (C1)		Moss Trim Lines (B16)
	Sediment Deposits (B2)		Oxidized Rhizospheres on Living Roots (C3)		Dry-Season Water Table (C2)
	Drift Deposits (B3)		Presence of Reduced Iron (C4)		Crayfish Burrows (C8)
	Algal Mat or Crust (B4)		Recent Iron Reduction in Tilled Soils (C6)		Saturation Visible on Aerial Imagery (C9)
	Iron Deposits (B5)		Thin Muck Surface (C7)		Geomorphic Position (D2)
	Inundation Visible on Aerial Imagery (B7)		Other (Explain in Remarks)		Shallow Aquitard (D3)
					FAC-Neutral Test (D5)

Secondary Indicators (minimum of two required)

Field Observations:

Surface Water Present?	Yes	No X	Depth (inches)		
Water Table Present?	Yes	No X	Depth (inches)	**Wetland Hydrology Present?**	
Saturation Present?	Yes	No X	Depth (inches)	Yes	
(include cappillary fringe)				No	X

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

Remarks:

Vegetation- Use scientific names of plants

Tree Stratum (Plot Sizes:_____)	Absolute % Cover	Dominant Species?	Indicator Status
1			
2			
3			
4			
5			
6			
7			
Total Cover			

Sapling Stratum (_____)	Absolute % Cover	Dominant Species?	Indicator Status
1			
2			
3			
4			
5			
6			
7			
Total Cover			

Shrub Stratum (_____)	Absolute % Cover	Dominant Species?	Indicator Status
1			
2			
3			
4			
5			
6			
7			
Total Cover			

Herb Stratum (_____)	Absolute % Cover	Dominant Species?	Indicator Status
1 Cynodon dactylon	100	Y	FACU
2 Paspalum notatum	20	Y	FAC
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
Total Cover	120		

Woody Vine Stratum (_____)	Absolute % Cover	Dominant Species?	Indicator Status
1			
2			
3			
4			
5			
Total Cover			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

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

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

Prevalance Index Worksheet:

Total % Cover of:			Multiply by:
OBL species		x 1 =	
FACW species		x 2 =	
FAC species	20	x 3 =	60
FACU species	100	x 4 =	400
UPL species		x 5 =	
Column Totals:	120	(A) (B)	460
Prevalence Index = B/A =			3.83

Hydrophytic Vegetation Indicators:

_____ Dominance Test is >50%

_____ Prevalence Index $\leq 3.0^1$

_____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes No _X___

Remarks: (If observed, list morphological adaptations below).

SOIL

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Fetures Color (moist)	Redox Fetures %	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR 2/1	95	10YR 5/8	5	C	M	S.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:

- ____ Histol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5)
- ____ Organic Bodies (A6) **(LRR P, T, U)**
- ____ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ____ Muck Presence (A8) **(LRR U)**
- ____ 1 cm Muck (A9) **(LRR P, T)**
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Coastal Prarie Redox (A16) **(MLRA 150A)**
- ____ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Dark Surface (S7) **(LRR p, S, T, U)**
- ____ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ____ Thin Dark Surface (S9) **(LRR S, T, U)**
- ____ Loamy Mucky Mineral (F1) **(LRR**
- ____ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Marl (F10) **(LRR U)**
- ____ Depleted Ochric (F11) **(MLRA 151)**
- ____ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ____ Umbric Surface (F13) **(LRR P, T, U)**
- ____ Delta Ochric (F17) **(MLRA 151)**
- ____ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ____ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ____ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicator for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) **(LRR O)**
- ____ 2 cm Muck (A10) **(LRR S)**
- ____ Reduced Vertic (F18) **(outside MLRA 150A, A)**
- ____ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ____ Anomalous Bright Loamy Soils (F20) **MLRA 153 B)**
- ____ Red Parent Material (TF2)
- ____ Other (Explain in Remarks)

[3]Indicators of hydrolophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if observed):

Type: ____

Depth (inches): ____

Hydric Soil Present?

Yes X **No** ____

Remarks:

BERG-OLIVER ASSOCIATES, INC.

ROUTINE WETLAND DETERMINATION DATA FORM

Project Site: Two Detention Sites City/County Fort Bend Sampling Date 10/1/2010
Applicant/Owne Burk-Kleinpeter State: TX Sampling Point Wet A
Investigator: Berg-Oliver Associates, Inc. Section/Range:
Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%):
Subregion (LRR or MLRA): LRR T Lat: 29.53577 Long: -95.4973 Datum: NAD 83
Soil Map Unit Name: Lake Charles clay, 0-1% slopes NWI classification:
Are climatic/hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks)
Are Vegetation Soil or Hydrology significantly disturber?
Are Vegetation Soil or Hydrology naturally problematic? (If needed, explain any answers in Remarks)
Are "Normal Circumstances" present? Yes X No

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

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

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required: check all that apply)			Secondary Indicators (minimum of two required)	
			X	Surface Soil Cracks (B6)
Surface Water (A1)	X	Water-Stained Leaves (B9)		Sparsely Vegetated Concave Surface (B8)
High Water Table (A2)		Aquatic Fauna (B13)	X	Drainage Patterns (B10)
Saturation (A3)		Marl Deposits (B15) **(LLR U)**		Moss Trim Lines (B16)
Water Marks (B1)		Hydrogen Sulfide Odor (C1)		Dry-Season Water Table (C2)
Sediment Deposits (B2)	X	Oxidized Rhizospheres on Living Roots (C3)		Crayfish Burrows (C8)
Drift Deposits (B3)		Presence of Reduced Iron (C4)		Saturation Visible on Aerial Imagery (C9)
Algal Mat or Crust (B4)		Recent Iron Reduction in Tilled Soils (C6)	X	Geomorphic Position (D2)
Iron Deposits (B5)		Thin Muck Surface (C7)		Shallow Aquitard (D3)
Inundation Visible on Aerial Imagery (B7)		Other (Explain in Remarks)		FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	No X	Depth (inches)	**Wetland Hydrology Present?**	Yes X
Water Table Present?	Yes	No X	Depth (inches)		No
Saturation Present? (include cappillary fringe)	Yes	No X	Depth (inches)		

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

Remarks:

Vegetation- Use scientific names of plants

Tree Stratum (Plot Sizes:_____)		Absolute % Cover	Dominant Species?	Indicator Status
1	Quercus nigra	20		FAC
2	Celtis laevigata	15		FAC
3				
4				
5				
6				
7				
	Total Cover	35		

Sapling Stratum (_____)		Absolute % Cover	Dominant Species?	Indicator Status
1				
2				
3				
4				
5				
6				
7				
	Total Cover			

Shrub Stratum (_____)		Absolute % Cover	Dominant Species?	Indicator Status
1				
2				
3				
4				
5				
6				
7				
	Total Cover			

Herb Stratum (_____)		Absolute % Cover	Dominant Species?	Indicator Status
1	Chasmanthium latifolium	15		FAC
2	Elymus virginicus	15		FAC
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
	Total Cover	30		

Woody Vine Stratum (_____)		Absolute % Cover	Dominant Species?	Indicator Status
1	Smilax bona-nox	5		FAC
2	Toxicodendron radicans	5		FAC
3				
4				
5				
	Total Cover	10		

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

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

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

Prevalance Index Worksheet:

Total % Cover of:			Multiply by:
OBL species		x 1 =	
FACW species		x 2 =	
FAC species	75	x 3 =	225
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	75 (A)	(B)	225
Prevalence Index = B/A =			3

Hydrophytic Vegetation Indicators:

_____ Dominance Test is >50%

X Prevalence Index ≤ 3.0[1]

_____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: (If observed, list morphological adaptations below).

SOIL

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Fetures Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-20	10YR 3/1	85	10YR 5/8	15	RM	M	S.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:

- ___ Histol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coastal Prarie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR p, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
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- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
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- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicator for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A, A)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **MLRA 153 B)**
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrolophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if observed):

Type: ___

Depth (inches): ___

Hydric Soil Present?

Yes X **No** ___

Remarks:

Appendix G:

Hazardous Materials Search

Database Updates

CSJ 0912-34-144

Environmental Data Search SUMMARY
Trammel Fresno Road Corridor
Fort Bend County, Texas
(Fort Bend Parkway to FM 521)

Acronym	Database	Checked Date	Minimum Search Distance	Site	Location	Distance from Corridor	Description
RCRA TSD	Resource Conservation and Recovery Information System - Treatment Storage and Disposal	05/2010	1.0 mile	Site 1	3130 FM 521, Fresno, TX 77545	0.68 Miles North	Site EPA ID TXD000356816, No starting date for TSD activities available for the site. Type of TSD: Land Disposal Unit.
ERNS	Emergency Response Notification System	05/2010	0.25 mile	Site 1	3130 FM 521, Fresno, TX 77545	1.0 Miles north	NRC Report # 760790, on June 2, 2005, a leak occurred in a valve connected to a storage tank resulting in a release to the atmosphere.
				Site 2	3130 FM 521, Fresno, TX 77545	1.0 Miles north	NRC Report #764466, on July 2, 2005, the material release from a 4 inch pipeline due to a leak at the weld.
				Site 3	3130 FM 521, Fresno, TX 77545	1.0 Miles north	NRC Report #819065, caller stated that a rupture disk broke causing a release of material from a reacter.
				Site 4	3130 FM 521, Fresno, TX 77545	1.0 Miles north	NRC Report 873090, caller is reporting that ethylene oxide released from the pilot plant due to overpressuring as the material released into the atmosphere.
				Site 5	3130 FM 521, Fresno, TX 77545	1.0 Miles north	NRC Report 892079, caller is reporting a release of glutaraldehyde (50% or less) from a tank at their facility due to the company not using their scrubber system because the scrubber system does not scrub off the vapors. There is no vapor recovery system to scrub off the glutarahyde. This event is going on daily. The safety issues are not being followed.
TXLF	TCEQ Solid Waste Facilities	05/2010	1.0 mile	Site 1	N of Fresno, 2.9 miles north of SH 6/FM 521, east side of FM 521, Fresno, TX, 77092	0.75 Miles east	Site ID 1939.000 Date Permit App was received 7/28/86. This site is a solid waste inceration facility w/o energy recovery.
LFUN	Unauthorized and Unpermitted Landfill Sites	05/2010	0.5 mile	Site 1	Jasmine Road, Fresno, TX	0.28 Miles southwest	Site ID 2406 - Approximate date of first use is 1993, approximate date of last use: 1995.
				Site 2	HWY 288, 2.2 miles North of intersection with HWY 6, Fort Bend County, TX	0.5 Miles southeast	Site ID 1028 - Date of first use unknown. Date of last use: 1978. Fresno Structure and Hangar MFG.

CSJ 0912-34-144

Environmental Data Search SUMMARY
Trammel Fresno Road Corridor
Fort Bend County, Texas
(Fort Bend Parkway to FM 521)

Acronym	Database	Checked Date	Minimum Search Distance	Site	Location	Distance from Corridor	Description
PST	Petroleum Storage Tank Registration	05/2010		Site 1	616 FM 521, Fresno, TX 77545	0.8 Miles northeast	Facility ID# 79373 - Date registered: 07/14/08; Industrial/Chemical/Manufacturing Plant; four (4) above ground storage tanks, all in-use, installed in 2007 and 2008, self certification not available for facility.
				Site 2	1218 Trammel Fresno Road, Fresno, TX 77545	On Corridor	Facility ID# 78880 - Date registered: 11/28/07; Retail; two (2) below ground storage tanks, all in-use, installed in 2007, self certification date 2/22/10.
				Site 3	3503 FM 521, Fresno, TX 77545	.01 Miles east	Facility ID# 54977 - Date registered 7/17/90; Retail; two (2) below ground storage tanks, all in use, installed in 2000; three (3) tanks removed in 2000, self certification date 1/28/10.
				Site 4	1439 Trammel Fresno Road, Fresno TX 77545	On Corridor	Facility ID# 43430 - Date registered 5/27/86; Retail; three (3) below ground storage tanks, only one in use, installed in 1987; two (2) tanks temporarily out of use since 11/20/2009; self certification date 4/15/10.
				Site 5	3523 FM 521, Fresno, TX 77545	.01 Miles east	Facility ID# 23838 - Date registered 05/08/1986; Permanently filled in place, 07/30/1984.
TXLUST	Leaking Underground Storage Tanks	05/2010	0.5 mile	Site 1	3523 FM 521, Fresno, TX 77545	.01 Miles east	LPST #107798, Facility ID #0023838, discovered 12/23/93; reported 2/11/94; minor soil contamination, does not require a rap, final concurrence, pending documentation of well plugging
				Site 2	3503 FM 521, Fresno, TX 77545	.01 Miles east	LPST #113432, Facility ID #0054977, discovered 07/16/98; reported 8/27/98; monitoring, preapproval given to plug and abandon five monitor wells in 11/2009.

No findings were made in the following database searches: NPL (National Priority List), within 1.0 mile; CERCLIS (Comprehensive Environmental Response, Compensation and Liability Information System), within 0.5 mile; NFRAP (No Further Remedial Action Planned), within 0.5 mile; CORRACT (Corrective Action), within 1.0 mile; RCRA-G (Resource Conservation and Recovery Information System), within 0.25 mile; TXVCP (Texas Voluntary Cleanup Program), within 0.5 mile; TXIOP (Innocent Owner/Operator Program), within 0.5 mile; TXSSF (Texas State Superfund), within 1.0 mile; TXSPILL (Texas Spills List), within 0.25 mile; Texas Commission on Environmental Quality Superfund Program; Registered Dry Cleaning Facilities and Drop Stations.

Site marked with an asterisk (*) added to list following field review in June 2008. Site research completed by Burk-Kleinpeter, Inc. of the Texas Commission on Environmental Quality PST Registration Database, www.tceq.state.tx.us, July 2008 and May 2010. Data from ERNS review conducted through the National Response Center, www.nrc.uscg.mil, May 2010.

Original Data Source: Environmental Data Search, TellALL Corporation, Widening of Trammel-Fresno Road, Fort Bend, TX, September 23, 2003. Copy of the search report attached.

Table prepared by Burk-Kleinpeter, Inc., 2008, updated in 2010.

Appendix H:
Soil and Groundwater Management Plan

July 2010

Soil and Groundwater Management Plan

Texas Department of Transportation
FM 521 at Trammel-Fresno Road
Road Widening Project
Fresno, Fort Bend County, Texas

Texas Department of Transportation
Contract No. 57-9XXSG005
Work Authorization No. 20
Tetra Tech NUS, Inc. Project No. 112C02970

Prepared for:

Texas Department of Transportation

Prepared by:

Tetra Tech NUS, Inc.
Houston, Texas

SOIL AND GROUNDWATER MANAGEMENT PLAN

FM 521 at Trammel-Fresno Road
Road Widening Project
Fresno, Fort Bend County, Texas

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1.3 Regulatory Overview 1

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SOIL AND GROUNDWATER MANAGEMENT PLAN

FM 521 at Trammel-Fresno Road
Road Widening Project
Fresno, Fort Bend County, Texas

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2	Soil and Groundwater Management Work Zone Map

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APPENDIX

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D	Soil and Groundwater Management Plan Acceptance Sign-Off Sheet

SOIL AND GROUNDWATER MANAGEMENT PLAN

FM 521 at Trammel-Fresno Road
Road Widening Project
Fresno, Fort Bend County, Texas

LIST OF ACRONYMS AND ABBREVIATIONS

BTEX	benzene, toluene, ethylbenzene, and xylenes
FM	Farm-to-Market
LPST	Leaking Petroleum Storage Tank
mg/kg	milligrams per kilogram
mg/l	milligrams per liter
OSHA	Occupational Safety and Health Administration
PCLs	Protective Concentration Levels
PID	photoionization detector
PPE	personal protective equipment
ppmv	parts per million volume
SGMP	Soil and Groundwater Management Plan
SOPs	Standard Operating Procedures
TAC	Texas Administrative Code
TCEQ	Texas Commission on Environmental Quality
TPH	Total Petroleum Hydrocarbons
TRRP	Texas Risk Reduction Program
TxDOT	Texas Department of Transportation
USEPA	United States Environmental Protection Agency

1.0 INTRODUCTION

1.1 Overview

The Texas Department of Transportation (TxDOT) has entered the planning stages for widening of Trammel-Fresno Road, including the construction of traffic control devices, located at the intersection of Farm-to-Market (FM) Road 521 and Trammel-Fresno Road/Palmetto Drive in Fresno, Texas (Figure 1). Initial research conducted for the construction project indicated potential environmental concerns due to the presence of two Leaking Petroleum Storage Tank (LPST) sites at this intersection. These sites lie on the northeastern and southeastern corners of the FM 521 and Trammel-Fresno Road/Palmetto Drive intersection.

This Soil and Groundwater Management Plan (SGMP) has been developed for TxDOT to direct the CONTRACTOR in the methods to be used in the management of potentially impacted soil and groundwater that may be encountered during the construction activities. Figure 2 depicts the construction area and the SGMP zone of potentially contaminated soil and groundwater for which this SGMP shall apply.

1.2 Background and Purpose

Subsurface soil and groundwater investigations have been performed at the active LPST site located on the northeastern corner of the FM 521 and Trammel-Fresno Road/Palmetto Drive intersection. Limited assessment activities have been conducted at the former LPST site located on the southeast corner of the Trammel-Fresno Road/Palmetto Drive intersection. The results of the subsurface investigations have indicated that potentially-contaminated soil and groundwater are present in the area proposed for drilling and excavation activities. This SGMP has been created to give adequate information and direction into the site operation and management in regard to potentially contaminated soil and groundwater during the construction activities at the intersection.

1.3 Regulatory Overview

There does not appear to be any regulatory impediments to the implementation of this SGMP as written. The Texas Risk Reduction Program (TRRP), 30 Texas Administrative Code (TAC) §350.36 allows the reuse of affected soils, above and below Protective Concentration Levels (PCLs), under specific circumstances applicable to this construction project in a public roadway. The United States Environmental Protection Agency (USEPA) set a precedent in 1992 (Silvia K. Lowrance memorandum), acknowledging that Resource Conservation and Recovery Act requirements and responsibilities are not in force within an area subject to typical excavation on public roadways. These statutory and policy precedents exempt TxDOT from generator status for any soil materials produced within the management zones so long as affected materials remain in the project site under the conditions specified by the SGMP. Chapter 30 TAC §335.10(h) excludes transportation of material potentially classified as hazardous on public roadways across contiguous properties from the normal requirements of marking and manifesting. Storm water discharged to the City of Fresno sanitary sewer system (if any) shall comply with the terms of and conditions of the permit issued by the City of Fresno.

2.0 CONTAMINATED MEDIA INFORMATION

As previously indicated, the properties located on the northeast and southeast corners of the FM 521 and Trammel-Fresno Road/Palmetto Drive intersection are an active and a former LPST site, respectively. Data for the active LPST site (Renfrow Grocery) located on the northeastern corner of the intersection has been obtained and reviewed for preparation of the SGMP (Appendix A). Based on information obtained from the Texas Commission on Environmental Quality (TCEQ) web site database, the underground storage tanks on the property on the southeast corner (Fresno Le Grand, Inc.) had been removed in July 1994 and the site was granted closure in May 1996. Given the closure status of the site and the information stated on the TCEQ web site, it can be concluded that the environmental impacts at the property were minimal and significant contaminated soil and groundwater should not be present. No additional data was obtained for the Fresno Le Grand, Inc. site. Results of the review of the data for the sites are listed below along with a summary of the associated environmental impacts:

Property	Location	Soil Impact (along FM 521)	Groundwater Impact (along FM 521)*
Renfrow Grocery (LPST #113432)	Northeast Corner	Benzene: <0.010 to 6.31 mg/kg BTEX: <0.060 to 106.4 mg/kg TPH: <40 to 1,107 mg/kg	Benzene: <0.001 to 0.840 mg/l BTEX: <0.003 to 1.978 mg/l TPH: <4.0 to 14.0 mg/l
Fresno Le Grand, Inc. (LPST #107798)	Southeast Corner	Data not obtained, Minor soil impact (TCEQ data base)	Data not obtained, No contaminated groundwater (TCEQ data base)
TCEQ Default Construction Worker Exposure Concentrations		Benzene: 12 mg/kg Toluene: 276 mg/kg Ethylbenzene: 1,350 mg/kg Xylene(s): 433 mg/kg	Benzene: 20.1 mg/l Toluene: 48.8 mg/l Ethylbenzene: 21.7 mg/l Xylene(s): 127 mg/l

Notes:
*The groundwater data indicated represents the last 12 months of monitoring conducted the site.
BTEX = Total of benzene, toluene, ethylbenzene, and xylenes
TPH = Total petroleum hydrocarbons
mg/kg = milligrams per kilogram
mg/l = milligrams per liter

Based on the data obtained for the Renfrow Grocery site, potentially contaminated media is not expected between 0 and 10.5 feet below grade. The impacted subsurface soil at the LPST site typically range from 10.5 to 15 feet below grade and the groundwater producing interval at the site ranges from 10.5 to greater than 17 feet below grade. Groundwater was detected in monitoring wells at 7.48 to 8.38 feet below grade in December 1998, but these wells were apparently plugged due to insufficient water production for sampling. Based on the data reviewed, exposure to contaminated soil and groundwater in the vicinity of the LPST sites (Figure-2, SGMP Zone) should not pose a threat to construction workers since none of the monitoring wells at the Renfrow Grocery site contain levels of BTEX in excess of the TCEQ default construction worker exposure levels (indicated on table above).

To ensure that proper soil and groundwater management is accomplished, an ENVIRONMENTAL SPECIALIST shall be on-call during all drilling and excavation work in the SGMP Zone.

3.0 SUMMARY OF POTENTIALLY IMPACTED CONSTRUCTION IMPROVEMENTS AND MATERIALS

The construction of footings at the site may encounter contaminated soil or groundwater. Since these structures are to be constructed of concrete and steel, they should not be affected by the residual petroleum hydrocarbons. Secondary groundwater intervals may be present at unknown depths beyond 25 feet below grade. The drilling and installation of footings in to secondary groundwater producing intervals may create a vertical pathway from the upper contaminated zone into the secondary groundwater producing intervals. Once the concrete has been poured, the pathway should be sealed sufficiently as to not promote the downward migration of contaminants because the contaminants are petroleum hydrocarbons and are lighter than water.

Surface improvements such as the construction of pavement should not be affected by the residual hydrocarbons since the contamination is expected to be at depths deeper than 10.5 feet below grade. The construction of storm sewers may be impacted if they are installed in the groundwater producing interval which is 10.5 to 17 feet below grade. Installation of the storm sewer in the groundwater bearing zone in the SGMP zone should not pose a threat to the integrity of the rubber seals since the concentrations of the dissolved hydrocarbons (if present) are expected to be low. Proper sealing of the pipe joints should preclude the contaminated groundwater from entering the pipe and from being transported down drain.

The installation of electrical and communication cables should not be impacted when installed in SGMP Zone since the depth of potential contaminated soil and ground water is greater than 10.5 feet below grade. Any dissolved or adsorbed hydrocarbons that may be present are expected to be in low concentrations that is not expected to degrade electrical or communication cables.

4.0 SOILS MANAGEMENT

4.1 Excavation Material Sampling and Handling

If contaminated soil or sludge (soil/water mixture) is detected in SGMP Zone, the CONTRACTOR shall notify the ENVIRONMENTAL SPECIALIST for sampling and waste classification. Any contaminated soil or sludge, if found, should be handled by individuals certified in Occupational Safety and Health Administration (OSHA) 29 CFR 1910.120 (Hazardous Waste Operations and Emergency Response). It shall be the CONTRACTOR's responsibility to remove and dispose of any contaminated soil either through self performance or subcontract. Appendix B includes the Soil and Groundwater Management Process Flow Diagrams to be followed in the event contamination is detected.

4.2 Excavation Monitoring and Field Screening

While drilling and excavation work is being conducted in SGMP Zone, the ENVIRONMENTAL SPECIALIST shall be on-call to travel to the site if needed. It is the responsibility of the CONTRACTOR to monitor the soil being excavated and/or drilled while working in the SGMP Zone. Equipment operators shall be instructed to immediately report color changes or odors in soils to the CONTRACTOR supervisor. The CONTRACTOR supervisor shall notify the ENVIRONMENTAL SPECIALIST that potentially contaminated material has been detected and the ENVIRONMENTAL SPECIALIST is to report to the construction site to document observations of staining, odors, sheens, or free product. The ENVIRONMENTAL SPECIALIST shall make a determination while the CONTRACTOR removes all equipment and continues construction activities in another area. The ENVIRONMENTAL SPECIALIST shall oversee the management of the potentially contaminated soil.

Field screening of soil samples from the suspect locations shall be conducted by placing the soil to be screened in a plastic sealable bag to allow volatilization, then a photoionization detector (PID) shall be used to measure the headspace. If the reading is above the threshold limit (20 parts per million volume [ppmv]) the soil shall be stockpiled in an area separate from soils that do not exhibit field-screening values above the threshold limit. Soils with PID concentrations less than the threshold are considered clean and can be re-used on-site. Sludge with a PID reading greater than 20 ppmv shall be contained in water tight roll-off boxes to prevent the release of potentially contaminated liquid.

4.3 Soils Stockpiling, Sampling and Re-use

The segregated stockpiles shall be classified as "clean" or "potentially contaminated". Soils determined to be suspect by the ENVIRONMENTAL SPECIALIST during excavation monitoring and field screening shall be placed into the "potentially contaminated" stockpile. All other soils may be placed in the "clean" stockpile. Sludge "potentially contaminated" shall be contained in water tight roll-off boxes to prevent the release of potentially contaminated groundwater.

"Clean" excavation materials may be re-used in other project areas without being further tested. The "potentially contaminated" stockpiles shall be sampled by the ENVIRONMENTAL SPECIALIST at a rate of one sample per 50 cubic yards. Results of the samples shall be returned from the laboratory within 24 hours and construction schedules should accommodate time for sampling and analysis. Basic soil sampling methodologies and quality control standards should be followed as well as applicable TxDOT Standard Operating Procedures (SOPs) included in Appendix C.

The ENVIRONMENTAL SPECIALIST shall be responsible for oversight of the staging and maintaining of the "potentially contaminated" stockpile at a location directed by the CONTRACTOR. This stockpile shall be placed on 40-mil high-density polyethylene and covered with 6-mil polyethylene during rainfall events and during non-working hours. The area shall be fenced to prevent access by the general public. Signs shall be posted on the fence indicating no entrance without authorization. This stockpile should not be located in an area where rain or storm water collects and should be stored in accordance with the site's storm water pollution prevention plan to prevent sediment from entering nearby drainage pathways.

Based on the analytical results, the ENVIRONMENTAL SPECIALIST shall coordinate the transportation and disposal of soil with contamination concentrations above the hazardous criteria if encountered for the CONTRACTOR. The soil classified as hazardous, shall be transported to and disposed at the US Ecology, Inc. landfill located at 3277 County Road 69 in Robstown, Texas. Those materials with contamination concentrations below the hazardous criteria but above the TCEQ TRRP Residential PCLs, shall be transported off site for disposal at the HPP Corporation facility located at 2070 Genoa Red Bluff in Houston, Texas for recycling. The TxDOT District Office representative shall sign all shipping papers, including hazardous waste manifests. Those materials with contamination concentrations below the TCEQ Residential PCLs may be re-used on-site or shipped for re-use if not needed. Appendix B includes the Soil Groundwater Management Process Flow Diagram which shall aid the ENVIRONMENTAL SPECIALIST and CONTRACTOR.

5.0 GROUNDWATER MANAGEMENT

Based on the review of the available reports for the Renfro Grocery site, contaminated groundwater may be encountered in the construction area at a depth of 10.5 to 17 feet below grade. Since de-watering is not expected, the production of large quantities of groundwater is not anticipated.

Since the groundwater in the construction area may be contaminated, any groundwater recovered shall be contained in an on-site portable holding tank and sampled prior to disposal. Tank size should be based on the anticipated volume of water to be recovered. Sampling should be conducted on a one sample per tank basis. Results of the samples shall be returned from the laboratory within 24 hours and construction schedules should accommodate time for sampling and analysis.

Following receipt of the analytical data, the water shall be removed from the construction site for disposal at the Intergulf Corporation facility located at 10020 Bayport Boulevard in Pasadena, Texas. The portable holding tank shall be placed in a bermed area lined with 20 mil plastic sheeting. Once the water is pumped into the portable holding tanks, the ENVIRONMENTAL SPECIALIST should be notified so that the proper sampling can be conducted prior to discharge or disposal.

The ENVIRONMENTAL SPECIALIST, on behalf of the CONTRACTOR, shall be responsible for the management and disposal of the water once it is collected into the tank. Basic water sampling methodologies and quality control standards should be followed as well as the TxDOT's SOPs (Appendix C). Appendix B includes the Groundwater Management Process Flow Diagram which shall aid the ENVIRONMENTAL SPECIALIST and CONTRACTOR.

6.0 REQUIREMENTS OF THE ENVIRONMENTAL SPECIALIST

The CONTRACTOR shall use an ENVIRONMENTAL SPECIALIST to manage the requirements outlined within this SGMP. The contracted personnel used for the onsite ENVIRONMENTAL SPECIALIST shall be billed at a rate no greater than a Field Technician. The contracted rates shall be negotiated between the CONTRACTOR and TxDOT prior to work commencing on the project. A list of duties and requirements that the ENVIRONMENTAL SPECIALIST shall be required to perform are included below.

- **Soil and Water Sampling**
  The ENVIRONMENTAL SPECIALIST shall be required to maintain personal protective equipment (PPE) as described in the CONTRACTOR's Health and Safety Plan at all times while obtaining soil and groundwater samples. It is expected that the samples shall be of low contaminant concentrations and shall not require the use of special PPE. Strict USEPA, TCEQ, and TxDOT soil and water sampling protocols shall be adhered to and any deviation shall be discussed, approved, and documented by TxDOT.

- **Excavation Monitoring and Field Screening**
  The ENVIRONMENTAL SPECIALIST shall be on-call when work is being conducted in the SGMP Zone. If contamination is detected or suspected, the CONTRACTOR shall notify the ENVIRONMENTAL SPECIALIST to report to the site within 2 hours of notification. Upon arrival the ENVIRONMENTAL SPECIALIST shall immediately field screen soil samples from the suspect location or inspect the suspect groundwater. The ENVIRONMENTAL SPECIALIST shall document field screening for each truckload of excavated materials.

- **Stockpile Sampling**
  The ENVIRONMENTAL SPECIALIST shall sample "potentially contaminated" stockpiles at a rate of one sample per 50 cubic yards. The samples shall be analyzed for BTEX, TPH, and total lead.

- **Experience Requirements**
  The ENVIRONMENTAL SPECIALIST shall have at least two verifiable years performing the work outlined within this SGMP. The verifiable proof shall be reviewed and accepted by TxDOT prior to the work commencing on the project.

- **Safety Training Requirements**
  The ENVIRONMENTAL SPECIALIST shall have the 40-hour Hazardous Waste Operation and Emergency Response training per OSHA 29 CFR 1910.120.

- **Employer Requirements**
  The ENVIRONMENTAL SPECIALIST shall be employed by a firm or organization that employs a professional(s) who hold a registration in one or more of the following: Professional Engineer by the State of Texas, Registered Environmental Manager/ Registered Environmental Professional by the National Registry of Environmental Professionals, Professional Geoscientist by the State of Texas, or a TCEQ-registered Corrective Action Project Manager.

7.0 SGMP DOCUMENTATION

7.1 Revisions to the SGMP

Special circumstances may dictate temporary or permanent changes or exceptions to this SGMP. Any changes or exceptions made in the field to the SGMP should be discussed with the TxDOT Engineer-in-Charge or their designated field representative and fully documented by the ENVIRONMENTAL SPECIALIST and CONTRACTOR.

7.2 Documentation of SGMP Acceptance

Appendix D is an SGMP Acceptance Form that shall serve as written documentation that the CONTRACTOR, SUB-CONTRACTOR(s), ENVIRONMENTAL SPECIALIST, and all personnel working within the SGMP Zone have read the SGMP and understand the contents. The initial SGMP Acceptance Form shall be signed and dated prior to work commencing on the project. The SGMP Acceptance Form is to be re-signed and delivered to TxDOT when changes to the plan or workers are made.

7.3 Field Documentation

The ENVIRONMENTAL SPECIALIST, if required for the project, shall maintain records of the monitoring, field screening, and sampling activities in a weather-resistant project field notebook. The notes should also document field conditions, CONTRACTOR activity, and all observations relative to the proper implementation of the SGMP. All field instrument calibrations, instrument readings and sample collection data shall be kept in the field notebook. Information shall be kept in the project field notebook to further document daily occurrences at the site. Field logs and daily activity summaries shall be submitted to the CONTRACTOR and TxDOT on a daily basis to verify work performed and time allocation. A field log shall be kept for the entire project and submitted to TxDOT at the end of the project by the CONTRACTOR. The TxDOT SOPs for Field Logbook procedures are included in Appendix C.

7.4 SGMP Final Report

A SGMP final report shall be developed by the ENVIRONMENTAL SPECIALIST and submitted to TxDOT by the CONTRACTOR at the completion of the construction project if impacted soil or groundwater is discovered. The final report shall contain, at a minimum:

- Daily field logs;
- All laboratory results with sample locations;
- All corrections/ and revisions to the SGMP;
- Disposal manifests;
- Personnel and company responsible for managing the SGMP, including names and certifications; and
- All other items related to the regulatory handling of the contaminated media, per the SGMP.

FIGURES

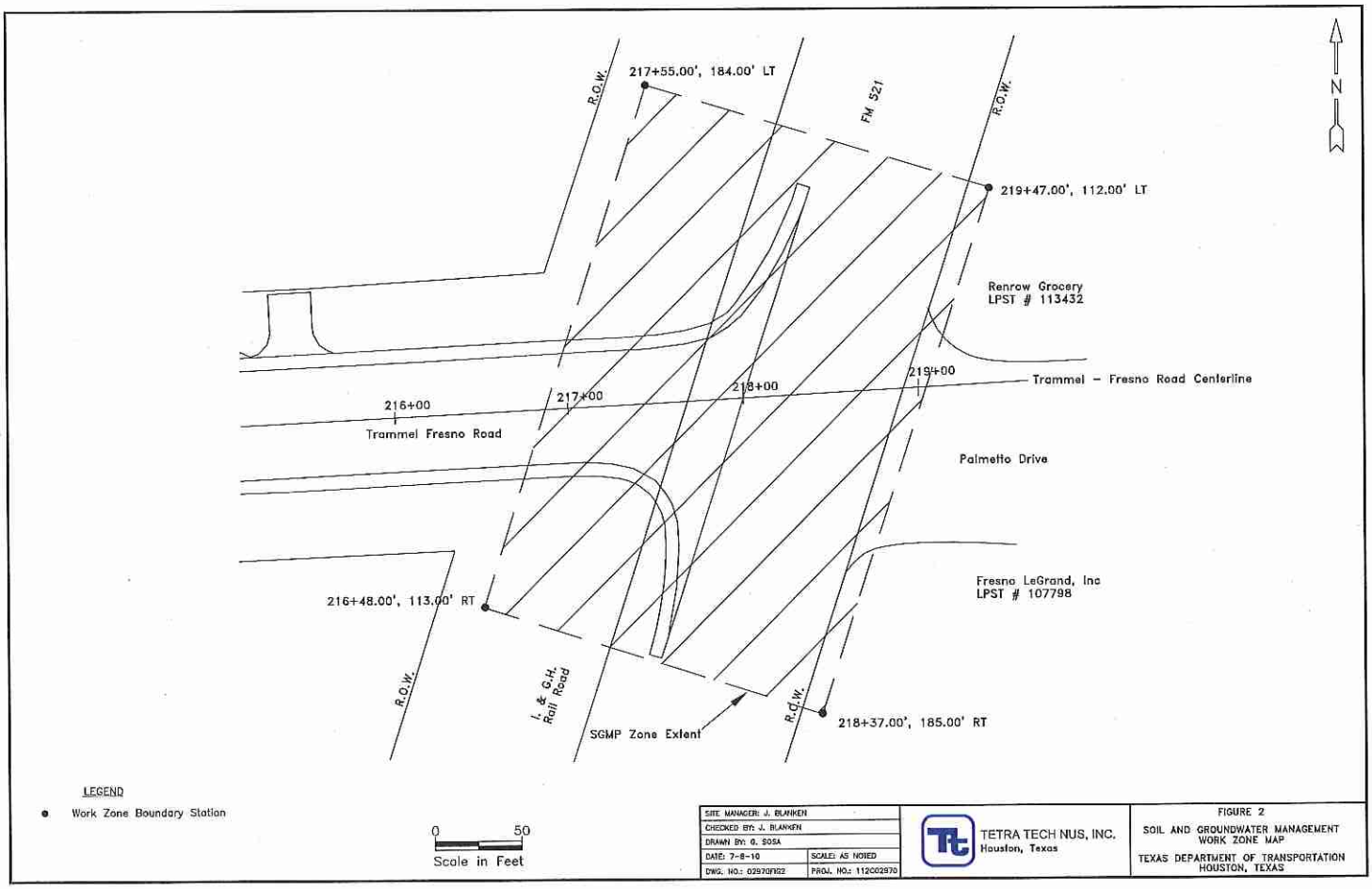
SITE MANAGER: J. BLANKEN	
CHECKED BY: J. BLANKEN	
DRAWN BY: G. SOSA	
DATE: 7-7-10	SCALE: AS NOTED
DWG. NO.: 02682FIG1	PROJ. NO.: 112C02970

TETRA TECH NUS, INC.
Houston, Texas

FIGURE 1

PROJECT LOCATION MAP

TEXAS DEPARTMENT OF TRANSPORTATION
HOUSTON, TEXAS



SITE MANAGER: J. BLANKEN	
CHECKED BY: J. BLANKEN	
DRAWN BY: G. SOSA	
DATE: 7-8-10	SCALE: AS NOTED
DWG. NO.: 02970N02	PROJ. NO.: 112002970

TETRA TECH NUS, INC.
Houston, Texas

FIGURE 2
SOIL AND GROUNDWATER MANAGEMENT WORK ZONE MAP
TEXAS DEPARTMENT OF TRANSPORTATION
HOUSTON, TEXAS

APPENDIX A

REVIEWED LPST SITE INFORMATION

TCEQ

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

LPST Database Query Results

The data was last updated on July 1, 2010.

LPST ID #: **107798**	Facility ID #: **0023838**
Facility Name: **FRESNO LE GRAND INC**	
Discovered: **12/22/1993**	Reported: **2/11/1994**
Facility Address: **3523 FM 521 , FRESNO 77545-**	
County: **FORT BEND**	
TCEQ Region Number and City: **12, HOUSTON**	
Federal Facility?: **N**	
Responsible Party: **FRESNO LE GRAND**	
Address: **3523 FM 521 , FRESNO, TX 77545-**	
Contact: **MR TOMMIE BRYANT,**	Phone: **713 431-1571**
Priority Code and Descritption: **5, MINOR SOIL CONTAMINATION - DOES NOT REQUIRE A RAP**	
Status Code and Description: **6P, FINAL CONCURANCE PENDING DOCUMENTATION OF WELL PLUGGING**	
Water Contaminated?: **N**	Depth to Water:
Coordinators: Primary: **1/2** RPR: **HLN** DISTRICT: **KPM**	

Glossaries of terms used in the Correspondence Type, TCEQ Action, and Staff columns.

Correspondence						
Correspondence Type	Correspondence Date	Last Action	Current Coord.	TCEQ Action	Action Date	TCEQ Staff
				NOC	2/17/1994	REG
TANK CLSR	7/1/1994			RR	2/12/1996	IHW
TANK CLSR	8/30/1994			RR	2/12/1996	IHW
				STARTUP	4/29/1996	WDC
OTHER	5/14/1996			FINAL	2/12/1996	IHW

Run a new query.

Contact us if you have any questions.

Last Modified: October 22, 2009

CUMULATIVE GROUNDWATER ANALYTICAL DATA
RENFROW GROCERY FACILITY
3503 FM 521
FRESNO, TEXAS
All values presented in Parts Per Million (mg/l)

SAMPLE ID	DATE	TPH C6-C12	TPH C12-C28	TPH C28-C36	TOTAL TPH	MTBE	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES
BR-1W	12/8/1998				175.7	0.013	0.154	0.025	1.47	3.36
BR-1W	7/19/2004	<1	<1	<2	<4	<0.005	<0.001	<0.001	<0.001	<0.003
BR-1W	12/14/2004	<1	<1	<2	<4	0.075	<0.001	<0.001	<0.001	<0.003
BR-1W	10/11/2005	Insufficient volume of water to sample								
BR-1W	3/1/2006	Insufficient volume of water to sample								
BR-1W	6/29/2006	Insufficient volume of water to sample								
BR-1W	10/12/2006	Insufficient volume of water to sample								
BR-1W	12/19/2007	Well Not Sampled								
BR-1W	6/23/2008	Well Not Sampled								
BR-2W	12/8/1998				190.1	35.7	0.279	0.107	2.21	4.81
BR-2W	7/19/2004	36	12	<2	48	64	5.6	0.097	3.2	4.8
BR-2W	12/14/2004	22	1.2	<2	23	260	1.9	0.14	3.8	4.2
BR-2W	10/11/2005	5.7	<1	<2	6.1	10	1.7	0.071	2.8	3.1
BR-2W	3/1/2006	Insufficient volume of water to sample								
BR-2W	6/29/2006	Insufficient volume of water to sample								
BR-2W	10/12/2006	Insufficient volume of water to sample								
BR-2W	12/19/2007	Well Not Sampled								
BR-2W	6/23/2008	Well Not Sampled								
BR-3W	12/8/1998				48.7	11.9	0.194	0.008	0.227	0.594
BR-3W	7/19/2004	14	3.5	<2	18	16	0.51	0.033	1.3	2.7
BR-3W	12/14/2004	12	<1	<2	13	26	0.53	0.026	1	1.6
BR-3W	10/11/2005	Insufficient volume of water to sample								
BR-3W	3/1/2006	Insufficient volume of water to sample								
BR-3W	6/29/2006	Insufficient volume of water to sample								
BR-3W	10/12/2006	Insufficient volume of water to sample								
BR-3W	12/19/2007	Well Not Sampled								
BR-3W	6/23/2008	Well Not Sampled								
BR-4W	12/8/1998				135	0.093	0.808	0.185	0.973	2.35
BR-4W	7/19/2004	28	2.3	<2	30	28	3.5	0.063	1.8	3.4
BR-4W	12/14/2004	8.5	<1	<2	8.5	140	1.9	0.03	1	1.1
BR-4W	10/11/2005	Insufficient volume of water to sample								
BR-4W	3/1/2006	Insufficient volume of water to sample								
BR-4W	6/29/2006	Insufficient volume of water to sample								
BR-4W	10/12/2006	Insufficient volume of water to sample								
BR-4W	12/19/2007	Well Not Sampled								
BR-4W	6/23/2008	Well Not Sampled								
BR-5W	12/8/1998				178	60.8	1.91	0.103	2.82	11.8
BR-5W	7/19/2004	46	3.1	<2	49	38	13	0.14	4	11
BR-5W	12/14/2004	40	3.4	<2	43	1.2	1.4	0.018	0.039	0.096
BR-5W	10/11/2005	24	1.9	<2	26	25	12	0.1	7.7	19
BR-5W	3/1/2006	Insufficient volume of water to sample								
BR-5W	6/29/2006	Insufficient volume of water to sample								
BR-5W	10/12/2006	Insufficient volume of water to sample								
BR-5W	12/19/2007	Well Not Sampled								
BR-5W	6/23/2008	Well Not Sampled								
MW-1	3/25/2006	<1.0	<1.0	<2.0	<4.0	<0.005	<0.001	<0.001	<0.001	<0.003
MW-1	6/29/2006	<1.0	<1.0	<2.0	<4.0	<0.005	<0.001	0.0095	0.0051	0.013
MW-1	10/12/2006	<1.0	<1.0	<2.0	<4.0	<0.005	<0.001	<0.001	<0.001	<0.003
MW-1	12/19/2007	<1.0	<1.0	<1.0	<2.0	<0.005	<0.001	<0.001	<0.001	<0.003
MW-1	6/23/2008	<1.0	<1.0	<1.0	<2.0	<0.005	<0.001	<0.001	<0.001	<0.003
MW-1	5/28/2009	<1.0	<1.0	<1.0	<2.0	<0.005	<0.001	<0.001	<0.001	<0.003
MW-1	9/29/2009	<1.0	<1.0	<1.0	<2.0	<0.005	<0.001	<0.001	<0.001	<0.003
MW-1	2/24/2010	<1.0	<1.0	<1.0	<2.0	<0.005	<0.001	<0.001	<0.001	<0.003
MW-4	3/25/2006	1.1	<1.0	<2.0	<4.0	1.5	0.061	0.001	0.019	0.024
MW-4	6/29/2006	1.1	<1.0	<2.0	<4.0	27	0.64	0.023	0.084	0.3
MW-4	10/12/2006	<1	<1	<2	<4	19	0.33	0.0075	0.14	0.13

TPH - Total Petroleum Hydrocarbons
MTBE - Methyl Tertiary Butyl Ether

CUMULATIVE GROUNDWATER ANALYTICAL DATA
RENFROW GROCERY FACILITY
3503 FM 521
FRESNO, TEXAS
All values presented in Parts Per Million (mg/l)

SAMPLE ID	DATE	TPH C6-C12	TPH C12-C28	TPH C28-C36	TOTAL TPH	MTBE	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES
MW-4	12/19/2007	1.7	<1.0	<1.0	<2.0	6.6	0.24	0.0073	0.31	0.16
MW-4	6/23/2008	<1.0	<1.0	<1.0	<2.0	2.0	0.081	<0.0010	0.051	0.005
MW-4	5/28/2009	<1.0	<1.0	<1.0	<2.0	3.1	0.2	<0.0010	0.13	0.0078
MW-4	9/29/2009	<1.0	<1.0	<1.0	<2.0	2.3	0.1	<0.001	0.058	0.014
MW-4	2/24/2010	2.8	<1.0	<1.0	3.4	<0.005	0.34	0.17	0.19	0.26
MW-5	12/19/2007	14	<1.0	<1.0	15	15	0.74	0.052	<0.001	2.5
MW-5	6/23/2008	14	1.1	<1.0	15	8.3	0.65	0.016	1.8	0.74
MW-5	5/28/2009	6.9	1.4	<1.0	8.3	2.9	0.37	0.0054	1.5	0.1
MW-5	9/29/2009	10	<1.0	<1.0	10	1	0.1	<0.001	0.071	<0.003
MW-5	2/24/2010	11	2.7	<1.0	14	2.1	0.84	0.018	0.97	0.15
MW-6	10/11/2005	<1	<1	<2	<4	0.03	<0.001	<0.001	<0.001	<0.003
MW-6	3/1/2006	<1	<1	<2	<4	0.034	<0.001	<0.001	<0.001	<0.003
MW-6	6/29/2006	<1	<1	<2	<4	0.026	<0.001	<0.001	<0.001	<0.003
MW-6	10/12/2006	<1.0	<1.0	<2.0	<4.0	<0.005	<0.001	<0.001	<0.001	<0.003
MW-6	12/19/2007	<1.0	<1.0	<1.0	<2.0	<0.005	<0.001	<0.001	<0.001	<0.003
MW-6	6/23/2008	<1.0	<1.0	<1.0	<2.0	<0.005	<0.001	<0.001	<0.001	<0.003
MW-6	5/28/2009	<1.0	<1.0	<1.0	<2.0	<0.005	<0.001	<0.001	<0.001	<0.003
MW-6	9/29/2009	<1.0	<1.0	<1.0	<2.0	0.0095	<0.001	<0.001	<0.001	<0.003
MW-6	2/24/2010	<1.0	<1.0	<1.0	<2.0	<0.005	<0.001	<0.001	<0.001	<0.003
MW-7	10/11/2005	<1.0	<1.0	<2.0	<4.0	<0.005	<0.001	<0.001	<0.001	<0.003
MW-7	3/1/2006	<1.0	<1.0	<2.0	<4.0	<0.005	<0.001	<0.001	<0.001	<0.003
MW-7	6/29/2006	<1.0	<1.0	<2.0	<4.0	<0.005	<0.001	0.008	0.013	0.046
MW-7	10/12/2006	<1.0	<1.0	<2.0	<4.0	<0.005	<0.001	<0.001	<0.001	<0.003
MW-7	12/19/2007	<1.0	<1.0	<1.0	<2.0	0.044	<0.001	<0.001	<0.001	<0.003
MW-7	6/23/2008	<1.0	<1.0	<1.0	<2.0	0.019	<0.001	<0.001	<0.001	<0.003
MW-7	5/28/2009	<1.0	<1.0	<1.0	<2.0	0.019	<0.001	<0.001	<0.001	0.0031
MW-7	9/29/2009	<1.0	<1.0	<1.0	<2.0	<0.005	<0.001	<0.001	<0.001	<0.003
MW-7	2/24/2010	<1.0	<1.0	<1.0	<2.0	0.48	<0.001	<0.001	<0.001	<0.003
MW-8	10/11/2005	<1.0	<1.0	<2.0	<4.0	<0.005	<0.001	<0.001	<0.001	<0.003
MW-8	3/1/2006	<1.0	<1.0	<2.0	<4.0	<0.005	<0.001	<0.001	<0.001	<0.003
MW-8	6/29/2006	<1.0	<1.0	<2.0	<4.0	<0.005	<0.001	<0.001	<0.001	<0.003
MW-8	10/12/2006	<1.0	<1.0	<2.0	<4.0	<0.005	0.0096	<0.001	<0.001	<0.003
MW-8	12/19/2007	<1.0	<1.0	<1.0	<2.0	<0.005	<0.001	<0.001	<0.001	<0.003
MW-8	6/23/2008	<1.0	<1.0	<1.0	<2.0	<0.005	<0.001	<0.001	<0.001	<0.003
MW-8	5/28/2009	<1.0	<1.0	<1.0	<2.0	<0.005	<0.001	<0.001	<0.001	<0.003
MW-8	9/29/2009	<1.0	<1.0	<1.0	<2.0	<0.005	<0.001	<0.001	<0.001	<0.003
MW-8	2/24/2010	<1.0	<1.0	<1.0	<2.0	<0.005	<0.001	<0.001	<0.001	<0.003
MW-9	3/25/2006	<1.0	<1.0	<2.0	<4.0	<0.005	<0.001	<0.001	<0.001	<0.003
MW-9	6/29/2006	<1.0	<1.0	<2.0	<4.0	<0.005	<0.001	<0.001	<0.001	<0.003
MW-9	10/12/2006	<1.0	<1.0	<2.0	<4.0	<0.005	<0.001	<0.001	<0.001	<0.003
MW-9	12/19/2007	<1.0	<1.0	<1.0	<2.0	<0.005	<0.001	<0.001	<0.001	<0.003
MW-9	6/23/2008	<1.0	<1.0	<1.0	<2.0	<0.005	<0.001	<0.001	<0.001	<0.003
MW-9	5/28/2009	<1.0	<1.0	<1.0	<2.0	<0.005	<0.001	<0.001	<0.001	<0.003
MW-9	9/29/2009	<1.0	<1.0	<1.0	<2.0	<0.005	<0.001	<0.001	<0.001	<0.003
MW-9	2/24/2010	<1.0	<1.0	<1.0	<2.0	<0.005	<0.001	<0.001	<0.001	<0.003
WATER WELL	7/20/2005	<1.0	<1.0	<2.0	<4.0	<0.005	<0.001	<0.001	<0.001	<0.003

1,978

TPH - Total Petroleum Hydrocarbons
MTBE - Methyl Tertiary Butyl Ether

GROUNDWATER ANALYTICAL SUMMARY - PAH
POLYNUCLEAR AROMATIC HYDROCARBONS
RENFROW GROCERY
3503 HIGHWAY 521
FRESNO, TEXAS

CONSTITUENT	TCEQ PLAN A CAT. I ACTION LEVELS	BR-2W (12/8/98)	BR-2W (7/19/04)	BR-5W (12/14/04)	BR-5W (10/11/05)	MW-5 (5/28/09)
Acenapthene	2.19	ND	0.084	0.0024	0.087	0.0015
Acenaphthylene		NA	NA	NA	NA	0.00035
Anthracene	11	ND	<0.001	0.0014	0.0021	0.00058
Benzo[a]anthracene	0.000117	ND	0.00086	0.00012	0.00029	0.000053
Benzo[a]pyrene	0.0002	ND	<0.00001	0.000097	<0.00001	0.000019
Benzo[b]fluoranthene	0.000117	ND	0.000066	0.00053	0.00045	0.000038
Benzo[ghi]perylene		NA	NA	NA	NA	0.000072
Benzo[k]fluoranthene	0.00117	ND	0.000094	0.00032	0.000015	<0.00001
Chrysene	0.0117	ND	0.00054	0.000087	0.00034	0.000068
Dibenz[a,h]anthracene	0.0000117	ND	<0.00001	<0.00001	<0.00001	<0.00001
Dibenzofuran		NA	NA	NA	NA	0.0011
Fluoranthene	1.46	ND	<0.001	<0.001	0.0021	0.00023
Flourene	1.46	ND	0.0052	0.0039	<0.001	0.005
Indeno[1,2,3-cd]pyrene	0.000117	ND	<0.00001	<0.00001	<0.00001	0.000075
Naphthalene	1.46	ND	0.57	1.7	0.46	0.24
Phenantherene		NA	NA	NA	NA	0.0027
Pyrene	1.1	ND	<0.001	<0.001	<0.001	0.00081

All results presented in ppm = parts per million

ND - Analyte not detected

CUMULATIVE SOIL ANALYTICAL DATA
RENFROW GROCERY FACILITY
3503 FM 521
FRESNO, TEXAS
All values presented in Parts Per Million (mg/Kg)

SAMPLE ID	DATE	TPH C6-C12	TPH C12-C28	TPH C28-C36	TOTAL TPH	MTBE	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES
MW-6, 10'	8/11/2005	<10	<10	<20	<40	<0.050	<0.010	<0.010	<0.010	<0.030
MW-6, 15'	8/11/2005	<10	<10	<20	<40	<0.050	<0.010	<0.010	<0.010	<0.030
MW-7, 10'	8/11/2005	<10	<10	<20	<40	<0.050	<0.010	<0.010	<0.010	<0.030
MW-7, 13'	8/11/2005	<10	<10	<20	<40	<0.050	<0.010	<0.010	<0.010	<0.030
MW-8, 10'	8/11/2005	<10	<10	<20	<40	<0.050	<0.010	<0.010	<0.010	<0.030
MW-8, 12.5'	8/11/2005	<10	<10	<20	<40	<0.050	<0.010	<0.010	<0.010	<0.030

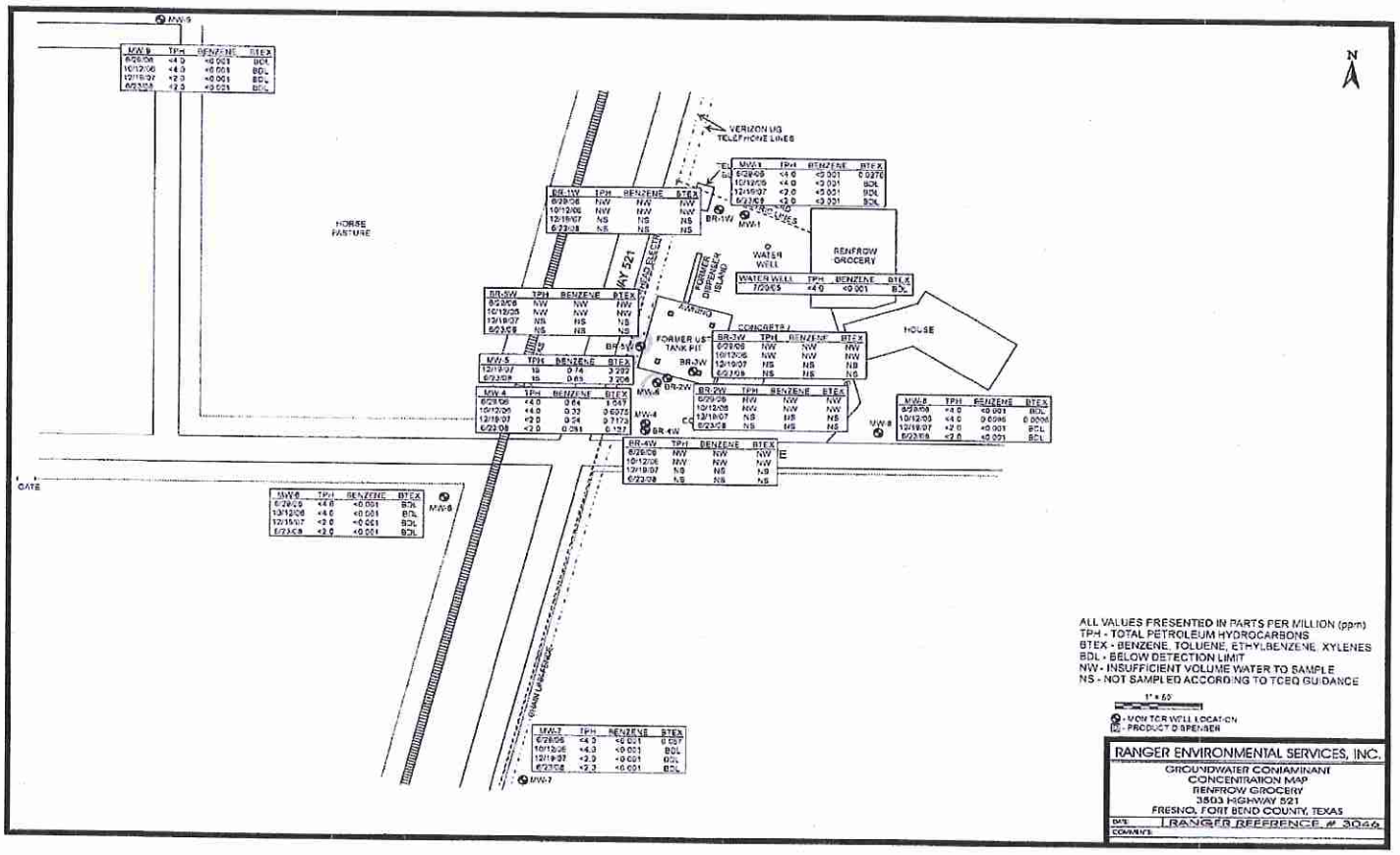
TPH - Total Petroleum Hydrocarbons
MTBE - Methyl Tertiary Butyl Ether

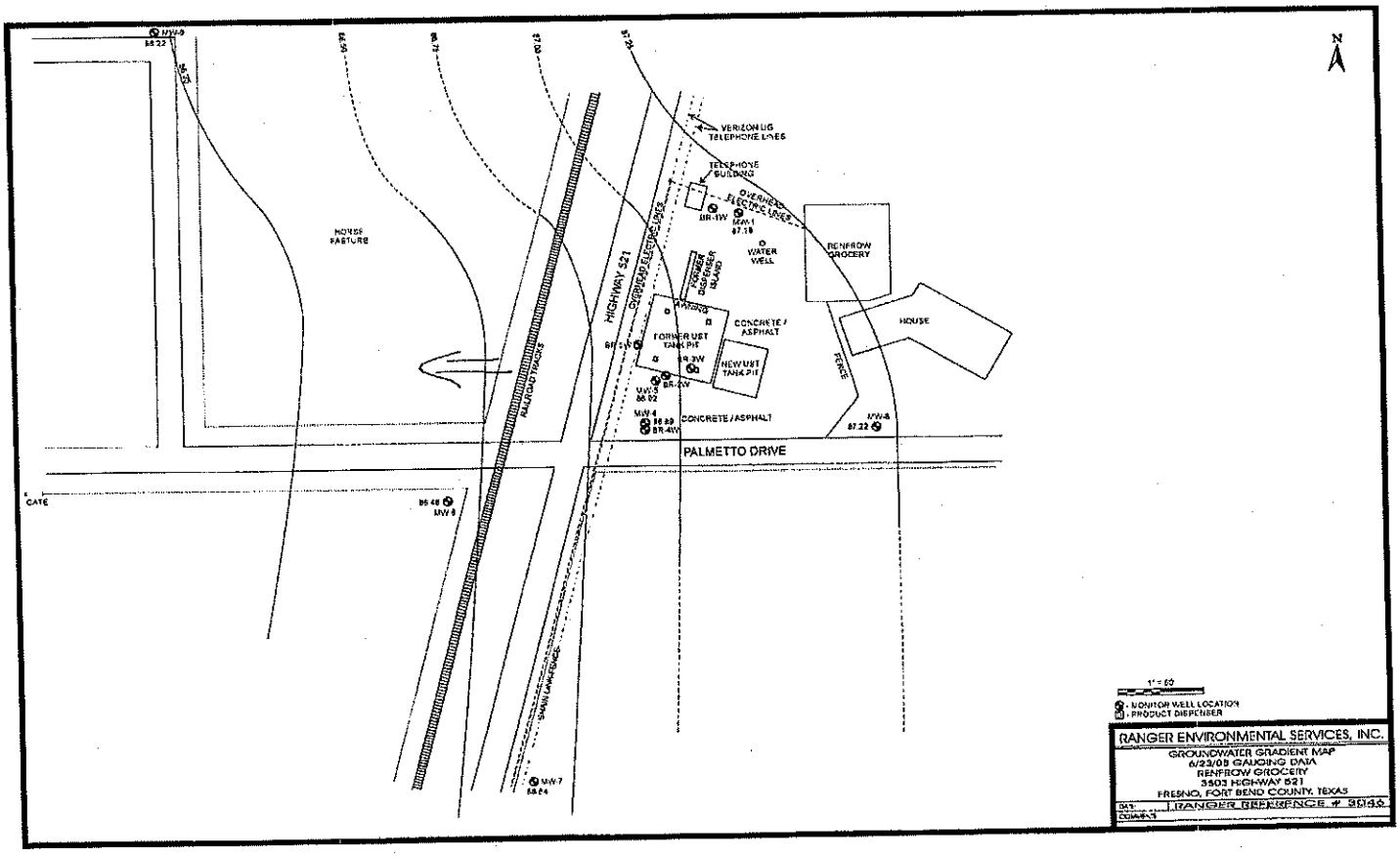
CUMULATIVE GROUNDWATER ELEVATION DATA
RENFROW GROCERY
3503 HIGHWAY 521
FRESNO, TEXAS

MONITOR WELL	DATE	CASING ELEV. (ft)	WELL SCREEN INTERVAL	DEPTH TO WATER (ft)	NAPL THICKNESS (ft)	WATER ELEVATION (ft)
BR-1W	12/8/1998	99.37	5' - 15'	8.38	0	90.99
BR-1W	7/19/2004	100	5' - 15'	10.39	0	89.61
BR-1W	12/14/2004	100	5' - 15'	11.30	0	88.7
BR-1W	10/11/2005	100	5' - 15'	13.74	0	86.26
BR-1W	3/1/2006	100	5' - 15'	13.90	0	86.1
BR-1W	6/29/2006	100	5' - 15'	13.92	0	86.08
BR-1W	10/12/2006	100	5' - 15'	dry	dry	dry
BR-1W	12/17/2007	100	5' - 15'	not gauged	not gauged	not gauged
BR-1W	6/23/2008	100	5' - 15'	not gauged	not gauged	not gauged
BR-2W	12/8/1998	98.77	5' - 15'	7.56	0	91.21
BR-2W	7/19/2004	99.91	5' - 15'	10.75	0	89.16
BR-2W	12/14/2004	99.91	5' - 15'	11.68	0	88.23
BR-2W	10/11/2005	99.91	5' - 15'	13.62	0	86.29
BR-2W	3/1/2006	99.91	5' - 15'	14.21	0	85.7
BR-2W	6/29/2006	99.91	5' - 15'	14.25	0	85.66
BR-2W	10/12/2006	99.91	5' - 15'	dry	dry	dry
BR-2W	12/17/2007	99.91	5' - 15'	not gauged	not gauged	not gauged
BR-2W	6/23/2008	99.91	5' - 15'	not gauged	not gauged	not gauged
BR-3W	12/8/1998	98.93	5' - 15'	8.01	0	90.92
BR-3W	7/19/2004	99.81	5' - 15'	10.37	0	89.44
BR-3W	12/14/2004	99.81	5' - 15'	11.31	0	88.5
BR-3W	10/11/2005	99.81	5' - 15'	13.74	0	86.07
BR-3W	3/1/2006	99.81	5' - 15'	14.14	0	85.67
BR-3W	6/29/2006	99.81	5' - 15'	14.17	0	85.64
BR-3W	10/12/2006	99.81	5' - 15'	dry	dry	dry
BR-3W	12/17/2007	99.81	5' - 15'	not gauged	not gauged	not gauged
BR-3W	6/23/2008	99.81	5' - 15'	not gauged	not gauged	not gauged
BR-4W	12/8/1998	98.37	5' - 15'	7.48	0	90.89
BR-4W	7/19/2004	99.65	5' - 15'	10.6	0	89.05
BR-4W	12/14/2004	99.65	5' - 15'	11.53	0	88.12
BR-4W	10/11/2005	99.65	5' - 15'	dry	dry	dry
BR-4W	3/1/2006	99.65	5' - 15'	dry	dry	dry
BR-4W	6/29/2006	99.65	5' - 15'	dry	dry	dry
BR-4W	10/12/2006	99.65	5' - 15'	dry	dry	dry
BR-4W	12/17/2007	99.65	5' - 15'	not gauged	not gauged	not gauged
BR-4W	6/23/2008	99.65	5' - 15'	not gauged	not gauged	not gauged
BR-5W	12/8/1998	99.05	5' - 15'	8.12	0	90.93
BR-5W	7/19/2004	100.13	5' - 15'	10.76	0	89.37
BR-5W	12/14/2004	100.13	5' - 15'	11.78	0	88.35
BR-5W	10/11/2005	100.13	5' - 15'	13.57	0	86.56
BR-5W	3/1/2006	100.13	5' - 15'	14.03	0	86.1
BR-5W	6/29/2006	100.13	5' - 15'	14.15	0	85.98
BR-5W	10/12/2006	100.13	5' - 15'	dry	dry	dry
BR-5W	12/17/2007	100.13	5' - 15'	not gauged	not gauged	not gauged
BR-5W	6/23/2008	100.13	5' - 15'	not gauged	not gauged	not gauged
MW-1	3/25/2006	100.56	7.5' - 25'	16.42	0	84.14
MW-1	6/29/2006	100.56	7.5' - 25'	16.96	0	83.6
MW-1	10/12/2006	100.56	7.5' - 25'	17.46	0	83.1
MW-1	12/17/2008	100.56	7.5' - 25'	11.88	0	88.68
MW-1	6/23/2008	100.56	7.5' - 25'	13.38	0	87.18

CUMULATIVE GROUNDWATER ELEVATION DATA
RENFROW GROCERY
3503 HIGHWAY 521
FRESNO, TEXAS

MONITOR WELL	DATE	CASING ELEV. (ft)	WELL SCREEN INTERVAL	DEPTH TO WATER (ft)	NAPL THICKNESS (ft)	WATER ELEVATION (ft)
MW-4	3/1/2006	99.65	7.5' - 25'	15.85	0	83.8
MW-4	6/29/2006	99.65	7.5' - 25'	16.35	0	83.3
MW-4	10/12/2006	99.65	7.5' - 25'	16.76	0	82.89
MW-4	12/17/2007	99.65	7.5' - 25'	11.59	0	88.06
MW-4	6/23/2008	99.65	7.5' - 25'	12.76	0	86.89
MW-5	12/17/2007	99.65	7.5' - 25'	11.56	0	88.09
MW-5	6/23/2008	99.65	7.5' - 25'	12.73	0	86.92
MW-6	10/11/2005	98.02	7.5' - 25'	13.27	0	84.75
MW-6	3/1/2006	98.02	7.5' - 25'	14.38	0	83.64
MW-6	3/25/2006	98.02	7.5' - 25'	14.52	0	83.5
MW-6	6/29/2006	98.02	7.5' - 25'	15.02	0	83
MW-6	10/12/2006	98.02	7.5' - 25'	15.41	0	82.61
MW-6	10/12/2006	98.02	7.5' - 25'	15.41	0	82.61
MW-6	12/17/2007	98.02	7.5' - 25'	10.69	0	87.33
MW-6	6/23/2008	98.02	7.5' - 25'	11.56	0	86.46
MW-7	10/11/2005	98.23	7.5' - 25'	13.32	0	84.91
MW-7	3/1/2006	98.23	7.5' - 25'	14.54	0	83.69
MW-7	3/25/2006	Well was innaccessible	Well was innaccessible	Well was innaccessible	Well was innaccessible	Well was innaccessible
MW-7	6/29/2006	98.23	7.5' - 25'	15.21	0	83.02
MW-7	10/12/2006	98.23	7.5' - 25'	15.57	0	82.66
MW-7	10/12/2006	98.23	7.5' - 25'	15.57	0	82.66
MW-7	12/17/2007	98.23	7.5' - 25'	10.65	0	87.58
MW-7	6/23/2008	98.23	7.5' - 25'	11.59	0	86.64
MW-8	10/11/2005	99.42	7.5' - 25'	14.09	0	85.33
MW-8	3/1/2006	99.42	7.5' - 25'	15.19	0	84.23
MW-8	3/25/2006	99.42	7.5' - 25'	15.37	0	84.05
MW-8	6/29/2006	99.42	7.5' - 25'	15.88	0	83.54
MW-8	10/12/2006	99.42	7.5' - 25'	16.32	0	83.1
MW-8	10/12/2006	99.42	7.5' - 25'	16.32	0	83.1
MW-8	12/17/2007	99.42	7.5' - 25'	10.52	0	88.9
MW-8	6/23/2008	99.42	7.5' - 25'	12.2	0	87.22
MW-9	3/25/2006	98.65	7.5' - 25'	15.03	0	83.62
MW-9	6/29/2006	98.65	7.5' - 25'	15.58	0	83.07
MW-9	10/12/2006	98.65	7.5' - 25'	16.01	0	82.64
MW-9	10/12/2006	98.65	7.5' - 25'	16.01	0	82.64
MW-9	12/17/2007	98.65	7.5' - 25'	11.6	0	87.05
MW-9	6/23/2008	98.65	7.5' - 25'	12.43	0	86.22


N
MW-9
MW-9 TPH BENZENE BTEX
6/28/08 <4.0 <0.001 BDL
10/12/06 <4.0 <0.001 BDL
12/19/07 <2.0 <0.001 BDL
6/23/08 <2.0 <0.001 BDL
VERIZON UG TELEPHONE LINES
MW-1 TPH BENZENE BTEX
6/28/08 <4.0 <0.001 0.0270
10/12/06 <4.0 <0.001 BDL
12/19/07 <2.0 <0.001 BDL
6/23/08 <2.0 <0.001 BDL
BR-1W TPH BENZENE BTEX
6/28/08 NW NW NW
10/12/06 NW NW NW
12/19/07 NS NS NS
6/23/08 NS NS NS
BR-1W
MW-1
HORSE PASTURE
WATER WELL
RENFROW GROCERY
WATER WELL TPH BENZENE BTEX
7/23/08 <4.0 <0.001 BDL
HIGHWAY 521
FORMER DISPENSER ISLAND
AWNING
FORMER UST TANK PIT
CONCRETE
HOUSE
BR-3W TPH BENZENE BTEX
6/28/08 NW NW NW
10/12/06 NW NW NW
12/19/07 NS NS NS
6/23/08 NS NS NS
BR-3W
BR-2W
BR-2W TPH BENZENE BTEX
6/28/08 NW NW NW
10/12/06 NW NW NW
12/19/07 NS NS NS
6/23/08 NS NS NS
MW-5 TPH BENZENE BTEX
12/19/07 NS 0.14 3.297
6/23/08 NS 0.65 3.206
MW-4 TPH BENZENE BTEX
6/28/08 <4.0 0.64 1.049
10/12/06 <4.0 0.33 0.6075
12/19/07 <2.0 0.54 0.7173
6/23/08 <2.0 0.098 0.121
MW-4
BR-4W
MW-8 TPH BENZENE BTEX
6/28/08 <4.0 <0.001 BDL
10/12/06 <4.0 0.0096 0.0096
12/19/07 <2.0 <0.001 BDL
6/23/08 <2.0 <0.001 BDL
MW-8
BR-4W TPH BENZENE BTEX
6/28/08 NW NW NW
10/12/06 NW NW NW
12/19/07 NS NS NS
6/23/08 NS NS NS
E
GATE
MW-6 TPH BENZENE BTEX
6/28/08 <4.0 <0.001 BDL
10/12/06 <4.0 <0.001 BDL
12/19/07 <2.0 <0.001 BDL
6/23/08 <2.0 <0.001 BDL
MW-6
MW-7 TPH BENZENE BTEX
6/28/08 <4.0 <0.001 0.007
10/12/06 <4.0 <0.001 BDL
12/19/07 <2.0 <0.001 BDL
6/23/08 <2.0 <0.001 BDL
MW-7
ALL VALUES PRESENTED IN PARTS PER MILLION (ppm)
TPH - TOTAL PETROLEUM HYDROCARBONS
BTEX - BENZENE, TOLUENE, ETHYLBENZENE, XYLENES
BDL - BELOW DETECTION LIMIT
NW - INSUFFICIENT VOLUME WATER TO SAMPLE
NS - NOT SAMPLED ACCORDING TO TCEQ GUIDANCE
1" = 50'
- MONITOR WELL LOCATION
- PRODUCT DISPENSER
RANGER ENVIRONMENTAL SERVICES, INC.
GROUNDWATER CONTAMINANT CONCENTRATION MAP
RENFROW GROCERY
3503 HIGHWAY 521
FRESNO, FORT BEND COUNTY, TEXAS
DATE
RANGER REFERENCE # 3044
COMMENTS

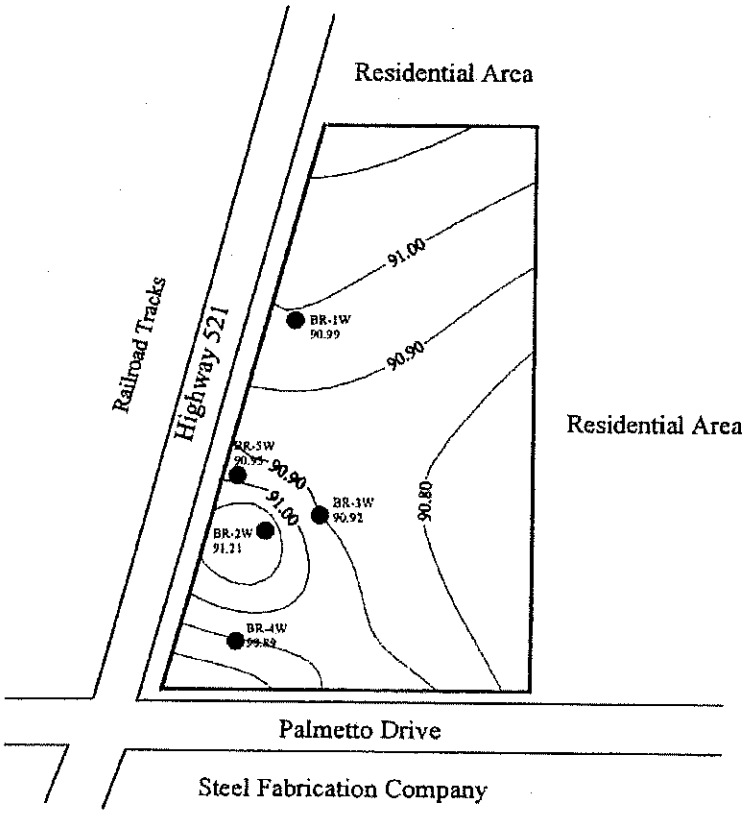

N
MW-9
88.22
HORSE PASTURE
VERIZON UG TELEPHONE LINES
TELEPHONE BUILDING
OVERHEAD ELECTRIC LINES
BR-1W
MW-1
87.39
WATER WELL
RENFROW GROCERY
HIGHWAY 521
OVERHEAD ELECTRIC LINES
FORMER DISPENSER ISLANDS
CONCRETE / ASPHALT
HOUSE
FORMER UST TANK PIT
NEW UST TANK PIT
BR-2W
MW-2
88.92
MW-4
88.89
BR-4W
CONCRETE / ASPHALT
FENCE
MW-8
87.22
PALMETTO DRIVE
GATE
88.48
MW-6
RAILROAD TRACKS
MW-7
88.64
1" = 60'
MONITOR WELL LOCATION
PRODUCT DISPENSER
RANGER ENVIRONMENTAL SERVICES, INC.
GROUNDWATER GRADIENT MAP
6/23/05 GAUGING DATA
RENFROW GROCERY
3503 HIGHWAY 521
FRESNO, FORT BEND COUNTY, TEXAS
DATE
RANGER REFERENCE # 35146
COMMENTS

LEGEND

——	Property Boundary
●	Location of Monitoring Wells
88.69	Assumed Groundwater Elevation
——	Groundwater Equi-potential Line

N

Approximate Scale: 1" = 50'



Groundwater Gradient Map

3503 Highway 521, Fresno, Fort Bend County, Texas 77545

LPST No.: 113432

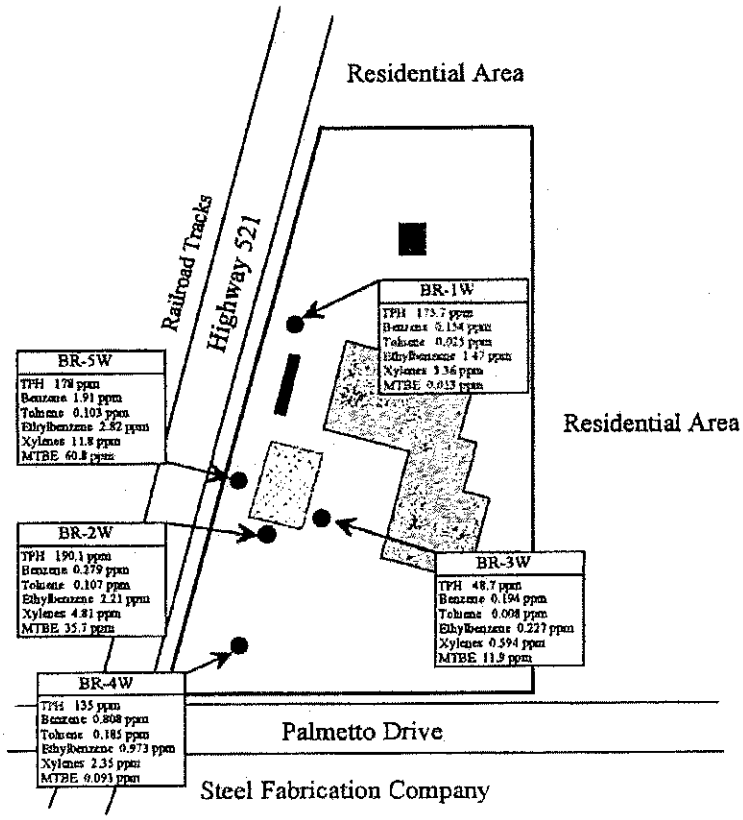
Attachment #7

LEGEND

Property boundary
Location of monitoring well
Tank pit
Filling island
Single-story building
Water supply well

N

Approximate Scale: 1" = 50'



Note: ppm = parts per million
MTBE = Methyl Tertiary Butyl Ether

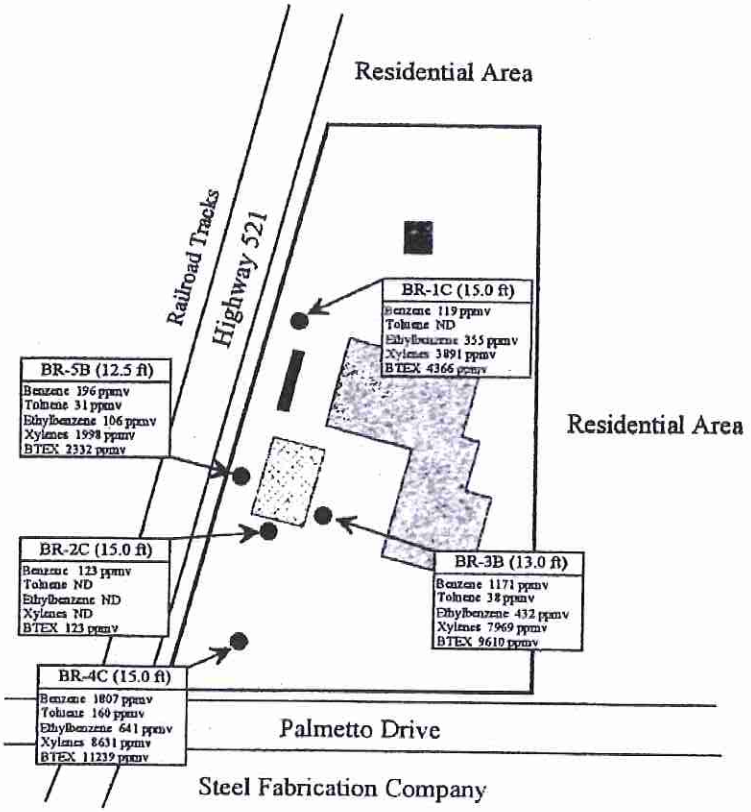
Groundwater Contamination Concentration Map **3503 Highway 521, Fresno, Fort Bend County, Texas 77545**	**LPST No.: 113432** **Attachment #8**

LEGEND

——	Property boundary
●	Location of boring
	Tank pit
▬	Filling island
	Single-story building
■	Water supply well

N

Approximate Scale: 1" = 50'



Note: ppmv = parts per million volume
soil vapor concentration were calculated using the equilibrium partition equation

Vapor Contaminant Concentration Map **3503 Highway 521, Fresno, Fort Bend County, Texas 77545**	**LPST No.: 113432** **Attachment #11**

SUMMARY OF ANALYTICAL RESULTS - SOIL AND GROUNDWATER

Plan A Risk Assessment for LPST NO. 113432

Renfrow Grocery

3503 Highway 521, Fresno, TX 77545

Sample ID	Sample Type	Depth (ft BGS)	Sampling Date	TPH (ppm)	Benzene (ppm)	Toluene (ppm)	Ethylbenzene (ppm)	Xylenes (ppm)	BTEX (ppm)	MTBE (ppm)
BR-1A	Soil	8.0	11/20/98	ND	ND	ND	ND	ND	ND	NA
BR-1B	Soil	10.0	11/20/98	ND	ND	ND	ND	ND	ND	NA
BR-1C	Soil	15.0	11/20/98	34	0.417	ND	13.4	33.5	47.317	NA
BR-2A	Soil	6.0	11/20/98	ND	ND	ND	ND	ND	ND	NA
BR-2B	Soil	9.0	11/20/98	ND	ND	ND	ND	ND	ND	NA
BR-2C	Soil	15.0	11/20/98	ND	0.43	ND	ND	ND	0.43	NA
BR-3A	Soil	10.0	11/20/98	ND	ND	ND	ND	ND	ND	NA
BR-3B	Soil	13.0	11/20/98	425	4.09	0.381	16.3	68.6	89.371	NA
BR-3C	Soil	15.0	11/20/98	251	0.635	ND	5.23	15.1	20.965	NA
BR-4A	Soil	10.0	11/20/98	ND	ND	ND	ND	ND	ND	NA
BR-4B	Soil	12.0	11/20/98	1142	ND	ND	ND	ND	ND	NA
BR-4C	Soil	15.0	11/20/98	1107	6.31	1.59	24.2	74.3	106.4	NA
BR-5A	Soil	10.5	11/20/98	251	0.297	ND	4.77	13.4	18.467	NA
BR-5B	Soil	12.5	11/20/98	174	0.686	0.312	4.01	17.2	22.208	NA
BR-5C	Soil	15.0	11/20/98	634	1.75	0.632	9.12	21.5	33.002	NA
BR-1W	Groundwater	-	12/8/98	175.7	0.154	0.025	1.47	3.36	5.009	0.013
BR-2W	Groundwater	-	12/8/98	190.1	0.279	0.107	2.21	4.81	7.406	35.7
BR-3W	Groundwater	-	12/8/98	48.7	0.194	0.008	0.227	0.594	1.023	11.9
BR-4W	Groundwater	-	12/8/98	135	0.808	0.185	0.973	2.35	4.316	0.093
BR-5W	Groundwater	-	12/8/98	178	1.91	0.103	2.82	11.8	16.633	60.8

Attachment #15

Note. 1) TPH (Total Petroleum Hydrocarbon) Analyzed by TX 1005

2) Benzene, Toluene, Ethylbenzene, and Xylenes Analyzed by EPA 8021B

3) BTEX=Benzene, Toluene, Ethylbenzene, Xylenes

4) ppm=Parts Per Million

Groundwater Level Reading Records

Plan A Risk Assessment for LPST NO. 113432

Renfrow Grocery

3503 Highway 521, Fresno, TX 77545

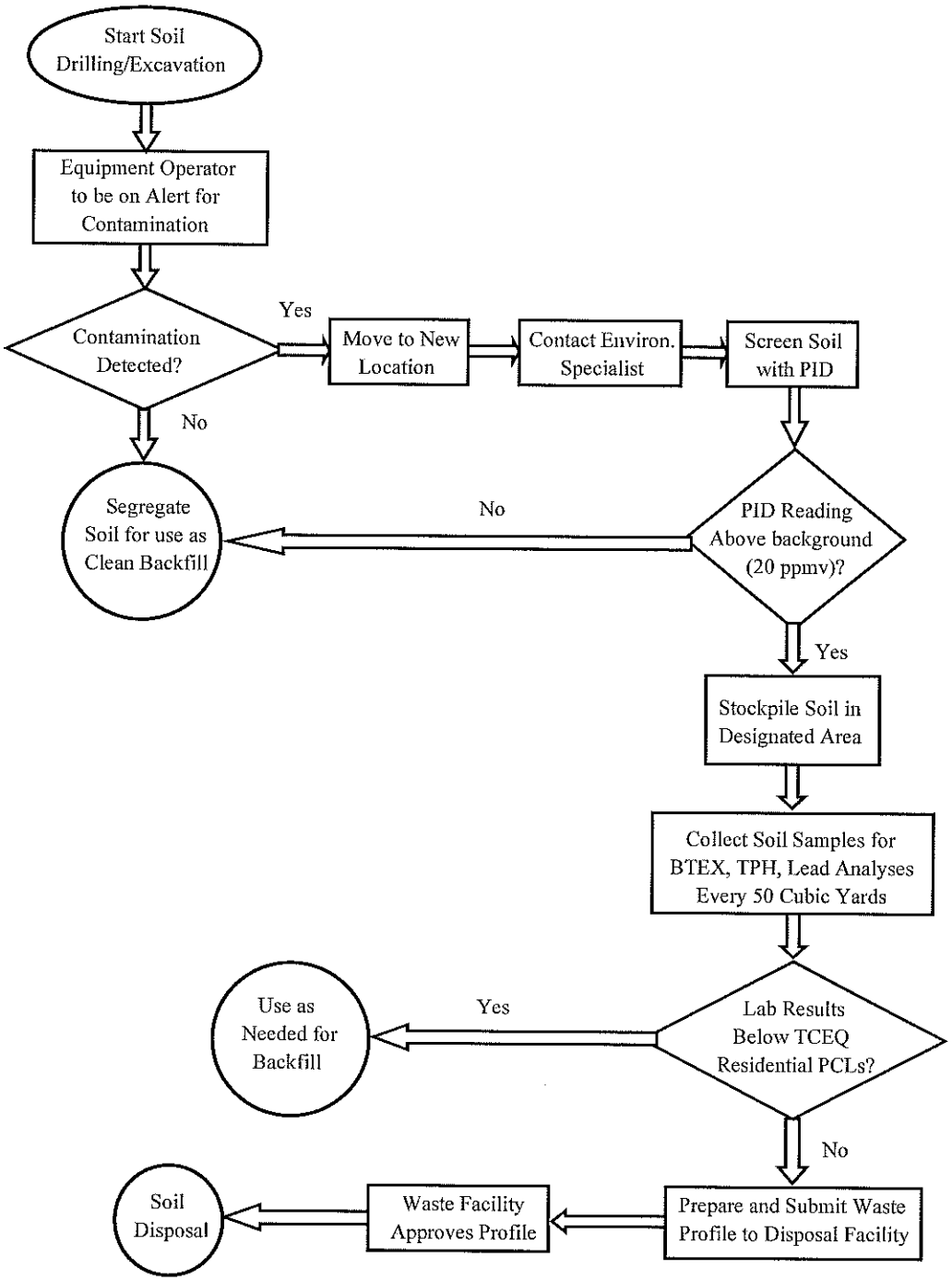
Monitoring Well	Record Date	Ground Level (ft)		Groundwater Depth From Top Casing (ft)	Groundwater Level Elevation (ft)	Screened Interval (feet BGS)
		Top Rim	Top Casing			
BR-1W	12/8/98	99.78	99.37	8.38	90.99	5 - 15
BR-2W	12/8/98	99.16	98.77	7.56	91.21	5 - 15
BR-3W	12/8/98	99.47	98.93	8.01	90.92	5 - 15
BR-4W	12/8/98	98.76	98.37	7.48	90.89	5 - 15
BR-5W	12/8/98	99.47	99.05	8.12	90.93	5 - 15

Attachment #16

Notes: 1. TBM railroad spike in power pole at the southeast corner of FM 521 and Palmetto Road, Assumed Elevation = 100.00 ft

APPENDIX B

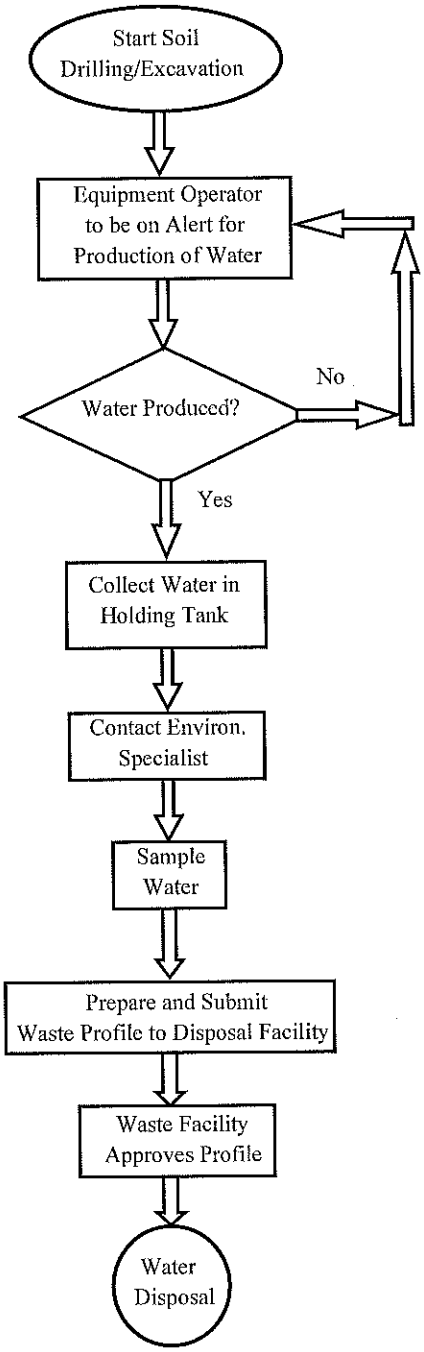
SOIL AND GROUNDWATER MANAGEMENT PROCESS FLOW DIAGRAMS



APPENDIX B-1

Soil Management Process Flow Diagram

FM 521 at Trammel-Fresno Road
Road Widening Project
Fresno, Fort Bend County, Texas



APPENDIX B-2

Groundwater Management Process Flow Diagram

FM 521 at Trammel-Fresno Road
Road Widening Project
Fresno, Fort Bend County, Texas

APPENDIX C

TEXAS DEPARTMENT OF TRANSPORTATION
STANDARD OPERATING PROCEDURES

ENV ITEM 138

Field Logbook

138.1 Description: Procedures and requirements for recording data and information in a field logbook. Field logbooks shall contain detailed records of all field activities, summaries of verbal communications, observations of site conditions, and any deviations from the Statement of Work (SOW). Entries must be accurate, detailed, and relevant to the field activities performed. The level of detail provided shall support the reconstruction of field events should question arise subsequent to the field effort.

138.2 Materials:

- Field Logbook – the field logbook should be a bound (not loose leaf) book with a water resistant cover and numbered pages.
- Indelible ink pen

138.3 Procedures: The following are guidelines for field logbooks and their use.

138.3.1 General:

- A separate field logbook will be maintained for each project (i.e. Work Authorization).
- All field activities pertinent to the project must be recorded in the logbook in indelible ink written darkly enough so that the pages can be easily photocopied or electronically scanned.
- If multiple logbooks are required for a project, each logbook should be identified in numerical order based on the first date each book is first used (i.e. 1 of 3, 2 of 3, etc.).
- Each new day's entries shall begin on a new page.
- Each page of entries for a specific day shall be completely filled prior to beginning a new page. Do not skip pages unless necessary for legibility. If a page must be skipped, draw a diagonal line through the entire page (initial and date) to prevent unauthorized entries.
- The unused, blank portion of any page of entries shall have a diagonal line drawn through the blank portion to discourage unauthorized later entries (initial and date).
- Do not remove any pages from the logbook.
- Corrections should be made by first drawing a single line through the entry to be corrected. Initial and date all corrections at the time they are made.
- Entries should be factual and relevant. Do not enter information that is not related to the scope of the project.

138.3.2 Format:

Record the following on the cover of the logbook:

- Project Name as assigned by the ENV-PPA Project Manager
- Work Authorization number
- Beginning and ending dates of activities recorded in the logbook.
- Company (Engineer/ Technical Expert) name

Record the following information on the first page of the field logbook:

- Engineer's/Technical Expert's Project Manager's name and contact information.
- Names and contact information for all field personnel who witness or record entries in the logbook.

Daily Logbook Entries – The following information should be entered at the beginning of each daily entry and then updated as warranted and relevant during the performance of field work:

- Date including day of the week.
- Starting time
- General weather conditions
- Specific location
- Personnel onsite including company affiliation.
- Equipment used and calibration results.
- Work tasks and location(s) where performed, including start and stop times.
- Scaled drawings of sampling locations, as appropriate.
- Description of photographs taken including a unique, sequential identifier (e.g., 1, 2, 3, 4…n).
- Sample collection information (See 138.3.3)
- Verbal communication summaries and changes in SOW (initialed by individuals authorizing any changes preferred).
- The recording personnel's initials after the last entry on each page.
- The recording personnel's dated signature following the last entry of each day.
- A diagonal line across any blank space remaining on a page following the last daily entry.
- Note any Health and Safety issues
- Tailgate meeting time and attendance
- IDW log noting container type, contents, and quality
- Underground utility notes/issues/clearances

138.3.3 Sample Collection – The following information shall be entered, as appropriate, into the logbook when collecting samples.

- Sample location description
- Sampler's name
- Collection time (Military)
- Type of media (soil, groundwater, etc.)
- Designation of sample (composite, grab, etc.)
- Sample specific measurement data/instrument readings (pH, temperature, conductivity, odor, color, etc.)
- Field observations/sample description
- Unique sample ID designation.

ENV ITEM 139

IDW Handling and Disposal

139.1 Description: The following procedures detail the proper handling and disposal of commonly generated investigation-derived wastes (IDW) produced as a result of ENV-PPA (Pollution Prevention and Abatement) projects.

139.2 Procedures: Unless otherwise directed by the Statement of Work (SOW), the following procedures shall be utilized when handling, characterizing, transporting and disposing of IDW associated with ENV-PPA projects.

IDW Containment and Labeling – IDW generated on the project site shall be temporarily stored/ containerized on-site or in an area designated by the SOW. Proper safety precautions shall be taken to ensure the safety of the workers and the general public.

The Engineer/Technical Expert shall utilize one of the following methods to temporarily store IDW at the project location, unless otherwise directed by the SOW.

- Plastic sheeting - IDW shall be placed on and covered with plastic sheeting to prevent the IDW from contaminating the media below and to prevent surface water erosion and infiltration of the IDW. When necessary, the Engineer/Technical Expert shall utilize containment berms and/or diversion berms in a manner to prevent surface water contact of the IDW.
- 55-gallon drums/Roll-off containers - Drums and containers used during the investigation(s) shall meet the appropriate Department of Transportation (DOT), Occupational Safety and Health Administration (OSHA), and U.S. Environmental Protection Agency (EPA) regulations, as applicable, for the wastes they contain. Drum shall be properly sealed and roll-off containers shall be covered with a tarp to prevent wind-blown dusts and rainwater infiltration. Drums shall be placed on pallets whenever possible. Containers utilized for the IDW storage shall be clean to the extent that no container contaminates are introduced into the IDW.

All containers should initially be labeled as containing non-hazardous IDW, pending the results of the laboratory characterization. The label shall be placed in a visible location and shall include, at a minimum, the following, unless directed by the SOW.

- Name of generator(s)
- Date generated
- Site address
- Contact person and phone number
- Type of material contained (i.e. liquid, soil, etc.)
- All labels shall be weather resistant and shall be completed with an indelible ink.

IDW Sampling and Characterization – The Engineer/ Technical Expert shall evaluate the analytical data collected for the assessment portion of the project and the requirements of the waste's depository to determine whether the previously collected data is representative, sufficient and acceptable for characterization purposes. If previously

collected analytical data is not acceptable or sufficient, prior to transportation and disposal, samples of the IDW shall be collected and submitted for laboratory analyses in accordance with applicable state and federal regulations. The Engineer/Technical Expert shall be responsible for determining the appropriate number of samples to collect and the applicable analytical tests required by the landfill, recycling center, and/or disposal site. The resulting chemical analyses will be used to determine the proper waste classification, disposal/recycling methods, and any additional labeling requirements prior to shipment.

IDW Manifesting and Disposal – A manifest shall be required for all IDW transported from an ENV-PPA site for recycling/disposal. The Engineer/Technical Expert shall be responsible for ensuring that the selected IDW transporter and disposal/recycling facility have the required local, State, and/or federal permits and/or licenses. All IDW shall be properly disposed within a ninety (90) day period, or as otherwise specified by the SOW.

Reporting – The Status Reports and Final Deliverables shall be reviewed and accepted by TxDOT. IDW handling and disposal activities shall be recorded in the field logbooks and included within the project deliverable(s).

The Engineer/Technical Expert shall include copies of the field logbook and waste characterization/ waste manifest forms within the project deliverable(s).

ENV ITEM 150

Soil Borings and Sample Collection

150.1 Description: Soil boring specifications and soil sample collection, handling, and custody procedures for ENV-PPA projects.

150.2 Licensing/Training Requirements: All drilling and soil sampling programs shall be planned and supervised by a Texas-licensed Professional Geoscientist. Soil borings, with the exception of hand auger borings, shall be completed by a licensed water well driller, licensed in the State of Texas, and experienced in performing environmental investigation work.

150.3 Procedures: The following are procedures that must be utilized when completing soil borings and collecting soil samples associated with ENV-PPA projects. The Professional Geoscientist shall consider geologic conditions at the site as well as the project objectives when deciding on the appropriate drilling and soil sampling methods.

Soil Borings – When site conditions permit, direct push methods (hydraulically and hammer-operated rams) and hollow-stem drilling methods shall be used to drill soil borings. When site conditions do not permit the use of these methods, rotary drilling methods shall be used. The Professional Geoscientist shall be responsible for determining the appropriate drilling method to be used on a project-specific basis, and the method shall be pre-approved by the ENV-PPA Project Manager. The introduction of any fluids into the borehole to enhance drilling efforts shall also be pre-approved by the ENV Project Manager. The drilling locations shall be pre-approved by the ENV Project Manager. Any adjustments to the drilling and sampling methods or locations shall be approved by the ENV Project Manager.

The drill rig and all associated drilling and sampling equipment shall be thoroughly decontaminated to remove all oil, grease, mud, etc., prior to mobilizing to the site. Equipment with porous surfaces such as rope, wood, etc. cannot be thoroughly cleaned and should not be re-used. Cleaned equipment shall only be handled with clean gloves, including new latex gloves, new clean cotton gloves, etc., as appropriate.

Soil boring locations shall be inspected for underground and above ground utilities prior to drilling. If drilling in the right-of-way, a traffic control plan shall be implemented.

Boring logs shall be completed for each soil boring location. The borehole data can be either entered into the Field Logbook and/or on a company boring log form. The following information shall be included on the boring log:

- Project Name
- Boring ID

- Drilling Company Name
- Driller Name
- Consulting Company Name
- Logger Name
- Drilling Start/Completion Dates
- Drilling Method
- Soil Sampling Method
- Lithologic Description
- Borehole Diameter
- Total Depth of Boring
- Soil Sample Depths
- Soil Screening Results
- Depth to Water, if Encountered
- Borehole Plugging Method
- Boring Location (GPS Coordinates)
- Brief Weather Description

Soil Sample Collection – Typical soil sampling methods include split-spoon samplers, Shelby tubes, and grab samples. The Professional Geoscientist shall be responsible for determining the appropriate sampling methods and equipment to be used on a project-specific basis.

Sampling personnel shall don a clean pair of gloves at the onset of sampling activities and at each new sampling interval to prevent cross-contamination. Sampling personnel shall keep their hands as clean as practical and replace gloves if they become soiled while performing sampling activities.

Soil samples shall be collected with pre-cleaned sampling equipment appropriate for the type of samples being collected. The procedures for equipment decontamination are listed under ENV ITEM 137.

A discrete portion of the collected sample shall be separated for the purposes of laboratory testing for chemical parameters (composite samples shall not be collected for VOC analysis because of volatilization during soil mixing). Headspace screening, physical description of soil characteristics and laboratory samples for testing of physical properties shall be performed with the remaining sample volume.

- Soil Sample Screening – Soil screening methods will include visual and olfactory observations made by a qualified environmental professional, and the use of Photoionization Detectors (PID) and/or Flame Ionization Detectors (FID). Instrumentation used for soil sample screening must be calibrated in accordance with the manufacturer's recommendations using the appropriate calibration standard for the type of contaminants expected to be encountered at the project site. The instruments shall be calibrated at least twice a per day; prior to sampling and at the end of the day. The calibration events shall be recorded in the Field Logbook.

  Using a self-sealing polyethylene freezer bag, field personnel shall half-fill the bag with the collected soil sample to be screened so the volume ratio of soil to air is equal, then they shall immediately seal the bag. The sample shall then be manually broken into smaller soil clumps within the bag.

Headspace shall be allowed to develop for at least 10 minutes. After development, the bag shall be vigorously shaken for 15 seconds at the both beginning and end of the headspace development period.

Following headspace development, the instrument sampling probe shall be introduced through a small opening in the bag to a point about one-half of the headspace depth. The highest meter response shall then be recorded. The headspace analysis shall be completed within approximately 20 minutes of sample collection.

- Soil Sample Handling - Samples collected for chemical analyses shall be placed in pre-cleaned laboratory-supplied containers. The type and size of containers and preservation methods used for soil samples varies based on the type of analyses performed. The Engineer/Technical Expert shall be responsible for selecting the appropriate sample containers and preservation methods in accordance with applicable EPA/TCEQ standards. Quality Assurance/Quality Control (QA/QC) sample may also be collected on ENV-PPA projects. The type and collection schedule for QA/QC samples shall be specified on a project specific basis in the Statement of Work.

  Sample labels shall be completed at the time of sample collection. Each sample container shall be labeled with the following information:

  - Project name
  - Unique sample ID number and depth
  - Sample collection date and time
  - Initial of person collecting sample
  - Analyses required
  - Preservation method

  A chain-of-custody record shall be initiated in the field at the time of sampling. A copy shall accompany each set of samples shipped to any laboratory. Each time responsibility for custody of the samples changes, the new and previous custodians shall sign the record and note the date and time. The final signed chain-of-custody shall be submitted with analytical results in the report documenting the sampling event.

  All signatures related to sample custody shall be made in indelible ink on the chain-of-custody form. One or more signatures shall be entered to identify the person or persons who are collecting the samples. Each time the custody of a sample or group of samples is transferred, a signature, date and time shall be entered to document the transfer.

  When a secured area is used for temporary storage, the time, date, and location of the secured area shall be recorded in the "relinquished by" space of the custody

form. The time at which an individual regains custody shall then be recorded in the "received by" space.

When samples are shipped, the person sealing the shipping container shall enter the time, date and sign the chain-of-custody form. The original chain-of-custody form shall be enclosed in the shipping container with a copy being retained for the project manager's file. A post office receipt, bill of lading, or similar document from the shipper shall be retained as part of the permanent chain-of-custody documentation.

One or more custody seals shall be affixed over the opening of the shipping container in a manner that precludes opening the container without breaking the seal(s). The container seal(s) shall be inscribed with the signature of the person sealing the container and the date and time sealed. The laboratory shall be instructed to note whether or not the container seal(s) are intact and sign in the appropriate blank on the custody form at the time of receipt. They shall also be instructed to keep a copy and return the original chain-of-custody form.

The Engineer/Technical Expert shall be responsible for proper sample packaging and shipment to the analytical laboratory. Lost coolers, exceedance of holding times, broken sample containers, mislabeled or missing sample containers and/or chain-of-custody forms, and improperly preserved samples shall be the responsibility of the Engineer/Technical Expert and/or their subcontracted analytical laboratory.

Borehole Plugging – The plugging and abandonment of the borehole shall be conducted in accordance with ENV ITEM 210.

IDW Handling and Disposal – The procedures for IDW (drill cuttings, decontamination water) handling and disposal are listed under ENV ITEM 139.

Reporting – Soil boring activities shall be recorded in the field logbooks (ENV ITEM 138) and/or on company boring log forms. The logbooks and/or boring log forms shall be included with the reports submitted to ENV-PPA.

ITEM 178

Groundwater Monitoring and Sampling

178.1 Description: Monitoring of static fluid levels and sample collection, handling, and custody procedures for ENV-PPA projects.

178.2 Procedures: The following are procedures that shall be utilized when conducting groundwater monitoring and sampling activities associated with ENV-PPA projects. The Engineer/Technical Expert shall consider hydrogeologic conditions at the site as well as the project objectives when deciding on the appropriate groundwater monitoring and sampling methods taking into account previous sampling methods.

Groundwater Monitoring – When monitoring wells are equipped with vapor-tight, water-tight caps, the caps should be removed approximately 30 – 60 minutes before measurements are taken to allow equilibration with atmospheric pressure and stabilization of groundwater elevation. The air above the well head should be monitored with a photo-ionization detector/flame ionization detector (PID/FID) to determine the potential for fire, explosion, and/or toxic effects on workers. The condition of the monitoring well casing, annular seal, concrete pad, and steal protective casing shall be recorded in the Field Logbook.

The device used to measure fluid levels in a monitoring well shall be sufficiently sensitive so that a measurement to $\pm$0.01 foot can be readily obtained. The field measurements shall include depth to standing water, immiscible layer(s) (DNAPL/LNAPL), if present, and total depth inside the well casing. The measurements shall be taken from a permanent, easily identified reference point on the top of the monitoring well casing.

Personnel conducting the site monitoring shall put on a clean pair of gloves at the onset of the monitoring activities and at each new monitoring well to prevent cross-contamination. Personnel shall keep their hands as clean as practical and replace gloves if they become soiled while performing the monitoring activities.

Groundwater monitoring equipment shall be decontaminated between uses at each monitoring well. The procedures for equipment decontamination are listed under ENV ITEM 137.

Groundwater Sample Collection – Low-flow groundwater purging and sampling is the preferred method for use on TxDOT ENV projects in any well that can be pumped at a constant rate of 1.0 L/min or less without drawdown of the water level in the well. Alternative sampling methods may be used on a project specific basis as agreed upon by the ENV Project Manager and Engineer/Technical Expert and described in the Statement of Work.

Low-Flow purging and sampling shall be conducted in accordance with ASTM Practice D 6771 – 02, *Standard Practice for Low-Flow Purging and Sampling for Wells and Devices Used for Ground Water Quality Investigations.*

Groundwater samples shall be collected with pre-cleaned, inert (i.e. fluorocarbon or stainless steel) sampling equipment appropriate for the type of samples being collected. Dedicated sampling equipment (pumps, tubing, etc.) is preferred on ENV-PPA projects. For non-dedicated sampling equipment, the procedures for equipment decontamination are listed under ENV ITEM 137.

During the collection of groundwater samples, a clean and dry sheet of plastic shall be placed on the ground surface in the sample handling area. If materials used in the sampling process must be put down, they shall be placed on a clean portion of the plastic sheet instead of the ground surface. Sampling personnel shall put on a clean pair of gloves at the onset of sampling activities and at each new sampling point to prevent cross-contamination. Sampling personnel shall keep their hands as clean as practical and replace gloves if they become soiled while performing sampling activities.

Sampling should occur in a progression from the least to the most contaminated well, if this is known. Monitoring wells that contain immiscible layers shall not be sampled, unless otherwise agreed upon by the Engineer/Technical Expert and the ENV-PPA Project Manager.

Sample Handling - Samples collected for chemical analyses shall be placed in pre-cleaned laboratory supplied containers. The type and size of containers and preservation methods used for groundwater samples varies based on the type of analyses performed. The Engineer/Technical Expert shall be responsible for selecting the appropriate sample containers and preservation methods in accordance with applicable EPA/TCEQ standards. Quality Assurance/Quality Control (QA/QC) sample may also be collected on ENV-PPA projects. The type and collection schedule for QA/QC samples shall be specified on a project specific basis in the Statement of Work.

Sample labels shall be completed at the time of sample collection. Each sample container shall be labeled with the following information:

- Project name
- Unique sample ID number
- Sample collection date and time
- Initial of person collecting sample
- Analyses required
- Preservation method

Sample Custody - A chain-of-custody record shall be initiated in the field at the time of sampling. A copy shall accompany each set of samples shipped to any laboratory. Each time responsibility for custody of the samples changes, the new and previous custodians

shall sign the record and note the date and time. The final signed chain-of-custody shall be submitted with analytical results in the report documenting the sampling event.

All signatures related to sample custody shall be made in indelible ink on the chain-of-custody form. One or more signatures shall be entered to identify the person or persons who are collecting the samples. Each time the custody of a sample or group of samples is transferred, a signature, date and time shall be entered to document the transfer.

When a secured area is used for temporary storage, the time, date, and location of the secured area shall be recorded in the "relinquished by" space of the custody form. The time at which an individual regains custody shall then be recorded in the "received by" space.

When samples are shipped, the person sealing the shipping container shall enter the time, date and sign the chain-of-custody form. The original chain-of-custody form shall be enclosed in the container; a copy shall be retained for the project manager's file. A post office receipt, bill of lading, or similar document from the shipper shall be retained as part of the permanent chain-of-custody documentation.

One or more custody seals shall be affixed over the opening of the shipping container in a manner that precludes opening the container without breaking the seal(s). The container seal(s) shall be inscribed with the signature of the person sealing the container and the date and time sealed. The laboratory shall be instructed to note whether or not the container seal(s) are intact and sign in the appropriate blank on the custody form at the time of receipt. They shall also be instructed to keep a copy and return the original Chain-of-custody form.

The Engineer/Technical Expert shall be responsible for proper sample packaging and shipment to the analytical laboratory. Lost coolers, exceedance of holding times, broken sample containers, mislabeled or missing sample containers and/or chain-of-custody forms, and improperly preserved samples shall be the responsibility of the Engineer/Technical Expert and/or their subcontracted analytical laboratory.

<u>IDW Handling and Disposal</u> – The procedures for IDW (purge water, decontamination water) handling and disposal are listed under ENV ITEM 139.

<u>Reporting</u> – Groundwater monitoring and sampling activities shall be recorded in the field logbooks (ENV ITEM 138) and/or on company monitoring and sampling forms. The logbooks and/or monitoring and sampling forms shall be included with the reports submitted to ENV-PPA.

APPENDIX D

SOIL AND GROUNDWATER MANAGEMENT PLAN ACCEPTANCE SIGN-OFF SHEET

SOIL AND GROUNDWATER MANAGEMENT PLAN
ACCEPTANCE SIGN-OFF SHEET

My signature below indicates that I have read and understand the Soil and Groundwater Management Plan (SGMP) prepared for the construction activities located at the intersection of FM 521 and Trammel-Fresno Road/Palmetto Drive in Fresno, Texas.

#	Name (Printed and Signed)	Date
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