

Environmental Assessment

**Interstate 45 South
(Beltway 8 to FM 518)
Harris and Galveston Counties, Texas
CSJ: 0500-03-462 and 0500-03-107**

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

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Acronyms, Abbreviations, and Terms

- ACHP: Advisory Council on Historic Preservation
 ADT: Average Daily Traffic
 Alternatives: General term that refers to a possible approach to meeting a project's stated purpose and need. Typically refers to the No-Build Alternative or the Build Alternative.
 ARPA: Archeological Resources Protection Act
 ASTM: American Society for Testing and Materials
 BMPs: Best Management Practices
 Building Attenuation: The reduction in the energy of a sound field resulting from its passage through a building's structural elements
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 CAA: Clean Air Act of 1970
 Cars: Four wheeled vehicles, 0 to 5,000 lbs
 CEQ: Council on Environmental Quality
 CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act of 1980
 CO: Carbon Monoxide
 CR: County Road
 CWA: Clean Water Act of 1977
 CZMA: Coastal Zone Management Area
 CZMP: Coastal Zone Management Plan
 dBA: "A" Weighted Sound Level. A method of representing the human ear's interpretations of the loudness of an equal sound level throughout the audible frequency range.
 Decibel (dB): a unit of measure of sound pressure to describe the loudness of sound.
 DPS: Texas Department of Public Safety
 EA: Environmental Assessment
 Effects: Exact same meaning as *Impacts* and *Consequences*
 EFH: Essential Fish Habitat
 ENV: TxDOT Environmental Affairs Division
 EPA: U.S. Environmental Protection Agency
 EPCRA: Emergency Planning and Community Right-to-Know Act
 ESA: Endangered Species Act of 1973
 Existing Noise: noise that is characteristic of an area before the proposed construction
 FEMA: Federal Emergency Management Agency
 FIRM: Flood Insurance Rate Map
 FPPA: Farmland Protection Policy Act
 FHWA: Federal Highway Administration
 FM: Farm-to-Market Road
 FONSI: Finding of No Significant Impact
 FTA: Federal Transit Administration
 FWCA: Fish and Wildlife Coordination Act
 HCFCD: Harris County Flood Control District
 Heavy trucks: vehicles with three or more axles and more than six wheels
 Hertz (hz): frequency in cycles per second
 HOV: High Occupancy Vehicle Lane
 H-GAC: Houston-Galveston Area Council
 Human Environment: See CEQ Regulations 1508.14. The term *human environment* includes and requires the appropriate consideration of the potential effects on the physical, biological (natural), economic, and social environmental factors in TxDOT analysis and documents. As used in the FHWA Environmental Policy Statement, *human environment* included the natural environment, the built environment, the cultural and social fabric of our country and our neighborhoods, and the quality of life of the people who live there.
 IH: Interstate Highway
 Insertion Loss: is the difference between the sound level at a receptor before and after a proposed barrier is "inserted" between the sound energy source and the receiver
 ISTEA: Intermodal Surface Transportation Efficiency Act
 L10 Noise Level: that level of noise where A-weighted sound pressure level in decibels is exceeded 10 percent of the time
 Leq Noise Level: that level of constant noise which contains the same amount of acoustic energy as time varying noise levels (e.g. traffic noise) during a given time interval
 Level of Service "C": with respect to vehicle movements, represents stable flow; however, most of the drivers are restricted in their freedom to select their own speed, change lanes or pass. This combination of speed and volume usually creates the worst noise condition
 LOS: Level of Service
 LUST: Leaking Underground Storage Tank
 Medium Trucks: vehicles with two axles and six wheels
 METRO: Metropolitan Transit Authority
 MIS: Major Investment Study
 MOA: Memorandum of Agreement
 MOU: Memorandum of Understanding
 MPO: Metropolitan Planning Organization
 mph: miles per hour
 MTP: Metropolitan Transportation Plan
 NAAQS: National Ambient Air Quality Standards
 NAGPRA: Native American Graves Protection and Repatriation Act of 1990
 NEPA: National Environmental Policy Act

- NFIP: National Flood Insurance Program
NHPA: National Historic Preservation Act
NMFS: National Marine Fisheries Service
NOI: Notice of Intent
Noise Abatement Criteria (NAC): noise levels established by FHWA in 23 CFR 772 for various activities and land uses as the upper limit of acceptable noise levels
Noise Contours: areas along a roadway within which noise levels will exceed a specified noise level. (Not to be interpreted as any single line.)
Noise Sensitive Areas or Locations: general areas of land or specific locations having activities affected by excessive noise levels
NOx: Nitrogen Oxide compounds
NPDES: National Pollutant Discharge Elimination System
NRCS: Natural Resources Conservation Service
NRHP: National Register of Historic Places
NWI: National Wetland Inventory (maps)
NWP: Nationwide Permit
PCN: Preconstruction Notification
Peak Hourly Volume: the highest hourly volume of vehicles with its associated speed on a roadway. This relationship is generally used as the noisiest traffic condition as long as the levels-of-service are not worse than LOS C or D
Project: The whole of an action that has a potential for resulting in a physical change in the environment, directly or ultimately, and that is any of the following:
(1) An activity directly undertaken by any public agency, including but not limited to public works construction and related activities, clearing or grading of land, improvements to existing public structures, enactment and amendment of zoning ordinances, and the adoption and amendment of local General Plans or elements thereof pursuant to Government Code Sections 65100-65700.
(2) An activity undertaken by a person, which is supported in whole or in part through public agency contracts, grants, subsidies, loans, or other forms of assistance from one or more public agencies.
(3) An activity involving the issuance to a person of a lease, permit, license, certificate, or other entitlement for use by one or more public agencies.
PIP: Public Involvement Plan
PS&E: Plans, Specifications and Estimates (Division of TxDOT)
psi: pounds per square inch
RCRA: Resource Conservation and Recovery Act
Receiver: a location at which noise levels are predicted and analyzed.
RHA: Rivers and Harbors Act of 1899.
RTP: Regional Transportation Plan
ROW: Right-of-Way
SARA: Superfund Amendments and Reauthorization Act of 1986
Scoping: Process of determining the potential physical, biological, economic, and social issues relevant to a proposed project.
SH: State Highway
SHPO: State Historic Preservation Officer
STIP: Statewide Transportation Improvement Plan
TARL: Texas Archeological Laboratory
TCMP: Texas Coastal Management Plan
TEA 21: Transportation Equity Act for the 21st Century
TGLO: Texas General Land Office
THC: Texas Historical Commission
THPO: Tribal Historic Preservation Officer
TIP: Transportation Improvement Plan
TNM: Traffic Noise Model (software)
TNRCC: Texas Natural Resource Conservation Commission
TPP: Transportation Planning and Programming Division (of TxDOT)
TPWD: Texas Parks and Wildlife Department
TSM: Transportation Systems Management
Transmission Loss: is the difference between the sound energy striking a barrier surface and the sound energy transmitted through a barrier
TxDOT: Texas Department of Transportation
Undeveloped Land: those tracts of land or portions thereof that contain no improvements or activities devoted to frequent human use or habitation
USACE: U.S. Army Corps of Engineers
USFWS: U. S. Fish and Wildlife Service
USGS: U. S. Geological Survey
UST: Underground Storage Tank
VOCs: Volatile Organic Compounds

Chapter 1. Introduction, Background, Purpose and Need for the Project

A. Introduction

This Environmental Assessment (EA) presents the potential environmental effects of a project proposed by the Texas Department of Transportation (TxDOT) - Houston District on Interstate Highway (IH) 45. TxDOT and the Federal Highway Administration (FHWA) use this EA to establish the significance of environmental effects on the natural and human environment associated with the proposed project. The public uses this EA to gain understanding of the proposed project and its potential effects to the environment. The public will be afforded the opportunity to provide comments regarding the proposed project.

This EA describes the proposed project and presents the purpose and need for the project, the project alternatives, the affected environment, and environmental consequences. This EA describes the systematic, interdisciplinary evaluation of the potential effects to the natural and human environment for those issues of concern. The "Purpose and Need for the Project" has been prepared to be consistent with the Council on Environmental Quality (CEQ) Regulations (40 CFR Section 1502.13). This EA has been prepared utilizing the FHWA Technical Advisory T6640.8A and the TxDOT Environmental Manual as guidance.

Exhibit 1 presents the location of the proposed project and the Study Area for this EA. The total length is approximately 10.0 miles (mi). The current facility consists of six main lanes (three in each direction) with one-way two-lane frontage roads in each direction. IH 45 has grade-separated intersections at FM 2533 / Scarsdale Boulevard, FM 1959 / Dixie Farm Road, FM 2351 / Clear Lake Boulevard, El Dorado Blvd, Bay Area Blvd, and FM 528 / NASA Road 1. A concurrent flow High Occupancy Vehicle (HOV) lane begins just south of Beltway 8 and travels into downtown Houston.

A.1 Background

A Major Investment Study (MIS) was completed in August 1999 that analyzed the potential improvements to IH 45 South Corridor from Beltway 8 in Harris County to 61st Street in Galveston County. The corridor was divided into three sections: north, middle, and south. The corridor's north section, part of which is the focus of this EA, begins at Beltway 8 and ends at FM 518, the logical termini for this proposed project.

The MIS team included TxDOT and their contractor team, the Houston-Galveston Area Council (H-GAC), the Metropolitan Transit Authority (METRO), FHWA; the Federal Transit Administration (FTA); Texas Natural Resource Conservation Commission (TNRCC) (now known as the Texas Commission on Environmental

Quality or TCEQ), and Harris and Galveston Counties. The MIS defined the scope and characteristics of the transportation infrastructure investment to be made over the twenty-year planning period (through year 2020). The overall goal of the MIS was to identify transportation needs of the corridor and determine the improvements that best address those needs.

The MIS process identified several goals and objectives to meet the existing and future travel demand, through which 30 conceptual alternatives were developed. These alternatives represented various levels of investment, ranging from a No Build Alternative to various build alternatives. The alternatives were screened using a “fatal flaw” analysis to arrive at six viable alternatives. The steering committee evaluated the alternatives and selected a Recommended Preferred Alternative. A copy of the IH 45 South Corridor MIS Executive Summary is included in Appendix A.

B. Purpose of the Proposed Project

The purpose of the proposed project is to support the goal of the Interstate System, which is to provide safe and efficient transportation for the movement of persons and goods. It is in the national interest to maintain the Interstate System to provide the highest level of service in terms of safety and mobility (FHWA 1998). The purpose of the proposed project is to reduce traffic congestion, improve mobility, correct design deficiencies, and reduce hurricane evacuation times, while protecting the human environment.

The TxDOT-Houston District proposes to improve a section of IH 45 from Beltway 8 in Harris County to FM 518 in Galveston County. This section was identified in the 1999 MIS as the North Segment of the IH 45 South Corridor.

C. Need for the Project

As identified in the 1999 IH 45 South Corridor MIS (see Appendix A), the need for the proposed project is supported by the following existing roadway conditions:

- Demand exceeds capacity during both of the daily commute periods
- Many of the critical IH 45 bridge crossings require replacement or major reconstruction
- Many sections of IH 45 need major pavement maintenance or overlay reconstruction
- Improvements are needed at various locations throughout the IH 45 corridor due to non-standard design configurations

- A demand exists for improved transit services throughout the IH 45 corridor; as transit services are expanded beyond the existing transit routes provided by METRO, significant transit ridership would be gained (TxDOT 1999a).
- The lack of hurricane and other evacuation options between Galveston Island and the mainland is a documented concern
- Roadway flooding contributes to reduced highway capacity and increased levels of congestion
- Improvements are needed to provide better access to the major employment generators such as Galveston Island, NASA communities, and nearby ports

TxDOT predicts that Average Daily Traffic (ADT) in the study area would increase approximately 60 percent over the 25-year planning period. During the peak hour¹, the mix of vehicles on the highway consists of automobiles (97.4 percent), light trucks (1.4 percent), and heavy trucks (1.2 percent) (TxDOT 2003a). Table 1-1 presents the current and predicted traffic volume in ADT and during the peak hour.

**TABLE 1-1
CURRENT AND PREDICTED TRAFFIC VOLUME**

Description	Number of Vehicles Current Year		Number of Vehicles Design Year	
	Low (at FM 518)	High (at Scarsdale)	Low (at FM 518)	High (at Scarsdale)
ADT	87,800	184,200	142,000	287,200
Peak hour	9,000	29,600	14,700	29,600

Source: TxDOT 2003b.

D. Objectives of the Project

The objectives of the proposed project are described in Table 1-2.

**TABLE 1-2
PROPOSED PROJECT OBJECTIVES AND INDICATORS**

Objective	Indicators
Reduce Congestion	Meet acceptable level of mobility, Level of Service (LOS) D or better, while minimizing the amount of congestion.
Correct Design Deficiencies	Meet standard design configurations
Provide Travel Options	Consistent with regional highway, thoroughfare and transit plans, and preserve opportunities for further implementation of transportation modes and alternatives
Improve hurricane evacuation time	Decrease probability of roadway flooding Accommodate demand during hurricane evacuation; meet maximum acceptable evacuation time in the event of a 100% evacuation.

¹ 10.3% K-factor with a 63/37 directional split

E. Focus of this Environmental Analysis

The focus of this environmental analysis covers a section of IH 45 from Beltway 8 in Harris County to FM 518 in Galveston County. Exhibit 1 presents the location of the proposed project and study area for this EA. This environmental analysis focuses on the issues relevant to the proposed project given the study area's human and natural environment.

E.1 Planning Process

This section summarizes efforts undertaken to coordinate with the public and resource agencies about the proposed project. The specific objectives of the activities performed to coordinate the project with the public and agencies were to:

- Identify and include people, groups, and agencies that may be affected
- Provide opportunities for interested parties to express their views, ideas, and concerns about the project
- Ensure that understandable project information is provided to interested parties
- Make apparent to interested parties that their opinions and ideas have been considered during the development of the project.

The project is open to comments by any person, and all views on the project's scope, alternative actions, environmental effects and any other matter are welcome. TxDOT will consider all comments and modify this EA, highway designs or other aspects of the project as appropriate.

E.1.1 Congestion Management System

It is required in 23 Code of Federal Regulations (CFR) 460.320 (b) that no additional single occupancy vehicle (SOV) capacity may be built in a Transportation Management Area (TMA) within a non-attainment area unless the project complies with a Congestion Management System (CMS).

The CMS is a systematic process for managing congestion that provides information on transportation system performance and on alternative strategies for alleviating congestion and enhancing the mobility of persons and goods to levels that meet state and local needs. The Intermodal Surface Transportation Efficiency Act (ISTEA) requires TxDOT to develop, establish, and implement a statewide CMS in cooperation with the local Metropolitan Planning Organization (MPO). The Houston-Galveston Area Council (H-GAC) is the MPO responsible for implementing the CMS in the Houston-Galveston TMA. The project was developed from H-GAC's operational CMS that meets all requirements in 23

CFR 500.109. The CMS was adopted by H-GAC on October 10, 1997, and was amended in December 1997.

A congestion mitigation analysis (CMA) and SOV analysis report was prepared in June 1999. Based on the findings of the analyses, levels of mobility (LOM) within the corridor between Beltway 8 in Houston and 61st Street in Galveston are projected to deteriorate, resulting in congestion levels that justify the addition of capacity throughout the corridor. Implementation of planned and expanded Transportation Control Measures (TCM) within the corridor would not provide enough relief of congestion to negate the need for additional capacity. The Steering Committee for the IH 45 South Corridor MIS concurred with this finding. The Federal Highway Administration (FHWA) has approved the IH 45 South Corridor for added capacity.

E.1.2 Project Funding

This project is included in the Houston-Galveston 2025 Regional Transportation Plan (RTP) (approved June 2005). The project is listed in the 2025 RTP as two segments. The first segment, CSJ 0500-03-462, from Beltway 8 to Medical Center Drive, has an anticipated let date of 2008 and is included in the 2006-2008 Transportation Improvement Program (TIP) (approved April 22, 2005). The second segment CSJ 0500-03-107, from Medical Center Drive to north of FM 518, has a scheduled let date of 2009. The proposed improvements are estimated to cost approximately \$ 116,534,000 and would be a combination of Federal (80 percent) and State (20 percent) funds.

The Highway Commission has mandated TxDOT consider tolling existing and future transportation projects, and therefore a toll option must be considered as a funding alternative. This project is currently under study by the Texas Turnpike Authority for tolling feasibility. Effects associated with tolling are not discussed in this EA. Should tolling prove feasible, TxDOT would make appropriate revisions to the RTP, TIP, and Statewide Transportation Improvement Plan (STIP), make a new conformity determination based on a tolled facility, and undertake a re-evaluation of this EA to address tolling in detail.

In order to convert an existing federally funded free facility to a toll facility, a toll agreement between TxDOT and FHWA must be executed. The FHWA Policy Memorandum "Policy for Planning, Environment and Project Development for Toll Roads," dated September 29, 2003 states:

"Section 129 of [the Code of Federal Regulations] Title 23 discusses the prohibition of tolls on the Interstate System. ISTEA [Intermodal Surface Transportation Efficiency Act] of 1991 modified that requirement by allowing the collection of tolls or congestion pricing on value pricing projects. Value pricing is normally applied to a HOV lane operation to sell

or value price the excess traffic capacity in the lane. TEA 21 [Transportation Equity Act of the 21st Century] expanded the options for placing tolls on the Interstate by adding a pilot program for three facilities in the US. TEA 21, Section 1216(a) is the value pricing program from ISTEA and Section 1216(b) is the Interstate Reconstruction and Rehabilitation Program that permits collection of tolls on three pilot facilities on the Interstate system. In order to be eligible for the program, among other requirements, an analysis must demonstrate that the facility could not be reconstructed to meet current and future needs from the State. Also, the tolling must be for the complete facility.”

E.1.3 Public Involvement

TxDOT adopted a Public Involvement Program (PIP) during the early phase of the MIS process that offered the public a variety of opportunities to become involved in the MIS through formal and informal input. Public meetings were the primary public involvement technique used to encourage the participation of community-based organizations, environmental interest groups, business interests, cyclists, transportation providers, truckers, local planning departments, aviators, public safety officials, advocates for people with disabilities, neighborhood associations, transit and highway users, concerned citizens and others. Other public involvement techniques included the regular meeting of a municipal advisory committee, presentations to community groups, and solicitation of written input.

The first series of public meetings was held April 28, 29, and 30, 1998. These meetings gave the public the opportunity to provide input about transportation problems and needs within the IH 45 South Corridor. Public comments from this meeting helped the MIS team establish its corridor goals and objectives.

The second series of public meetings for the MIS was held September 15 and 16, 1998. Public input at these meetings was used to help in the development of six viable alternatives for improving the corridor.

The third series of public meetings was held on March 23 and 24, 1999. These meetings gave the public an opportunity to comment on the six viable alternatives, which emerged from the MIS. This public input was used to help to select the preferred alternative.

The fourth series of public meetings was held June 22 and 23, 1999. The public commented on the recommended preferred alternative of the MIS. Public input from the fourth series of public meetings was used in finalizing plans for the corridor.

Most recently, a public scoping meeting was held on December 11, 2002, to present the proposed action within the project limits to be discussed in this EA.

Many of the comments received at this meeting regarded drainage and flooding of the roadway, inadequacies of the interchanges within the project limits and impacts to adjacent properties, particularly maintaining access to businesses. A summary of this public meeting is included in Appendix B and public comments received during the public comment period are included in Appendix C.

E.1.4 Early Agency Coordination and Consultation

The study team conducted early agency coordination via a letter dated February 13, 2003. The letter was sent to the following Federal, State, and local agencies: Natural Resources Conservation Service (NRCS); Texas Parks and Wildlife Department (TPWD); U.S. Fish and Wildlife Service (USFWS); U.S. Army Corps of Engineers (USACE); Texas Historical Commission (THC); Texas General Land Office (TGLO) Coastal Permitting Assistance Office; U.S. Environmental Protection Agency (EPA); U.S. Coast Guard (USCG); Texas Commission on Environmental Quality (TCEQ); National Marine Fisheries Service (NMFS); City of Houston; Harris County Flood Control District; Galveston County Consolidated Drainage District; Harris-Galveston County Coastal Subsidence District; Harris County; Galveston County; and METRO.

These agencies were asked to provide any information that might help TxDOT better evaluate potential impacts to the natural and human environment within the project limits. Copies of the early agency coordination letters and any responses received are presented in Appendix D.

The following agencies responded to early coordination:

- METRO discussed their existing and proposed facilities within the study area, such as HOV lanes and Park & Rides. METRO requested additional and ongoing coordination with TxDOT throughout the planning process.
- THC stated that, per their programmatic agreement with FHWA and TxDOT, TxDOT shall initiate consultation with THC regarding possible effects federal undertakings may have on cultural resources. THC provided contact information. This consultation was started through the issuance of the Antiquities Permit issued to the study team.
- TPWD expressed concerns regarding valuable riparian, wetland, and stream habitats associated with Clear Creek and requested specific information in this EA about potential impacts and TxDOT's plans to avoid, minimize, and mitigate for habitats affected at this location. TPWD also requested specific coordination with their Resource Protection office in Dickinson regarding aquatic resources; this will be done concurrent with the Section 404 permitting process through the USACE. TPWD recommended that removal of migratory bird nests or nest structures, tree felling, and vegetation clearing should occur outside the March – August migratory bird nesting season.

- USCG stated that they would provide input regarding the application and issuance of a Coast Guard bridge permit. Two permits were issued for the existing Clear Creek bridge under Section 9 of the Rivers and Harbors Act (RHA). Section 9 RHA bridge permit applications will be prepared and submitted to the USCG for review and approval at the conclusion of the NEPA process.
- USFWS recommended a survey specifically for the endangered plant prairie dawn (*Hymenoxys texana*) during the flowering season and provided information regarding this species. The study team conducted a survey during the flowering period; the results of the survey are presented in Section E.4.16 (Threatened and Endangered Species). The survey found no occurrence of prairie dawn.

As part of the routine agency coordination process, TxDOT Environmental Affairs Division circulated a Draft copy of this EA (November 2004) to TPWD, TCEQ, and THC for their review and comment. Of these agencies, only TCEQ responded. TCEQ requested a correction regarding the TIP referenced by the Draft EA; this correction was made and the issue was resolved.

E.1.5 Future Public Involvement

TxDOT will schedule a public hearing at least 30 days after the release of this EA to the public and publish an announcement of the hearing in local papers. The public will be invited to this hearing to comment on the EA and any aspects of the project. TxDOT will consider all public comments and make appropriate modifications. The FHWA will use this EA and any comments received to establish the significance of environmental effects associated with the project.

E.2 Related Studies and Relevant Documents

The following documents and studies are relevant to the proposed project:

- TxDOT completed an MIS in August of 1999. A discussion of the MIS is included in Chapter 1.A.1 (Background). A copy of the IH 45 South Corridor MIS, Executive Summary, is included in Appendix A.
- An “Environmental Assessment for a Bridge Replacement for IH 45 Galveston Causeway (CSJ 0500-01-117)”, dated November 2002, has been prepared for the replacement of the Galveston Causeway (southern segment of the IH 45 South Corridor MIS). On January 23, 2003, the Environmental Assessment received a Finding of No Significant Impact (FONSI) from FHWA.
- Other EAs are being prepared by TxDOT to assess impacts from proposed improvements to the Southern Segment of the IH 45 South Corridor MIS, the

Middle Segment, and remaining portion of the Southern Segment of the IH 45 South Corridor (as defined in the MIS).

- Segment B of the Grand Parkway (SH 99) is a planned scenic highway from SH 288 to IH 45 through Brazoria and Galveston Counties. The project team is currently conducting a location and environmental study of possible alternatives for SH 99. Each of the alternative alignments studied intersect IH 45 between SH 96 and FM 517.
- The NASA Road 1 Bypass (CSJ 0981-01-086) is a new 4-lane access controlled facility with overpasses at SH 3, NASA Road 1, and Egret Bay Blvd, and direct connectors to IH 45. This project received a FONSI in February 1997 and construction is scheduled to begin in late 2005.

E.3 Issues Discussed in Detail

The EA Team, after systematic interdisciplinary analyses¹, determined that the following issues are relevant to the proposed project and may be affected if the proposed project was implemented. These issues are discussed in detail in Chapter 3 of this EA.

E.3.1 Commercial Displacements and Relocations

The proposed right-of-way (ROW) would displace six commercial buildings and portions of five other commercial properties with structures, which in turn, could potentially affect aspects of the community.

E.3.2 Traffic Noise

A traffic noise analysis of the land use activity areas adjacent to the proposed project indicates that several representative receivers would be impacted by highway traffic noise.

E.3.3 Waters of the U.S.

The proposed project would cross Clear Creek, one un-named tributary to Clear Creek, and would affect one jurisdictional wetland adjacent to the tributary. In addition, two man-made drainage ditches have hydrologic connections to the un-named tributary to Clear Creek. One other man-made ditch has a hydrologic connection to Turkey Creek west of the project area. Also, two rectified canals that have a hydrological connection to Turkey Creek are located west of the project. These waters of the U.S. and one wetland encompass a total area of approximately 3.66 acres (ac).

¹ The EA Team compiled their data and presented the results of their analyses in a series of Technical Reports submitted to the TxDOT-Houston District that are incorporated by reference herein.

The creeks would all be crossed with culvert structures or concrete pilings and filled in a manner that would not diminish stream flow or affect aquatic resources. In addition to those areas identified above, several non-jurisdictional areas would be directly affected by the proposed project and encompass an area of 7.72 ac.

Based on information currently available, the proposed project would require an Individual Permit. The project does not qualify for a Nationwide Permit (NWP) because the area of tidally-influenced waters affected is greater than 0.33 ac. NWPs can be used only if the proposed impacts are less than 0.33 ac in tidally-influenced waters and meet certain other general and regional conditions.

E.3.4 Vegetation

In accordance with Provision (4)(A)(ii) of the TxDOT-TPWD Memorandum of Understanding (MOU) and the Memorandum of Agreement (MOA), an investigation to identify and map the vegetation types and assess the potential effects of the project on these natural habitats was completed early in the planning process through aerial photographic interpretation followed by ground-truthing. Native vegetation types potentially affected by the proposed project include riparian forest, tidally-influenced wetlands, periodically inundated wetlands, managed pastureland, and aquatic resources. For areas of new ROW, the investigation included the collection of data required by the MOA, including dominant vegetation for each strata, height of trees, diameter at breast height of trees, and percent tree canopy cover. The proposed project would affect approximately 8.05 ac of native vegetation. Native vegetation types potentially affected by the proposed project include marsh adjacent to Clear Creek, small areas of upland forest adjacent to Clear Creek, and small isolated depressional wetlands. Of the 8.05 ac, approximately 3.48 ac would be permanently affected due to their conversion from native vegetation to the footprint of the roadway and 4.57 ac would be either temporarily affected or converted to maintained ROW. In keeping with the MOU, mitigation would be required for wetlands and riparian forest areas.

E.3.5 Hazardous Materials

A review of available databases, correspondence with pertinent agencies, and a field survey identified the potential for hazardous material sites within the proposed ROW of the proposed project. Of the sixty-one sites identified in the study area, eleven are within the proposed ROW. Eight of the eleven sites warranted further consideration due to either (1) direct evidence of hazardous materials at the site or (2) the nature of the facility would support the assumption that hazardous materials were used or stored at one time. Certified American Society for Testing and Materials (ASTM) Standard Phase I Environmental Site Assessments are recommended for these sites.

E.4 Issues Eliminated from Detailed Discussion

Per 40 CFR 1501 (a)(3), the EA Team, after systematic, interdisciplinary analyses¹, determined that the following issues should be eliminated from detailed discussion in this EA. The issues summarized in this section were eliminated because they have either no effect or such a minimal effect that they would not individually or cumulatively influence the decision to be made.

E.4.1 Land Use

The City of Webster and the City of League City maintain Comprehensive Plans and zoning regulations, but no other land use planning documents pertain to the study area. The land use trends in the study area appear to be in a growth and development mode. The pattern of future land use is anticipated to continue this trend under either the Build or No-Build Alternative. The proposed project is consistent with the appropriate planning documents (Study Team 2003c).

E.4.2 Farmlands

Early coordination with NRCS determined that an estimated 48.2 ac of prime and unique, statewide and locally important farmland soils in Harris County and 0.60 ac of these soils in Galveston County would be affected by the proposed project. Out of a possible 260 points, the farmland conversion impact ratings are 106 for the entire proposed project. Because the scores are less than 160, further consideration for protection and further evaluation is not necessary (7 CFR §658.4(c)(2)). (Study Team 2003c.) A copy of the coordination with NRCS is included in Appendix D.

E.4.3 Community Cohesion, Focal Points, and Activity Centers

The proposed project would not affect community cohesion or community focal points and activity centers (Study Team 2003c).

E.4.4 Environmental Justice and Limited English Proficiency

In accordance with Section 601 of Title VI of the 1964 Civil Rights Act (42 USC 2000) and Executive Order 12898 “Federal Actions to Address Environmental Justice in Minority Populations,” data on the presence of and effects to minority and low-income populations have been analyzed at the Census Block Group level to determine if these populations are disproportionately affected by the project. To make this determination, a disproportionate effects test (Shakowski 2000) was

¹ The EA Team compiled their data and presented the results of their analyses in a series of Technical Reports, which are incorporated by reference herein. The Technical Reports are available from the TxDOT-Houston District upon request.

conducted by comparing the minority and income characteristics of the residents of the study area with the characteristics of residents of the region (Harris and Galveston counties and the cities of Houston, League City, and Webster). A disproportionately high population of minorities was not found to exist. A disproportionately high number of minority-owned businesses was not found to exist. One Census Block Group (Tract 3412, Block Group 6) may have a disproportionately high population of low-income persons. The socioeconomic data to support these findings is presented in Appendix E.

Census Tract 3412 Block Group 6 is located northeast of IH 45 and Clear Creek, generally bounded by IH 45 on the west, Clear Creek on the south, NASA Road 1 on the north, and SH 3 on the east. Residential populations are primarily sensitive to effects related to the human environment such as elevated noise, direct displacement, and relocation. These effects from the proposed project only occur in areas immediately adjacent to the roadway; effects such as elevated noise levels diminish with increased distance. There are no residences that receive adverse effects in this Block Group; the only nearby structures are commercial buildings located southeast of the intersection of IH 45 and NASA Rd 1. The only parcels of land that would be acquired in this Block Group are either commercial or vacant. There are no disproportionate effects to minority or low-income populations because there are no residential areas within the area affected by the proposed project. Because a disproportionately high population of low-income persons may exist, residents have been encouraged to participate in the public involvement process.

A public involvement and outreach program was initiated in December 2002 for affected communities and populations, including minority and low-income populations. This program has been and will continue to be maintained throughout the project providing opportunities for the full and fair participation by all potentially affected communities in the transportation decision-making process.

Data on potential language barriers associated with ethnic and minority populations was analyzed in accordance with Executive Order 13166, "Improving Access to Services for Persons with Limited English Proficiency," which mandates that federal agencies examine the services it provides and develop and implement a system by which persons with Limited English Proficiency (LEP) can meaningfully access those services consistent with, and without unduly burdening, the fundamental mission of the agency. TxDOT complies with Executive Order 13166 by offering to meet the needs of persons requiring special communication accommodations in all public involvement activities and notices.

According to the US Bureau of the Census (USBOC), a linguistically isolated household is one in which no member of the household aged 14 or over speaks English or speaks it without difficulty. Within the Census Block Groups that

contain the study area, 931 households (5 %) identified themselves as linguistically isolated. Of the linguistically isolated households, 68 percent speak Spanish, 23 percent speak an Asian language, and 9 percent speak some other language (USBOC 2000).

E.4.5 Residential Displacements and Relocations

The proposed project would not require displacement or relocation of residential structures or houses; therefore, this topic is eliminated from detailed study (Study Team 2003c).

E.4.6 Economic Effects

Although the proposed project would displace or relocate six businesses and therefore remove a small area of commercial land from the local tax base, it is anticipated that they would relocate within the same taxing jurisdiction. Even if displaced businesses elect not to relocate within the same jurisdictions, the tax base effects would be minimal as these businesses contribute a nominal share of the total tax base (Study Team 2003c).

E.4.7 Considerations Relating to Pedestrians and Bicyclists

The 2025 H-GAC Regional Transportation Plan includes a regional bikeway plan update that contains a listing of current and proposed bicycle facilities for the Houston area. The proposed project would have provisions for suitable crossing for both pedestrians and bicyclists over or under the roadway at appropriate crossing points. In the event that a bicycle or pedestrian facility is in place prior to the proposed project, the facility would be reconstructed to maintain continuity and function. It is not anticipated that bicycle traffic would be accommodated on the outside lanes of the frontage roads.

Several miles of bike lanes and shared use paths have been designed and constructed by various communities in the Clear Lake area. A coalition of these communities has been working with TxDOT to develop a master plan for bicycle and pedestrian facilities. The master plan will prioritize strategies for improving bikeways in southeast Harris County (H-GAC 2004).

E.4.8 Travel Patterns and Accessibility

Changes in travel patterns and accessibility caused by the proposed project would result in indirect beneficial effects to other aspects of the community. These effects include providing safer and more efficient travel through the project corridor (Study Team 2003c).

E.4.9 Public Facilities and Services

The proposed project would not adversely affect emergency and law enforcement services, schools, or parks. Response time for emergency and law enforcement services are anticipated to improve after construction (Study Team 2003c).

E.4.10 Air Quality

The primary pollutants from motor vehicles are volatile organic compounds (VOCs), carbon monoxide (CO), and nitrogen oxides (NO_x). VOCs and NO_x combine under the right conditions in a series of photochemical reactions to form ozone. Because these reactions take place over a period of several hours, maximum concentrations of ozone are often found far downwind of the precursor sources. Thus, ozone is a regional problem and not a localized condition.

The project is located in an area that is currently designated Severe-II nonattainment for exceeding the 1-hour ozone National Ambient Air Quality Standards (NAAQS) and Moderate nonattainment for exceeding the 8-hour ozone NAAQS. The area is currently in attainment for all other pollutants.

The concentrations for carbon monoxide for the proposed action were modeled using the worst-case scenario (adverse meteorological conditions and sensitive receptors at the ROW line) in accordance with the "Texas Department of Transportation 1999 Air Quality Guidelines." Local concentrations of carbon monoxide are not expected to exceed national standards at any time.

Estimated Time of Completion (ETC) Year Air Quality Environment: For this alternative, the NAAQS was not exceeded for the worst-case condition. The worst-case traffic volume is predicted to be located just south of Beltway 8, the Sam Houston Tollway. The highest 1-hour CO concentration was predicted to be 6.9 ppm and the highest 8-hour concentration was 3.8 ppm.

Table 1-3 shows the project CO concentrations. For ozone, the proposed action is consistent with the area's financially constrained Houston-Galveston 2025 RTP. The USDOT found the 2025 RTP and the 2006-2008 TIP conformed to the requirements of the State Implementation Plan (SIP) for the Houston-Galveston ozone nonattainment area.

ETC + 20 Air Quality Environment: For this alternative, the NAAQS was not exceeded for the worst-case condition. Similar to the ETC year, the worst-case traffic volume is predicted to be located just south of Beltway 8, the Sam Houston Tollway. The highest 1-hour CO concentration was predicted to be 6.6 ppm and the highest 8-hour concentration was 3.6 ppm.

Table 1-3 shows the project CO concentrations. For ozone, the proposed action is consistent with the area's financially constrained Houston-Galveston 2025 RTP.

The USDOT found the 2025 RTP and the 2006-2008 TIP conformed to the requirements of the SIP for the Houston-Galveston ozone nonattainment area.

**TABLE 1-3
 PROJECT CARBON MONOXIDE CONCENTRATIONS**

Year	1 HR CO (PPM) Standard 35 PPM	1 HR % NAAQS	8-HR CO (PPM) Standard 9 PPM	8-HR % NAAQS
2011 Build (ETC)	6.9	19.7	3.8	42.2
2031 Build (ETC + 20)	6.6	18.5	3.6	40.0

Notes: The National Ambient Air Quality Standard (NAAQS) for CO is 35 ppm for one hour and 9 ppm for eight-hours. Analysis includes a one-hour background concentration of 4.5 and an 8-hour background concentration of 2.8.

Source: Study Team 2005

The proposed project would have no impacts to air quality according to TxDOT guidance. The proposed project is listed as a short-range project in the 2025 RTP and the predicted CO concentrations are below the NAAQS. Therefore, no mitigation is required. The contractor will adhere to construction measures regarding fugitive dust in any construction specifications.

This project is included in the 2025 RTP and conforms to the USEPA final transportation conformity rule (40 CFR Parts 51 and 93). The proposed project also conforms to the SIP conformity criteria and procedures approved by the USEPA.

E.4.11 Water Quality

Although runoff from highways could have an effect on water quality, no measurable effects are anticipated to the ambient water quality of the river basin segments associated with the proposed project (i.e., Segment 1101 – Clear Creek Tidal from the confluence with Clear Lake to a point 328 feet (ft) upstream of FM 528). No effects are anticipated because the area of impervious cover in the proposed project is small compared to the total area of the watersheds. No sole-source aquifers are present in the study area and no sole-source surface water features would be measurably affected. Seven public water supply systems have wells with 100-year capture zones that intersect the study area. Clear Lake City Water Authority is the only system that participates in the Source Water Protection Program (Study Team 2003i).

Since the project will disturb more than 1 acre, TxDOT would also be required to comply with the Texas Commission on Environmental Quality (TCEQ) Texas Pollutant Discharge Elimination System (TPDES) Construction General Permit TXR150000. This would be accomplished by filing a Notice of Intent to comply with the TPDES stating that the Texas Department of Transportation (TxDOT)

would have a Storm Water Pollution Prevention Plan (SWPPP) in place during construction of the project.

The TCEQ is responsible for conducting Section 401 certification reviews of Section 404 permit applications for the discharge of dredged or fill material into waters of the U.S., including wetlands.

TCEQ review for 401 certifications for either NWP or Individual Permits uses a two-tiered approach. Projects that affect less than three acres of jurisdictional wetlands may qualify for expedited review under Tier I of the TCEQ process. For high-profile projects that are less than three acres or for any project that affects greater than three acres of wetlands, the TCEQ requires that Tier II review be performed. The applicant is required to complete a Tier II Checklist that provides additional detail regarding the project. In particular, the applicant must demonstrate that wetland effects have been avoided and minimized to the extent practicable. The proposed project is anticipated to affect more than three acres of jurisdictional wetlands and waters of the U.S.; therefore, an Individual 401 Water Quality Certification (Tier II) analysis would be required.

It is anticipated that the Best Management Practices (BMP) used for the project will include applying temporary seeding to disturbed areas. Additionally, it is anticipated that silt fences and rock berms across drainage swales and/or upstream of water bodies will be installed to prevent turbidity discharges from adversely affecting ambient water quality. Grass-lined ditches (vegetative strips/wet basins) will also be created as indicated in TxDOT specifications. These ditches would accept stormwater runoff as sheet flow from the adjacent roadway and filter it along the slopes and bottom of the ditch. These BMPs would minimize potential adverse effects to water quality and with the implementation of these measures; no long-term effects to water quality are anticipated.

E.4.12 Floodplains

The proposed facility would be designed to have no adverse effect on the 100-year floodplain or floodways. Inundation of the roadway, without causing significant damage to the roadway, stream, or other property, is considered acceptable. The hydraulic design practices of this project would be in accordance with current TxDOT and FHWA design policies and standards. The project would not increase the base flood elevation to a level that would violate applicable floodplain regulations or ordinances. Because the placement of above-grade fill is expected in the 100-year floodplain, coordination with the Federal Emergency Management Agency (FEMA) would be required. Specific design features, including the volume and type of fill and structures proposed would be

determined prior to coordination with FEMA representatives (Study Team 2003d).

E.4.13 Coastal Coordination

As a coastal county, Harris County is under the jurisdiction of the Texas Coastal Management Program (TCMP) of the Coastal Zone Management Act (CZMA). The Coastal Coordination Act of 1991 established the Coastal Coordination Council (CCC) to develop policy and oversee implementation of the TCMP. TCMP rules: (1) state that actions that may adversely affect coastal natural resource areas must comply with the TCMP and (2) authorize CCC to review actions for consistency with the TCMP (consistency review).

TxDOT will initiate the consistency review with the Texas General Land Office (GLO) in accordance with the regulations of the CCC, and in order to comply with the CZMA. The proposed project will comply with the CZMA; no impacts to coastal zone resources are anticipated.

E.4.14 Essential Fish Habitat (EFH)

Clear Creek is tidally-influenced at the project site, and therefore within the purview of review by NMFS for potential impacts to EFH. The Fishery Management Plans (FMP) for the Gulf of Mexico Fishery Management Council (GMFMC) states that suitable habitats for brown shrimp (*Penaeus aztecus*), pink shrimp (*Penaeus duorarum*) (juvenile only), white shrimp (*Penaeus setiferus*), Gulf stone crab (*Menippe adina*), red drum (*Sciaenops ocellatus*), and Spanish mackerel (*Scomberomorus maculatus*) may be present within the project vicinity. The relative abundance of each of these managed species is outlined in the 1998 amendment to the FMP prepared by the GMFMC.

Marsh habitats present along Clear Creek at the project site consist of slightly brackish to freshwater vegetation such as alligator weed (*Alternanthera philoxeroides*), bull-tongue arrowhead (*Sagittaria lancifolia*), broad-leaf cattail (*Typha latifolia*) three-square bulrush (*Scirpus pungens*), swamp dock (*Rumex verticillatus*), eastern false-willow (*Baccharis halimifolia*) and water oak (*Quercus nigra*). No submerged aquatic vegetation (seagrasses), algal meadows or oyster reefs/beds were observed within Clear Creek at the project location.

Brown shrimp are found in estuaries to offshore depths up to 110 m throughout the Gulf of Mexico. Adult brown shrimp are common to rare and juveniles are abundant to highly abundant in the Galveston Bay system. (GMFMC 1998). Marsh edge habitats and submerged vegetation provide the highest densities of postlarval and juvenile brown shrimp, followed by tidal creeks, inner marshes, shallow open water and oyster reefs. If unvegetated bottoms are present, muddy substrates are preferred. Brown shrimp rely on these nursery areas for food,

protection from predators, and suitable substrate for maturation. Adult brown shrimp prefer silty, muddy sand, and sandy substrates as they migrate offshore to mature and complete their life cycles. Based on the habitats available, brown shrimp may be present in the project area.

White shrimp can be found in offshore and estuarine habitats, depending on their life cycle stage. Adult white shrimp are not present to common and juveniles are abundant to highly abundant in the Galveston Bay system (GMFMC 1998). Postlarval white shrimp seek shallow water estuarine habitats, characterized by muddy-sand bottoms rich in organic detritus or abundant marsh, for nursery areas. Juvenile white shrimp densities are usually highest in marsh edges and submerged aquatic vegetation and prefer lower salinity waters less than 10 ppt. Based on the habitats available, white shrimp may be present in the project area.

Red drum is found in every estuary along the Gulf of Mexico and in adjacent offshore waters. Adult and juvenile red drum are common in the Galveston Bay system (GMFMC 1998). Estuarine habitats are essential to larval, juvenile and subadult red drum, where they spend most of these life stages. Estuaries provide shelter from predators and an abundance of prey species for red drum, which are also estuarine dependent organisms. Juvenile red drum are found on the marsh periphery in quiet, shallow, sheltered waters with vegetated or slightly muddy bottoms. Optimum red drum habitat has been identified as shallow water with 50 to 75 percent submerged vegetation growing on mud bottoms and fringed with emergent vegetation. At subadult and adult stages, red drum prefer shallow bay bottoms and oyster reef substrates; however, adult red drum tend to spend more time offshore as they age. Based on the habitats available, red drum may be present in the project area.

Based on the habitats available on-site, pink shrimp and Spanish mackerel are not likely to be present in the project area. Gulf stone crabs are considered rare in the Galveston Bay system (GMFMC 1998) and guidance from NMFS indicates that they are not managed in Texas. Spanish mackerel are partially dependent upon estuaries for food sources; however, it is unlikely that the proposed project would have an overall adverse effect to this species.

Preliminary coordination with NMFS was initiated in February 2002 and September 2003 regarding the proposed project. Because the final design for the proposed bridge is not yet finalized, NMFS recommended that the EFH coordination be delayed until the project design was complete to a point to where EFH impacts could be clearly determined.

The proposed project would involve the construction of additional bridge structures and demolition of existing frontage road bridges traversing Clear Creek. Impacts associated with the construction of these additional structures would be limited the installation of bridge columns/pilings and limited

embankment fill associated with these bridge structures. The bridge structures are still in design and exact impacts to jurisdictional wetlands and waters of the U.S. cannot be determined at this date. Additional coordination, if needed, will be conducted with NMFS once more detailed design information is available.

The proposed bridge structures are immediately adjacent to the existing facility and the project has avoided and minimized impacts to wetlands to the greatest extent practicable. It is not anticipated that the proposed project would have an adverse effect to EFH, including those managed species present in the project area or dependent on habitats present in the project area.

E.4.15 Wildlife

The study area is located in the Gulf Coast Prairies and Marshes vegetation region, which includes parts of the Texan and Austroriparian Biotic Provinces (Blair 1950). In addition, fauna characteristic of the Tamaulipan Biotic Province are also present. The wildlife habitat potentially being affected by the proposed project is correlated with the vegetation types mentioned in Section E.3.4 (Vegetation). As with other elements of the ecosystem, wildlife communities are directly affected by the loss of habitat. The area of each habitat type that would be affected by the proposed project is presented below in Table 1-4.

Construction activities may permanently affect individuals of some species due to the conversion of habitat to transportation uses. Another direct effect would be the temporary disturbance of normal behavior patterns caused by the noise and physical activities of the work crews, although the project corridor is already dedicated to transportation.

**TABLE 1-4
 AERIAL EXTENT OF LAND USE/LAND COVER TYPES WITHIN PROPOSED ROW**

Land Use/Land Cover	Location/Distribution	Area within proposed ROW	
		Acres	Percent
Riparian Forest	Forested strips in uplands adjacent to Clear Creek and A111-00-00	3.44	0.8%
Tidally-Influenced Marsh	Fringe marsh associated with Clear Creek	2.83	0.6%
Periodically-inundated Wetlands	Common and scattered throughout the study area	8.27	1.9%
Managed Pastureland	Common	27.88	6.2%
Aquatic Features	Clear Creek and A111-00-00	2.85	0.6%
Urban	Common and scattered throughout the study area	13	2.8%
Existing Pavement	IH 45 (including entrance and exit loops)	236	53.4%
Maintained ROW	Linear strip along the roadway (including vegetation located at entrance and exit loops)	149.24	33.7%

Source: Study Team 2003b.

The potential effects on regional wildlife resources would be relatively minor. To minimize effects to wildlife, native vegetation would be re-established as soon as is practical to replace important forage and cover. The use of best management practices to reduce potential erosion and stream sedimentation would minimize effects to all adjacent natural habitats (Study Team 2003b).

The Migratory Bird Treaty Act (MBTA) protects migratory birds and their nests and eggs. The project would not restrict the migration of any migratory birds through the project area. No evidence of current or past migratory bird nesting including nesting swallows, was observed during field investigation. If migratory bird nests are observed prior to construction, measures would be taken to avoid impacts to migratory birds, their eggs, and/or their young.

The Fish and Wildlife Coordination Act (FWCA), as amended in 1964, provides protection for potentially affected fish and wildlife species and their habitats when a federal action results in a modification of a natural stream or water body or a proposed control structure of those features. The statute, administered by the USFWS and the National Marine Fisheries Service, requires federal agencies to take into consideration the effect of the modification or control on local fish and wildlife resources, the actions proposed to minimize these effects, and the proposed measures to improve the resources. Technically, modification includes the placement of fill in waters of the U.S., including culverts and other structures. The Proposed Project would require crossing Clear Creek, an un-named tributary to Clear Creek, four man-made drainage ditches with hydrologic connections to creeks, two adjacent wetlands, and 92 isolated wetlands. Due to potential effects in these areas, coordination with the USFWS would be required in order to comply with the FWCA.

E.4.16 Threatened and Endangered Species

Several rare species potentially occur in Harris and Galveston Counties. A complete list of state and federal threatened and endangered species of Harris and Galveston Counties is presented in Appendix F.

The federally listed threatened and endangered species potentially occurring in the study area include Houston toad (*Bufo houstonensis*), Attwater's greater prairie-chicken (*Tympanuchus cupido attwateri*), bald eagle (*Haliaeetus leucephalus*), brown pelican (*Pelecanus occidentalis*), piping plover (*Charadrius melodus*), whooping crane (*Grus americana*), West Indian manatee (*Trichechus manatus*), Atlantic hawksbill sea turtle (*Eretmochelys imbricata*), green sea turtle, (*Chelonia mydas*), Kemp's ridley sea turtle, (*Lepidochelys kempii*), leatherback sea turtle (*Dermochelys coriacea*), loggerhead sea turtle (*Caretta caretta*), and Texas prairie dawn (*Hymenoxys texana*). Based on review of the available habitats and field observations conducted, habitat exists for only the Texas prairie dawn within the proposed project.

USFWS recommended a survey specifically for the endangered plant Texas prairie dawn during the flowering season and provided information regarding this species. An extensive field investigation for this species was performed on the entire study area during March-April of 2003. Dr. Larry Brown, a recognized local expert on this species, accompanied field biologists during the field investigation. This species was not found in the study area and would not be affected by the proposed project (Study Team 2003b).

Habitat exists for several state-listed species. The state-listed species potentially occurring in the project area based on available habitats include the white-faced ibis (*Plegadis chihi*), white-tailed hawk (*Buteo albicaudatus*), wood stork (*Mycteria americana*), and the Rafinesque's big-eared bat (*Corynorhinus rafinesquii*).

The white-faced ibis inhabits marshes, swamps, ponds, and rivers feeding on insects, newts, leeches, earthworms, snails, and crayfish. In Texas, nesting occurs between April and June on dead reeds or floating mats of dead plants. Limited habitat for this species is found along Clear Creek in the study area. This species is not expected to be adversely affected by construction of the proposed project due to its wide-ranging nature and high mobility.

In Texas, the white-tailed hawk is a resident of coastal grasslands from the Rio Grand delta to the upper coast and farther inland in open-country with scattered mesquite, yucca, and large cacti. The white-tailed hawk perches on bushes, trees, utility wires, or on the ground. Breeding season extends from March to May and eggs are laid in nests found 5 ft to 15 ft above the ground in sizeable bushes and trees. The study area supports coastal grasslands, and therefore, habitat for this species potentially occurs there. However, this species is not expected to be

adversely affected by construction of the proposed project due to its high mobility.

The wood stork is a large white-bodied bird with a long heavy bill. It inhabits coastal marshes, bays, and prairie lakes. In Texas, it is a common summer resident along the coastal plain. It is listed as a state threatened species. This species requires dead snags for roosting, and preferred habitat for it is not found in the study area. It is a highly mobile species and would avoid the area during construction of the proposed project. As a result, it is not expected to be affected by the proposed project.

The Rafinesque's big-eared bat roosts in tree cavities of bottomland hardwoods, concrete culverts, and abandoned man-made structures. However, this species is primarily known as an inhabitant of the deep, mature pinewoods of east Texas. Man-made structures that potentially support this species are found in the study area; however the available habitat for the species is sub-optimal. This species is highly mobile and would avoid the project area during construction activities. It is not likely to be affected by the proposed project.

After the evaluation of the best available information, site surveys and after coordination with USFWS, a determination of no effect for the proposed activities was concluded. The proposed project would not have an adverse effect to state-listed threatened and endangered species or their habitats.

E.4.17 Cultural Resources

Archeological Resources

Prior to field survey, a review of records and literature was conducted for known sites and properties currently listed on the National Register of Historic Places (NRHP). None were located within the proposed new ROW for the Preferred Alternative (Study Area). (For detailed discussion of the Preferred Alternative, see Chapter 2.) Records housed at the Texas Archeological Research Laboratory (TARL) were examined along with the Texas Archeological Sites Atlas. Sites closest to the Study Area include 41HR635, a mid-19th century home located on private property, approximately 1,000 ft (300 m) to the west of IH 45 on the north side of Clear Creek, and 41HR529, a non-operational power plant, approximately 3500 ft (930 m) east of IH 45, on the north side of Clear Creek (TARL 1984, TARL 1990, and TxDOT 1999b).

High probability areas for archeological resources within the Study Area were determined from historic mapping and the Potential Archeological Liability Mapping of the Houston District (Houston-PALM) (Abbott 2001) (Exhibit 2). Approximately 26.8 ac (10.8 ha) of archeological high probability areas were identified for the Project. These acres included 25.7 ac (10.4 ha) of Houston-PALM Map Unit 2a and 1.1 ac (0.4 ha) of Houston-PALM Map Units 1 and 3a

combined, recommending surface survey of mounds and deep reconnaissance, respectively. One previously unidentified prehistoric site locality was recorded during the intensive survey for the Proposed Project. Due to the low artifact density and the small size of the lithic component at this locality, it was evaluated as not eligible for nomination to the NRHP, and no further archeological investigations were recommended. (Study Team 2003f.)

Deep testing along Clear Creek identified no buried cultural materials or living surfaces. Historic disturbance was seen across the Southeast quadrant of the Clear Creek / IH 45 crossover, and near the bridge construction at the edge of Clear Creek in the Northeast quadrant.

In accordance with the Programmatic Agreement between the FHWA, the Texas Historical Commission (THC), the Advisory Council on Historic Preservation (ACHP), and TxDOT and the MOU between TxDOT and THC, TxDOT will consult with the State Historic Preservation Officer (SHPO) regarding the eligibility of any properties for inclusion in the National Register.

The study team was granted permission in April and August 2003 to enter nine of the ten tracts identified for investigation, representing approximately 84 percent surveyed in terms of land area of the Preferred Alternative. The study team was not granted right-of-entry permission by Eastfield Realty to survey approximately 6.2 ac (2.5 ha) of an area designed as a Houston-PALM map Unit 2a, recommending surface survey of mounds only. This area was approximately 70 x 3850 ft² and was examined by the study team from the existing TxDOT ROW. This visual inspection revealed large areas of dirt moving equipment disturbance and intermittent disturbance from petroleum exploration related activities throughout the property. Due to the appearance of these soils, the amount of disturbance present, the probability of significant artifact concentrations or intact cultural features being present on this property is very low, and clearance for this property was recommended. In the event archeological materials are disturbed during construction, operations would immediately cease in the area of the discovery and the TxDOT Environmental Affairs Division will be contacted.

Historic Structures

To identify previously designated historic structure resources along the Preferred Alternative, qualified cultural resource personnel reviewed the (NRHP, the list of Recorded Texas Historical Landmarks (RTHL), and Texas Historic Sites Inventory to identify previously designated historic resources. In October 2003, these same individuals conducted a historic resource survey of the Study Area. The Area of Potential Effects (APE) was determined to extend 150 ft (45.7 m) beyond the proposed ROW boundaries for the Preferred Alternative. The purpose of the survey was to identify and evaluate all buildings, structures, objects, and potential districts constructed in 1961 or earlier that are located within the APE.

The historic structure field survey identified 1 building, 15 structures, and 1 object constructed in 1961 or earlier within the project's APE. Other surveyed resources included oil related machinery, bridges, drainage ditches and culverts. None of the resources surveyed were recommended as eligible for inclusion in the NRHP. TxDOT will consult with the THC to finalize the determination of each resource's eligibility.

E.4.18 Cemeteries

The Forest Park Cemetery is located adjacent to the existing IH 45 facility. This cemetery would not be affected; therefore, this issue was eliminated from detailed discussion.

E.4.19 Section 4(f)

No Section 4(f) properties are located within the proposed ROW; therefore, this issue was eliminated from detailed discussion.

E.4.20 Utilities

Although the precise location of utilities within the proposed ROW was not determined during this study, it is anticipated that the utilities observed in the field could be relocated to accommodate the proposed project with only temporary disruptions in service (Study Team 2003c).

E.4.21 Visual Impacts

Aesthetic quality provides the setting for a community. Some communities place a high value their visual resources and consider them a factor of their community cohesion. The visual characteristics of the existing roadway are best described as an interstate with concentrations of commercial development in a suburban setting. The existing roadway provides an open viewshed; it does not contrast with the visual character of the study area and it allows for a clear view of the commercial development on both sides of the road.

The proposed project would have very little visual effects from the existing roadway. Construction of new frontage roads, grade separations or noise walls (if reasonable and feasible) would alter the existing views of the motorist and some adjacent property owners. The proposed project would add lanes to the outside of the original footprint of the facility and would have the visual effect of moving the facility closer to the adjacent property owners.

E.4.22 Construction Impacts

Construction would temporarily affect traffic patterns in the study area with detours, alternating closures, and temporary reductions in lane widths. The contractor would make every reasonable effort to maintain the existing number of traffic lanes. Cross-street closures may be required during construction of overpasses; typically, these closures would be staggered to minimize inconvenience to motorists. Motorists may choose alternate routes of travel to avoid potential delays associated with construction. As a result, other roadways in the area may experience temporary increases in traffic volume.

The construction likely would take place in phases. The normal operations associated with road construction and traffic control phasing may result in temporary increases in vehicle miles traveled in some areas. Increased noise levels would be anticipated in areas adjacent to the active construction. The impacts to any given receptor would be relatively short term in nature and extended disruption of normal activities is not likely. Every reasonable effort would be made to minimize construction noise.

Dust and exhaust gas from construction equipment may temporarily have an adverse effect on localized air quality. Measures to control or abate fugitive dust emissions would be incorporated into the construction specifications.

Construction may not be limited to daylight hours, but the contractor would make reasonable efforts to perform certain work during off-peak hours to minimize motorist delay. Accessibility to adjacent properties would be maintained. While ensuring safety for motorists, the contractor would maintain temporary drainage of stormwater as needed and required by regulation. A Storm Water Pollution Prevention Plan (SWPPP) and erosion/sedimentation controls would be implemented (Scheffler 2003).

E.4.23 Beneficial Landscaping/Invasive Species

In accordance with the Executive Memorandum on Beneficial Landscaping and Executive Order 13112 on Invasive Species, landscaping would be limited to seeding and replanting the ROW with native species of plants to the extent practicable. Soil disturbance would be minimized to reduce the establishment of invasive species in the ROW.

F. Applicable Regulatory Requirements and Required Coordination

The following regulatory requirements are relevant to the issues studied in detail in this EA and applicable to the proposed project:

- **Clean Air Act (CAA) of 1970** — (42 U.S.C. s/s 7401 et seq.). This act is the comprehensive Federal law that regulates air emissions from area, stationary,

and mobile sources. This law authorizes the EPA to establish National Ambient Air Quality Standards (NAAQS) to protect public health and the environment.

- **Clean Water Act (CWA) of 1977** — (33 U.S.C. s/s 1251 et seq.). This Act is an amendment to the Federal Water Pollution Control Act of 1972 and it sets the basic structure for regulating discharges of pollutants to waters of the U.S. Section 401 of the Clean Water Act requires that an applicant for a federal permit provide a State certification that any discharges from the facility would comply with the Act, including water quality standard requirements.
- **Coastal Zone Management Plan.** The Federal Coastal Zone Management Act of 1972, as amended, authorized a Federal program to encourage coastal states and territories to develop comprehensive coastal management programs. Participation in this program will make these states and territories eligible for grants to carry out certain activities. This led to the Texas Coastal Coordination Act of 1991, which called for the development of a comprehensive coastal program based on existing statutes and regulations. Projects that are proposed with the Coastal Management Zone (CMZ) must comply with the goals and objectives of the Coastal Zone Management Plan.
- **Floodplain Management** — (Executive Order 11988). This order requires agencies to take action to reduce the risk of flood loss, to minimize the effect of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains.
- **Protection of Wetlands** — (Executive Order 11990). This order requires agencies to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands.
- **Section 9 of the Rivers and Harbors Act of 1899.** This section requires that the United States Coast Guard approve the location and plans for bridges and causeways over navigable waters of the U.S.
- **Section 10 of the Rivers and Harbors Act of 1899.** This section prohibits the obstruction or alteration of navigable waters (coastal/inland) of the U.S. without a permit from the USACE.
- **Pollution Prevention Act (P2) of 1990** — (42 U.S.C. 13101 and 13102, s/s et seq.). This Act focused industry, government, and public attention on reducing the amount of pollution through cost-effective changes in production, operation, and raw materials use.
- **Archeological Resources Protection Act (ARPA) of 1979** — (16 USC 470aa et seq., P.L. 96-95). This Act supplements the provisions of the 1906 Antiquities Act. The law makes it illegal to excavate or remove from federal

or Native American lands any archeological resources without a permit from the land manager. (TxDOT Environmental Affairs Division to verify cultural resources.)

- **National Historic Preservation Act (NHPA) of 1966**, as amended — (16 USC 470, P.L. 95-515). This Act establishes as federal policy the protection of historic properties or places and their values in cooperation with other nations and with state and local governments. It establishes a program of grants-in-aid to state governments for historic preservation activities. Subsequent amendments designated the State Historic Preservation Officer (SHPO) or the Tribal Historic Preservation Officer (THPO) as the individual responsible for administering programs in the states or reservations. The Act also creates the Advisory Council on Historic Preservation (ACHP). (TxDOT Environmental Affairs Division to verify cultural resources.)
- **Native American Graves Protection and Repatriation Act (NAGPRA) of 1990** — (25 USC 3001, P.L. 101-601). This act sets forth rules for intentional excavation and removal of Native American cultural items, including human remains and funerary objects, and for inadvertent discovery of such items. (TxDOT Environmental Affairs Division to verify cultural resources.)
- **Native American Graves Protection and Repatriation Act Regulations, Final Rule, 1996** — (43 CFR Part 10). This final rule establishes definitions and procedures for lineal descendants, Indian tribes, Native Hawaiian organizations, museums, and Federal agencies to carry out the Native American Graves Protection and Repatriation Act of 1990. (TxDOT Environmental Affairs Division to verify cultural resources.)
- **Memorandum of Understanding (MOU) between TxDOT and TPWD** — This MOU requires TxDOT to provide TPWD with pertinent information regarding potential effects to natural resources and measures to minimize and/or compensate for unavoidable losses of unregulated but sensitive habitats. TPWD must coordinate with TxDOT to assist with the decision-making process.
- **Memorandum of Agreement (MOA) between TxDOT and TPWD** — The MOA provides procedures and methodologies for habitat characteristics and impact descriptions, and criteria for compensatory mitigation.
- **Fish and Wildlife Coordination Act (FWCA)** – (16 U.S.C. 661 et seq.) — This law was enacted to protect fish and wildlife when federal actions result in a modification of a natural stream or body of water. If a modification to a natural stream or water body is expected, coordination with the U.S. Fish and Wildlife Service (USFWS) is required.

- **Magnuson-Stevens Fishery Management and Conservation Act (1996)** – Section 305(b) of the Magnuson-Stevens Fishery Management and Conservation Act (1996) requires that the Fishery Management Councils (FMC), and other federal agencies identify and protect important marine and anadromous fish habitat. This important habitat, Essential Fish Habitat (EFH), is defined as those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity. Protected species can include invertebrates that are important for the commercial nursery such as shrimp and crabs, depending on the FMC and region of the country.
- **Endangered Species Act (ESA) of 1973** — (16 USC 1531 et seq., P.L. 93-205) — This law provides a program for the conservation of threatened and endangered plants and animals and the habitats in which they are found.
- **Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations** — (Executive Order 12898). This order requires agencies to ensure that achieving environmental justice is part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations
- **Uniform Relocation Assistance and Real Property Acquisitions Policies Act** — (42 U.S.C. 4601-4605, 4621-4633, 4635-4636, 4638, 4651-4655). This title establishes a uniform policy for the fair and equitable treatment of persons displaced as a direct result of programs or proposals undertaken by a Federal agency or with Federal financial assistance.
- **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980** — (42 U.S.C. s/s 9601 et seq.). This Act provides a Federal “Superfund” to clean up uncontrolled or abandoned hazardous-waste sites as well as accidents, spills, and other emergency releases of pollutants and contaminants into the environment. Through the Act, EPA was given power to seek out those parties responsible for any release and assure their cooperation in the cleanup.
- **Resource Conservation and Recovery Act (RCRA)** — (42 U.S.C. s/s 6901 et seq.). This Act gives the EPA the authority to control hazardous waste from the “cradle-to-grave.” This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous wastes.
- **Superfund Amendments and Reauthorization Act (SARA) of 1986** — (42 U.S.C.9601 et seq.). This Act reauthorized CERCLA to continue cleanup activities around the country. Several site-specific amendments, definitions clarifications, and technical requirements were added to the legislation,

including additional enforcement authorities. Title III of SARA also authorized the Emergency Planning and Community Right-to-Know Act (EPCRA).

- **Farmland Protection Policy Act (FPPA)** — (7 USC 4201 et seq.). This Act minimizes the extent to which Federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses, and to assure the Federal programs are administered in a manner that, to the extent practicable, will be compatible with State, unit of local government, and private programs and policies to protect farmland.
- **Protection of Children from Environmental Health Risks and Safety Risks** — (Executive Order 13045). This order requires each Federal agency to make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children. It also requires agencies to ensure that policies, programs, activities and standards address disproportionate risks to children that result from environmental health risks or safety risks.
- **Executive Memorandum on Environmentally and Economically Beneficial Landscape Practices** — This memorandum requires agencies to (where cost effective and to the extent practicable) use beneficial landscaping practices such as regionally native plants for landscaping and designing and to use or promote construction practices that minimize adverse effects on the natural habitat.
- **Executive Order 13112 on Invasive Species** — This order requires Federal agencies to prevent the introduction of invasive species and provide for their control and then to minimize the economic, ecological, and human health effects that invasive species cause.
- **Improving Access to Services for Persons with Limited English Proficiency** – (Executive Order 13166) This order mandates that federal agencies examine the services it provides and develop and implement a system by which Limited English Proficiency (LEP) persons can meaningfully access those services consistent with, and without unduly burdening, the fundamental mission of the agency. Each agency shall also work to ensure that recipients of federal financial assistance (recipients) provide meaningful access to their LEP applicants and beneficiaries (65 Federal Register 50123, August 16, 2000). TxDOT complies with EO 13166 by offering to meet the needs of persons requiring special communication accommodations in all public involvement activities and notices.

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Chapter 2. Description of the Alternatives

This chapter describes the alternatives developed to address the transportation needs within the project limits discussed in this EA. Alternatives to the proposed project are the various activities that would meet the purpose and the need. This chapter discusses the process used to develop project alternatives, the requirements for and benefits of alternatives, and the reasons alternatives were eliminated from detailed study with consideration given to environmental, economic, and design factors.

A. Background

To meet the transportation needs of the IH 45 corridor, a full range of alternatives were considered in the 1999 IH 45 South Corridor MIS. These conceptual alternatives ranged in scope and focus from a No-Build Alternative to various build alternatives that represented various levels of investments. (Please see Appendix A for a detailed description of the alternatives.)

TxDOT and the MIS Steering Committee selected a high level of investment in the North Segment of IH 45 as the recommended preferred alternative. In addition, the Steering Committee recommended that a transit option expanding the existing transit system in Harris County and extending basic commuter transit services into Galveston County be incorporated into the recommended preferred alternative.

B. Criteria for Development and Evaluation of Alternatives

Using a systematic, interdisciplinary approach, the study team used the following to develop and evaluate project alternatives: (1) design requirements, (2) desired benefits, and (3) environmental protection and enhancement requirements.

B.1 Design Requirements

The principal design requirements of this project are to meet current interstate design standards (see Exhibit 3 for Existing and Proposed Typical Sections) and better accommodate projected traffic volumes. The facility must also be able to meet maximum acceptable hurricane evacuation times for Galveston Island and surrounding coastal areas in the event of 100 percent evacuation. Bridges along IH 45 must meet truck and/or marine clearance standards and the IH 45 interchanges must meet current design criteria.

B.2 Design Benefits

The desired design benefits of the proposed project are:

- Reduce congestion and improve mobility in the corridor
- Reduce the potential for flooding of the roadway during storm events
- Provide travel options and improved access to alternative modes of transportation such as transit services
- Avoid, minimize, or mitigate potential environmental and community impacts

B.3 Environmental Protection and Enhancement Requirements

The preferred alternative would avoid adverse effects to the human environment to the maximum extent practicable and minimize or mitigate unavoidable effects. The requirements relevant to this project are enumerated above in Chapter 1.F.

B.4 Detailed Description of the Alternatives

The following alternatives are considered in this document:

- No-Build Alternative – The No-Build Alternative includes projects currently committed and funded by local, regional, and state governments. Normal routine maintenance and all other pending, previously authorized actions would proceed as long as they do not require additional travel lanes.
- Build Alternative – The Build Alternative includes the following elements: ten general purpose lanes within the project limits; replace interchanges on IH 45 to incorporate TxDOT Standards; transition reversible HOV lanes to two concurrent HOV lanes within the project limits; three-lane frontage roads; and provide a 14-foot outside curb lane on frontage roads.

B.4.1 No-Build Alternative

As stated previously, the No-Build Alternative includes transportation projects that are currently committed and funded by local, regional, and state governments. Committed projects include those projects that have committed funding as identified in the H-GAC's VISION 2020 transportation plan. The VISION 2020 plan identified "place holder" projects within the project limits, in lieu of the results of this EA. As part of the MIS analysis, these placeholder projects were removed or replaced and/or modified by the recommended preferred alternative. Within the project limits, these place holder projects included:

- Project No. 9315: Construct bus priority lane on IH 45 South between Beltway 8 and FM 517;
- Project No. 918: Widen IH 45 South to eight mainlanes from 0.71 mi south of NASA Road 1 Bypass to the SH 6 / SH 146 Wye.

Outside of these placeholder projects, the No-Build Alternative would leave the existing IH 45 South facility as is, it would remain a six mainlane facility with two-lane frontage roads. Normal routine maintenance and all other pending, previously authorized actions would proceed as long as they do not require additional travel lanes.

B.4.2 Build Alternative

Typical cross sections of the Build Alternative are presented in Exhibit 3. The total project length is approximately 10.0 mi; additional ROW would be required. The following paragraphs describe the Build Alternative.

North of Beltway 8 to FM 1959

The proposed lane configuration in this section is achieved through changing the lane stripe locations (re-striping) of the existing pavement. The existing ROW width varies from 300 ft usual to 354 ft usual. No new ROW is required in this section. This segment of the Build Alternative is approximately 2.6 mi in length.

The existing IH 45 facility through the Beltway 8 interchange includes six mainlanes. The proposed facility would include eight mainlanes. Due to the location of the various structural members of the Beltway 8 interchange, the maximum section possible is limited. Thus, in order to accommodate the recommended eight general-purpose lanes and two auxiliary lanes (10 lanes total), the existing IH 45 shoulders would be re-striped. For both the northbound¹ and southbound sections, the inside and outside shoulders would be narrowed to approximately 4 ft and 6 ft, respectively. It is anticipated these recommended improvements would require minimal construction effort.

South of the Beltway 8 interchange, the freeway transitions to the full proposed ten-lane general-purpose facility with intermittent additional auxiliary lanes between ramp terminals. While most of the existing cross-street overpasses between ramp terminals. While most of the existing cross-street overpasses would be converted to mainlane overpasses, the interchange at FM 2533 (Scarsdale) would remain as a mainlane underpass. This is due to constructability limitations in converting it to a mainlane overpass, as well as a desire to maintain the existing T-bone HOV ramp connectors located just south of this interchange.

New construction begins just north of the FM 1959 interchange where the existing cross-street overpass would be converted to a mainlane overpass. At this location, the 4 ft inside shoulders and 6 ft outside shoulders transition to full 12 ft shoulders. The 12 ft wide shoulders are maintained from this point to the southern terminus of the project (FM 518).

¹ IH 45 travels in a northwest-southeast direction. For ease of communication in this document, IH 45 is considered to travel north-south and intersecting roads are considered to travel east-west, unless otherwise indicated. Features are described as being located east or west of IH 45 and north or south of the intersecting roadways.

FM 1959 to South of Bay Area Boulevard

Within this segment of IH 45, an additional 75 ft of ROW would be acquired, and the facility would be fully reconstructed to accommodate the proposed recommendations. The existing ROW width is typically 300 ft. The proposed widening to 375 ft ROW width would occur typically by widening equally (37.5 ft) on each side. However, at certain locations the alignment (and ROW widening) may be shifted further to one side or the other to avoid significant existing commercial development and/or other constraints. This segment of the Build Alternative is approximately 4.4 mi in length.

The existing six-lane freeway with two-lane frontage roads would be replaced with a ten-lane freeway and three-lane frontage roads. In addition, the existing reversible HOV lane that currently terminates just south of Beltway 8 would be extended to just south of NASA Road 1. The existing cross street facilities overpass IH 45 South. These types of interchanges would be replaced with conventional urban interchanges where IH 45S would overpass these facilities. The existing access to and from the existing cross streets typically conforms to the conventional diamond ramp configuration. This access approach would be replaced with "X-ramp" configurations where the existing ramp locations would be reversed.

At this time an elevated "T-ramp" is proposed for access to and from the reversible HOV lane from a proposed METRO park and ride located just south of El Dorado. It should be noted that the inclusion of this "T-ramp" at this location is conceptual and hasn't been included within any approved transportation plan.

South of Bay Area Boulevard to South of NASA Road 1

In this section, the proposed facility ties to the programmed NASA 1 Bypass interchange, which requires a ROW width of up to approximately 393 ft. Required additional ROW in this section varies from 0 ft to approximately 60 ft maximum on the east side, and from 0 ft to approximately 92 ft maximum on the west side. As with the previous section, the facility would be fully reconstructed to provide for the proposed recommendations. Just south of Bay Area Boulevard access to and from the reversible HOV would be provided. In addition, this access location would also serve as an opportunity to transition the reversible HOV facility to a concurrent flow HOV facility. The concurrent flow HOV lanes would continue to the south and terminate just south of NASA Road 1. This segment of the Build Alternative is approximately 1.0 mi in length.

South of NASA Road 1 to FM 518

Within this section, the initial access to the HOV lane would be provided. Northbound AM traffic would be provided access to the reversible HOV lane just

south of NASA Road 1. Southbound PM traffic in the reversible HOV lane would merge with the proposed five-lane section and continue southward. This segment of the Build Alternative is approximately 2.0 mi in length.

Unlike the continuance of the southbound five mainlane section to the south, four northbound mainlanes are proposed from FM 518 approaching to the north until the location of two lane entrance ramp just north of FM 518 where the five proposed mainlanes would begin and continue onward to the north.

Just south of the proposed NASA 1 Bypass interchange, Forest Park Cemetery is located along approximately 0.6 mi of the southbound frontage road. In this area, the IH 45 alignment is shifted to the east to avoid impacting the cemetery.

The only significant water crossing within the project corridor is located within this segment. Clear Creek crosses the existing IH 45 South facility between NASA Road 1 and FM 518 from the west and flows to the east. Currently the existing mainlanes span across Clear Creek utilizing a 451.5 ft bridge. The existing frontage roads each span Clear Creek on individual 450 ft bridges. Due to the satisfactory condition of the existing mainlane bridge, it is anticipated at this time that these bridges can be widened versus replacement to accommodate the proposed recommendations. The frontage road bridges would be replaced with wider bridges of similar length. The proposed mainlane and frontage road bridges would be 158 ft and 58.5 ft wide, respectively.

C. Other Relevant Actions

The other relevant actions in or near the study area include the following planned transportation improvements:

- NASA Road 1 Bypass (CSJ 0981-01-086). The bypass is a new 4-lane access controlled facility with overpasses at SH 3, NASA Road 1, and Egret Bay Blvd, and direct connectors to IH 45. This project received a FONSI in February 1997, and construction is scheduled to begin in late 2005.
- H-GAC is conducting a study of the FM 518 corridor between U.S. 288 and SH 146 to identify transportation measures that would improve public safety, traffic flow, reduce motorist delay, enhance air quality, and enhance bicycle and pedestrian access. The agencies involved in this study are Pearland, Friendswood, League City, Kemah, Brazoria and Galveston Counties, and TxDOT.
- The replacement of the Galveston Causeway (southern segment of the IH 45 South Corridor MIS). On January 23, 2003, the EA for this project received a FONSI.

- Proposed improvements to the Southern Segment of the IH 45 South MIS, the Middle Segment, and the remaining portion of the Southern Segment of the IH 45 South Corridor (as defined in the MIS).
- Segment B of the Grand Parkway (SH 99) is a planned scenic highway from SH 288 to IH 45 through Brazoria and Galveston Counties. The SH 99 project team is currently conducting a location and environmental study of possible alternatives for SH 99. Each of the alternative alignments studied intersect IH 45 between SH 96 and FM 517.
- The 2025 H-GAC Regional Transportation Plan includes a regional bikeway plan. This document contains a listing of current and proposed bicycle facilities for the region, and proposes bike lanes and shared use paths near the proposed project.

Chapter 3. Affected Environment and Environmental Consequences

This chapter presents the baseline environmental conditions and predicted effects of implementing the Build Alternative and the No-Build Alternative. The EA Team, after systematic interdisciplinary analyses, determined that the issues presented in this chapter are relevant to and therefore could influence the decisions to be made regarding the proposed project.

A. Commercial Displacements and Relocations

A.1 Existing Environment

The study area is predominantly suburban in nature; about half of the land along the corridor is undeveloped. (Please see Appendix G for representative photographs of the project area.) Large tracts of undeveloped land are used for gas production and limited cattle grazing. Development along the project corridor consists of primarily commercial establishments and higher density development. The City of Webster and City of League City maintain zoning regulations that would regulate commercial relocations.

A.2 Environmental Consequences of Implementing the No-Build Alternative

If the No-Build Alternative was implemented, no new ROW would be acquired and therefore no displacements of commercial properties would occur. Growth and development in the project area is likely to continue at the current rate for both counties.

A.3 Environmental Consequences of Implementing the Build Alternative

A.3.1 Summary of Effects

The Build Alternative would displace six commercial buildings and affect portions of five other commercial properties with structures. The displacement of these properties, when considered with other past and reasonable foreseeable future actions, would have a minimal cumulative effect.

A.3.2 Anticipated Effects

It is anticipated that the Build Alternative would result in the permanent displacement of six commercial structures and would require ROW from five other commercial properties. Two of the six structures could possibly relocate within the same lot, but these are treated herein as displacements. A review of the local real estate market indicates that an adequate supply of commercial real estate and vacant land exists to accommodate the commercial property and

business relocations resulting from the proposed project. The Build Alternative is consistent with the appropriate zoning and master planning documents. (Study Team 2003c.)

All commercial structures falling completely or mostly within the proposed ROW have been identified as displacements. Seven businesses are located within the proposed ROW, six with permanently displaced structures. The proposed ROW would also encroach on parts of five properties and therefore would reduce the size of the affected tracts, but would not take the entire tract. It is probable that these businesses would be affected but not displaced. Exhibit 4 presents the location of these properties. Table 3-1 presents the commercial displacements, identifies the name of the displaced businesses, identifies the centerline station number (according to TxDOT), provides a description of the effects to each structure and/or business, and indicates whether the business could potentially be relocated on the same lot.

**TABLE 3-1
 COMMERCIAL DISPLACEMENTS AND COMMERCIAL PROPERTIES DIRECTLY
 AFFECTED BY THE BUILD ALTERNATIVE**

Business Name	Station Number¹	Description	Potentially Relocated on Same Lot²
Morgan Buildings and Spas	565+00 to 573+00	1 permanent structure and approximately 30 to 40 temporary buildings in inventory	Yes
Backyard Accessories	697+00	1 permanent structure	No
Gifts and Baskets	699+00	1 permanent structure (same structure as Hobby Center)	No
Hobby Center	700+00	1 permanent structure (same structure as Gifts and Baskets)	No
Bay Architects	702+00	1 permanent structure	No
Chik-Fil-A	762+00	ROW for proposed frontage road is very close to front of restaurant	May not require relocation
Houston Palm Tree	808+00 to 818+00	No permanent structures; nursery area and parking lot	No relocation needed
Rainbow Play Systems	819+00	1 permanent structure	No
Accent Spas	820+00	1 permanent structure	Yes
Public Storage	822+00	Eastern portion of 1 building	No relocation needed
McDonald's Restaurant	930+00	Eastern portion of "Play Place" in front of restaurant	No relocation needed
Exxon Gas Station	932+00	Eastern portion of pump shelter and 4 to 6 pumps	No relocation needed

Notes: 1) Station number from TxDOT design files 2) Buildings that could be located on the same lot are estimates based on the amount of remaining area as compared to the area of displaced buildings and associated infrastructure.

Source: Study Team 2003b.

A.3.3 Cumulative Effects

The direct or indirect displacement of commercial properties by the Build Alternative, when considered with other past and reasonable foreseeable future

actions, would have a minimal cumulative effect. These other actions (see Chapter 2.C [Other Relevant Actions]) include transportation improvement projects to the IH 45 corridor or adjacent roadways and potential non-transportation projects. The transportation projects may contribute incremental impacts to commercial displacements within the project corridor, but the projects are likely to displace a small number of commercial properties. The non-transportation projects have contributed or would contribute to continued development within the project corridor, but are not likely to include a commercial displacement component.

The study area is experiencing continued development and growth that is converting available undeveloped land to developed. This development and growth would likely continue in a pattern similar to that seen today with commercial retail, wholesale, light industrial, and possibly multi-family residential structures. Displacement often has a temporary effect that is relieved once the commercial enterprise has relocated. The natural growth, the number of properties available in the real estate market, and the relocation assistance provided by TxDOT would be anticipated to offset any effects resulting from commercial displacements.

B. Traffic Noise

B.1 Existing Environment

The dominant source of existing noise in the study area is highway traffic. However, existing traffic noise levels, by themselves, do not determine when noise impacts would occur. Rather, existing noise levels are only considered relative to predicted (future) noise levels. Therefore, potential noise impacts associated with both existing and predicted noise levels are documented in Section B.3 below.

B.1.1 Methodology

The traffic noise analysis was accomplished in accordance with TxDOT's (FHWA approved) Guidelines for Analysis and Abatement of Highway Traffic Noise.

Sound from highway traffic is generated primarily from a vehicle's tires, engine and exhaust. It is commonly measured in decibels and is expressed as "dB". Sound occurs over a wide range of frequencies. However, not all frequencies are detectable by the human ear; therefore, an adjustment is made to the high and low frequencies to approximate the way an average person hears traffic sounds. This adjustment is called A-weighting and is expressed as "dBA." Also, because traffic sound levels are never constant due to the changing number, type, and speed of vehicles, a single value is used to represent the average or equivalent

sound level and is expressed as “Leq.” For the reader’s reference, Table 3-2 shows common sound/noise levels.

**TABLE 3-2
 COMMON SOUND/NOISE LEVELS**

Outdoor	Noise Level (dBA)	Indoor
Jet Flyover at 1,000 ft	110	Rock Band
Gas lawn mower at 3 feet	100	Inside Subway Train (New York)
Diesel Truck at 50 ft, Noisy urban daytime	90	Food blender at 3 ft
Gas Lawnmower at 100 ft	80	Garbage Disposal at 3 ft
Commercial Area	70	Vacuum cleaner at 10 ft
Air conditioning unit	60	Large business office
Quiet urban daytime	50	Dishwasher in next room
Quiet urban nighttime	40	Small theater, Library
Quiet suburban nighttime	30	Bedroom at night, Concert Hall (Background)
Quiet rural nighttime	20	Broadcast and Recording Studio

Source: Texas Department of Transportation, 1996 Rev July 1997.

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.

B.1.2 Noise Abatement Criteria

The FHWA has established 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 3-3).

**TABLE 3-3
NOISE ABATEMENT CRITERIA – HOURLY A-WEIGHTED SOUND LEVEL – (dBA)**

Activity Category	Leq(h)	Description of Activity Category
A	57 (Exterior)	Lands on which serenity and quiet are of extraordinary 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)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72 (Exterior)	Developed lands, properties, or activities not included in categories A or B above.
D	--	Undeveloped lands.
E	52 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditorium.

Note: primary consideration is given to exterior areas (Category A, B or C) where frequent human activity occurs. However, interior areas (Category E) 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.

Source: Federal Highway Administration, 23 CFR 772.

A noise impact occurs when either the absolute or relative criterion is met. These criteria are as follows:

- Absolute criterion - the predicted noise level at a receiver approaches, equals or exceeds the NAC. “Approach” is defined as 1 dBA below the NAC. For example: a noise impact would occur at a Category B residence if the noise level is predicted to be 66 dBA or above.
- Relative criterion - the predicted noise level substantially exceeds the existing noise level at a receiver even though the predicted noise level does not approach, equal, or exceed the NAC. “Substantially exceeds” is defined as more than 10 dBA. For example: a noise impact would occur at a Category B residence if the existing level is 54 dBA and the predicted level is 65 dBA (11 dBA increase).

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

The FHWA traffic noise modeling software was used to determine the number of potential noise impacts and to evaluate associated noise abatement measures. 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.

B.2 Environmental Consequences of Implementing the No-Build Alternative

Noise levels would be expected to increase with an associated increase in traffic volume.

B.3 Environmental Consequences of Implementing the Build Alternative

B.3.1 Summary of Noise Analysis

Existing and predicted traffic noise levels were modeled at receiver locations (Table 3-4 and Exhibit 4) that represent the land use activity areas adjacent to the proposed project that might be impacted by traffic noise and potentially benefit from feasible and reasonable noise abatement.

**TABLE 3-4
 EXISTING AND PREDICTED TRAFFIC NOISE LEVELS (DBA LEQ)**

Receiver	Description	Number of Dwelling Units	NAC Category	NAC Level	Existing Sound Level	Predicted Sound Level	Change + [-]	Noise Impact
1	Multi-family (Windswept Apts)	18	E	52	41	44	1	No
2	Multi-family (Sundial Apts)	18	E	52	36	39	0	No
3	Private tennis court (Windswept Apts)	1	B	67	67	70	3	Yes
4	Multi-family (Sundial Apts)	24	E	52	34	38	0	No
5	Multi-family (Windswept Apts)	28	E	52	35	39	0	No
6	Multi-family (Windswept Apts)	8	E	52	41	45	4	No
7	Multi-family (Windswept Apts)	8	E	52	36	40	1	No
8	Great Western Metals	1	E	52	45	49	2	No
9	Single Family Homes	6	B	67	60	63	2	No
10	Single Family Homes	45	B	67	61	65	2	No
11	Grace Community Church	1	E	52	41	45	5	No
12	Heavy Equipment	1	E	52	48	50	2	No
13	Single Family Homes 10	50	B	67	61	64	2	No
14	Dixie Farm Business Park	1	E	52	41	44	3	No
15	Dixie's Classic Diner	1	E	52	44	48	4	No
16	Multi-family (Cooper's Mill Apts)	20	E	52	41	44	3	No
17	Multi-family (Cooper's Mill Apts)	12	E	52	51	51	1	Yes
18	Multi-family (Cooper's Mill Apts)	14	E	52	51	53	2	Yes

**TABLE 3-4 (CONT.)
EXISTING AND PREDICTED TRAFFIC NOISE LEVELS (DBA LEQ)**

Receiver	Description	Number of Dwelling Units	NAC Category	NAC Level	Existing Sound Level	Predicted Sound Level	Change + [-]	Noise Impact
19	Multi-family (Cooper's Mill Apts)	14	E	52	41	46	5	No
20	Multi-family (Cooper's Mill Apts)	16	E	52	49	52	3	Yes
21	Bassett	1	E	52	44	48	4	No
22	Circuit City	1	E	52	40	43	3	No
23	Denny's	1	E	52	46	49	3	No
24	Lowe's	1	E	52	37	40	2	No
25	Best Buy	1	E	52	38	40	1	No
26	Big and Tall	1	E	52	37	39	2	No
27	Bay Brook Square	1	E	52	47	48	1	No
28	Macaroni Grill	1	E	52	45	47	2	No
29	Thomasville Furniture	1	E	52	40	43	4	No
30	Smith Strip Center	1	E	52	46	48	2	No
31	Chili's	1	E	52	45	47	2	No
32	Strip Center at NASA	1	E	52	45	46	1	No
33	NASA Wholesale Landscaping	1	E	52	46	47	1	No
34	Schizenberger Monuments	1	E	52	46	48	2	No
35	Forest Park Cemetery	1	E	52	34	38	3	No
36	Single Family Homes	7	B	67	60	63	3	No
37	Private tennis courts, playground, & boat launch	1	B	67	65	68	3	Yes
38	Single Family Homes	7	B	67	61	64	3	No
39	Single Family Homes	8	B	67	53	56	3	No
40	Single Family Homes	4	B	67	59	63	4	No
41	Single Family Homes	4	B	67	61	64	3	No
42	Academy Out Parcel	1	E	52	51	52	1	Yes
43	Single Family Homes	2	B	67	61	64	3	No
44	Single Family Homes	5	B	67	53	56	3	No
45	Exxon	1	E	52	47	49	2	No

Note: Shaded areas represent those that meet the TxDOT impact criteria

Source: Michael Baker Jr., Inc. 2004.

As indicated in Table 3-4, the proposed project would result in traffic noise impacts.

B.3.2 Noise Abatement Analysis

The proposed project would result in a traffic noise impact; therefore, the following noise abatement measures were considered: traffic management, alteration of horizontal and/or vertical alignments, acquisition of undeveloped property to act as a buffer zone and the construction of noise barriers.

Before any abatement measure can be proposed for incorporation into the project, it must be both feasible and reasonable. In order to be "feasible," the abatement measure must be able to reduce the noise level at an impacted receiver by at least five dBA; and to be "reasonable," it must not exceed the cost-effectiveness criterion of \$25,000 for each receiver that would benefit by a reduction of at least five dBA.

Traffic Management Measures

Control devices could be used to reduce the speed of the traffic; however, the minor benefit of 1 dBA per 5 mph reduction does not outweigh the potential associated increase in congestion and air quality impacts. Other measures such as time or use restrictions for certain vehicles are prohibited on state highways.

Horizontal/Vertical Realignment

The proposed alignment was developed to minimize and/or avoid overall impacts within the study area, to reduce ROW acquisition, to maintain acceptable cross-street connections, and to minimize/avoid other environmental impacts. Any horizontal or vertical realignment would require the taking of more property and/or structures, would expose residential areas to noise that is currently buffered behind the commercial development and therefore would not be feasible.

Buffer Zones

The acquisition of undeveloped property to act as a buffer zone is designed to avoid rather than abate traffic noise impacts and therefore is not feasible.

Noise Barriers

This is the most commonly used noise abatement measure. Noise barriers were evaluated for each of the impacted receiver locations with the following results:

R-3: This receiver is a private tennis court. A continuous noise barrier would restrict access to this receiver. A gap in a noise barrier would satisfy the access

requirements, but the resulting non-continuous barrier segments would not be sufficient to achieve the minimum, feasible reduction of 5 dBA.

R-42: This receiver represents businesses in the Academy Shopping Center. Noise barriers would have a detrimental affect on this receiver by restricting views and access by potential customers.

R-37: This receiver represents a private tennis court, playground, and boat launch. Based on preliminary calculations, a noise barrier 800 ft in length and 10 ft in height is the minimum dimension that would reduce noise levels by the minimum feasible amount of 5 dBA would exceed the reasonable, cost-effectiveness criterion of \$25,000.

R-17 R-18 and R-20: these receivers represent 42 receivers at the Cooper's Mill Apartments. A noise barrier was determined to be both feasible and reasonable for these receivers and therefore is proposed for incorporation into the project (Exhibit 4, Map 05 of 15). Based on preliminary calculations, a noise barrier 854 ft in length and 10 ft in height would reduce noise levels by at least 5 dBA for 42 benefited receivers at a total cost of \$128,100 or \$3,050 for each benefited receiver.

Any subsequent project design changes may require a reevaluation of this proposal. The final decision to construct the proposed noise barrier will be made upon completion of the project design, utility evaluation and the public involvement process.

A copy of this traffic noise analysis will be made available to local officials to ensure, to the maximum extent possible, future developments are planned, designed and programmed in a manner that would avoid traffic noise impacts. On the date of approval of this document (Date of Public Knowledge), FHWA and TxDOT are no longer responsible for providing noise abatement for new development adjacent to the project.

C. Waters of the U.S.

C.1 Existing Environment

The southern portion of the project area is drained by Clear Creek, which is tidally influenced according to TCEQ. Several man-made drainage ditches, located on the southern portion of the project area, drain into an un-named tributary of Clear Creek west of the project area. The extreme northern portion of the project area is drained by man-made drainage ditches, which eventually flow into Turkey Creek and then Clear Creek. The southern portion of the project area is underlain by Beaumont clay, the only mapped soil affected by the project included on the list of Hydric Soils of Texas by the Natural Resource Conservation Service (NRCS). Clear Creek and one of its tributaries are within

mapped Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) 100-year floodplains that are crossed by IH 45 at the southern end of the project (FEMA FIRM panel 1090 of 1135). (Study Team 2003b.)

The waters of the U.S. potentially affected by the proposed project were initially evaluated by the interpretation of National Wetland Inventory (NWI) Maps (League City and Friendswood Quads), the Harris and Galveston Counties soil surveys, 7.5-minute USGS quadrangles (League City and Friendswood), 1995 National Aerial Photography Program color near infrared photos, and project plans. A field investigation was conducted in April 2003 to ground-truth aerial signatures of potential wetlands, identify all waters of the U.S. potentially affected by the proposed project, and to evaluate potential measures to minimize effects to these features.

Follow-up field investigations were conducted in June/July 2003 and March 2004 to finalize the delineation of the boundaries of the waters of the U.S. potentially affected by the proposed project. The delineation was conducted using the methods outlined in the U.S. Army Corps of Engineers (USACE) 1987 Wetland Delineation Manual.

One hundred fourteen (114) aquatic features were determined to meet the wetland criteria as defined in the 1987 Wetland Delineation Manual. Seven areas were later determined to be outside of the ROW, one area non-wetland and five areas within the proposed ROW were previously verified by the USACE (USACE File No. D-11904). One hundred and one (101) aquatic features were determined to be present within the proposed ROW and subject to verification by the USACE.

C.1.1 Non-Jurisdictional Areas

The areas described below have been determined not to be adjacent to or connected to waters of the U.S. These areas are not subject to the jurisdiction by the USACE pursuant to Section 404 of the CWA. A total of 92 areas (7.72 ac) were determined to be non-jurisdictional by field personnel. These 92 areas consisted of isolated depressional wetlands (4.41 ac), isolated wetlands in drainage swales (0.21 ac), isolated wetlands (0.03 ac), and isolated man-made ditch wetlands (3.07 ac). In light of these wetlands not being regulated by the USACE, these areas do provide several functions and values to the environment (stormwater attenuation, water quality enhancement, binding of sediments, habitat of wildlife, etc.).

C.1.2 Jurisdictional Wetlands/Waters of the U.S.

The aquatic features in the project area were determined to be jurisdictional wetlands/waters of the U.S. as they are immediately adjacent to navigable waters of the U.S., actual waters of the U.S., tributaries of waters of the U.S. or have a

direct hydrological connection to these tributaries. These features include those in man-made drainage ditches, un-named tributaries of Clear Creek and Turkey Creek, rectified canals that discharge into Turkey Creek, wetlands adjacent to Clear Creek, a navigable water of the U.S., and the open waters of Clear Creek. As shown in Table 3-5, approximately 3.66 ac of jurisdictional wetlands/waters of the U.S. are present in the proposed project area.

Wetlands AJ and AK (HCFCU Unit #A119-06) and wetlands AI and AL (HCFCU Unit #A119-05) form rectified canals that are hydrologically connected to Turkey Creek west of the project site. The vegetation for these wetlands are characterized by swamp smartweed, Chinese tallow-tree, black willow, green flatsedge, sand spikerush, Asian coinleaf (*Centella asiatica*), and grass-leaf arrow-head (*Sagittaria graminea*). Wetlands AI, AJ, AK, and AL encompass a total of approximately 0.01 ac.

**TABLE 3-5
POTENTIALLY JURISDICTIONAL WATERS OF THE U.S.
WITHIN THE PROPOSED ROW**

Wetland	Description	STA No. ¹	OHWL (in) ²	Structure Length (ft)	Area ³ within Proposed Project ROW (ac)	Adjacent Wetlands Present	Within 100-year Floodplain?
AJ, AK	HCFCU Unit #A119-06	482+50	16	480	<0.01	No	No
AI, AL	HCFCU Unit #A119-05	539+00	6	450	0.01	No	No
TT, AAA	Unnamed tributary of Clear Creek	896+45	53	285	0.15	Yes (UU)	Yes
TT1	Adjacent wetlands to TT		N/A		0.12	N/A	
UU	Adjacent to unnamed tributary of Clear Creek	897+00	N/A	N/A	0.10	No	Yes
SS	Clear Creek	914+00	78.5	451	1.09	Yes	Yes
	Wetlands adjacent to Clear Creek		N/A		2.19		

Notes: 1) Approximate station numbers from TxDOT planimetric drawings. 2) OHWL = Ordinary high-water mark. 3) Calculations based on approximate length of proposed structure.

Source: Study Team 2003, Costello, Inc. 2002.

The un-named tributaries of Clear Creek, (Wetlands TT and AAA), are located on the east and west sides of IH 45 and are generally comprised of vegetation similar of that for Wetland UU described below. Wetlands TT and AAA encompass approximately 0.15 ac. Wetland TT1 is a wetland adjacent to Wetland TT and encompasses approximately 0.12 ac.

One wetland (UU) is adjacent to an unnamed tributary of Clear Creek located east of IH 45, north of Clear Creek, and is generally comprised of alligator weed, common hackberry (*Celtis occidentalis*), cedar elm, dwarf palmetto (*Sabal*

minor), great ragweed (*Ambrosia trifida*), and sand spikerush. Adjacent Wetland UU encompasses approximately 0.10 ac.

Wetland SS is a crossing over Clear Creek, just north of FM 518. This is the largest water body to be crossed by the proposed project, and it is a tidally-influenced creek. The vegetation is characterized by arrowhead (*Sagittaria lancifolia*), alligator weed, big-leaf sumpweed (*Iva frutescens*), black willow, broad-leaf cattail, common reed (*Phragmites australis*), dwarf palmetto, eastern Baccharis, swamp dock (*Rumex verticillatus*), and water oak (*Quercus nigra*). Wetland SS encompasses a total area of approximately 3.28 ac. Approximately 2.19 ac of adjacent wetlands and 1.09 acres of Waters of the US are present within Wetland SS.

C.2 Environmental Consequences of Implementing the No-Build Alternative

If the No-Build Alternative were implemented, no new ROW would be acquired and therefore no effects are anticipated to waters of the U.S. No permits would be required.

C.3 Environmental Consequences of Implementing the Build Alternative

C.3.1 Summary of Effects

The Build Alternative would cross two natural drainage features and directly affect 92 aquatic features. Five of these features are potentially jurisdictional wetlands, totaling 3.65 ac. Since one wetland (SS) is greater than 1/3 acre in size, the project does not qualify for a NWP and therefore an Individual Permit (IP) would be required. Four of the jurisdictional areas (AJ, AK, AI and AL) would not be affected by the proposed project.

Ninety-two (92) non-jurisdictional areas are within the proposed project ROW. The proposed project would adversely affect 87 of these areas with an area of approximately 7.38 ac. Five of these areas, encompassing approximately 0.34 ac, are avoided by the project. It is anticipated some of these non-jurisdictional areas, such as roadside swales used for stormwater capture, attenuation and runoff, would be recreated in the final design/construction of the project.

Depending upon the amount of wetlands claimed to be jurisdictional by the USACE, the entire proposed project would be permitted under a single Section 404 Individual Permit. Compensatory mitigation for wetlands losses would be required. Only the USACE can make the final determination as to which wetlands affected by the proposed project are jurisdictional.

C.3.2 Anticipated Effects

Five of the features affected by the Build Alternative are potentially jurisdictional wetlands because they are located in named waters of the U.S. or hydrologically connected to waters of the U.S. The total area of jurisdictional wetlands affected by the Build Alternative is 3.65 ac. Table 3-6 presents the effects to potentially jurisdictional waters of the U.S.

**TABLE 3-6
POTENTIALLY JURISDICTIONAL WATERS OF THE U.S.
AFFECTED BY THE BUILD ALTERNATIVE**

Wetland	Description	STA No. ¹	Area within Proposed Project ROW (ac)	Area Affected by Build Alternative (ac)
AJ, AK	HCFCU Unit #A119-06	482+50	<0.01 (80 sq. ft)	0.00
AI, AL	HCFCU Unit #A119-05	539+00	0.01	0.00
TT, AAA	Unnamed tributary of Clear Creek	896+45	0.15	0.15
TT1	Wetlands adjacent to TT	896+45	0.12	0.12
UU	Adjacent to unnamed tributary of Clear Creek	897+00	0.10	0.10
SS	Clear Creek, including adjacent wetlands	914+00	3.28	3.28 ²
Total			3.66	3.65 ²

Notes: 1) Approximate station numbers from TxDOT planimetric drawings. 2) Subject to change depending on pending project design details

Source: Study Team 2003.

C.3.3 Permitting

The Clear Creek crossing (SS) is larger than 0.33 ac. An IP would be required for the Clear Creek crossing and therefore the entire project would fall under one IP. Wetland SS would be crossed with three eleven-span bridges. The existing mainlane bridge would be widened and the two frontage road bridges would be relocated and replaced with new, wider structures. The ROW would be widened at this location to accommodate the proposed project.

At this time, potential compensatory mitigation measures for effects to wetlands and waters of the U.S. have not been identified. This issue will be resolved through coordination between TxDOT and the USCAE before submittal of the IP to the USACE. Consultation would be conducted to determine which issues would affect the decision to avoid or fill aquatic features. The final authority to determine if this project complies with Section 404 of the CWA rests with the USACE and the EPA. TxDOT will provide all pertinent information necessary for these agencies in order to make final determination.

C.3.4 Potential Mitigation

Restoring minor wetlands within the ROW is not generally compatible with TxDOT goals, where shedding water from the road is essential to prevent hazards during precipitation events. On-site mitigation within the ROW is not feasible due to the long-term commitments associated with mitigation sites; placement of a mitigation area within the proposed ROW would effectively prohibit the use of the site for future projects. Mitigation for effects to non-jurisdictional wetlands is not required by the CWA.

Several mitigation options may be available to compensate for unavoidable impacts associated with the proposed project. These options include in-lieu fee (ILF) agreements, mitigation banking, and preservation/conservation off-site. TxDOT and FHWA guidance recommends mitigation banking be used for mitigation as much as practicable, then ILF agreements, and then other options such as restoration, enhancement, creation, preservation and/or conservation.

Mitigation banking options available include the use of the Coastal Bottomlands Mitigation Bank, available for use by TxDOT, and the Greens Bayou Wetland Mitigation Bank, administered by the Harris County Flood Control District. The ILF options available include the Armand Bayou Nature Center, Galveston Bay Foundation, and The Nature Conservancy of Texas. Additionally, Harris County has a mitigation site, the Space Center Boulevard Mitigation Site, located on Space Center Boulevard between Genoa Red Bluff and NASA Road 1 where additional land could be purchased to add to the existing 52.5 ac area.

Coordination with the USACE and other resource agencies will be conducted to determine whether any of the options listed above are feasible and reasonable to compensate for the proposed project impacts.

D. Vegetation

D.1 Existing Environment

The study area is located in Gulf Coast Prairies and Marshes vegetation region of Texas (Gould 1975). This nearly level Gulf Coast plain area of approximately 13 million acres borders the Gulf of Mexico from the Sabine River to Corpus Christi Bay. The Gulf Prairies are nearly level with slow surface drainage and elevations ranging from sea level to approximately 250 ft. The Gulf Marshes are low, wet, marshy coastal areas commonly covered with saline water, ranging from sea level to a few feet in elevation. These marshes support species of sedges, rushes, cordgrasses, reeds, and forbs. The Gulf Prairies are used for crops, livestock grazing, wildlife production, and urban and industrial centers. It is estimated that as much as 99 percent of the coastal prairies in Texas have been converted to agricultural lands (Gould 1975; McMahan et al. 1984). Many existing rangelands

have been overtaken by invasive species, including honey mesquite (*Prosopis glandulosa*), eastern baccharis (*Baccharis halimifolia*), huisache (*Acacia minuta*), smutgrass (*Sporobolus indicus*), yankeeweed (*Eupatorium compositifolium*), McCartney Rose (*Rosa bracteata*), and Chinese tallow (*Sapium sebiferum*). Bermudagrass (*Cynodon dactylon*) and Johnson grass (*Sorghum halapense*) are common on frequently mowed pastures and road ROW.

The vegetation types identified within the study area are Urban and Bluestem Grassland (McMahan et al. 1984). Bluestem grassland is evident over much of the Gulf Prairies and Marshes and is particularly manifest south and west of the Houston area. This vegetation type is co-mingled with Urban Land, which is prevalent throughout the study area. The existing vegetation in Texas derives largely from land-use disturbance, so mapping of vegetation types is based on the best representation possible (McMahan et al. 1984). No distinct boundary between the Urban and Bluestem Grassland types is evident in this region. Reconnaissance-level surveys of the ROW within the proposed project were conducted in March-June 2003 to determine the specific types of vegetation assemblages, verification of the vegetation types, and corresponding wildlife communities occurring within the study area. Currently, the study area is characterized primarily by grasslands in varying stages of succession. Natural vegetation types identified along the study area include riparian forest, tidally-influenced marsh, and periodically-inundated freshwater marsh.

Historically, hardwood forests lined the bayous and rivers bisecting tall grass prairies that formerly characterized uplands in much of the study region. In general, the vegetation observed in the ROW is consistent with the vegetation types defined by McMahan, et. al, 1984. In March 2003, Dr. Larry Brown, local plant taxonomy expert, examined the ROW to assess the potential for occurrence of listed plant species or rare plant communities. None were observed.

A tree survey was conducted for the proposed project on February 26, 2004 and March 1-2, 2004. This survey was conducted within nine areas (A-I) within the proposed project ROW. This survey consisted of determining the dominant species present, identifying their ranges of height, diameter at breast height (dbh), and percent canopy cover of trees within each area. The results of this tree survey are summarized in Table 3-7 below.

**TABLE 3-7
 WOODY VEGETATION IN THE PROPOSED PROJECT**

Area	Tree Survey Area in ROW (ac)	Wooded Area (ac)	Chinese tallow (%)	Non-Chinese tallow Woody Vegetation (ac)	Canopy Cover (%)	Average DBH (in)	Range of DBH (in)	Range of Height (ft)	Dominant Species
A	5.25	2.40	91.4	0.21	20	9.47	2 - 67	10 - 35	Chinese tallow, hackberry
B	1.58	0.36	86.9	0.05	50	7.26	2 - 36	10 - 30	Chinese tallow, hackberry
C	2.87	2.87	99.0	0.03	60	6.06	2 - 30	10 - 30	Chinese tallow, hackberry
D	0.77	0.77	72.2	0.21	20	5.33	2 - 72	10 - 40	Chinese tallow, hackberry
E	4.70	0.66	97.8	0.01	20	4.32	2 - 16	10 - 30	Chinese tallow, hackberry, black willow, live oak
F	3.99	0.61	26.5	0.45	40	4.56	2 - 36	10 - 50	hackberry, American elm, cedar elm, green ash, live oak, Chinese tallow, yaupon, loblolly pine
G	1.45	0.32	76.9	0.07	10	7.08	2 - 17	10 - 30	Chinese tallow, hackberry
H	4.49	0.54	26.8	0.40	40	5.52	2 - 61	10 - 50	hackberry, white ash, American elm, cedar elm, green ash, water oak, live oak, Chinese tallow, black willow, yaupon, loblolly pine
I	1.15	1.02	91.3	0.09	65	5.12	2 - 70	10 - 80	hackberry, white ash, American elm, cedar elm, green ash, water oak, live oak, Chinese tallow, black willow, yaupon, loblolly pine
Totals	32.1	9.6	71.2% average	1.5	39% average	6.094	2-72	10-80	

Source: Study Team 2004.

Based on the tree survey conducted, approximately 1.5 ac of native woody vegetation is present within the proposed project ROW. The remaining 8.1 acres of woody vegetation is dominated by Chinese tallow, an invasive, non-native species.

D.1.1 Vegetation Types in the Study Area

Riparian Forest

Approximately 3.4 ac of riparian forest are within the proposed ROW of the Build Alternative. Small areas of riparian forest exist in uplands adjacent to Clear Creek and HCFCF drainage channel A111-00-00. Species characteristic of these riparian corridors include sugarberry (*Celtis laevigata*), hackberry (*C. occidentalis*), white ash (*Fraxinus americana*), American elm (*Ulmus americana*), cedar elm (*Ulmus crassifolia*), green ash (*F. pennsylvanica*), water oak (*Quercus nigra*), live oak (*Q. virginia*), Chinese tallow, bald cypress (*Taxodium distichum*), black willow (*Salix nigra*), pepper vine (*Ampelopsis arborea*), cat briar (*Smilax bona-nox*), greenbriar (*S. rotundifolia*), rattlebush

(*Sesbania drummondii*), deciduous holly (*Ilex decidua*), yaupon (*Ilex vomitoria*), eastern red cedar (*Juniperus virginiana*), Chinese privet (*Ligustrum sinense*), ligustrum (*L. licudum*), Japanese honeysuckle (*Lonicera japonica*), Virginia creeper (*Parthenocissus quinquefolia*), Loblolly pine (*Pinus taeda*), dwarf palmetto (*Sabal minor*), ironwood (*Bumelia lanuginosa*), eastern baccharis, and poison ivy (*Rhus toxicodendron*).

Tidally-influenced Marsh

Approximately 2.8 ac of tidally-influenced marsh are present in the proposed ROW. Tidally-influenced marsh exists in and adjacent to Clear Creek. On the north side of the creek, eastern baccharis dominates a vegetated flat. Other species characterizing the tidal marsh include common reed (*Phragmites australis*), giant ragweed (*Ambrosia trifida*), arrowhead (*Sagittaria lancifolia*, *S. papillosa*), cattail, swamp dock (*Rumex verticillatus*), curly dock (*R. crispus*), big-leaf sumpweed (*Iva frutescens*), Chinese tallow, dwarf palmetto, black willow, and spider lily (*Hymenocallis liriosme*).

Periodically Inundated Wetlands

Approximately 8.3 ac of periodically inundated wetlands are present in the proposed ROW. Periodically inundated wetlands in the study area include depressional wetlands that typically hold standing water during wet periods of the year and road-side ditches adjacent to the ROW. Approximately 6.4 ac of these wetlands are vegetated with non-native species such as Chinese tallow. The remaining 1.9 ac of these wetlands are vegetated with native species such as cattail, black willow, alligator weed (*Alternanthera philoxeroides*), green flatsedge (*Cyperus virens*), sand spikerush, Dombey's Spikerush (*Eleocharis montana*), soft rush (*J. effusus*), Verdolaga de aqua (*Ludwigia peploides*), water pimpernel (*Samolus parviflorus*), rattlebush (*Sesbania drummondii*), and seaside goldenrod (*Solidago sempervirens*).

Managed Pastureland

Approximately 27.9 ac of managed pastureland are present in the proposed ROW. Managed pastureland in the study area is comprised of former prairie that has been grazed, typically for several decades. Pasture derived from former prairie tracts supports such upland species as those included in Table 3-8.

Species observed in low areas within former prairie locations include bushy bluestem, green flatsedge, Cherokee sedge (*Carex cherokeensis*), prairie sedge (*C. microdonta*), chaffweed (*Centunculus minimus*), sand spikerush, hairy fimbry (*Fimbristylis puberula*), smartweed (*Polygonum hydropiperoides*), and pennywort (*Hydrocotyle sp.*).

**TABLE 3-8
 UPLAND PRAIRIE SPECIES OBSERVED ON THE ROW**

Common name	Scientific name	Common name	Scientific name
Huisache	<i>Acadia minuta</i>	Short Ragweed	<i>Ambrosia artemisiifolia</i>
Broomweed	<i>Amphyriachis arunculodes</i>	Dog Fennel	<i>Anthemis cotula</i>
Wild Indigo	<i>Baptisia bracteata</i> and <i>B. sphaerocarpa</i>	Rattan	<i>Berchemia scadens</i>
Texas Gramma Grass	<i>Bouteloua rigidiseta</i>	Quaking Grass	<i>Briza minor</i>
Indian Paintbrush	<i>Castilleja coccinea</i>	Butterweed	<i>Cenicio tampicus</i>
Branching Centaury	<i>Centarium pulchellum</i>	Lance-leaf Tickseed	<i>Coreopsis lanceolata</i>
Bermuda Grass	<i>Cynodon dactylon</i>	Wire Leaf Sedge	<i>Cyperus entrerianus</i>
Bundle Flower	<i>Desmanthus sp.</i>	Prairie Fleabane	<i>Erigeron strigosus</i>
Fleabane	<i>Erigeron tenuis</i>	Spurge	<i>Euphorbia spathulata</i>
Indian Blanket	<i>Gaillardia pulchella</i>	Gaura	<i>Gaura lindheimeri</i>
Common Sunflower	<i>Helianthus annuus</i>	Flax	<i>Linum burlandieri</i>
Tufted Flax	<i>Linum imbricatum</i>	Ear-flower Lobelia	<i>Lobelia appendiculata</i>
Ryegrass	<i>Lolium perenne</i>	White Clover	<i>Melilotus albus</i>
Sour Clover	<i>Melilotus indicus</i>	Gulf Muhly	<i>Muhlenbergia capillaries</i>
Wax Myrtle	<i>Myrica cerifera</i>	Showy Primrose	<i>Oenothera speciosa</i>
Wood-sorrel	<i>Oxalis dillenii</i>	Pale-seeded Plantain	<i>Plantago virginica</i>
False Dandelion	<i>Pyrrhopappus multiflora</i>	Dewberry	<i>Rubus trivialis</i>
Cone-flower	<i>Rudbeckia hirta</i>	Shining Cone Flower	<i>Rudbeckia nitida</i>
Soapberry	<i>Sapindus saponaria</i>	Chinese Tallow	<i>Sapium sebiferum</i>
Little Bluestem	<i>Schizachyrium scoparium</i>	Skullcap	<i>Scutellaria parvula</i>
Bladder Pod	<i>Sesbania vesicaria</i>	Rosin Weed	<i>Silphium gracile</i>
Blue-eyed Gras	<i>Sisyrinchium sp.</i>	Canada Goldenrod	<i>Solidago Canadensis</i>
Sow Thistle	<i>Sonchus asper</i>	Johnson Grass	<i>Sorghum halepense</i>
Rattail Smutgrass	<i>Sporobolus indicus</i>	Speargrass	<i>Stipa leutricha</i>
Corn Salad	<i>Valerianella woodsiana</i>	Brazilian Vervane	<i>Verbena brasiliensis</i>
Texas Vervane	<i>Verbena halei</i>	Tuber Vervane	<i>Verbena rigida</i>
Tickle Tongue	<i>Zanthoxylum clava-herculis</i>		

Source: Study Team 2003

Aquatic Features

Approximately 2.8 ac of aquatic features are present in the proposed ROW. The aquatic features of the study area include Clear Creek, an unnamed natural drainage north of Clear Creek designated by Harris County Flood Control District (HCFCD) as A111-00-00, roadside ditches, and periodically inundated isolated and adjacent wetlands. A discussion of waters of the U.S. is presented in Chapter 3.D above.

Urban

Approximately 13.0 ac of urban areas are present in the proposed ROW. Urban areas included numerous commercial facilities along and adjacent to the existing IH 45. These areas are highly disturbed and do not generally support floral communities associated with other parts of the study area.

Maintained Right-of-Way

Approximately 149.2 ac of maintained ROW are present in the proposed ROW. Maintained ROW is highly disturbed and does not generally support the high-quality natural floral communities associated with other parts of the study area. Mowed and maintained ROW is characterized by Bermuda grass, Johnson grass, false dandelion (*Pyrrhopappus multiflora*), ryegrass (*Lolium perenne*), giant ragweed, short ragweed (*Ambrosia artemisiifolia*), Indian paintbrush (*Castilleja coccinea*), and southern carpet grass (*Axonopus affinis*).

D.1.2 Study Area Habitat Analysis

Reconnaissance-level surveys to determine the specific types of vegetation assemblages and corresponding wildlife communities occurring within the study area were conducted in March-June 2003. Currently, the study area is characterized primarily by grasslands in varying stages of succession. Natural vegetation types identified along the study area include riparian forest, tidally-influenced marsh, periodically-inundated freshwater marsh, and managed pasturelands.

D.2 Environmental Consequences of Implementing the No-Build Alternative

If the No-Build Alternative was implemented, no new ROW would be acquired and therefore there would be no effect to vegetation in the study area. It is assumed that the existing land use activities (managed pasture and primarily urban/commercial activities) would continue in the vicinity and incrementally affect vegetation communities.

D.3 Environmental Consequences of Implementing the Build Alternative

D.3.1 Summary of Effects

The Build Alternative would require the acquisition of approximately 44.4 ac of new ROW adjacent to the existing facility. The Build Alternative would affect approximately 8.1 ac of native vegetation. Native vegetation types potentially affected by the proposed project include the following: tidally-influenced marsh adjacent to Clear Creek; small areas of riparian forest; and periodically-inundated freshwater wetlands that are vegetated with native species. Of the 8.1 ac, 3.5 ac would be permanently affected due to their conversion from native vegetation to the footprint of the roadway, and an additional 4.6 ac would be converted to maintained ROW. Approximately 1.5 acres of native woody vegetation would be affected by the proposed project. Approximately 8.1 acres of non-native, invasive woody vegetation dominated by Chinese tallow would also be affected by the proposed project.

D.3.2 Anticipated Effects

The Build Alternative would affect approximately 44.4 ac of new ROW adjacent to the existing facility and approximately 149.2 ac of existing, maintained ROW for a total 441.0 ac. The new ROW would be cleared of vegetation as required for the safety clear zone, travel lanes, and other project features. The vegetation cleared from the new ROW would be replaced with pavement surface, shoulders, drainage ditches/swales, and maintained vegetation. The effects of these activities are summarized in Table 3-9, which shows the effects of the proposed project without consideration of final design.

The natural communities that occur linearly or in blocks (e.g., riparian corridors, periodically-inundated freshwater marshes, and managed pastures) would be separated by greater distances with the proposed roadway expanding in width. Representative photographs of the vegetation types potentially affected are presented in Appendix G.

Native vegetation types potentially affected include riparian forest, tidally-influenced marsh, and periodically inundated wetlands. The proposed alternative would affect approximately 8.1 ac of native vegetation. The direct effect of the Build Alternative would be the permanent conversion of this land to roadway lanes and shoulders or its conversion to maintained ROW. Of the 8.1 ac, approximately 3.5 ac would be permanently converted from native vegetation to the actual footprint of the roadway facility, and approximately 4.6 ac of native vegetation communities would be converted to maintained ROW. The direct effects to native vegetation include 1.5 acres of non-Chinese tallow woody areas within the Build Alternative.

**TABLE 3-9
AERIAL EXTENT OF LAND COVER TYPES AFFECTED
BY THE BUILD ALTERNATIVE**

Land Cover	Location/Distribution	Area Affected	
		Acres	Percent
Riparian Forest	Forested strips in uplands adjacent to Clear Creek and A111-00-00	3.4	0.8
Tidally-Influenced Marsh	Fringe marsh associated with Clear Creek	2.8	0.6
Periodically-inundated Wetlands (with non-native species)	Common and scattered throughout the study area	6.4	1.5
Periodically-inundated Wetlands (with native species)	Common and scattered throughout the study area	1.9	0.4
Managed Pastureland	Common	27.9	6.2
Aquatic Features	Clear Creek and A111-00-00	2.8	0.6
Urban	Common and scattered throughout the study area	13.0	2.8
Existing Pavement	IH 45 (including entrance and exit loops)	236.0	53.4
Maintained ROW	Linear strip along the roadway (including vegetation located at entrance and exit loops)	149.2	33.7
Totals		441.0	100

Source: Study Team 2003b.

Riparian Forest

The Build Alternative would affect 3.4 ac of riparian forest. Riparian forest within the proposed project would be converted to maintained ROW and feeder roads and the effects would be permanent in nature. Since riparian forest occurs on either side of Clear Creek and HCFCF Canal No. A111-00-00, impacts to these areas are unavoidable with the proposed project. The amount of ROW being acquired within these areas has been minimized to the greatest extent practicable as they lie immediately adjacent to existing ROW and still achieve the project purpose, need, and design standards.

Tidally Influenced Marsh

The Build Alternative would affect 2.8 ac of tidally-influenced marsh. Tidally-influenced marshes occur primarily adjacent to Clear Creek within the southern portion of the project area. These tidally-influenced marshes would be permanently converted to maintained ROW and feeder roads and the effects would be permanent in nature. The effects to these vegetation types have been minimized and avoided to the greatest extent practicable while still achieving the project purpose, need and conformity with design standards.

Periodically Inundated Wetlands

The Build Alternative would affect 8.3 ac of periodically inundated wetlands. Approximately 6.4 ac of these wetlands are vegetated with non-native species and the remaining 1.9 ac are vegetated with native species. These wetlands occur throughout the existing and proposed ROW and cannot be avoided. These areas would be permanently converted to new roadway, maintained ROW, or feeder roads, depending on its location in the project.

Managed Pastureland

The Build Alternative would affect 27.9 ac of managed pastureland. These pasturelands occur throughout the project area and would be permanently converted to new roadway, maintained ROW, or feeder roads, depending on its location. Acquisition of additional ROW has been minimized throughout the proposed project, as it would be acquired immediately adjacent to the existing ROW.

Aquatic Features

The Build Alternative would affect 2.8 ac of aquatic features. The aquatic features, such as HCFCD Canal A111-00-00 and Clear Creek would not be completely affected by the proposed project as they would require a culvert or bridged structures to traverse them. Impacts to these areas would be limited to minimal sidebank fill and pilings. Effects to roadside ditches and periodically inundated wetlands within the proposed project would be primarily in the form of conversion to new roadway, maintained ROW or feeder roads, depending on its location.

Urban

The Build Alternative would affect 13.0 ac of urban areas. These areas would be permanently converted to new roadway, maintained ROW or feeder roads, depending on its location. Acquisition of ROW in these areas have been minimized and avoided to the greatest extent practicable as the acquisition was performed immediately adjacent to the existing roadway.

Maintained ROW

The Build Alternative would affect 149.2 ac of maintained ROW. These areas would be permanently converted to new roadway or feeder roads depending on its location, or would be temporarily affected during construction. These areas are within the existing ROW and impacts to these areas are unavoidable.

D.3.3 Cumulative Effects

The Build Alternative, when considered with other past and reasonable foreseeable future actions, would have little cumulative effect. These other actions (see Chapter 2.C) include transportation improvement projects to the existing IH 45 corridor or existing adjacent roadways and potential non-transportation projects. Effects to vegetation resources are associated with the construction phase and the potential for additional development. The clearing and preparation of the ground surface could result in an increased potential for erosion and sedimentation in adjacent local drainages and receiving streams. Adjacent vegetation could be affected by these disturbances if temporary modifications of hydrologic and nutrient cycling and transfer processes occur during construction. These effects are expected to be temporary and minor.

Potential indirect effects related to secondary development usually result from increased growth facilitated by a new roadway creating access to undeveloped areas. In the case of the IH 45 improvements, however, no significant changes in the use of the IH 45 corridor are expected to occur. Alteration of overpasses crossing existing roads may promote a change in the development pattern of adjacent commercial operations. Because this area is already significantly developed, these effects are expected to be minor.

D.3.4 Potential Mitigation

In accordance with the TxDOT MOU, habitats given consideration for non-regulatory mitigation include: (1) habitat for Federal candidate species (impacted by the project) if mitigation would assist in the prevent of the listing of the species, (2) rare vegetation series (S1, S2 or S3) that also locally provide habitat for 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 chooses to consider.

A portion of the proposed project would affect a riparian area adjacent to Clear Creek. The specific riparian zone consists of stands of Chinese tallow (*Sapium sebiferum*) interspersed with more desirable native vegetation. Within this riparian area, Chinese tallow cover varies from 26.8 to 68.2%. Woody areas throughout the entire project length average 71.2% cover of Chinese tallow. Because Chinese tallow is an invasive, non-native species, it is typically considered low quality habitat. The removal of Chinese tallow is generally encouraged by local, state and federal agencies, as well as non-governmental organizations. Because the woody vegetation within the proposed ROW is

generally of poor quality due to the predominance of an invasive, non-native species, compensatory mitigation is not being considered for impacts to the proposed ROW.

Even though the referenced riparian zone is not considered to be worthy of mitigation, it is recognized that there will be a loss of vegetative structure, which provides for limited habitat (shelter and cover). To help reestablish habitat and encourage the natural revegetation of a more diverse riparian zone, vegetation enhancement within the project area is proposed. This enhancement would include the planting of trees, shrubs, and forbs native to the area and typical of that found in riparian zones within the Gulf coastal prairie. The beautification/enhancement would enable and promote the natural revegetation process, while providing an immediate source of habitat to wildlife utilizing the area following construction of the proposed project.

Excluding the limited riparian area, the dominant vegetation that would be affected by this project is largely invasive and opportunistic. It has not been considered for compensatory mitigation. TxDOT would conduct coordination with TPWD to determine mitigation requirements for regulated plant communities within the proposed project ROW.

E. Hazardous Materials

E.1 Existing Environment

Land along IH 45 is comprised of undeveloped tracts (55 percent), agricultural/grazing (18 percent), commercial (18 percent), industrial (6 percent), multi-family residential (1 percent), office (<1 percent), and transportation and utilities (<1 percent). Exxon Company USA maintains long-term oil and gas leases on most of the undeveloped tracts within the study area. Commercial and industrial uses are the prevalent developed land uses; commercial land use consists of densely developed retail near the major intersections, light industrial facilities, and large businesses such as car dealerships.

A review of available databases, correspondence with pertinent agencies, and field surveys identified the potential for hazardous material sites within the proposed ROW of the proposed project. Sixty-one areas were identified as having possible hazardous materials concerns within a survey area of approximately 500 ft on either side of the existing IH 45 ROW. The Hazardous Materials Initial Site Assessment was performed in accordance with the applicable laws, regulations, and TxDOT guidance.

General background investigations were performed to identify evidence of operations and historical occurrences that may have resulted in the release of

contaminants to the environment. These investigations were performed based on available project maps, a regulatory database search, field reconnaissance, and, interviews/agency contacts (Study Team 2003e).

E.2 Environmental Consequences of Implementing the No-Build Alternative

If the No-Build Alternative were implemented, no new ROW would be acquired and therefore no effect from potential hazardous materials sites is anticipated.

E.3 Environmental Consequences of Implementing the Build Alternative

E.3.1 Summary of Effects

Of sixty-one potential sites identified within approximately 500 ft on either side of the existing facility, eleven are within the proposed ROW of the Build Alternative. Eight of the eleven sites warrant further consideration due to either (1) direct evidence of hazardous materials at the site or (2) the nature of the facility would support the assumption that hazardous materials were used or stored at one time. Two sites may contain asbestos containing materials. Asbestos inspections, specification, notification, license, accreditation, abatement, and disposal, as applicable, would be in compliance with Federal and State regulations. Any asbestos issues would be addressed during the ROW acquisition process prior to construction.

E.3.2 Anticipated Effects

Of sixty-one potential sites identified in the study area, eleven sites are within the proposed ROW of the Build Alternative. Table 3-10 describes the level of concern regarding these sites. Eight of the eleven sites warrant further consideration due to either (1) direct evidence of hazardous materials at the site, termed a “high” level of concern or (2) the nature of the facility would support the assumption that hazardous materials were used or stored at one time, termed a “medium” level of concern. Evidence supporting a “high” level of concern included visual observation, reports by an agency or property owner, results of a database search, and/or documentation describing a historical property use that would support the reasonable assumption that hazardous materials were stored. Additional environmental investigation is warranted at these eight sites prior to acquisition of the property by TxDOT. This investigation should include the completion of Phase I and II site assessments at each of these properties.

**TABLE 3-10
 LEVEL OF CONCERN REGARDING POTENTIAL HAZARDOUS MATERIALS SITES
 WITHIN THE PROPOSED RIGHT-OF-WAY**

Site Number	Property Appearance	Property Name	Identified by Regulatory Database Search	Level of Concern
22	Commercial	Clear Lake Dodge	Yes	Low
23	Industrial	Exxon Company, U.S.A Friendswood Field, NW Quadrant	No	High
24	Industrial	Exxon Company, U.S.A Friendswood Field, NE Quadrant	No	High
25	Industrial	Exxon Company, U.S.A Friendswood Field, SE Quadrant	No	High
26	Industrial	Exxon Company, U.S.A Friendswood Field, SW Quadrant	No	High
32	Commercial/ Utility	Eastfield Realty	No	Low
38	Commercial	Hobby Lobby	Yes	Low
42	Commercial	Houston Palm Tree	No	Medium
53	Commercial	Exxon Gas Station	Yes	Medium
54	Commercial	Shell Gas Station	Yes	Medium
55	Commercial	Star Enterprise	Yes	Medium

Note: The Site Number corresponds with the identification number assigned to each site by the Study Team in the report entitled *Initial Hazardous Materials Site Assessment*. Only the eleven sites within the proposed ROW of the Build Alternative are included here.

Source: Study Team 2003e.

Sites with a Low Level of Concern

- Site 22: Clear Lake Dodge is located on the east side of IH 45 approximately 2,100 ft south of FM 1959 (Dixie Farm Road). This site is an active car dealership that has a service center and a body shop onsite. According to the database search, in July 1994, this facility had a Leaking Underground Storage Tank (LUST) that affected the groundwater but had no apparent threats or impacts to any receptors. Concurrence has been issued and the case has been closed. This property is also listed under the Resource Conservation and Recovery Information System (RCRIS), Facility Index System (FINDS), and the Texas Industrial and Hazardous Waste database (TX IHW). Access to the property was denied; therefore, a visual inspection of the property was not possible. However, it is anticipated that Underground Storage Tanks (USTs) may exist due to the history of this site (Exhibit 4, Map 6).
- Site 32: Eastfield Realty. This site is located on the east side of IH 45 approximately 1,500 ft south east of El Dorado Boulevard. The highway frontage portion of this large tract of land, owned by Eastfield Realty, has been cleared of vegetation. New water lines and a water station have been installed approximately 20 ft to 50 ft east of the frontage road. Field

observation also indicated the presence of solid waste debris (Exhibit 4, Map 9).

- Site 38: Hobby Lobby, identified as a former Builder's Square home improvement store, is located on the east side of IH 45 at the intersection of Medical Center and IH 45. Field observations found no indication of hazardous materials. This property is listed under the RCRIS and FINDS databases (Exhibit 4, Map 11).

Sites with a Medium Level of Concern

- Site 42: Houston Palm Tree is located on the west side of IH 45 approximately 1,200 ft north of NASA Road 1. This site is a tree farm and nursery with a large quantity of trees and shrubbery. An aboveground storage tank (AST), which probably contains petroleum or diesel, was observed on the property. On the far west side of this property, field observations indicated an area of inert solid waste debris such as concrete, wire, tires, and other materials. There is a large drainage canal west of the solid waste; the potential for contaminated runoff is low (Exhibit 4, Maps 11 and 12).
- Site 53: Exxon Gas Station is located on the north side of IH 45 west of the intersection of FM 518 and IH 45. This gas station/food mart is an active business that has six gas pumps on site but does not have a service center. According to the database search, there was an identified LUST at this facility in January 1997. The LUST affected public/domestic water within 0.25 mi to 0.50 mi. Concurrence has been issued and the case has been closed. This site may also contain asbestos containing materials. Asbestos inspections, specification, notification, license, accreditation, abatement, and disposal, as applicable, would be in compliance with federal and state regulations. Any asbestos issues would be addressed during the ROW acquisition process prior to construction (Exhibit 4, Map 15).
- Site 54: Shell Gas Station (identified as Texaco Retail 42 049 1355) is located on the south side of FM 518 approximately 300 ft east of the intersection of FM 518 and IH 45. This gas station/food mart is a business with eight gas pumps and a service center. At the time of field observations, Galveston County Health Department was performing tests on the USTs (Exhibit 4, Map 15).
- Site 55: Star Enterprise has the same physical address as Site #54 and is probably the service center on this property; this site is listed under the RCRIS and FINDS databases. See Site #54.

Sites with a High Level of Concern

Exxon Company, U.S.A., formerly known as Humble Oil and Refining Company, owns a large portion of the land under study for this project. Humble Oil purchased the “West Ranch” property in 1938 and developed two oilfields there, Clear Creek and Friendswood (Texas Handbook Online 2003). The Friendswood Field is located along IH 45 at FM 2351 and is still actively producing.

- Site 23: Exxon’s NW quadrant of the Friendswood Field is located on the west side of IH 45 north of FM 2351. This area contains approximately 14 gas lift systems, saltwater gathering systems, gas gathering systems, oil gathering systems, and AST’s and pipelines. There were multiple locations where these facilities were located approximately 20 ft to 50 ft away from the IH 45 frontage road (Exhibit 4, Map 5).
- Site 24: Exxon’s NE quadrant of the Friendswood Field is located on the east side of IH 45 north of FM 2351. This area contains approximately 15 gas lift systems, saltwater gathering systems, gas gathering systems, oil gathering systems, and AST’s and pipelines. There were multiple locations where these facilities were located approximately 20 ft to 50 ft away from the IH 45 frontage road (Exhibit 4, Map 6).
- Site 25: Exxon’s SE quadrant of the Friendswood Field is located on the east side of IH 45 south of FM 2351. This area contains approximately 18 gas lift systems, saltwater gathering systems, gas gathering systems, oil gathering systems, and AST’s and pipelines. There were multiple locations where these facilities were located approximately 20 ft to 50 ft away from the IH 45 frontage road (Exhibit 4, Map 8).
- Site 26: Exxon’s SW quadrant of the Friendswood Field is located on the west side of IH 45 south of FM 2351. This area contains approximately eight gas lift systems, saltwater gathering systems, gas gathering systems, oil gathering systems, and AST’s and pipelines. There were multiple locations where these facilities were located approximately 20 ft to 50 ft away from the IH 45 frontage road (Exhibit 4, Map 7).

Recommendations

The Study Team recommends that a certified ASTM Standard Phase I ESA should be conducted for each parcel associated with the eight sites. The Phase I should include recommendations for Phase II activities, if warranted.

E.3.3 Cumulative Effects

The Build Alternative, when considered with other past and reasonable foreseeable future actions, would have no cumulative effect with regard to

hazardous materials. These other actions include transportation improvement projects to the IH 45 corridor or adjacent roadways and potential non-transportation projects.

F. Summary and Comparison of Potential Effects

The No-Build Alternative would not fulfill the transportation needs of the study area. The Build Alternative would fulfill the need to improve roadway conditions and mobility for traffic in the study area, thereby meeting the project's objectives. Table 3-11 presents a summary and comparison of the effects of the alternatives on the project objectives.

Table 3-12 presents a summary and comparison of the effects of the alternatives on the relevant issues.

**TABLE 3-11
 SUMMARY AND COMPARISON OF THE EFFECTS OF THE NO-BUILD ALTERNATIVE
 AND THE BUILD ALTERNATIVE ON THE PROJECT OBJECTIVES**

Project Objectives Objective Indicator(s)	No-Build Alternative	Build Alternative
<p>To reduce congestion <i>Objective Indicator</i></p> <ul style="list-style-type: none"> • Meets acceptable level of mobility, Level of Service (LOS) D or better, while minimizing the amount of congestion. 	<p>Objective would not be attained; The No-Build Alternative would result in more congestion and an unacceptable LOS for IH 45.</p>	<p>Objective would be attained; the Build Alternative would result in less congestion and an acceptable LOS through increased traffic capacity.</p>
<p>To correct design deficiencies <i>Objective Indicator</i></p> <ul style="list-style-type: none"> • Improved non-standard design configurations 	<p>Objective would not be attained; No-Build Alternative does not include the changes to non-standard design configurations.</p>	<p>Objective would be attained; the Build Alternative would modernize the existing facility to standard design configurations.</p>
<p>Provide travel options <i>Objective Indicators</i></p> <ul style="list-style-type: none"> • Consistent with regional highway, thoroughfare and transit plans • Preserve opportunities for future implementation of transportation modes and alternatives 	<p>Objective would not be attained; No-Build Alternative does not:</p> <ul style="list-style-type: none"> • Alter the existing travel options • Provide flexibility for future implementation of transportation modes and alternatives. 	<p>Objective would be attained; the Build Alternative would:</p> <ul style="list-style-type: none"> • Provide travel options in the study area consistent with regional highway, thoroughfare, and transit plans. • Preserve opportunities for future implementation of transportation modes and alternatives.
<p>Improve hurricane evacuation <i>Objective Indicators</i></p> <ul style="list-style-type: none"> • Decrease probability of roadway flooding • Accommodate demand during hurricane evacuation; meet maximum acceptable evacuation time in the event of a 100% evacuation. 	<p>Objective would not be attained; No-Build Alternative does not:</p> <ul style="list-style-type: none"> • Change the elevation of the frontage roads or mainlanes, and therefore, would not decrease probability of roadway flooding • Exceeds the maximum acceptable evacuation time. 	<p>Objective would be attained; the Build Alternative would:</p> <ul style="list-style-type: none"> • Improve drainage conditions, thereby decreasing the probability of roadway flooding. • Provide a hurricane evacuation time below the maximum acceptable time during hurricane or other emergency evacuations.

**TABLE 3-12
 SUMMARY AND COMPARISON OF THE EFFECTS OF THE NO-BUILD ALTERNATIVE
 AND THE BUILD ALTERNATIVE ON RELEVANT ISSUES**

Relevant Issues	No-Build Alternative	Build Alternative
Commercial Displacements and Relocations	<ul style="list-style-type: none"> No relocation of commercial properties would occur. 	<ul style="list-style-type: none"> The proposed ROW would displace six commercial buildings and affect portions of four other commercial properties with structures. It is anticipated that displaced commercial property owners and businesses could be relocated without difficulty. The displacement of these commercial enterprises would result in minimal cumulative effects.
Traffic Noise	<ul style="list-style-type: none"> Increasing traffic volume on this segment of IH 45 over the 20-year planning period would result in an increase in noise levels along the roadway. 	<ul style="list-style-type: none"> Noise impacts would occur at 44 representative receivers. A noise barrier is proposed as feasible and reasonable noise abatement for three impacted receivers at the Cooper's Mill Apartments.
Waters of the U.S.	<ul style="list-style-type: none"> The existing stream crossings would remain unchanged and would be periodically maintained by TxDOT. No effects to the stream crossings or associated wetlands adjacent to IH 45 would occur. 	<ul style="list-style-type: none"> Crosses two natural drainage features and would directly affect 92 aquatic features. <ul style="list-style-type: none"> Eighty-seven of the features are classified as non-jurisdictional wetlands, totaling 7.72 ac. Five of these features are potentially jurisdictional wetlands, totaling 3.65 ac. Four jurisdictional areas will be avoided by the proposed project An Individual Permit with the USACE would be required to permit the proposed project to affect jurisdictional wetlands, since one wetland is greater than 0.33 ac in size. An individual Section 401 Water Quality Certification (Tier II) will be required by TCEQ in association with any impacts to waters of the U.S. A Section 9 RHA USCG bridge permit will be required if it is determined by FHWA that the Clear Creek crossing is considered navigable.
Vegetation	<ul style="list-style-type: none"> The existing ROW and clear zones would continue to be mowed and maintained at the current maintenance intervals. No other effects to vegetation would occur in the project area because of transportation-related projects. 	<ul style="list-style-type: none"> Would require the acquisition of approximately 44.4 ac of new ROW adjacent to the existing facility. Would affect approximately 8.1 ac of native vegetation, including tidally-influenced marsh adjacent to Clear Creek, small areas of riparian forest, and periodically-inundated freshwater wetlands. Of the 8.1 ac, 3.5 ac would be permanently affected due to their conversion from native vegetation to the footprint of the roadway. The dominant woody vegetation within the proposed project consists of Chinese tallow, an invasive exotic species that is very undesirable. Removal of this species from the project area would provide a net environmental benefit.
Hazardous Materials	<ul style="list-style-type: none"> The No-Build Alternative would not alter the ROW, and therefore, not affect or be affected by potential hazardous materials sites 	<ul style="list-style-type: none"> Eleven hazardous materials sites are within the proposed ROW. Eight of the 11 sites presented a high level of concern for the presence of hazardous materials. A certified ASTM Standard Phase I ESA should be conducted for each parcel associated with the 11 sites.

G. Identification and Rationale for the Preferred Alternative

G.1 Preferred Alternative

TxDOT recommends the Build Alternative as the Preferred Alternative.

G.2 Support Rationale

The Build Alternative can be constructed using standard, proven techniques at a reasonable cost. It would also fulfill the purpose and need while meeting the stated objectives. Table 3-11 describes the ability of the Build Alternative to achieve the project objectives. Specifically, the Build Alternative would:

- Reduce Congestion through improved LOS
- Correct Design Deficiencies
- Provide Travel Options
- Improve Hurricane Evacuation

The Build Alternative would comply with all Federal and State environmental laws and regulations. All required permits would be attained before proceeding with this project.

G.3 Mitigation and Monitoring Commitments

TxDOT has committed to mitigate for unavoidable impacts to resources as described below. These commitments may be modified by various resource agencies after the NEPA process concludes and/or permits are issued.

G.3.1 Historical and Archeological Resources

The study team was not granted right-of-entry permission by Eastfield Realty to survey approximately 6.2 ac (2.5 ha) of an area designated as a Houston-PALM map Unit 2a, recommending surface survey of mounds only. This area was approximately 70 x 3,850 ft² and was examined by the study team from the existing TxDOT ROW. This visual inspection revealed large area of dirt moving equipment disturbance and intermittent disturbance from petroleum exploration related activities throughout the remaining property. Due to the appearance of these soils, the amount of disturbance present, the probability of significant artifact concentrations or intact cultural features being present on this property is very low, and clearance for this property was recommended. In the archeological materials are disturbed during construction of the proposed project, operations would immediately cease in the area of the discovery and the TxDOT Environmental Affairs Division will be contacted.

G.3.2 Traffic Noise

At Cooper's Mill Apartments, a noise barrier was determined to be both feasible and reasonable for these receivers and therefore, is proposed for incorporation into the project (Exhibit 4, Map 05 of 15). Based on preliminary calculations a noise barrier 854 ft in length and 10 ft in height would reduce noise levels by at least 5 dBA for 42 benefited receivers at a total cost of \$128,100 or approximately \$3,050 for each benefited receiver.

Any subsequent project design changes may require a reevaluation of this proposal. The final decision to construct the proposed noise barrier will be made upon completion of the project design, utility evaluation and the public involvement process.

G.3.3 Waters of the U.S.

Restoring minor wetlands within the ROW is not generally compatible with TxDOT goals, where shedding water from the road is essential to prevent hazards during precipitation events. On-site mitigation within the ROW is not feasible due to the long-term commitments associated with mitigation sites; placement of a mitigation area within the proposed ROW would prohibit the use of the site for any future project. Compensatory mitigation for non-jurisdictional wetlands is not required under the CWA.

Several mitigation options may be available to compensate for unavoidable impacts associated with the proposed project. These options include in-lieu fee (ILF) agreements, mitigation banking, and preservation/conservation off-site. TxDOT and FHWA guidance recommends mitigation banking be used for mitigation as much as practicable, then ILF agreements, and then other more traditional options such as restoration, enhancement, creation, preservation and/or conservation.

Mitigation banking options available include the use of the Coastal Bottomlands Mitigation Bank and the Greens Bayou Wetland Mitigation Bank. The Coastal Bottomland bank is available for use by TxDOT and the Harris County Flood Control District administers the Greens Bayou bank. ILF agreement options available include the Armand Bayou Nature Center, Galveston Bay Foundation, and The Nature Conservancy of Texas. Additionally, Harris County has a mitigation site, the Space Center Boulevard Mitigation Site, located on Space Center Boulevard between Genoa Red Bluff and NASA Road 1 where additional land could be purchased to add to the existing 52.5 ac area.

Coordination with the USACE and other resource agencies will be conducted to determine whether any of the options listed above are feasible and reasonable to compensate for the proposed project impacts.

G.3.4 Vegetation Resources

In accordance with the TxDOT MOU, habitats given consideration for non-regulatory mitigation include: (1) habitat for Federal candidate species (impacted by the project) if mitigation would assist in the prevent of the listing of the species, (2) rare vegetation series (S1, S2 or S3) that also locally provide habitat for 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 chooses to consider.

A portion of the proposed project would affect a riparian area adjacent to Clear Creek. The specific riparian zone consists of stands of Chinese tallow (*Sapium sebiferum*) interspersed with more desirable native vegetation.. Within this riparian area, Chinese tallow cover varies from 26.8 to 68.2%. Woody areas throughout the entire project length average 71.2% cover of Chinese tallow. Because Chinese tallow is an invasive, non-native species, it is typically considered low quality habitat. The removal of Chinese tallow is generally encouraged by local, state and federal agencies, as well as non-governmental organizations. Because the woody vegetation within the proposed ROW is generally of poor quality due to the predominance of an invasive, non-native species, compensatory mitigation is not being considered for impacts to the proposed ROW.

Even though the referenced riparian zone is not considered to be worthy of mitigation, it is recognized that there will be a loss of vegetative structure, which provides for limited habitat (shelter and cover). To help reestablish habitat and encourage the natural revegetation of a more diverse riparian zone, vegetation enhancement within the project area is proposed. This enhancement would include the planting of trees, shrubs, and forbs native to the area and typical of that found in riparian zones within the Gulf coastal prairie. The beautification/enhancement would enable and promote the natural revegetation process, while providing an immediate source of habitat to wildlife utilizing the area following construction of the proposed project.

Excluding the limited riparian area, the dominant vegetation that would be affected by this project is largely invasive and opportunistic. It has not been considered for compensatory mitigation. TxDOT would conduct coordination with TPWD to determine mitigation requirements for regulated plant communities within the proposed project ROW.

G.3.5 Construction

The contractor would make every reasonable effort to maintain the existing number of traffic lanes. Cross-street closures may be required during construction of overpasses; typically, these closures would be staggered to minimize inconvenience to motorists. Every reasonable effort would be made to minimize construction noise. Measures to control or abate fugitive dust emissions would be incorporated into the construction specifications.

Construction may not be limited to daylight hours, but the contractor would make reasonable efforts to perform certain work during off-peak hours to minimize motorist delay. Accessibility to adjacent properties would be maintained. While ensuring safety for motorists, the contractor would maintain temporary drainage of stormwater as needed and required by regulation. A Storm Water Pollution Prevention Plan (SWPPP) and erosion/sedimentation controls would be implemented (Scheffler 2003).

G.4 Recommendation for Alternative Selection and a Finding of No Significant Impact

TxDOT recommends implementation of the Build Alternative based on the information in this EA and in this project's Administrative Record. This environmental assessment concludes that the proposed project is necessary for safe and efficient travel within the project corridor. The project will have no significant adverse social, economic, or environmental impacts of a level that would warrant an environmental impact statement.

Alternative selection will occur following the completion of the public review period, which could include a public hearing. Unless significant impacts are identified as a result of public review or at the public hearing, a FONSI will be prepared for this proposed action as a basis for federal-aid corridor location approval.

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Chapter 4. References

- Abbot, James. 2001. Houston Area Geoarcheology: A Framework for Archeological Investigation, Interpretation, and Cultural Resource Management in the Houston District. Texas Department of Transportation. Environmental Affairs Division. Archeological Studies Program.
- Abbott, John C. Biotic Provinces of Texas. Available from: http://www.esb.utexas.edu/jcabbott/odonata/fieldguide/helpfiles/biotic_provinces_of_texas.htm
- Arroyo, B. 1992. Threatened and Endangered Species of Texas. U.S. Fish & Wildlife Service Texas State Office, Austin.
- Aten, Lawrence, Charles K. Chandler, Al B. Wesolwsky, and Robert M. Malina. 1976. Excavations at the Harris County Boys' School Cemetery: Analysis of Galveston Bay Area Mortuary Practices. Texas Archeological Society. Special Publication 3.
- Bettis, Allen. 2003. Personal Communication. TxDOT Environmental Affairs Division.
- Blair, W.F. 1950. The Biotic Provinces of Texas. Texas Journal of Science 2:93-117.
- Civil Rights Act of 1964. 42 USC 2000.
- Civil Rights Act of 1964. 42 USC 2000.
- Clear Creek Project. 2001. The Clear Facts on Clear Creek: Eco-Friendly Flood Damage Reduction. Available on the internet: <http://www.clearcreekproject.com/>
- Clear Creek Project. 2001. The Clear Facts on Clear Creek: Eco-Friendly Flood Damage Reduction. Available on the internet: <http://www.clearcreekproject.com/>
- Correll and Johnston. 1979. Manual of the Vascular Plants of Texas. The University of Texas at Dallas.
- Costello, Inc. 2002. Drainage Overview Report for Texas Department of Transportation, Schematic Design of IH 45 from Beltway 8 to FM 518, Harris and Galveston County, Texas. June.
- Costello, Inc. 2002. Drainage Overview Report for Texas Department of Transportation Schematic Design of IH 45 from Beltway 8 to FM 518 Harris & Galveston County [sic], Texas. June 2002.
- Cox, Paul W. and Patty Leslie. Texas Trees: A Friendly Guide. Corona Publishing Company. San Antonio, Texas.
- Crenwelge, Gerald W., Edward L. Griffin, and Janet K. Baker. Soil Survey of Galveston County, Texas. United States Department of Agriculture Soil Conservation Service, in cooperation with the Texas Agricultural Experiment Station and the Texas State Soil and Water Conservation Board.

- Duncan and Duncan. 1988. *Trees of the Southeastern United States*. The University of Georgia Press.
- Environmental Data Resources, Inc. Corridor Database Search of IH 45 South between Fuqua St. and FM 518. 2002. Southport, Connecticut.
- Environmental Protection Agency, Enviromapper. 2003. <http://map3.epa.gov/enviromapper> Accessed April 21, 2003
- Executive Office of the President. February 11, 1994 (issue date). Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." Federal Register, Vol. 59. No. 32 (February 16, 1994).
- Farmland Protection Policy Act. January 1, 2000 (revised). 7 CFR Part 658.
- Farro, Joe, City of Webster. April 22, 2003. Personal communication.
- Federal Emergency Management Agency (FEMA). 1999. 100-year floodplain Community Panels Flood Insurance Rate Map (FIRM). City of League City Community Panel 485488 0010 D. Revised September 22, 1999.
- Federal Emergency Management Agency (FEMA). 2000. 100-year floodplain Community Panels Flood Insurance Rate Map (FIRM) panels 48201C1055 K, 48201C1060 K, 48201C1070 K, 48201C1090 K. Revised April 20, 2000.
- Federal Highway Administration (FHWA). 1987. Technical Advisory T 6640.8A. "Guidance for Preparing and Processing Environmental and Section 4(f) Documents." October 30.
- Federal Highway Administration (FHWA). 1996. Community Impact Assessment, A Quick Reference for Transportation. September.
- Federal Highway Administration (FHWA). 1998. OPI-HIPA-10. June 17.
- Fields, Ross C. 1995. The Archeology of the post Oak Savannah of East Central Texas. *Bulletin of the Texas Archeological Society*. Volume 66: 301-330.
- Fullen, William L. 1985. An Archeological Survey of Portions of Horsepen Bayou, Harris County, Texas. Texas Heritage Services, Deer Park.
- Godfrey & Wooten. 1981. *Aquatic and Wetland Plants of Southeastern United States - Dicotyledons*. The University of Georgia Press.
- Gould, F.W. 1975. Texas Plants-A Checklist and Ecological Summary. MP-585/Rev. Texas Agricultural Experiment Station, Texas A&M University, College Station.
- Gould. 1951. *Grasses of the Southwestern United States*. The University of Arizona Press.
- Greenwade, James. 2002. USDA-NRCS Soil Scientist. Personal communication. February 28.
- Greenwade, James. 2003. USDA-NRCS Soil Scientist. Personal communication. March 19.

- Handbook of Texas Online. 2003. Website address: <http://www.tsha.utexas.edu/handbook/online/articles/view/EE/doi4.html> Downloaded July 2003.
- Harris County Tax Assessor-Collector. May 2003. <http://www.tax.co.harris.tx.us>. Accessed May 12, 2003.
- Harris-Galveston Area Council (H-GAC) 2004. Draft 2025 Regional Transportation Plan.
- Hatch, Stephen L, and Jennifer Pluhar. 1993. Texas Range Plants. The W.L. Moody, Jr., Natural History Series, Number 13. Texas A&M University Press, College Station, Texas.
- Herredia, Louis, City of Webster. April 22, 2003. Personal communication.
- Howard, Margaret A., Martha Doty Freeman, and C. Britt Bousman. Archeological Reconnaissance in the Third Reach of the Clear Creek Flood Control Project, Galveston and Harris Counties, Texas. Reports of Investigations Number 85. Prewitt and Associates, Inc., Austin, Texas.
- Jordan, T. G., J. L. Bean, and W. M. Holmes. 1984. Texas: A Geography. Boulder: Westview Press.
- Mabic, D.W. 1989. Bald Eagle Nest Survey and Management. Texas Parks and Wildlife Department Federal Aid Project No. W-103-R-19, Job No. 30.
- Mattiza, Dorothy Baird. 1993. 100 Texas Wildflowers. Native Plant Society of Texas. Western National Parks Association. Tuscon, Arizona.
- McGuff, Paul R. and Wayne N. Cox. 1973. A Survey of the Archeological and Historical Resources of Areas to be Affected by the Clear Creek Flood Control Project, Texas. Research Report No. 28. Texas Archeological Survey. University of Texas. Austin.
- McMahan, C.A., R.G. Frye, and K.L. Brown. 1984. The Vegetation Types of Texas. Texas Parks and Wildlife Department. Project W-107-R. et al. 1984
- McNab, W. Henry and Peter E. Avers. 1994. Ecological Subregions of the United States: Prairie Parkland (Subtropical) Province 255. USDA Forest Service. Available at: <http://www.fs.fed.us/land/pubs/ecoregions/ch29.html#255D>
- Mercado-Allinger, Patricia A., Ross C. Fields, Kathleen Gilmore, and Nancy Reese. 1984. Inventory and Assessment of Cultural Resources, Clear Creek Channel Improvement Project, Galveston County, Texas. Reports of Investigations Number 26, Prewitt and Associate, Inc., Austin, Texas
- Muenschler. 1980. Weeds. Comstock Publishing Associates, Cornell University Press.
- Munsell Soil Color Charts. 1994 Revised Edition. Macbeth Division of Kollmorgan Instruments Corporation, New Windsor, NY.
- Palmer, R.S. 1962. Handbook of North American Birds. Vol. 5: Loons through flamingos. Yale University Press, New Haven, Conn. 567 pp.

- Parrent, Greg, P.E.. 2003. Personal Communication. Rodriguez Transportation Group.
- Patterson, Leland W. 1995. The Archeology of Southeast Texas. Bulletin of the Texas Archeological Society. Volume 66: 239-264
- Peterson, R. T. 1990. A field guide to western birds. Houghton Mifflin Company, Boston, 432 pp.
- Preston. 1961. North American Trees. The M.I.T. Press.
- Ricklis, Robert A. 1995. Prehistoric Occupation of the Central and Lower Texas Coast: A Regional Overview. Bulletin of the Texas Archeological Society. Volume 66: 265-300.
- Ries, L., D.M. Debinski, and M.L. Wieland. 2001. Conservation Value of Roadside Prairie Restoration to Butterfly Communities. Conservation Biology Vol. 15, No. 2: 401-411. April.
- Scheffler, Harold C. 2003. Personal Communication. Rodriguez Transportation Group. October 31.
- Shakowski, Joseph. May 2000. A practical approach to addressing environmental justice during the NEPA process: The disproportionate effects test. Transportation Research Board, XVIII, no. 1:6-7.
- Southern Weed Science Society. Weed Identification Guide. Champaign, IL.
- Spearing, Darwin. Roadside Geology of Texas. Mountain Press Publishing Company. Missoula, Montana.
- Story, De Ann, Janice A. Guy, Barbara A. Burnett, Martha Doty Freeman, Jerome C. Rose, D. Gentry Steele, Ben W. Olive, and Karl J. Reinhard. 1990. The Archeology and Bioarcheology of the Gulf Coastal Plain. Arkansas Archeological Survey Research Series No. 38. Arkansas Archeological Survey, University of Arkansas, Fayetteville, Arkansas.
- Stubbendieck, Hatch and Butterfield. 1991. North American Range Plants. University of Nebraska Press.
- Study Team, 2003a. Air Quality Impact Analysis Technical Report, IH 45 South (Beltway 8 to FM 518). June.
- Study Team, 2003b. Biological Resources Technical Report, IH 45 South (Beltway 8 to FM 518). June.
- Study Team, 2003c. Community Impact Assessment Technical Report, IH 45 South (Beltway 8 to FM 518). June.
- Study Team, 2003d. Floodplains Technical Report, IH 45 South (Beltway 8 to FM 518). June.
- Study Team, 2003e. Hazardous Materials Initial Site Assessment Technical Report, IH 45 South (Beltway 8 to FM 518). June.
- Study Team, 2003f. Phase I Archeological Investigation Technical Report, IH 45 South (Beltway 8 to FM 518). June.

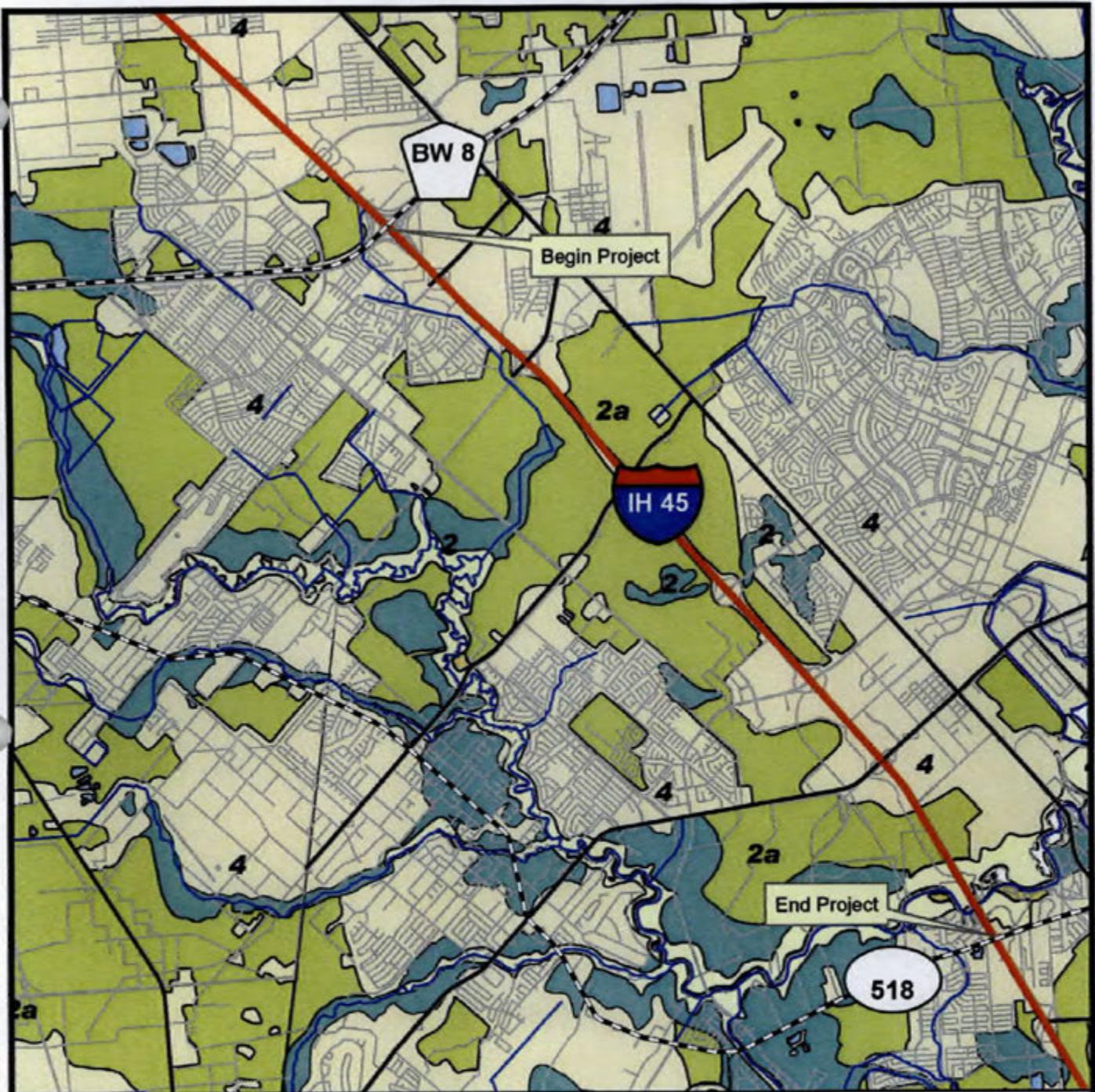
- Study Team, 2003g. Traffic Noise Technical Report, IH 45 South (Beltway 8 to FM 518). June.
- Study Team, 2003h. Waters of the U.S. Technical Report, IH 45 South (Beltway 8 to FM 518). June.
- Study Team, 2003i. Water Quality Technical Report, IH 45 South (Beltway 8 to FM 518). June.
- Terres, J.K. 1990. Audobon Society Encyclopedia of North American Birds. Alfred A. Knopf, New York, New York.
- Texas A&M University Bioinformatics Working Group. Checklist of Vascular Plants of Texas: Ecological Summary- Vegetation Area 2, Gulf Marshes and Prairies. Available from: <http://botany.cs.tamu.edu/FLORA/tracy/taesreg2.htm>. Last modified Feb. 4, 1996.
- Texas Archeological Research Laboratory (TARL). 1984. State of Texas Archeological Data Site Form: 41HR529. Ross Fields, Pat Mercado-Allinger, and M.A. Howard. Submitted Jan. 1, 1984.
- Texas Archeological Research Laboratory (TARL). 1990. State of Texas Archeological Data Site Form: 41HR635. C. M. Garvey and M.A. Howard. Submitted Jan. 11, 1990.
- Texas Archeological Research Laboratory (TARL). 1999. State of Texas Archeological Data Site Form: 41GV82. Carolyn Good. U.S. Army Corps of Engineers, Galveston District. Submitted Dec. 30, 1999.
- Texas Commission on Environmental Quality. 2002. DRAFT 2002 Texas 303(d) List. October 1.
- Texas Commission on Environmental Quality. 2002. Water Quality Certification Conditions for NFPs. April 12.
- Texas Department of Transportation (TxDOT). 1999. Hazardous Materials in Project Development Guidance Document. <http://www.dot.state.tx.us/env/hazmatprojguide.htm> Accessed April 18, 2003.
- Texas Department of Transportation (TxDOT). 1999a. IH 45 South Corridor Major Investment Study: Alternatives Evaluation Report. August 1999.
- Texas Department of Transportation (TxDOT). 1999b. IH 45 South Corridor Major Investment Study: Environmental Analyses Report. August 1999.
- Texas Department of Transportation (TxDOT). 2000. Bridge Inventory and Inspection File: Clear Creek. Houston District. Program P120179. 1.65 Miles SE of NASA Rd 1. Pages 241, 246, 247, and 249. October 27.
- Texas Department of Transportation. 2003a. Traffic Analysis for Highway Design. Supplied upon request for IH 45 (BW 8 to FM 518).
- Texas Department of Transportation. 2003b. Traffic Line Diagram. Supplied upon request for IH 45 (BW 8 to FM 518).
- Texas Historical Commission. 2003. Archeological Survey Standards for Texas. Available from: <http://www.the.state.tx.us/rulesregs/RulesRegsword/surveystandards02.doc>

- Texas Natural Resource Conservation Commission (as of 9-1-02 known as Texas Commission on Environmental Quality). 1979. Groundwater Availability in Texas.
- Texas Natural Resource Conservation Commission (as of 9-1-02 known as Texas Commission on Environmental Quality). 1995. Aquifers of Texas.
- Texas Natural Resource Conservation Commission. 1996 State of Texas Water Quality Inventory.
- Texas Parks and Wildlife. Correspondence to the Biotic Provinces of Texas. Available from: <http://www.tpwd.state.tx.us/nature/ecoreg/pages/biocorr.htm>
- Texas State Data Center, Population Estimates and Projections Program. March 2003. Projections of the Population of Texas and Counties in Texas by Age, Sex and Race/Ethnicity for 2000-2040. 2003 Texas Population Projections. <<http://txsdc.tamu.edu/tpepp/2001_txpopprj_cntytotnum.php >> Accessed March 17, 2003.
- Tiner. 1987. A Field Guide to the Coastal Wetland Plants of the Northeastern United States. The University of Massachusetts Press.
- Tropical Storm Allison Recovery Project (TSARP). 2002. Tropical Storm Allison Overview, Clear Creek Watershed. Available online at www.tsarp.org.
- U.S. Bureau of Labor Statistics. 2003. Employment Data. <http://stats.bls.gov/lau/home.htm> accessed March 5, 2003.
- U.S. Bureau of the Census (USBOC) . 1990. Census of Population and Housing.
- U.S. Bureau of the Census (USBOC). 2000 Census of Population and Housing. http://factfinder.census.gov/servlet/BasicFactsServlet?_lang=en Accessed March 6, 2003.
- U.S. Department of Agriculture. National Resource and Conservation Service (NRCS). Soil Survey Geographic Database (SSURGO). Digital soil survey maps for Harris (2002) and Galveston (2002) Counties.
- U.S. Department of Commerce. Bureau of Economic Analysis (BEA). 2003. Accessed using the Regional Economic Information System (REIS) <http://www.bea.doc.gov/bea/regional/reis/> accessed March 4, 2003.
- U.S. Fish & Wildlife Service (USFWS). 1987. Habitat Management Guidelines for the Bald Eagle in the Southeast Region. Third revision. January 1987.
- U.S. Fish & Wildlife Service (USFWS). 1989. Southeastern States Bald Eagle Recovery Plan. USFWS Endangered Species Office, Atlanta, Georgia.
- Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended. 42 USC 4601.
- USDA. 1971. Common Weeds of the United States. Dover Publications, Inc., New York.

Valerie Nesheim, Texas Commission on Environmental Quality, Houston. April 22, 2003.
Personal communication

Vines. 1977. Trees of East Texas. University of Texas Press.

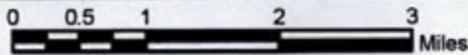
Wheeler, Frankie F. 1976. Soil Survey of Harris County, Texas. United States Department of Agriculture Soil Conservation Service, in cooperation with the Texas Agricultural Experiment Station and Harris County Flood Control District.



Legend

AREA_VALUE

- 0 Water: No Survey Recommended.
- 1 Surface Survey Recommended, Deep Reconnaissance Recommended if Deep Impacts are anticipated.
- 2 Surface Survey Recommended, No Deep Reconnaissance Recommended.
- 2a Surface Survey of Mounds Only, No Deep Reconnaissance Recommended.
- 3 No Surface Survey Recommended, Deep Reconnaissance Recommended if Deep Impacts are Anticipated.
- 3a No Surface Survey Recommended, Deep Reconnaissance Recommended only if Severe Impacts are Anticipated.
- 4 No Survey Recommended.



Potential Archeological Liability Map

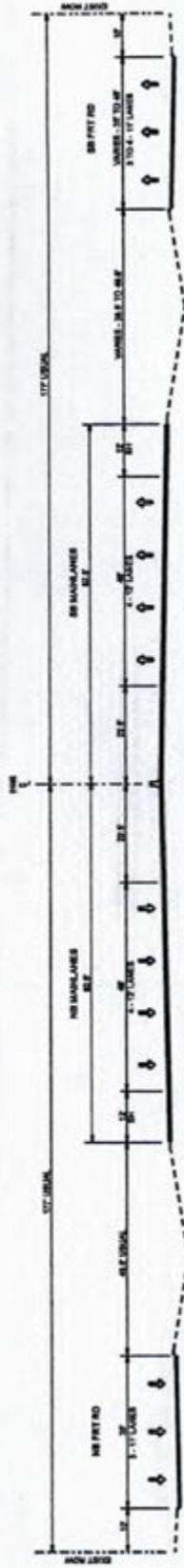
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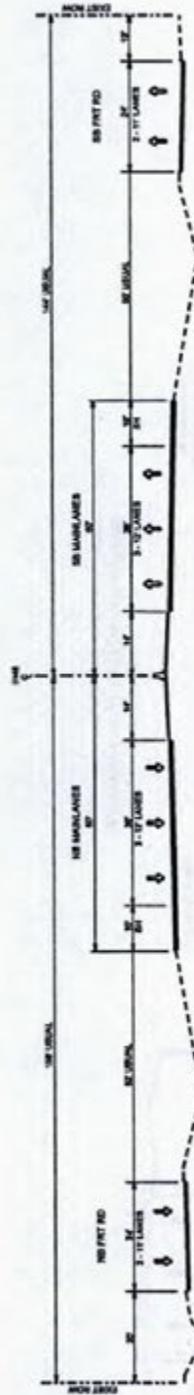
Exhibit 2: PALM Map

IH 45: Medical Center to BW
& N of FM 518 to Medical Center

CSJ 0500-03-107 & 0500-03-462



IH 45
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 FROM S. OF SCARSDALE TO N. OF FM 1559



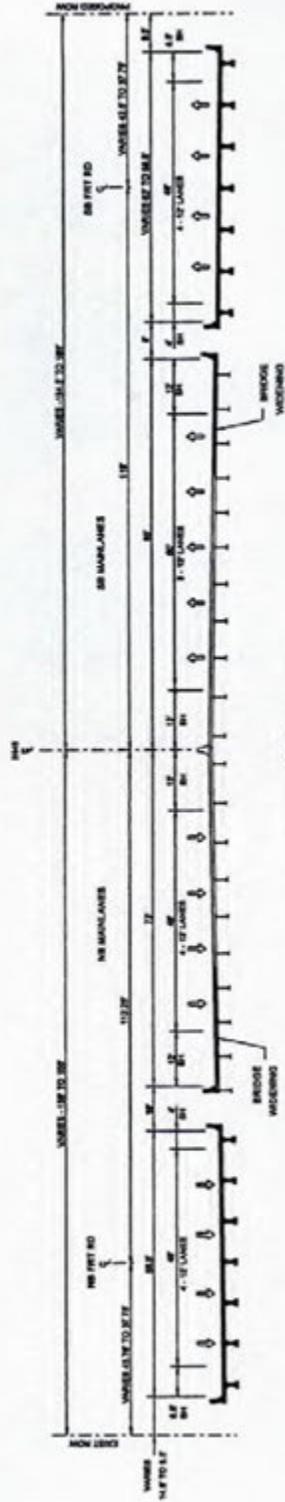
IH 45
 EXISTING TYPICAL SECTION
 FROM N. OF FM 1559 TO CLEAR CREEK

Scale Varies
 Source: RTG 2003

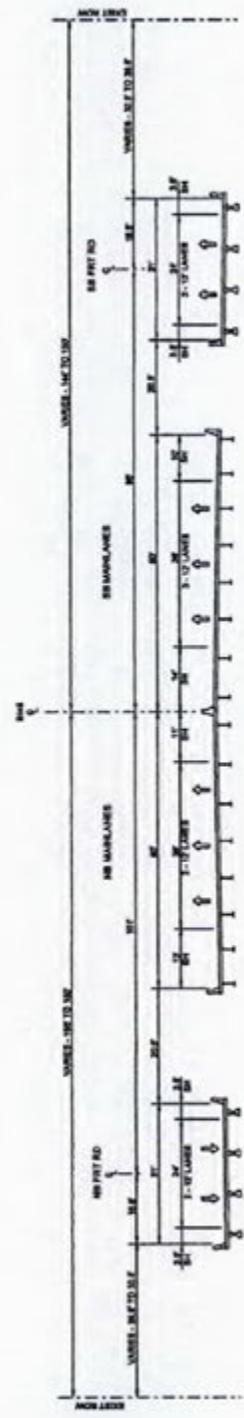


Exhibit 3:
 1 of 3
 Existing and Proposed
 Typical Sections

IH 45 (Beltway 8 to FM 518)
 Harris and Galveston Counties
 CSJs 0500-03-462 and 0500-03-107



IH 45
 PROPOSED TYPICAL SECTION
 CLEAR CREEK BRIDGE



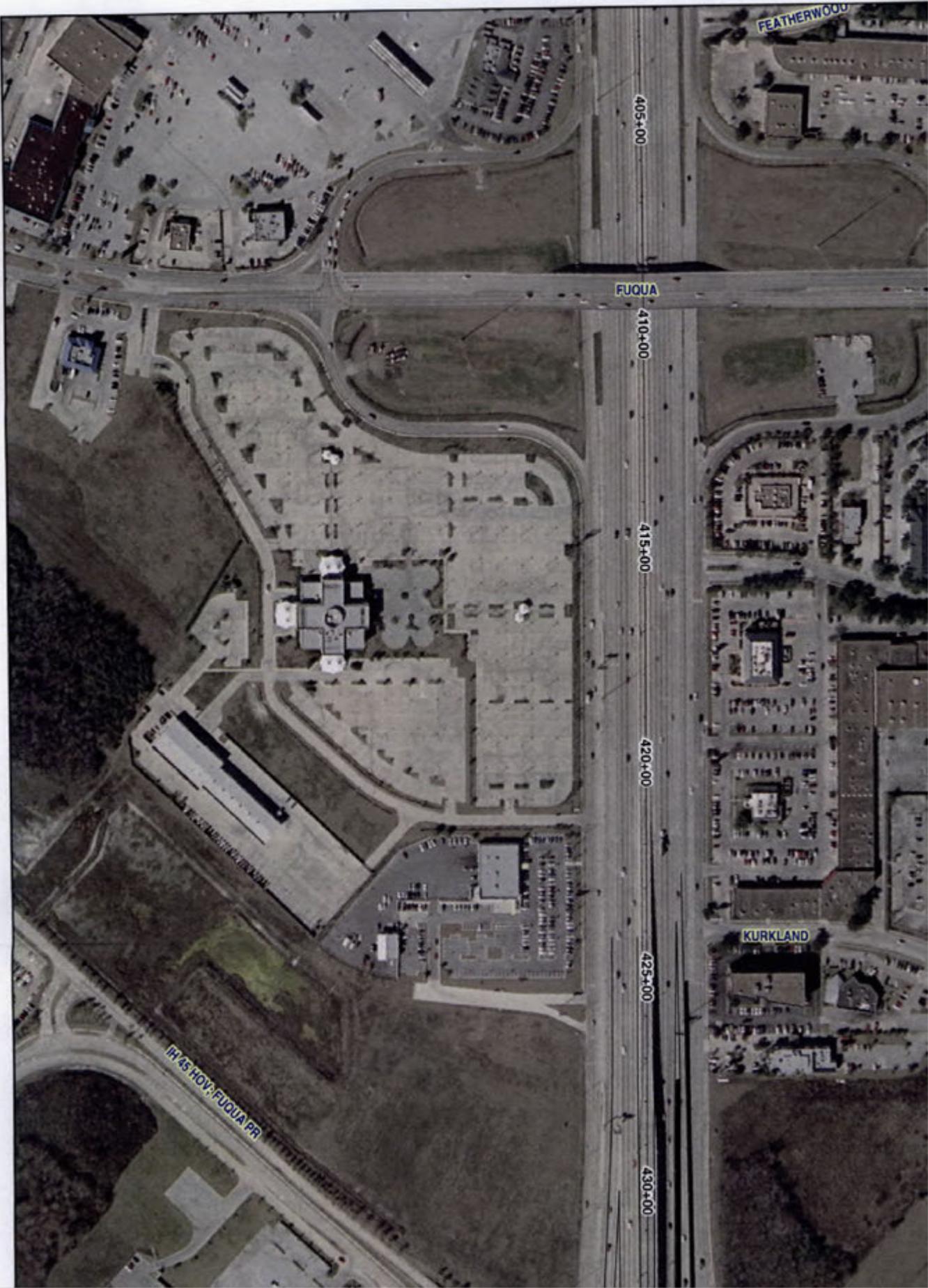
IH 45
 EXISTING TYPICAL SECTION
 CLEAR CREEK BRIDGE

Scale Varies
 Source: RTG 2003

IH 45 (Beltway 8 to FM 518)
 Harris and Galveston Counties
 CSJs 0500-03-462 and 0500-03-107



Exhibit 3
 3 of 3
 Existing and Proposed
 Typical Sections

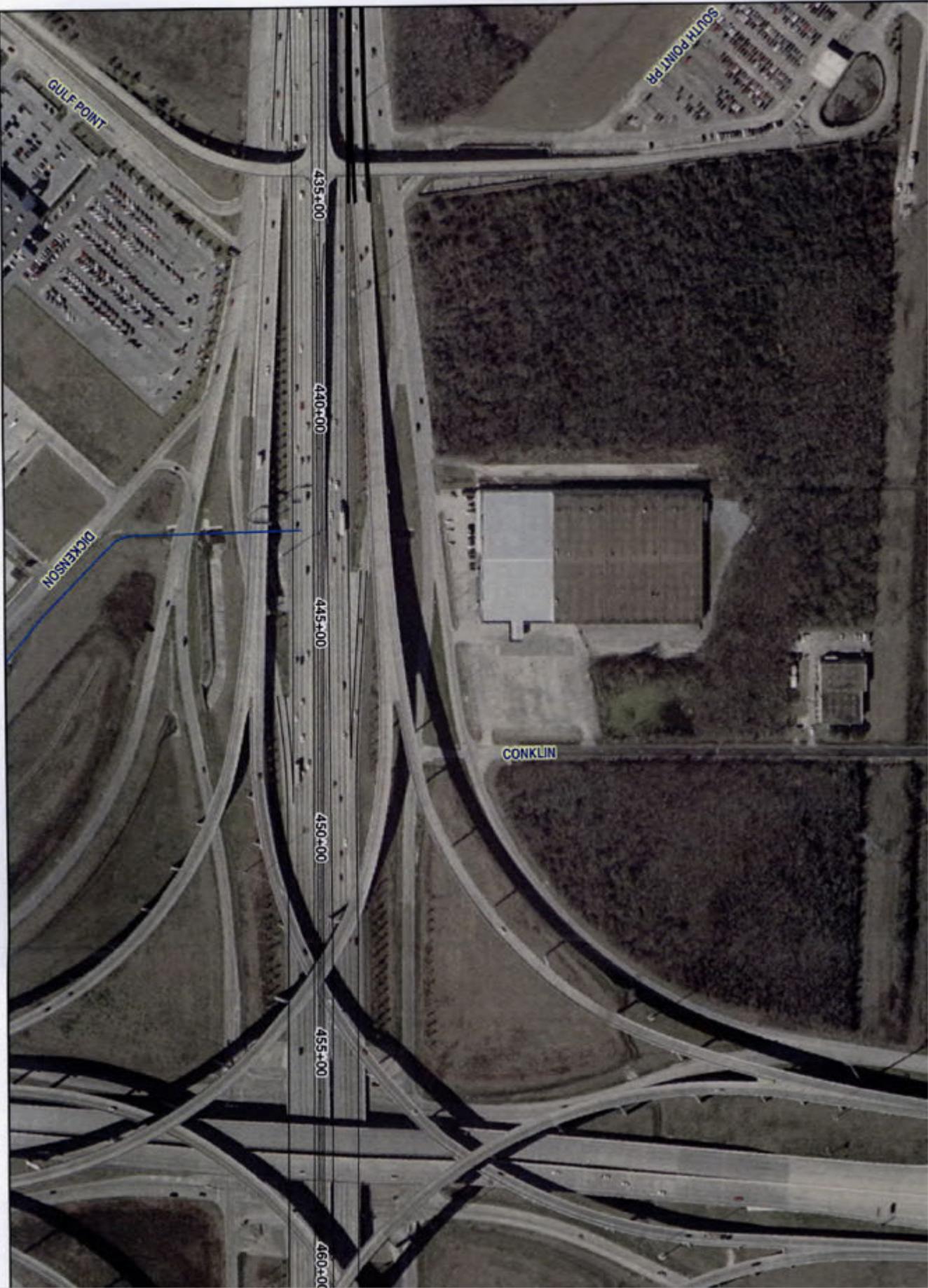


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IH 45 (Beltway 8 to FM 518)
Harris and Galveston Counties
CSJs 0500-03-462 and 0500-03-107



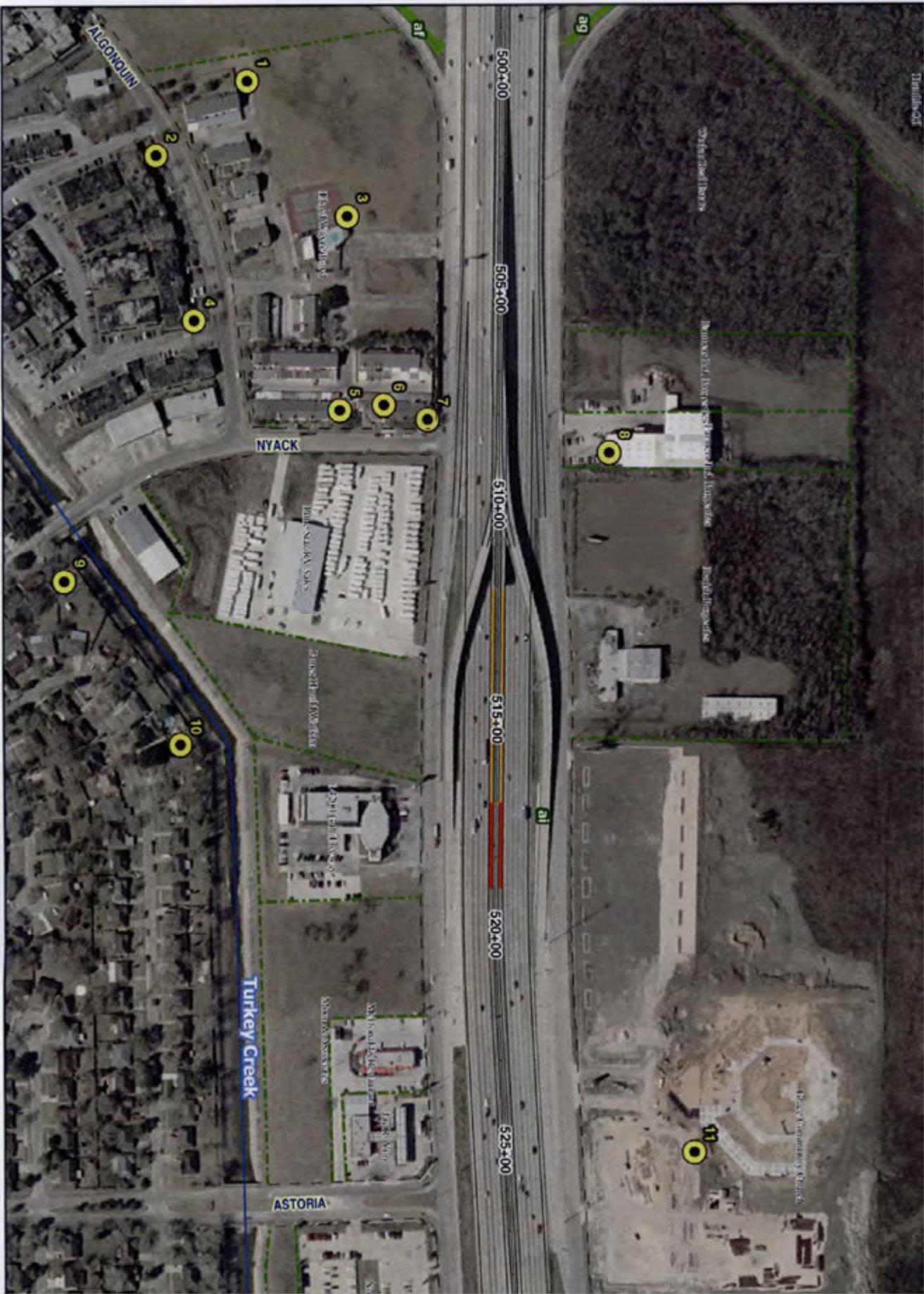


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 Harris and Galveston Counties
 CSJs 0500-03-462 and 0500-03-107



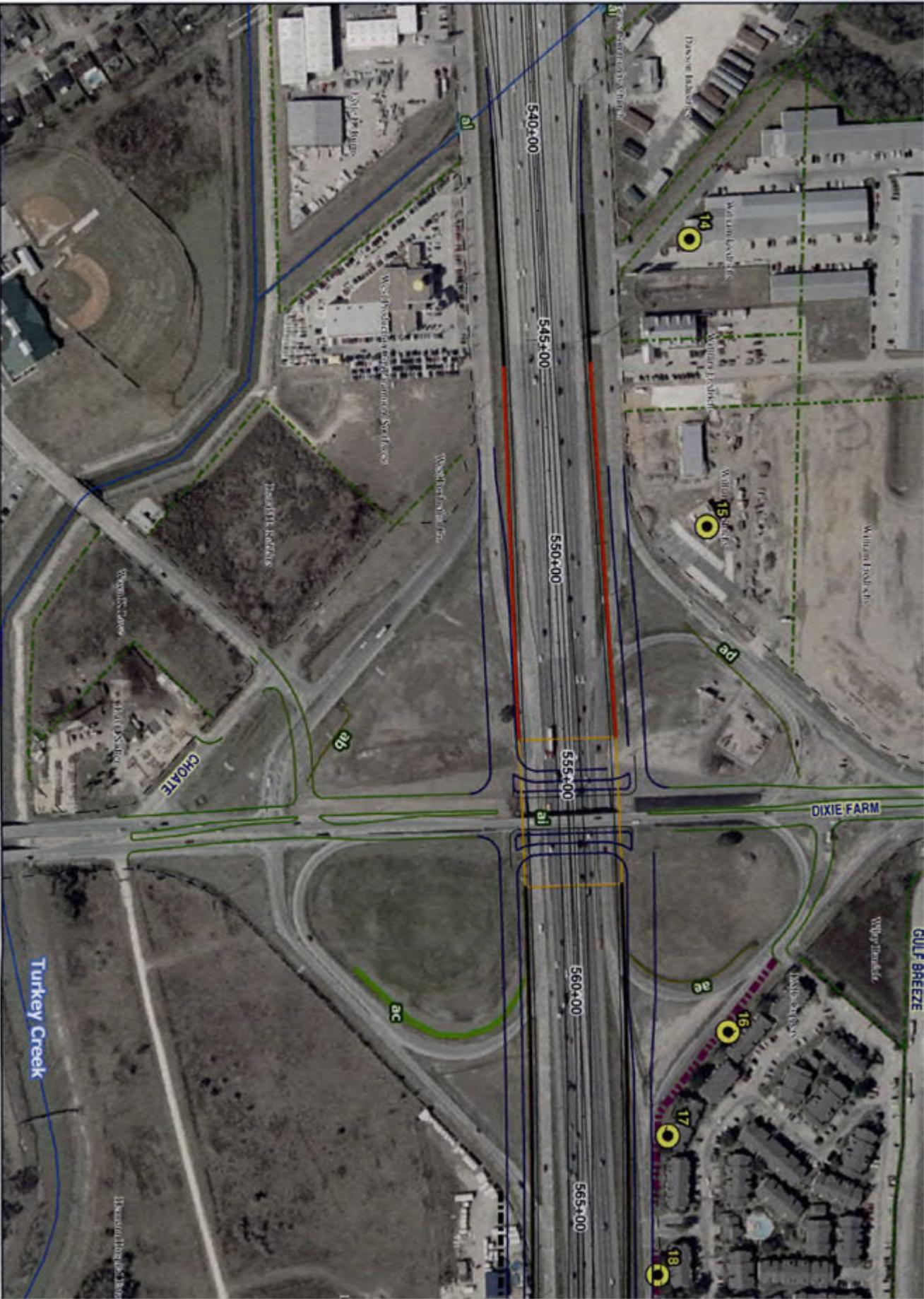


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 Harris and Galveston Counties
 CSJs 0500-03-462 and 0500-03-107





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IH 45 (Beltway 8 to FM 518)
 Harris and Galveston Counties
 CSJs 0500-03-462 and 0500-03-107





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IH 45 (Beltway 8 to FM 518)
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 CSJs 0500-03-462 and 0500-03-107





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 Harris and Galveston Counties
 CSJs 0500-03-462 and 0500-03-107





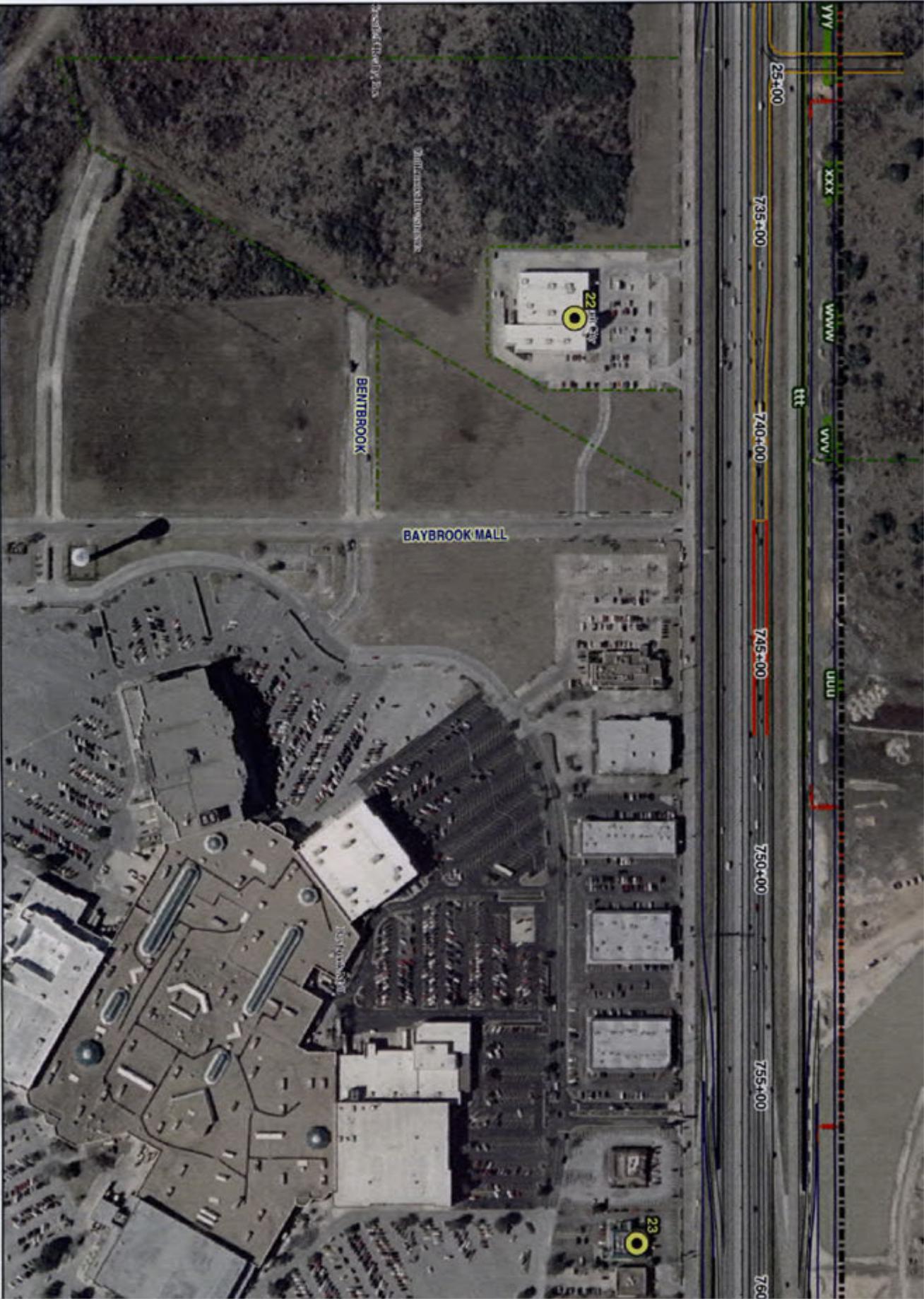
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IH 45 (Beltway 8 to FM 518)
 Harris and Galveston Counties
 CSJs 0500-03-462 and 0500-03-107



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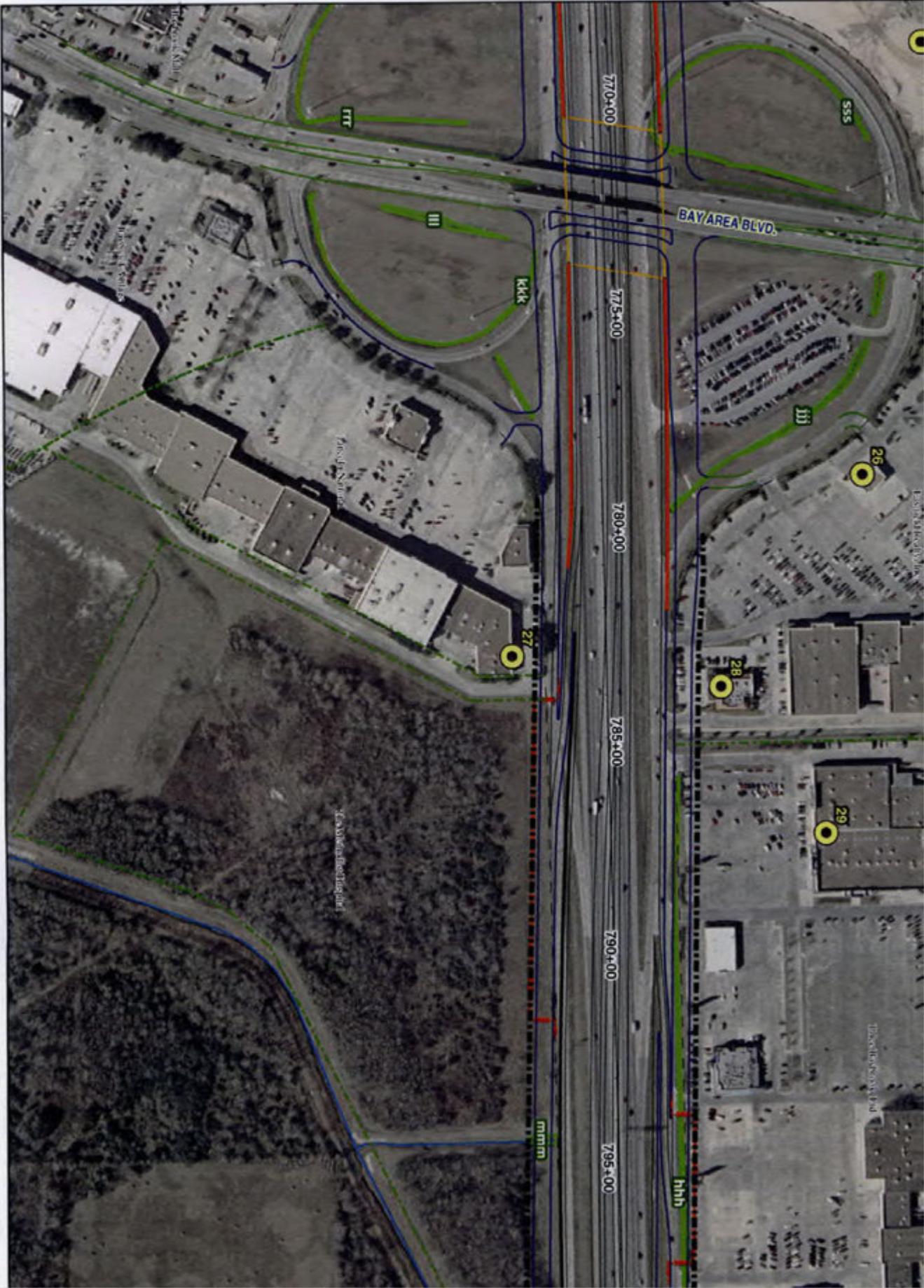


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IH 45 (Beltway 8 to FM 518)
 Harris and Galveston Counties
 CSJs 0500-03-462 and 0500-03-107



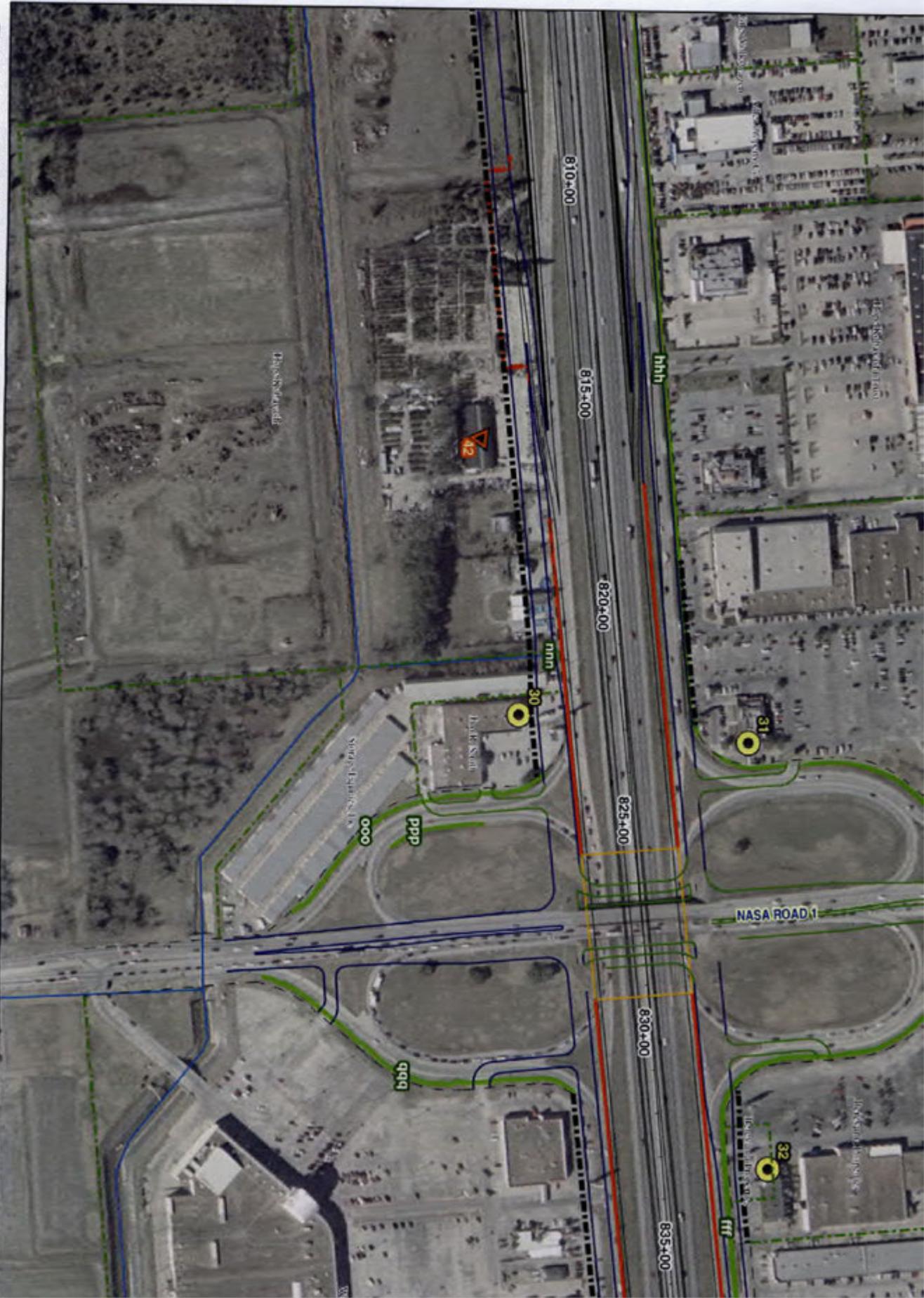


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IH 45 (Beltway 8 to FM 518)
Harris and Galveston Counties
 CSJs 0500-03-462 and 0500-03-107



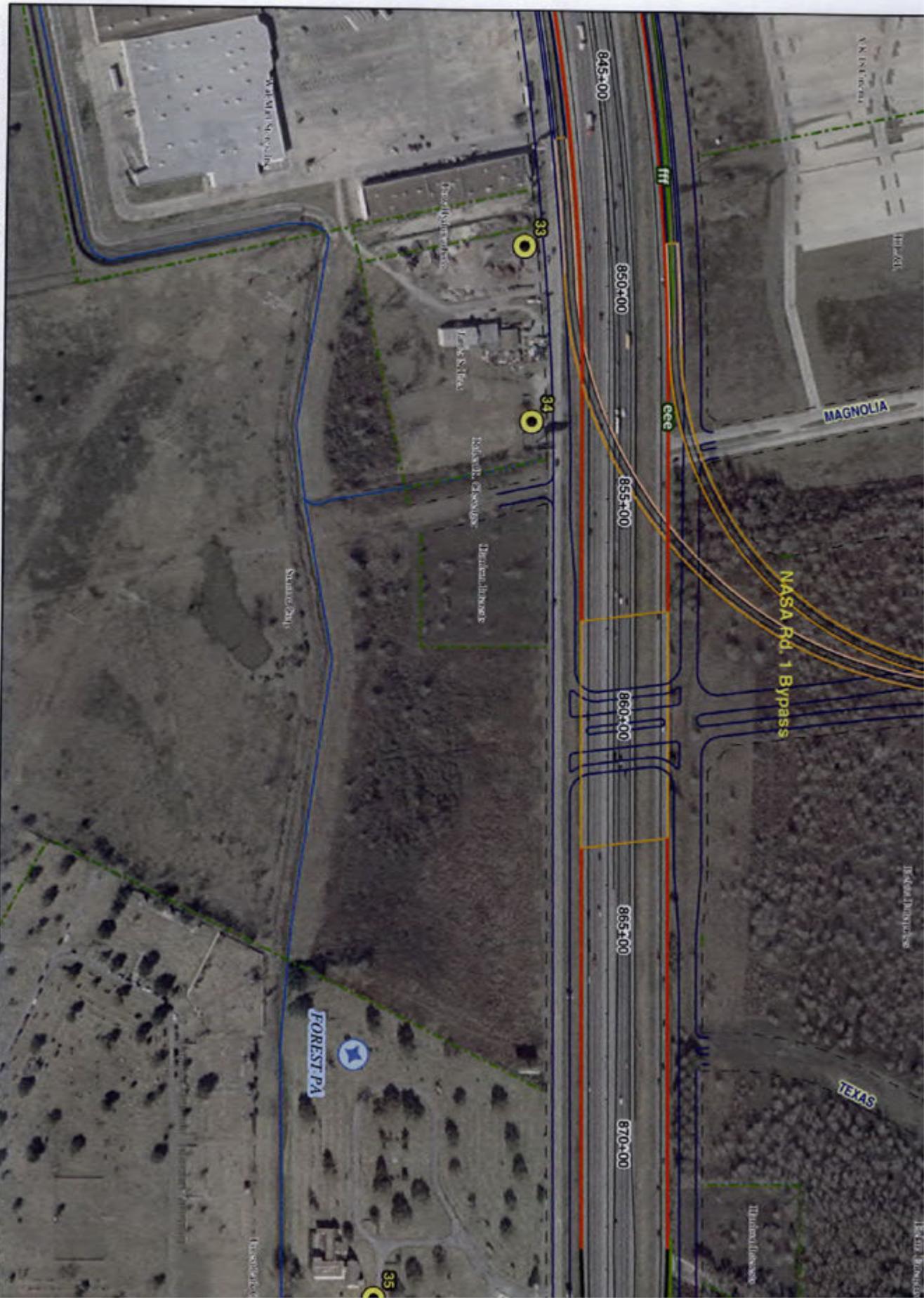


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IH 45 (Beltway 8 to FM 518)
 Harris and Galveston Counties
 CSJs 0500-03-462 and 0500-03-107





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IH 45 (Beltway 8 to FM 518)
 Harris and Galveston Counties
 CSJs 0500-03-462 and 0500-03-107

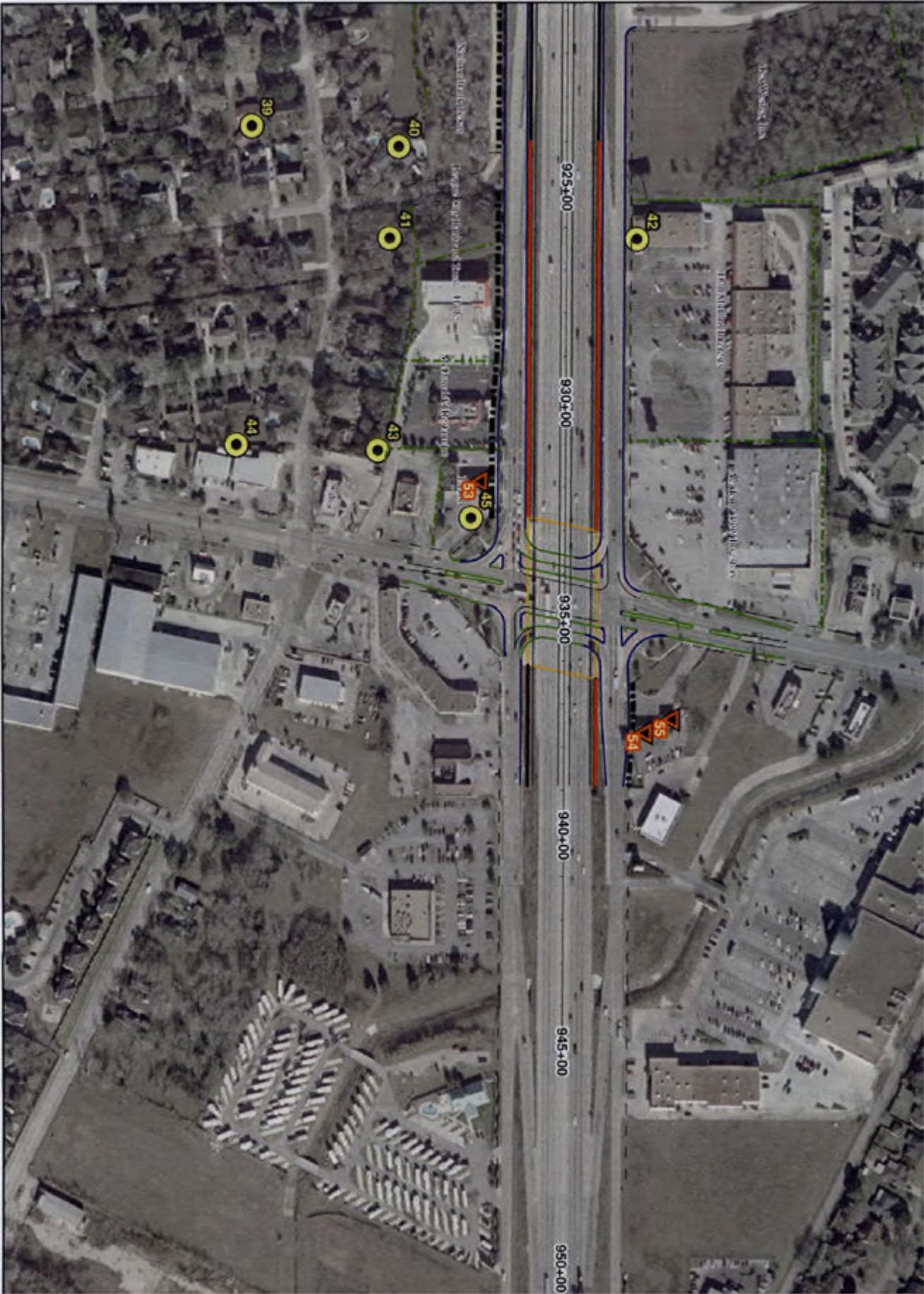




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IH 45 (Beltway 8 to FM 518)
 Harris and Galveston Counties
 CSJs 0500-03-462 and 0500-03-107





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IH 45 (Beltway 8 to FM 518)
 Harris and Galveston Counties
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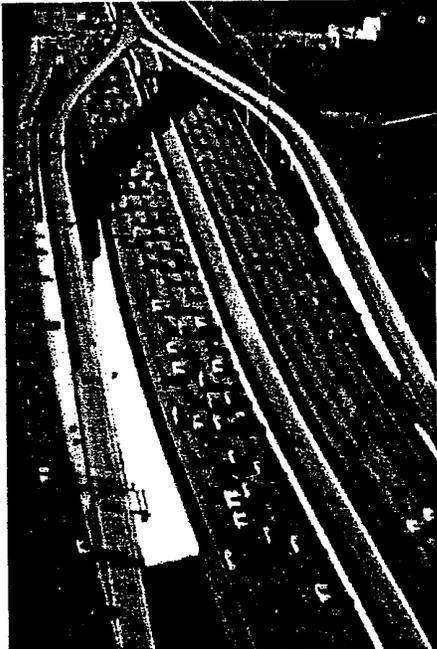




Texas Department of Transportation

**IH 45 South Corridor
Major Investment Study**

***Executive
Summary***



**Interstate 45 South Corridor
major investment study**



Texas Department of Transportation

AUGUST 1999

45
INTERSTATE
Interstate 45 South Corridor
major investment study





**Interstate 45 South Corridor
major investment study**

Lead Agency:

**Texas Department of Transportation (TxDOT)
Houston District**

- Stuart Corder
- Jim Darden
- Roger Gonzalez
- Gabriel Johnson
- Teri Kaplan
- Julie Morse
- Carol Nixon
- Chris Olavson
- Jose Ramirez
- Robin Sterry
- Michael Tello
- Gary Trietsch
- Maureen Wakeland

Steering Committee:

Houston-Galveston Area Council (H-GAC)

- Alan Clark
- Andy Mullins
- Parviz Nazem

Federal Highway Administration (FHWA)

- Wilbur Lee Gibbons
- Gary Johnson
- Mike Leary

Metropolitan Transit Authority of Harris County (METRO)

- Pete Finn
- Don Garrison

City of Houston

- Doug Wiersig

Harris County

- Pat Smiley

Galveston County

- Mike Fitzgerald
- Wayne Johnson

**Texas Natural Resource Conservation Commission
(TNRCC)**

- James Thomas

Connect Transit

- Paulette Shelton

Consultant Team:

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- Bill Feulner
- Charles Fuhs
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- Chris Hagar
- Bill Othon

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- C. L. Roy Mynier
- Nelson B. Nuckles
- Rich Squire

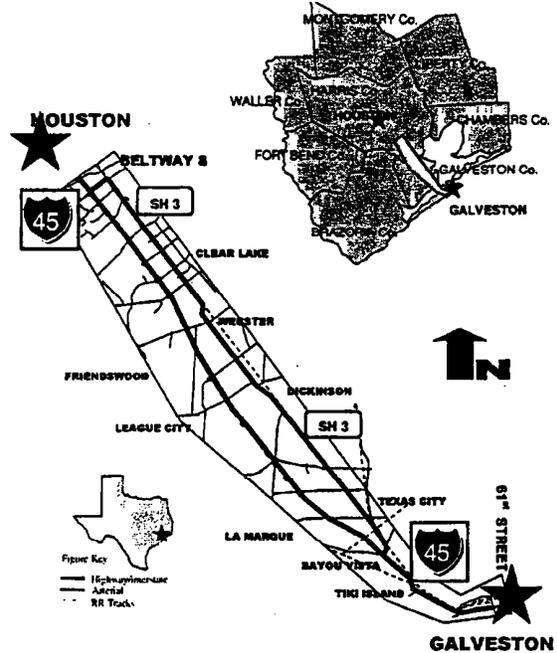
Executive Summary

Overview

The IH 45 South Corridor Major Investment Study (MIS) was initiated in February 1998 to evaluate the transportation needs of the IH 45 South Corridor. The purpose of the study was to define the scope and characteristics of the transportation investment to be made in the IH 45 South Corridor over the next 20-year period (Year 2020). The overall goal of the study was to identify the transportation needs of the corridor and to determine the improvements which best address those identified needs.

The study corridor, consisting of portions of both Harris and Galveston Counties, extends along IH 45 and State Highway 3 (SH 3), and serves the communities of Houston, Clear Lake, Webster, League City, Friendswood, Dickinson, La Marque, Texas city, Tiki Island, Bayou Vista, and Galveston. The study corridor (map) is approximately 32 miles long and extends from one-half mile west of IH 45 to one-half mile east of SH 3.

I 45 S. Corridor



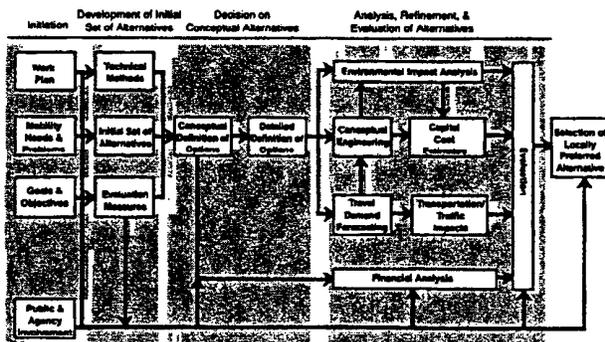
The MIS Process

The MIS is an integral part of a metropolitan area's long range planning process. It is designed to provide decision-makers with information on options available for addressing identified transportation problems. The process used for the IH 45S Corridor MIS is shown below.

The MIS provided a focused analysis and evaluation of the mobility needs; identified an appropriate set of multi-modal options to address the identified problems and needs; developed measures of benefits, costs and impacts; and

allowed for a comprehensive analysis and evaluation of the selected options. TxDOT was identified as the lead agency and was responsible for initiating and managing the study. This included the development of a Locally Preferred Alternative (LPA) for consideration by the Houston-Galveston Area Council (H-GAC). This agency serves as the local Metropolitan Planning Organization (MPO) and is responsible for incorporating the recommendation of the MIS into the Regional Transportation Plan (RTP). Another major responsibility of the lead agency was to provide local transportation agencies, participating municipalities, residents, stakeholders and environmental agencies with the opportunity to be involved in the development of the transportation needs of the corridor and assist in the evaluation of the potential improvement options.

MIS Process



Study Participants

As part of the MIS, a number of agency, business and public representatives were consulted, including the study's Steering and Municipal Advisory Committees, corridor stakeholders and the general public. The Steering Committee had the role of providing oversight of the study and

Executive Summary

technical input based on their unique regional perspectives. The Steering Committee was composed of representatives of the following agencies:

- ◆ Texas Department of Transportation (TxDOT)
- ◆ Federal Highway Administration (FHWA)
- ◆ Federal Transit Administration (FTA)
- ◆ Houston-Galveston Area Council (H-GAC)
- ◆ Metropolitan Transit Authority of Harris County (METRO)
- ◆ Harris County
- ◆ Galveston County
- ◆ Connect Transit
- ◆ City of Houston
- ◆ Texas Natural Resource Conservation Commission (TNRCC)

This committee met as needed to monitor the progress of the study, to provide reviews of all the technical products being developed and to help ensure that a complete and technical analysis was being performed. Representatives also participated in the public meetings to gain their own sense of the public's reaction to the planning process and the study's recommendations.

The Municipal Advisory Committee included representatives from each community within the corridor, major land holders, and various community and environmental groups having a major interest in the transportation issues of the corridor. This committee convened following the Steering Committee meetings to be briefed on the progress of the study and to provide input to the Study Team.

The Corridor Stakeholders represented the large business enterprises or institutions in the corridor that would potentially be affected by the transportation improvements being considered. Individual "one-on-one" briefing meetings were held with those stakeholders who expressed an interest in keeping abreast of the progress of the study.

In addition to the involved agencies, affected municipalities and stakeholders, there was an extensive public involvement program throughout the MIS process. This outreach effort was designed to inform the public about the IH 45 MIS and to obtain public input regarding the various milestones reached during the study. This input was solicited through public Open Houses to help define the needs in the corridor, to get reaction to the

conceptual alternatives developed, to obtain comments on the viable alternatives, and to provide assistance in the selection of a locally preferred alternative.

Problems and Needs

A set of problems and needs within the IH 45 Corridor was identified early in the MIS study process. These identified issues were based on an analysis of the existing traffic conditions, forecasts of future travel demand 20 years hence, projected population and employment growth trends, extensive dialogue with concerned citizens and stakeholders within the corridor, and public input and discussions with federal, state, and local agencies. The identified problems and needs helped refine the scope of the MIS and highlighted those issues to be addressed. Identified problems and needs included:

Traffic Congestion

- ◆ On the north end of the corridor, demand exceeds capacity during both of the daily commute periods.
- ◆ On the south end of the corridor, seasonal recreational and special event demand exceeds capacity on a regular basis.

IH 45 Facility Improvement Needs

- ◆ Many of the critical IH 45 and SH 3 bridge crossings, particularly the Galveston Causeway, require replacement or major reconstruction.
- ◆ Many sections of IH 45 and SH 3 need major pavement maintenance or overlay reconstruction.
- ◆ Safety improvements are needed at various locations throughout the IH 45 corridor due to high accident rates and non-standard design configurations.
- ◆ A need exists for an improved IH 45 terminus in Galveston due to excessive demand between the mainland and the Port of Galveston, Galveston CBD and other area attractions.

- ◆ A need exists for improved transit services throughout the IH 45 corridor.

Parallel Route and Evacuation Needs

- ◆ Identify additional options for north-south travel between the mainland and Galveston Island.
- ◆ Provide for additional modes of transportation such as bicycle and pedestrian facilities, especially on the causeway.
- ◆ The lack of hurricane and other evacuation options between Galveston Island and the mainland is a documented safety concern that needs to be addressed.
- ◆ Roadway flooding along IH 45, SH 6, SH 3 and at the Texas City Wye contributes to reduced highway capacity and increased levels of congestion.
- ◆ When incidents obstruct the IH 45 Causeway there are very limited alternative routes and this results in a breakdown of the IH 45 freeway.

Community/Environmental Concerns

- ◆ There is a need to improve access to the recreational and scenic resources within the IH 45 corridor.
- ◆ When considering alternative solutions, address the status of Houston and Galveston as ozone "non-attainment" areas.
- ◆ Improve ground access for the Ellington and Galveston Island Airports while maintaining adequate vertical clearances for landing aircraft.
- ◆ Some bridges along IH 45 and various port access roads do not meet truck clearance requirements.
- ◆ A substantial number of trains traveling into and out of the ports of Galveston and

Texas City utilize rail lines having numerous at-grade road crossings. These crossings not only require slower train speeds but cause bottlenecks and congestion on the crossing roadways.

- ◆ Growth in port activities will contribute to the need to improve freight movement to and from the ports of Galveston and Texas City and within freight corridors in the IH 45 study area.
- ◆ Various bridges throughout the corridor have inadequate clearances for marine needs, particularly bridges that cross navigable channels such as Clear Creek.
- ◆ A number of attractions, businesses and events are important to the economy of the corridor and the improvement alternatives must provide adequate accessibility.
- ◆ Improvements are needed to provide better access to the major employment generators such as Galveston Island, NASA corridor communities and ports.
- ◆ Traffic, population and employment trends reveal the existence of a variety of travel needs throughout the corridor.

Study Goals

In evaluation of the Problems and Needs, comprehensive goals were developed to provide guidance for the development and evaluation of the transportation alternatives to be considered. These goals were adopted by the Steering Committee and served as the guiding principals for the MIS:

- Goal 1: Reduce Traffic Congestion**
- Goal 2: Improve Hurricane Evacuation**
- Goal 3: Improve Safety**
- Goal 4: Provide Travel Options**
- Goal 5: Protect Natural and Social Environment.**

Roadway Alternatives Considered

Based on the adopted study goals and objectives, a range of conceptual alternatives were developed to meet the needs of the corridor. These conceptual alternatives ranged in scope and focus from a No-Build Alternative to various build alternatives that represented various levels of investments.

Utilizing a "mix-n-match" process, combinations of planning concepts were defined, resulting in thirty conceptual alternatives. These were then screened using a "fatal flaw" type analysis to arrive at six alternatives that were considered to be viable for the corridor. These viable alternatives include:

No-Build Alternative

The No-Build Alternative assumes the current roadway configuration plus enhancements of regional significance that are already under construction or that are planned and have committed funding sources. The enhancements included in the no-build alternative are expected to be in place by the year 2020 and they represent the future base system against which all other alternatives are compared.

Transportation System Management (TSM) Alternative

This alternative included the existing and committed improvements in the no-build alternative plus traffic operational improvements and travel demand programs designed to relieve congestion. The elements of the TSM alternative included:

- ◆ Improved traffic signal systems
- ◆ Operational and circulation improvements
- ◆ Increased bus transit services
- ◆ Bicycle/Pedestrian facilities
- ◆ Expansion of park-and-ride/ park-and-pool facilities
- ◆ Motorist information systems
- ◆ Intersection improvements
- ◆ Rideshare support programs

Build Alternative 3: High-Medium-High Investment

Alternative 3 included the improvements defined for the no-build alternative and the TSM alternative and provides for a high level of investment in the north and south segments and a medium level of investment in the middle segment. Major improvements included in Alternative #3 are highlighted below. In addition to these major elements, a number of minor multi-modal elements were also incorporated.

- ◆ **North Segment (Beltway 8 to FM 518)**
 - Ten mainline travel lanes on IH 45 (5 lanes in each direction)
 - Upgrade of major interchanges to TxDOT standards
 - Three lane frontage roads
 - 6-lane urban boulevard design on SH 3 (3 lanes in each direction)
 - Barrier separated reversible HOV lane on IH 45
 - Direct connection between SH 3 and IH 45 in Beltway 8 interchange
- ◆ **Middle Segment (FM 518 to Tx. City Wye)**
 - Eight mainline travel lanes on IH 45 (4 in each direction)
 - Upgrade of major interchanges to TxDOT Standards
 - 4-lane urban boulevard design on SH 3
 - Continuous 2-lane frontage roads
- ◆ **South Segment (Tx. City Wye to 61st Street)**
 - Eight mainline travel lanes on IH 45 (4 in each direction)
 - Upgrade major interchanges to TxDOT standards
 - Reversible lane operation on Causeway
 - Direct connectors from IH 45 to Harborside Drive and 61st Street

Build Alternative 4: High-Low-High Investment

Alternative 4 incorporated the elements of the no-build and TSM alternatives and provided a high level of investment for the north and south segment (similar to Alternative #3) and a low level of investment for the middle segment. Major elements included in Alternative #4 are highlighted below.

- ◆ **North Segment**
 - Improvements same as Alternative #3
- ◆ **Middle Segment**
 - 6-mainline travel lanes on IH 45 (same as existing)
 - Upgrade of major interchanges to TxDOT standards
 - 4-lane urban boulevard design on SH 3
 - Continuous two lane frontage roads
- ◆ **South Segment**
 - Improvements same as Alternative #3

Build Alternative 5: Medium-Medium-High Investment

Alternative #5 incorporated the elements of the no-build and TSM alternatives and provided a medium level of investment in the north and middle segment of the corridor and a high level of investment in the south segment. This alternative is similar to Alternative #3 with the exception that this alternative has less capacity increase for IH 45 and SH 3. Major elements of alternative #5 are highlighted below.

- ◆ **North Segment**
 - 8-mainline travel lanes on IH 45 (4 in each direction)
 - Non-barrier concurrent flow HOV lanes (one in each direction)
 - Upgrade of major interchanges to TxDOT standards
 - 3-lane frontage roads
 - Direct connection between IH 45 and SH 3 at Beltway 8 interchange
 - 4-lane urban boulevard design on SH 3
- ◆ **Middle Segment**
 - Improvements same as Alternative #3
- ◆ **South Segment**
 - Improvements same as Alternative #3

Build Alternative 6: Medium-Low-High Investment

Alternative #6 incorporated the no-build and the TSM alternatives and provided for a medium level of investment for the north segment, a low level of investment for the middle segment and a high level of investment for the south segment. The major elements of Alternative #6 are highlighted below.

- ◆ **North Segment**
 - Improvements same as Alternative #5
- ◆ **Middle Segment**
 - Improvements same as Alternative #4
- ◆ **South Segment**
 - Improvements same as Alternative #3

Transit Alternatives Considered

For each of the viable roadway alternatives described above, four bus transit concepts were developed. These included a No-Build transit element, a TSM transit element, an expanded Harris county transit element and a transit concept that expanded the Harris County transit services and extended commuter transit services into Galveston County.

The no-build transit concept consisted of committed transit service improvements to the existing transit system. It would provide a continuation of METRO services through the Bay Area Boulevard park-and-ride facilities, a continuation of demand responsive services in Galveston County, and a continuation of local transit services on Galveston Island.

The TSM transit concept provided low cost service improvements without the expansion of capital facilities. It would utilize the same facilities and routes as incorporated under the no-build transit concept but would double the frequency of existing services.

The third transit concept provided an expansion of the Harris County transit services. In this concept, feeder transit routes and shuttles were added to the existing transit services at the Bay

Executive Summary

Area Boulevard transit facilities and to a new park-and-ride facility west of the IH 45 freeway. The new feeder transit routes would operate as shuttles between the established transit facilities and the Clear Lake communities.

The fourth transit concept developed builds upon the Harris County service by adding commuter transit service extending the length of the corridor into downtown Galveston. Two additional park-and-ride facilities would be constructed in Galveston County to facilitate this new service.

Analysis of Alternatives

As part of the MIS process, the viable alternatives were analyzed to determine how well each met adopted goals and objectives. Specifically, they were evaluated for their ability to:

- ◆ Reduce congestion and improve mobility in the corridor.
- ◆ Provide adequate evacuation capacity during emergency conditions.
- ◆ Improve the safety characteristics of the corridor.
- ◆ Provide travel options and improved access to alternative modes of transportation.
- ◆ Minimize potential environmental and community impacts.

Additionally, detailed planning-level cost estimates were developed for each of the viable alternatives. The combined evaluation of mobility, emergency evacuation, safety, access to alternative modes, environmental and community impacts, and costs formed the basis for developing a locally preferred alternative.

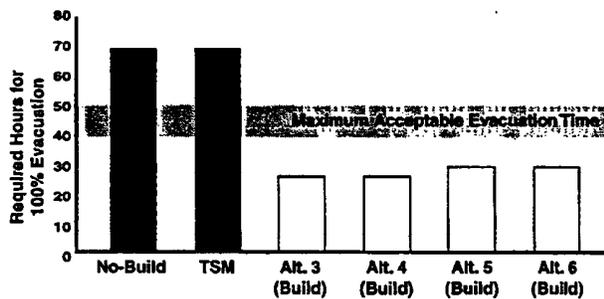
Mobility Analysis

Each viable alternative was analyzed for its ability to reduce congestion and increase mobility in the corridor. Based on the congestion mitigation analysis, the No-Build and the TSM Alternatives did not meet the mobility needs of the corridor. Build Alternative #3 demonstrated the greatest ability to reduce congestion as its performance was better than any of the other alternatives.

Emergency Evacuation

As shown below, the No-Build and the TSM Alternatives could not provide a 100 percent evacuation of the affected areas of Harris and Galveston Counties within the acceptable 48-hour time period. However, all of the Build Alternatives are able to accommodate the evacuation more efficiently with a 100 percent evacuation of the affected areas under 30 hours. Hence, it can be concluded that any of the build alternatives can easily meet the evacuation needs.

Year 2020 Evacuation Times



Corridor Safety Concerns

Safety of the future transportation system within the IH 45 was a major concern of citizens who participated in the public meetings. In response to these concerns, safety concepts related to the design of facilities in the corridor were incorporated in all the build alternatives. Major elements of these concepts included:

- ◆ Re-Design of major interchanges to meet current TxDOT design standards
- ◆ Widen the outside travel lanes on SH 3 and IH 45 frontage roads
- ◆ Increased motorist assistance patrols in the corridor
- ◆ Provide relief of the congested areas in the corridor
- ◆ Ability to reverse one lane of traffic between the causeway and the Texas City Wye.

The implementation of these elements will improve the safety within the corridor and respond to the concerns that have been raised.

Provide Travel Options

Travel within the IH 45 Corridor are heavily dependent on the automobile as the primary mode of travel and the analysis of these patterns indicated a need to expand access to alternate modes of transportation. An analysis of these alternate modal concepts resulted in the incorporation of the following access improvements:

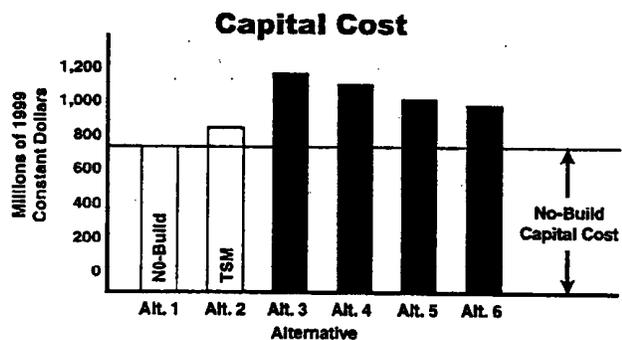
- ◆ **Bicycle:** All of the build Alternatives include a recommendation for an off-road bicycle / pedestrian facility adjacent SH 3. If implemented, any of the Build Alternatives would thus improve bicycle / pedestrian access throughout the corridor.
- ◆ **Transit:** Four transit concepts were examined, ranging from a No-Build concept that would maintain current transit services within the corridor to various options that would expand the existing services in Harris County and extend services into Galveston County. The analysis indicated that the goals of the study could best be met by both expanding the transit service in Harris County and extending commuter service into Galveston.
- ◆ **High Occupancy (HOV):** Two HOV concepts for extending the existing METRO HOV Lane to the Harris / Galveston County line were examined. One concept extended the Barrier-Separated Reversible lane southward with access at NASA 1 Bypass and at the end. The other option transitioned the existing reversible lane to two, non-barrier concurrent flow lanes (one in each direction), with access possible at multiple locations. The latter concept was recommended for inclusion in a preferred alternative.

Environmental Analysis

As part of the MIS evaluation, a full range of environmental and community impact concerns were analyzed for their potential affect on the six viable alternatives. The evaluation indicated that there are relatively few environmental or community constraints within the corridor that would be adversely affected with the implementation of one of the viable Build alternatives. Hence, if the No-Build and TSM Alternatives are determined to be inadequate to meet the goals of the IH 45 corridor MIS, the resulting environmental impacts from selecting a build-alternative will be similar, regardless of which build alternative is selected.

Cost Estimates by Alternative

Planning level cost estimates were developed for each of the viable alternatives and are presented below. These costs were used to gain an understanding of the relative magnitude of the improvements recommended under each concept and to judge the relative cost effectiveness of each of the build alternatives relative to the No-Build and TSM Alternatives. As noted, the majority of the costs associated with the each Alternative are to maintain the existing IH 45 freeway and SH 3 facilities and that there is relatively little difference in capital costs the Build Alternatives between capital costs range between \$750m for the No Build and 1.13 billion for Alternative 3.



Recommended Preferred Alternative

Based on findings of the technical evaluation of the alternatives, a recommendation for a locally preferred alternative was developed. This recommendation was based on five key findings directly related to the goals of the study.

- ◆ **Reduce Traffic Congestion:**
The No-Build and TSM Alternatives did not meet the basic mobility needs of the corridor. Alternative #3 (High-Med-High) provided the greatest reduction in future congestion levels and from a mobility perspective, Alternative #3 was recommended as the preferred alternative.
- ◆ **Improve Hurricane Evacuation:**
The No-Build and TSM Alternatives do not meet the evacuation needs of the corridor in 2020. All of the build alternatives however would.
- ◆ **Improve Safety:** From a corridor-wide perspective, all of the build alternatives would provide a greater level of safety than the No-Build or TSM Alternatives. Hence, any of the build alternatives would meet the goal to improve safety.
- ◆ **Provide Travel Options:** All of the build alternatives include a recommendation for an off-road bicycle/pedestrian facility adjacent to SH 3, and these improvements will improve bicycle access in the corridor.

The modeling of the transit services indicated that the expanded Harris County transit concept with extended service to Galveston achieved the most patronage and this concept was recommended for the preferred alternative.

The analysis of the two HOV concepts indicated that the transition of the existing reversible HOV lane to two concurrent flow HOV lanes would best satisfy the future HOV demand and it was recommended that the concurrent flow HOV concept be included in Alternative #3.

- ◆ **Avoid / Minimize Environmental Impacts:**
The analysis of the environmental impacts for the IH 45 corridor indicated that the No-Build and TSM alternatives would have few impacts. However, these alternatives would provide few benefits in meeting any of the study goals.

The selection of a build alternative would result in minor impacts, regardless of which build alternative is selected. However, the identified impacts did not indicate a bias towards any of the build alternatives, nor did the analysis indicate potential impacts of a magnitude that would suggest any of the build alternatives to be infeasible. Hence, the selection of any of the build alternatives for the preferred alternative would not be affected by any environmental constraints within the corridor.

Based on these five key findings, TxDOT and the Steering Committee recommended that Alternative #3 be selected as the Locally Preferred Alternative. In addition, the Steering Committee recommended that a transit option expanding the existing transit system in Harris County and extending basic commuter transit services into Galveston County be incorporated into the preferred alternative.

Elements of Preferred Alternative

Elements of the recommended preferred alternative are listed below classified by facility type and transportation function:

- ◆ **No-Build & TSM Elements**
 - No-Build Improvements
 - TSM Improvements
 - Traffic Management System on SH 3 expanded
- ◆ **IH 45 Improvements**
 - Ten (10) general purpose lanes between Beltway 8 and FM 518
 - Eight (8) general purpose lanes between FM 518 and Harborside Dr.
 - Six (6) general purpose lanes between Harborside Dr. and 61st St.
 - Reversible lanes on Causeway
 - Replace interchanges on IH 45 to incorporate TxDOT Standards

- Transition reversible HOV lane to two (2) concurrent HOV lanes (Beltway 8 to FM 518)
- ◆ **IH 45 Frontage Roads**
 - Three (3) lane frontage roads (Beltway 8 to FM 518)
 - Continuous Two (2) lane frontage roads (FM 518 to Causeway)
 - Provide 14-Foot outside curb lane on frontage roads
- ◆ **SH 3 Improvements**
 - Convert SH 3 to an Urban Boulevard
 - Six (6) lanes on SH 3 (Beltway 8 to FM 518)
 - Four (4) lanes on SH 3 (FM 518 to Tx. City Wye)
 - Provide 14-Foot outside curb lane on SH 3
 - Improve designated SH 3 Intersections with grade separations
- ◆ **Direct Connectors**
 - Between IH 45 and Harborside Drive
 - Between IH 45 and 61st Street
 - Extend 61st Street & provide direct connector between 61st Street and Harborside Drive
 - Between SH 3 & IH 45 at Beltway 8
- ◆ **Arterial Extensions**
 - Provide arterial extensions in Clear Lake area to complete thoroughfare plan
- ◆ **Transit Improvements**
 - Expand bus services in Harris County, extend service into Galveston County
 - Construct park-and-ride lots as required to facilitate expanded transit services
- ◆ **Bicycle Facilities**
 - Incorporate off-road bicycle/pedestrian facility in utility corridor adjacent to SH 3

Costs of Preferred Alternative

The preliminary capital cost estimate for the recommended Locally Preferred Alternative is shown below by major element.

Capital Costs

IH 45 Capital Improvements	\$ 797.5 million
Causeway Replacement	\$ 70.0 million
SH 3 Capital Improvement	\$ 190.5 million
Arterial Extensions (Clear Lake)	\$ 46.8 million
Transit Capital Requirements	\$ 20.9 million
Off-Road Bicycle/Pedestrian facility	\$ 7.0 million
TOTAL CAPITAL COSTS	\$ 1.13 Billion

Implementation Responsibilities

Since the recommended preferred alternative represents a package of improvements for both TxDOT and non-TxDOT facilities, the responsibility for implementation will be shared by all of the agencies and municipalities participating in the implementation of the plan. This responsibility will depend upon the type and location of the proposed improvement. The general implementation responsibilities for the various elements of the recommended preferred alternative are presented below.

Implementation Responsibilities

Recommended Alternative Element	Responsible for Implementation
No-Build Elements	Agencies identified in the regional Transportation Improvement Plan (TIP) will be responsible for completion of individual No-Build projects.
TSM Elements	TxDOT will be responsible for implementing the TSM Elements of the recommended alternative per the requirements of the Congestion Mitigation Plan submitted to H-GAC as part of the IH 45 S. Corridor MIS (July 1999).
IH 45 Improvements	TxDOT will be responsible for implementation of all mainline improvements to IH 45 S. TxDOT and METRO will jointly be responsible for the implementation of the HOV extension.
IH 45 Frontage Road Improvements	TxDOT will be responsible for implementation of all IH 45 S. frontage road improvements.
Direct Connectors	TxDOT will be responsible for implementation of the direct connectors as part of the IH 45 and SH 3 Improvements.
Arterial Extension Clear Lake/Friendswood Vicinity	Local jurisdictions, depending on location of proposed street extension, will be responsible for implementation of arterial extension.
Transit Improvements	<p>METRO will be responsible for expanding transit services in Harris County, including the proposed transit shuttles serving the Clear Lake community.</p> <p>METRO will be responsible for implementing improvements/expansions of the Bay Area Boulevard park-and-ride and park-and-pool facilities and for the implementation of the proposed Friendswood park-and-ride facility.</p> <p>Connect Transit, METRO and Island Transit will be responsible for jointly implementing the extended service to Galveston County. A lead agency must be identified during the detailed planning phases of implementation.</p> <p>Connect Transit and TxDot will be jointly responsible for implementing the expanded park-and-ride facilities in Galveston County, needed to implement the recommended transit scenario.</p>
Bicycle Facilities	Local municipalities and counties through which the proposed facility passes will be responsible for implementation of the off-road bicycle facility.

Next Steps

The recommended locally preferred alternative will be considered in September 1999 by the Metropolitan Planning Organization (MPO) for adoption into the Regional Transportation Plan (VISION 2020). Following its adoption into the regional plan, the amended VISION 2020 will be evaluated for conformity with regional air quality requirements. Preliminary design, environmental documentation and final design will then follow.

COMMENT SHEET

Public Meeting
IH 45 South: From Beltway 8 to FM 518

Clear Brook High School
December 11, 2002 - 6:00 P.M.

ATTACHED FLOOD CONTROL
DOCUMENT

FROM HERBERT S. KOBAYASHI

1428 FM 528W

WEBSTER, TX 77598

Phone 281-532-3349

Name:

Address: _____

Phone #:

E-mail:

Please include your name and mailing address with all written comments. Comment sheets and/or letters should be mailed to: Lance Olenius, Environmental Coordinator, P.O. Box 1386, Houston, Texas, 77251-1386 or faxed to (713) 802-5896. All written comments mailed by December 23, 2002, will be included in the official meeting record. If you have any questions, please contact Lance Olenius at (713) 802-5271.



HARRIS COUNTY FLOOD CONTROL DISTRICT

Arthur L. Storey, Jr., P.E.
Executive Director

August 1, 1991

Mr. Herbert S. Kobayashi
1428 F.M. 528 W
Webster, Texas 77598

RE: Removal of Channel Sheet Pile Structures
Harris County Flood Control Unit A111-00-00

Dear Mr. Kobayashi:

In accordance with our previous letter to you dated July 2, 1991, the removal of the drop structures is contingent on completion of future channel work. If you would like to review the engineering report for the design of the existing structures, a copy can be made available. Inasmuch as we currently have no capital improvement bond funds allocated to channel A111-00-00 through 1995, the only possible way a project would be initiated in the near future would be for Precinct 1 to reallocate its resources. By copy of this letter we are informing Mr. Chuck Wilcox of Precinct 1 of this funding situation.

Sincerely,

A handwritten signature in cursive script that reads "Tom A. Parker".

Tom A. Parker, P.E.
Watershed Department Mgr.

TAP:ep

cc: Chuck Wilcox, HC Pct. 1

71491FLOOD.LET

JULY 14, 1991

FROM: Herbert S. Kobayashi
1428 FM 528 W
Webster, Texas

PHONE: 713-332-3349

Mr. Tom A. Parker, P.E.
Harris County Flood Control District
9900 NorthWest Freeway, Suite 220
Houston, Texas 77092

phone 713-684-4000

Dear Sir:

Thankyou for your explanation of the computer modeling and the acceptance by FEMA and the maps indicating the Turkey Creek drainage improvement by placement of the Steel Restriction by NASA Rd 1 or F.M. 528 on Turkey Creek which in your letter of July 2, 1991 as steel drop structure.

We again ask your consideration of preventing the flooding problem; we have no problem with up stream erosion. The NASA VALUE CENTER channel improvement, especially the Steel Restriction, has caused many flooding not only on June 26, July 1, and August 1, 1989 but other times as well. It is obvious when a drainage ditch is restricted the water will rise causing flooding on the upstream side, and this is supported by fluid mechanics .

The following owner and businesses wish to bring your attention to the two Steel Restrictions on Turkey Creek that is aggravating the flooding in this area.

My Residence Herbert S. Kobayashi
Purple Thumb Nursery R. P. Smith
Texas Yamaha South Wanda Sherman
Landsdowne and Moody Tommy Fisher
Houston Palms Nursery Tommy Fisher
Mcduff Tommy Fisher
Conoco Tommy Fisher

Bald Furniture Judy Bald

I appreciate attention given to this matter.

Sincerely yours,

Herbert S. Kobayashi 7/17/91
Herbert S. Kobayashi

cc: Chuck Wilcox



HARRIS COUNTY FLOOD CONTROL DISTRICT

Arthur L. Storey, Jr., P.E.
Executive Director

July 2, 1991

Mr. Herbert S. Kobayashi
1428 F.M. 528 W
Webster, Texas 77598

RE: Flooding at F.M. 528 and Harris County Flood Control
Unit A111-00-00

Dear Mr. Kobayashi:

In response to a request by Mr. Wilcox of Harris County Precinct 1, the Flood Control District has again investigated the drainage design for construction of Nasa Value Center located at the southwest corner of the Gulf Freeway and F.M. 528.

The design of the channel improvements and control structures complies with Flood Control District design criteria including the use of computer modeling techniques typically applied by the Federal Emergency Management Agency (FEMA) to delineate 100-year flood plains. The design was, in fact, accepted by FEMA for incorporation into the latest flood plain maps which were officially made effective on September 28, 1990. Attached herewith is a copy of the current flood plain map together with the previous map. A comparison of these two maps indicates that there has been a net reduction in 100-year flood plain elevations for the area upstream of F.M. 528. In consideration of above, it is our opinion that Nasa Value Center channel improvements have not aggravated 100-year design flood elevations upstream of F.M. 528.

The widespread sheet ponding that you described occurring on June 26, July 1, and August 1, 1989 is not unusual in an area of exceptionally flat topography like the area in question. Short duration, high intensity storms can very easily exceed the capacity of roadside ditch and street storm sewer systems given the fact that such systems are usually designed to handle only a 3-year event.

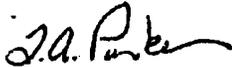
July 2, 1991
Mr. Herbert S. Kobayashi

Page Two

We should also explain to you the function of the steel structure near F.M. 528. The channel flowline at this location drops abruptly by approximately two feet. The water surface will, of course, also drop abruptly at such a change in channel depth. This waterfall affect is what you photographed on August 1, 1989. Such sudden changes in channel depth and water surface are associated with highly erosive velocities and turbulence. Steel drop structures like the one at F.M. 528 are needed to prevent the channel upstream of the drop from being severely eroded. Such drop structures are carefully designed to allow upstream flows to fall into the lower downstream channel without causing either upstream erosion or upstream impoundment. We might further note that when, in the future, the channel upstream of F.M. 528 is improved and lowered to match the downstream channel, this steel drop structure will no longer be needed.

In conclusion, it is our belief that the Nasa Value Center channel improvements were engineered to prevent any adverse impacts to 100-year water surfaces upstream of F.M. 528. Should you have any additional questions, please call Mr. Herb Herndon of my staff.

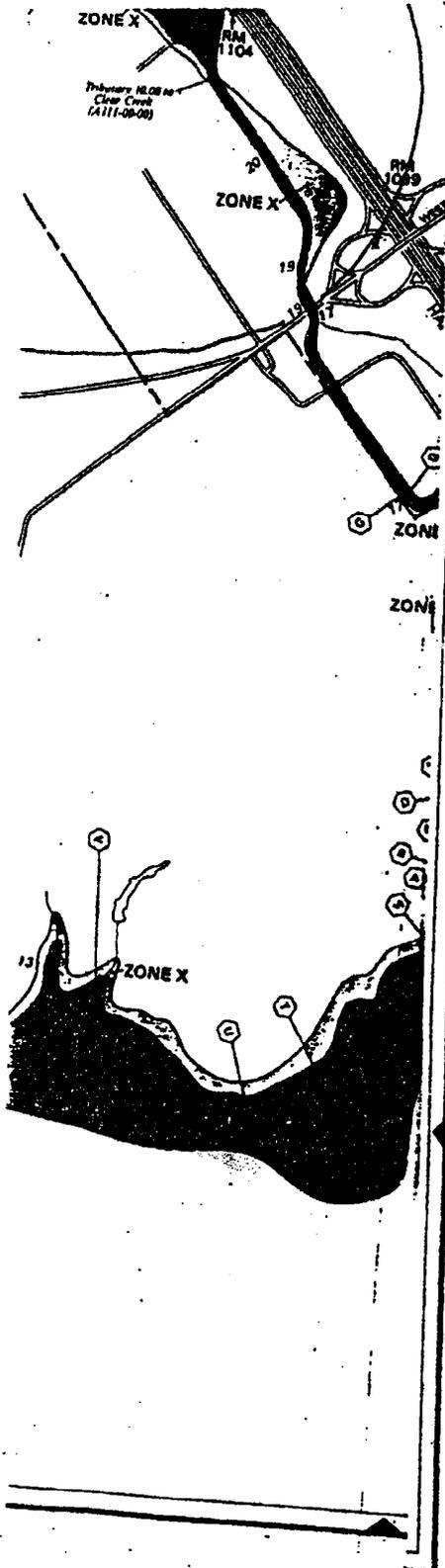
Sincerely,



Tom A. Parker, P.E.
Watershed Department Mgr.

TAP:HEH:cd
Attachments: Maps

cc: Chuck Wilcox



For community map revision history please consult the revision history of the Flood Insurance Study Report.
For adjoining map panels see separately printed Map Index.

MAP REPOSITORY
Refer to Repository Listing on Map Index

EFFECTIVE DATE OF COUNTRYWIDE
FLOOD INSURANCE RATE MAP
SEPTEMBER 28, 1998

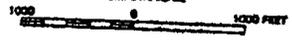
EFFECTIVE DATES OF REVISIONS TO THIS PANEL

Refer to the Flood Insurance Rate Map Effective Date shown on this map to determine when actual rates apply to structures in the areas where elevations or depths have been established.

If determination of flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at (800) 438-6228.



APPROXIMATE SCALE



NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP
HARRIS COUNTY,
TEXAS AND
INCORPORATED AREAS

PANEL 385 OF 390

SEE MAP INDEX FOR PANELS NOT PRINTED!

CITIES:

CITY	ZONE	SIZE	
HUNTSVILLE, CITY OF	48220	0.00	F
SPRING BRN., CITY OF	48240	0.00	G
UNINCORPORATED AREAS	48227	0.00	G
WHEELER, CITY OF	48240	0.00	G

MAP NUMBER
48201C385 G

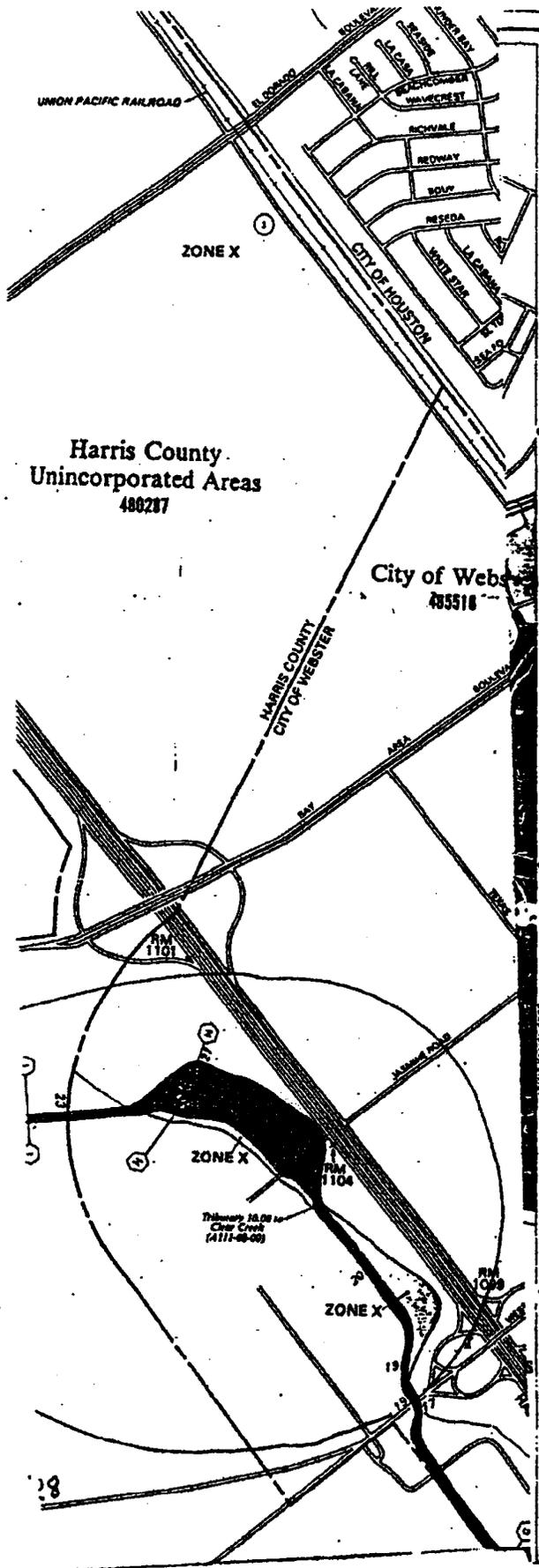
EFFECTIVE DATE:
SEPTEMBER 28, 1998



Federal Emergency Management Agency

NEW MAP

(includes improvements made
by Alan V. Van Caster)



Harris County
Unincorporated Areas
488287

City of Webster
485518

LEGEND

- SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD**
- ZONE A** No base flood elevations determined.
- ZONE AE** Base flood elevations determined.
- ZONE AM** Flood depths of 1 to 3 feet generally sheet flow on sloping terrain; average depths determined. For areas of altered flow flooding; velocities also determined.
- ZONE AG** Flood depths of 1 to 3 feet generally sheet flow on sloping terrain; average depths determined. For areas of altered flow flooding; velocities also determined.
- ZONE ABB** To be protected from 100-year flood by Federal flood protection system under construction; no base flood elevations determined.
- ZONE V** Coastal flood with velocity hazard (wave action); no base flood elevations determined.
- ZONE VE** Coastal flood with velocity hazard (wave action); base flood elevations determined.
- FLOODWAY AREAS IN ZONE AE**
- OTHER FLOOD AREAS**
- ZONE X** Areas of 200-year flood areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.
- OTHER AREAS**
- ZONE X** Areas determined to be outside 200-year flood plain.
- ZONE D** Areas in which flood hazards are undetermined.
- UNDEVELOPED COASTAL BARRIERS**
- Floodplain Boundary
- Floodway Boundary
- Zone D Boundary
- Boundary Dividing Special Flood Hazard Zones, and Boundary Dividing Areas of Different Coastal Flood Elevations Within Special Flood Hazard Zones.
- Base Flood Elevation Line; Elevation in Feet
- Cross Section Line
- Base Flood Elevation in Feet Where Uniform Within Zone
- Elevation Reference Mark
- Flow Arrows

Referenced to the National Geodetic Vertical Datum of 1989

NOTES

This map is for use in administering the National Flood Insurance Program; it does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size, or all physically features within Special Flood Hazard Areas. The community map repository should be consulted for possible "dry" or "low" areas prior to use of this map for property purchase or other uses.

Coastal base flood elevations apply only to landward of 60'NGVD, and include the storm of more uniform depth elevations may also differ significantly from those developed by the National Weather Service for hurricane evacuation planning.

Areas of special flood hazard (100-year flood) include Zones A, AE, AM, AG, ABB, V, and VE.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the Federal Emergency Management Agency.

Floodway widths in some areas may be the narrowest shown on this map. Floodway widths are provided in the Flood Insurance Study Report.

Division reference marks are described in the Flood Insurance Study Report.

Coastline limits shown are current as of the date of this map. The user should consult appropriate community officials to determine if coastline limits have changed subsequent to the issuance of this map.

For community map revision history prior to countywide mapping, see section 4.6 of the Flood Insurance Study Report.

For obtaining map panels see separately printed Map Index.

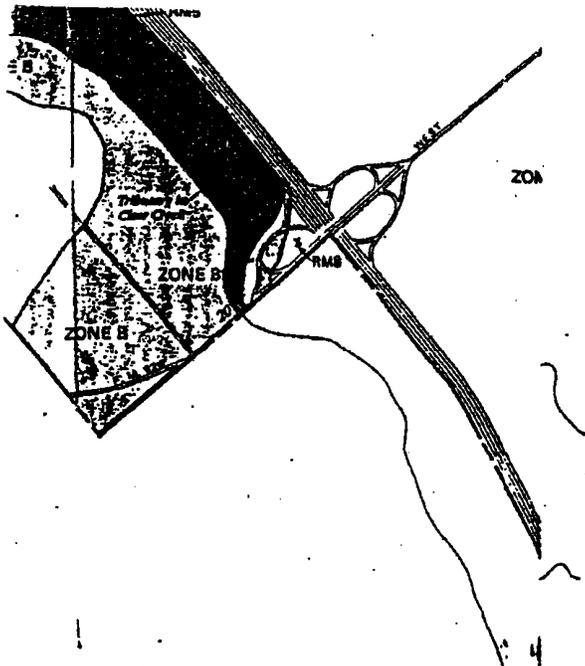
MAP REPOSITORY

Refer to Repository Using an Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
SEPTEMBER 30, 1998

EFFECTIVE DATES OF REVISIONS TO THIS PANEL

Refer to the Flood Insurance Rate Map Effective date shown on this map to determine when minimum rates apply to structures in the areas shown on this map.



ELEVATION REFERENCE MARKS

ELEVATION (Feet)	DESCRIPTION OF LOCATION
1.43	At northwest corner of intersection of State Route 3 and Bay Area Boulevard, a National Geodetic Survey disk on top of culvert flush with ground level.
1.84	From its intersection with 2351, proceed southeast approximately 2.7 miles on Interstate 45; elevated square in north corner of culvert on south side of Interstate 45.
4.84	At intersection of Medical Center Boulevard and North Texas Avenue, a U.S. Coast and Geodetic Survey disk, 0.8 feet northwest of southeast end of southern headwall of culvert.
2.78	At southeast corner of intersection of State Route 3 and West NASA Road, a bronze U.S. Coast and Geodetic Survey disk on top of headwall of culvert, 1.8 feet above ground level.
0.49	From its intersection with FM 2351, proceed southeast approximately 3.2 miles on Interstate 45; elevated square in curb on south side of Interstate 45.
12.42	At south corner of intersection of West NASA Road and Texas Avenue, a railroad spike projecting 3 inches from a power pole.
19.16	From its intersection with West NASA Road, proceed southeast approximately 0.51 mile on State Route 3; railroad spike projecting 4 inches from a power pole on the east side of State Route 3.
21.84	At intersection of FM 228 and West NASA Road, railroad spike projecting from a power pole, 72 feet southwest of centerline of intersection, 21 feet northwest of corner fence post.
16.12	From its intersection with West NASA Road, proceed north approximately 1.8 mile on State Route 3; elevated square on top of culvert, 11 inches above ground level on east side of State Route 3.

Obsolet of 1929; 1973 Replotting

MAY 19, 1977

FLOOD INSURANCE RATE MAP REVISIONS:

July 1, 1976-to change zone designations.

June 10, 1977-to change base flood elevations, to change zone designations, to reflect cumulative flood immunity, to add special flood hazard areas; subsequent after 1955 has not been considered.

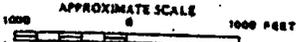
February 27, 1981-to change corporate limits, to add base flood elevations.

June 15, 1984-to change corporate limits, to add base flood elevations, to lower base flood elevations.

To determine if flood insurance is available in this community, contact your insurance agent, or call the National Flood Insurance Program, at (800) 638-6628.



APPROXIMATE SCALE



NATIONAL FLOOD INSURANCE PROGRAM

**FIRM
FLOOD INSURANCE RATE MAP**

**CITY OF
WEBSTER, TEXAS
HARRIS COUNTY**

ONLY PANEL PRINTED

**COMMUNITY-PANEL NUMBER
485518 0005 G**

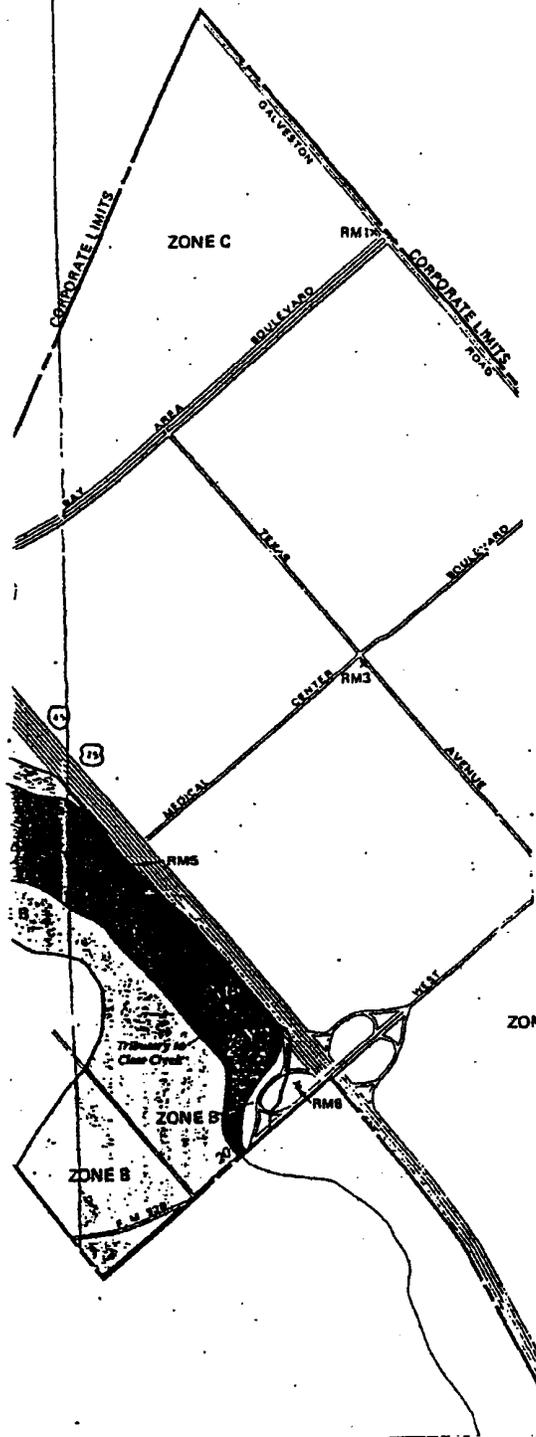
**MAP REVISED:
JUNE 15, 1984**



Federal Emergency Management Agency

MANAGEMENT DEPT.

OLD MAP
(before Nasa Valve
Center improvements)



300-Year Flood Boundary	-----
100-Year Flood Boundary	-----
Zone Designations* With Date of Identification e.g., 12/2/74	
100-Year Flood Boundary	-----
500-Year Flood Boundary	-----
Base Flood Elevation Line With Elevation in Feet**	-----573-----
Base Flood Elevation in Feet Where Uniform Within Zone**	(EL 987)
Elevation Reference Mark	RM7x
Zone D Boundary	-----
River Mile	•M1.5

**Referenced to the National Geodetic Vertical Datum of 1929

***EXPLANATION OF ZONE DESIGNATIONS**

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
AB	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AM	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
AI-V30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
ABR	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

NOTES TO USER

Certain areas not in the special flood hazard areas (zones A and V) may be protected by flood control structures. Early show all areas subject to flooding in the community or all planimetric features outside special flood hazard areas.

INITIAL IDENTIFICATION:
MAY 19 1972

FLOOD HAZARD BOUNDARY MAP REVISIONS:
NONE

FLOOD INSURANCE RATE MAP EFFECTIVE:
MAY 19, 1972

FLOOD INSURANCE RATE MAP REVISIONS:
July 1, 1974-to change zone designations.

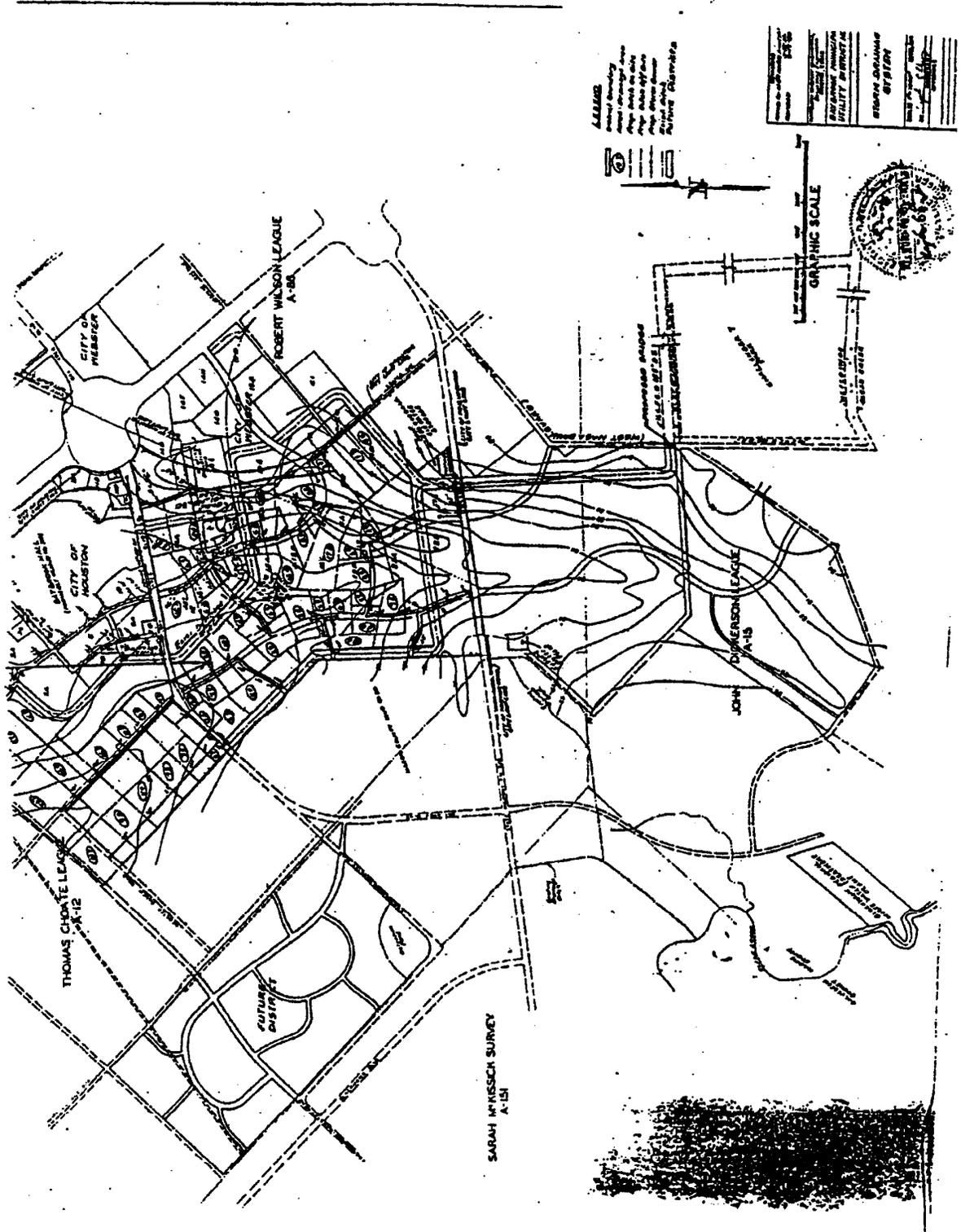
June 10, 1977-to change base flood elevations, to change zone designations, to effect continuous flood boundaries, to add special flood hazard areas; subsequent after 1955 has not been considered.

February 27, 1983-to change corporate limits, to add base flood elevations.

June 15, 1984-to change corporate limits, to add base flood elevations, to lower base flood elevations.

To determine if flood insurance is available in this community, contact your insurance agent, or call the National Flood Insurance Program, at (800) 638-6626.





LEGEND
 Street Boundary
 Street Right of Way
 Property Line
 Easement
 Utility Right of Way
 Utility Line
 Other Features

Project No.	1216
Date	12/16
Surveyor	Surveying Department
City	Houston, Texas
Client	City of Houston
Scale	As Shown



GRAPHIC SCALE
 0 10 20 30 40 50 Feet

SARAH M. KESCK SURVEY
 A-15

THOMAS CHATELAIN
 A-12

FUTURE DISTRICT

ROBERT WILSON LEAGUE
 A-28

JOHN DICKERSON LEAGUE
 A-15



HARRIS COUNTY FLOOD CONTROL DISTRICT

JAMES B. GREEN, P.E.
DIRECTOR

September 11, 1989

Mr. Herbert S. Kobayaski
1428 F.M. 528W
Webster, Texas 77598

RE: Harris County Flood Control Unit A111-00-00

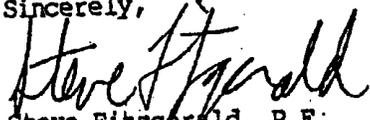
Dear Mr. Kobayaski:

The Flood Control District is in receipt of your letter dated August 4, 1989 regarding the flooding in the vicinity of F.M. 528 and I.H. 45 from the rains in late June 1989. You and several others, as indicated in your letter, are concerned about the flooding and the sheet pile "restrictions" which have been put in the channel behind the Fiesta Mart Shopping Center.

The Flood Control District reviewed and approved of the placement of the "restrictions" or control structures within the channel by the developers of the Fiesta Shopping Center as a means to regulate downstream flood waters in the channel. The analysis for the structures was approved by the Flood Control District and it was shown that structures would not aggravate flooding problems along the channel. The Flood Control District will investigate the problems identified in your letter and rectify any problems which may exist. Precipitation data indicates the local rainfall may have exceeded the 100-year design storm used to size channels and control structures in Harris County.

Thank you for your concern and your letter and please keep us informed of any additional flooding problems in your area. Should you have any further questions, please contact Mr. Joe Myers of my staff.

Sincerely,


Steve Fitzgerald, P.E.
Watershed Department Mgr.

SF:JTM:cr

xc: Chuck Wilcox (w/Aug. 4, 1989 letter)

FLOOD67889.FIE

August 4, 1989

FROM: Herbert S. Kobayashi
1428 FM 528W
Webster, Texas 77598

Phone: 713-332-3349

HARRIS COUNTY FLOOD CONTROL
& JIM GREEN
9900 NORTHWEST FWY 220
HOUSTON, TEXAS 77092
PHONE: 713-684-4000

Dear Sir:

I would like to bring your attention to FLOODING in this area caused by the rain on JUNE 26, 1989, JULY 1, 1989, and the recent storm, CHANTAL, on AUGUST 1, 1989. This FLOODING was aggravated by two STEEL restrictions in the DRAINAGE DITCHE in TURKEY CREEK near the FIESTA SHOPPING CENTER IN WEBSTER, TEXAS.

Enclosed are pictures of the flooding in this area aggravated by the restrictions on Turkey Creek which is making this area a detention pond for the Fiesta shopping center development.

The flooding has affected my house on FM 528, Purple Thumb Nursery on FM 528, Yamaha on FM 528, Lansdowne and Moody on FM 528, Houston Palms Nursery on the Gulf Freeway, Spas on the Freeway, Brock Collins Corvette on the Gulf Freeway, Smith Pools on the Gulf Freeway, Keystone Storage on the Gulf Freeway, and McDuff on the Gulf Freeway and many others.

The following owners and businesses wish to bring your attention to the two STEEL restrictions on Turkey Creek that is aggravating the flooding in this area.

My Residence	<u>Herbert S. Kobayashi</u>
Purple Thumb Nursery	<u>Ed Smith</u>
TEXAS YAMAHA	<u>Ed Smith</u>
Lansdowne and Moody	<u>Ed Smith</u>
Houston Palms Nursery	<u>Ed Smith</u>
Spas	<u>Ed Smith</u>
Brock Collins Corvette	<u>Damon Downing</u>
Smith Pools	<u>Ed Smith</u>
Keystone Storage	<u>Ed Smith</u>
McDuff	<u>Ed Smith</u>
Bill I	<u>Ed Smith</u>
Conc	<u>Ed Smith</u>

I would appreciate attention given to this matter.

Joe Myers phone 684 7050

Sincerely yours,

Herbert S. Kobayashi
Herbert S. Kobayashi

SOUTH END 10 F 2 NORTH END



NASA RD 1 FLOODING



1006 NASA RD 1



FLOODING FM 528W

August 1, 1989



my house

JUNE 26, 1989



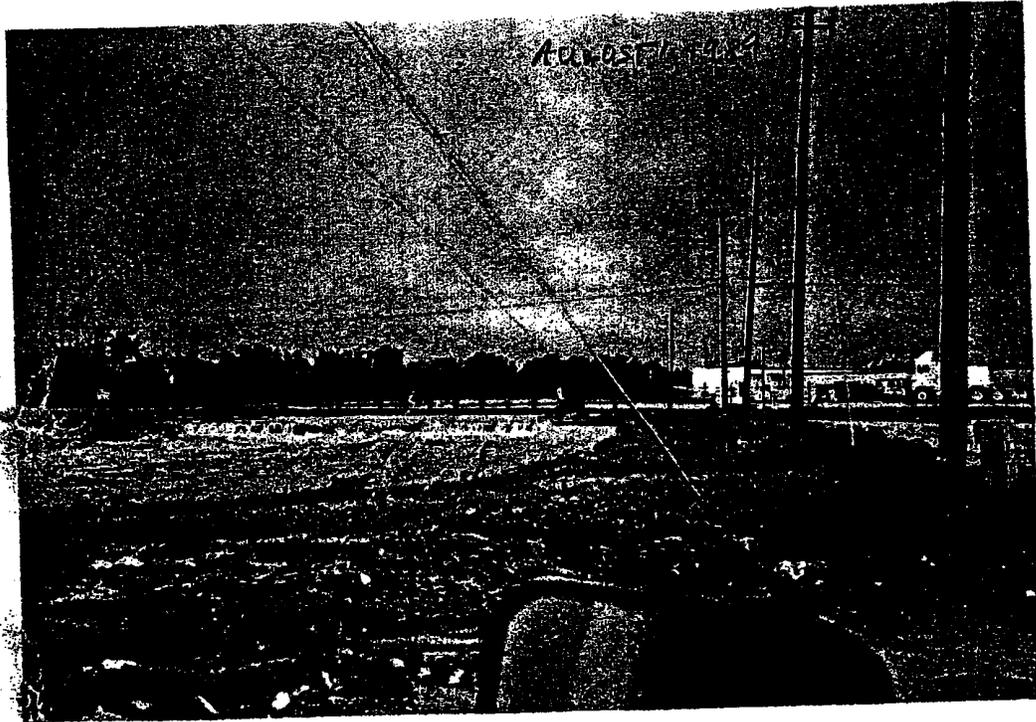
FLOOD FM 528 AUGUST 1, 1989
CONOCO



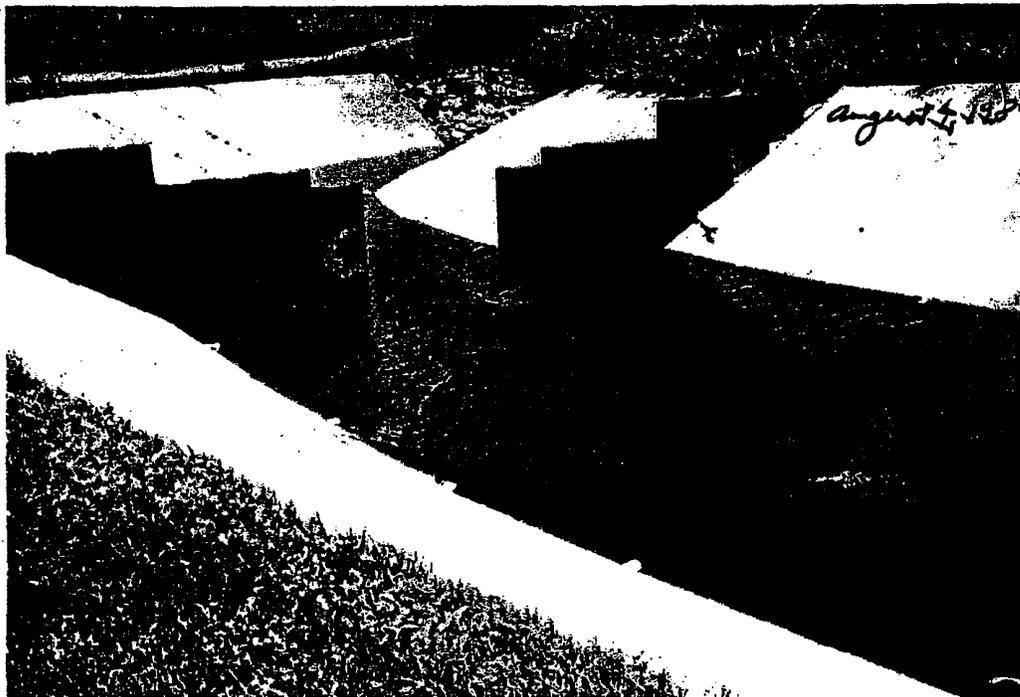
LANS DOWNEY MOODY



NORTH END ^{SITE -} 1 OF 2 RESTRICTION



NORTH END



The Marquis Who's Who Publications Board

Certifies that

Herbert Shin Kobayashi

is a subject of biographical record in

Who's Who in the World

Seventeenth Edition

2000

inclusion in which is limited to those individuals who have demonstrated outstanding achievement in their own fields of endeavor and who have, thereby, contributed significantly to the betterment of contemporary society.



**Millennium
Edition**

Randy Nygel
Publisher

COMMENT SHEET

Public Meeting
IH 45 South: From Beltway 8 to FM 518

Clear Brook High School
December 11, 2002 - 6:00 P.M.

I embrace this project -- the
widening of I-45 in Webster --
I encourage you to fast-track
this project, in conjunction with
the NASA Road Bypass --
Don't wait until 2005+

Name: Betsy Giusto, E.D. Director

Address: City of Webster
101 Pennsylvania Ave

Phone #: 281-316-4116

E-mail: Bgiusto@cityofwebster.com

Please include your name and mailing address with all written comments. Comment sheets and/or letters should be mailed to: Lance Olenius, Environmental Coordinator, P.O. Box 1386, Houston, Texas, 77251-1386 or faxed to (713) 802-5896. All written comments mailed by December 23, 2002, will be included in the official meeting record. If you have any questions, please contact Lance Olenius at (713) 802-5271.

COMMENT SHEET

Public Meeting
IH 45 South: From Beltway 8 to FM 518

Clear Brook High School
December 11, 2002 - 6:00 P.M.

I would like to insure continued coordination with the Corps of Engineers on impacts to Clear Creek. We are performing a re-evaluation of alternatives to reduce flood damage on the Creek. TxDOT is welcome to participate to insure that any modifications to the bridge are advantageous for both projects.

Name: Bob Heinly/us Army Corps of Eng

Address: P.O. Box 1229

Galveston, TX 77553-1229

Phone #: 409 766-3992

E-mail: robert.w.heinly@usace.army.mil

Please include your name and mailing address with all written comments. Comment sheets and/or letters should be mailed to: Lance Olenius, Environmental Coordinator, P.O. Box 1386, Houston, Texas, 77251-1386 or faxed to (713) 802-5896. All written comments mailed by December 23, 2002, will be included in the official meeting record. If you have any questions, please contact Lance Olenius at (713) 802-5271.

COMMENT SHEET

Public Meeting
IH 45 South: From Beltway 8 to FM 518

Clear Brook High School
December 11, 2002 - 6:00 P.M.

- INCREASE ELEVATION OF FEEDER ROADS FROM 2351 SOUTH TO NASA 1 TO ALLOW USE IN HEAVY RAINS (HURRICANE). CURRENTLY FEEDER ROADS FLOOD WITH 3" RAIN, BLOCKING EVACUATION OF CLEAR LAKE CITY AND SURROUNDS.
- CLEAR LAKE CITY BOULEVARD (FM 2351) NEEDS MULTIPLE RIGHT TURN LANES INTO FEEDER FOR ACCESS TO FWY.
- CONSIDER REVERSING POSITION OF ENTRANCE/EXIT ROADS N BOUND FROM 2351. THIS IS A HEAVILY USED ENTRANCE, AND EXITING TRAFFIC FROM FWY WILL POSE SIGNIFICANT HAZARDS. AS ALTERNATE, ELIMINATE 1959 EXIT.

Name: FRANK B. WEARY
Address: 14823 TUMBLING FALLS
HOUSTON TX 77062
Phone #: 281 486-5448
E-mail: FRANK@WEARY.NET

Please include your name and mailing address with all written comments. Comment sheets and/or letters should be mailed to: Lance Olenius, Environmental Coordinator, P.O. Box 1386, Houston, Texas, 77251-1386 or faxed to (713) 802-5896. All written comments mailed by December 23, 2002, will be included in the official meeting record. If you have any questions, please contact Lance Olenius at (713) 802-5271.

COMMENT SHEET

Public Meeting
IH 45 South: From Beltway 8 to FM 518

Clear Brook High School
December 11, 2002 - 6:00 P.M.

PROPOSED LOCATION OF PARK AND RIDE DOES
NOT PROVIDE FOR REASONABLE ACCESS FROM
EAST SIDE. BAY AREA BOULEVARD IS ALREADY
OVERLOADED DUE TO COMMERCIAL ACTIVITY. SUGGEST
RELOCATE PARK AND RIDE EITHER N OR S OF EXISTING
PROPOSAL

Name: FRANK G. WEARY

Address: 14823 TUMBUNK FALLS
HOUSTON TX 77062

Phone #: 281 486-5448

E-mail: frank@weary.net

Please include your name and mailing address with all written comments. Comment sheets and/or letters should be mailed to: Lance Olenius, Environmental Coordinator, P.O. Box 1386, Houston, Texas, 77251-1386 or faxed to (713) 802-5896. All written comments mailed by December 23, 2002, will be included in the official meeting record. If you have any questions, please contact Lance Olenius at (713) 802-5271.

COMMENT SHEET

Public Meeting
IH 45 South: From Beltway 8 to FM 518

Clear Brook High School
December 11, 2002 - 6:00 P.M.

DRAINAGE FROM EAST SIDE OF FWY IS CURRENTLY EAST TO HORSESHOE BAYOU AND THRU CLEAR LAKE CITY (POP 50,000) FOR AREAS N OF 2351. PLEASE PLAN CONSTRUCTION DRAINAGE AND PERMANENT RUN-OFF TO AVOID FLOODING HOMES OR DISRUPTING QUALITY OF WATER IN HORSESHOE/ARMAD BAYOU SYSTEM. THE SYSTEM IS NEAR CAPACITY TODAY WITH EXTENSIVE RETENTION BASINS ALREADY TAKEN UNDER HEAVY RAIN CONDITIONS. TO FURTHER COMPLICATE THE MATTER, HURRICANE EVACUATION FROM CLEAR LAKE CITY IS ALREADY IMPOSSIBLE AFTER THE FIRST 3 INCHES OF RAINFALL.

Name: FRANK G. WEARY
Address: 14823 TUMBLING FALLS
HOUSTON TX 77062

Phone #: 281 486-5448

E-mail: frank@weary.net.

Please include your name and mailing address with all written comments. Comment sheets and/or letters should be mailed to: Lance Olenius, Environmental Coordinator, P.O. Box 1386, Houston, Texas, 77251-1386 or faxed to (713) 802-5896. All written comments mailed by December 23, 2002, will be included in the official meeting record. If you have any questions, please contact Lance Olenius at (713) 802-5271.

COMMENT SHEET

Public Meeting
IH 45 South: From Beltway 8 to FM 518

Clear Brook High School
December 11, 2002 - 6:00 P.M.

My interest is in the NASA 1, Bay Area and
El Dorado intersections. I like the switch
to I-45 overpasses to these intersections.
I have always thought that freeway overpasses
were more efficient for off-freeway traffic.

Name: Tom Miller
Address: 2248 Gemini Ave
Houston 77058
Phone #: 281-480-6655
E-mail: tomkc@EV1.NET

Please include your name and mailing address with all written comments. Comment sheets and/or letters should be mailed to: Lance Olenius, Environmental Coordinator, P.O. Box 1386, Houston, Texas, 77251-1386 or faxed to (713) 802-5896. All written comments mailed by December 23, 2002, will be included in the official meeting record. If you have any questions, please contact Lance Olenius at (713) 802-5271.

COMMENT SHEET

Public Meeting
IH 45 South: From Beltway 8 to FM 518

Clear Brook High School
December 11, 2002 - 6:00 P.M.

Keep feeder roads at
high enough elevation
to prevent flooding.

Consider flyover ramps at
Bay Area Blvd / El Dorado /
NASA Rd.

Name: Ed Mullery

Address: 15414 Bay Green Ct
Houston TX 77059

Phone #: 713-246-7886

E-mail: ed.mullery@shell.com

Please include your name and mailing address with all written comments. Comment sheets and/or letters should be mailed to: Lance Olenius, Environmental Coordinator, P.O. Box 1386, Houston, Texas, 77251-1386 or faxed to (713) 802-5896. All written comments mailed by December 23, 2002, will be included in the official meeting record. If you have any questions, please contact Lance Olenius at (713) 802-5271.

COMMENT SHEET

Public Meeting
IH 45 South: From Beltway 8 to FM 518

Clear Brook High School
December 11, 2002 - 6:00 P.M.

I THINK THE PROPOSED EXPANSION IS AN
EXCELLENT IDEA - TRAFFIC SOUTH OF
ALAMEDA MALL TO 2351 IS TERRIBLE IN
THE AFTERNOON. MY ONLY SUGGESTION IS
ALLOW ENTRANCE AND EXIT TO THE HOV
LANE SUCH THAT A PERSON COULD
STILL EXIT AT FM 528 / NASA 1

Name: MARK WERSNER

Address: 2404 HARVEST HILL
FRIENDSWOOD, TX 77546

Phone #: 281 332 8757

E-mail:

Please include your name and mailing address with all written comments. Comment sheets and/or letters should be mailed to: Lance Olenius, Environmental Coordinator, P.O. Box 1386, Houston, Texas, 77251-1386 or faxed to (713) 802-5896. All written comments mailed by December 23, 2002, will be included in the official meeting record. If you have any questions, please contact Lance Olenius at (713) 802-5271.

COMMENT SHEET

Public Meeting
IH 45 South: From Beltway 8 to FM 518

Clear Brook High School
December 11, 2002 - 6:00 P.M.

Project Looks Great as shown
~~the~~ Looks as though it will not
involve taking up any of our
existing parking & Building

Name: Jim Mertz
Address: 20835 Gulf Freeway
Webster, TX 77598
Phone #: 281-338-4040
E-mail: jim-mertz@hotmail.com

Please include your name and mailing address with all written comments. Comment sheets and/or letters should be mailed to: Lance Olenius, Environmental Coordinator, P.O. Box 1386, Houston, Texas, 77251-1386 or faxed to (713) 802-5896. All written comments mailed by December 23, 2002, will be included in the official meeting record. If you have any questions, please contact Lance Olenius at (713) 802-5271.

COMMENT SHEET

Public Meeting
IH 45 South: From Beltway 8 to FM 518

Clear Brook High School
December 11, 2002 - 6:00 P.M.

I embrace this project -- the
widening of I-45 in Webster --
I encourage you to fast-track
this project, in conjunction with
the NASA Road Bypass --
Don't wait until 2005+

Name: Betsy Giusto, E.D. Director

Address: City of Webster

101 Pennsylvania Ave

Phone #: 281-316-4116

E-mail: Bgiusto@cityofwebster.com

Please include your name and mailing address with all written comments. Comment sheets and/or letters should be mailed to: Lance Olenius, Environmental Coordinator, P.O. Box 1386, Houston, Texas, 77251-1386 or faxed to (713) 802-5896. All written comments mailed by December 23, 2002, will be included in the official meeting record. If you have any questions, please contact Lance Olenius at (713) 802-5271.

COMMENT SHEET

Public Meeting
IH 45 South: From Beltway 8 to FM 518

Clear Brook High School
December 11, 2002 - 6:00 P.M.

RE: PROPERTY AT F.M. 1959 AND CHATEAU ROAD
OWNERSHIP NAME: DAVID SADLER

THE PROPOSED DESIGN OF THE PROJECT COULD HAVE A SIGNIFICANT
NEGATIVE IMPACT ON THE ACCESS AND VALUE OF OUR PROPERTY.
IT APPEARS THAT THERE ARE ASPECTS OF THE DESIGN THAT COULD BE
MODIFIED SO THAT THE IMPACT WOULD NOT DAMAGE OUR PROPERTY
AND WOULD ALSO NOT BE OF MAJOR IMPACT TO TRAFFIC FLOW,
COST OF CONSTRUCTION... WE WOULD LIKE TO HAVE ADDITIONAL
INPUT DURING THIS PROCESS SO THAT WE CAN AVOID ANY
SITUATIONS THAT ~~WOULD~~ DAMAGE OUR ACCESS AND DECREASE
OUR VALUE. WE NEED TO HAVE A POINT OF CONTACT SO
THAT WE CAN STAY INFORMED DURING THIS PROCESS

BARRY SADLER
3131 TIMMONS LANE #242
HOUSTON, TX 77027

713-623-0788

713-858-1113

E-MAIL: BARRYSAD@AOL.COM

Name: DAVID SADLER

Address: 6238 QUEENSLOCH
HOUSTON, TX 77096

Phone #: 713-774-9245

E-mail:

Please include your name and mailing address with all written comments. Comment sheets and/or letters should be mailed to: Lance Olenius, Environmental Coordinator, P.O. Box 1386, Houston, Texas, 77251-1386 or faxed to (713) 802-5896. All written comments mailed by December 23, 2002, will be included in the official meeting record. If you have any questions, please contact Lance Olenius at (713) 802-5271.

COMMENT SHEET

Public Meeting
IH 45 South: From Beltway 8 to FM 518

Clear Brook High School
December 11, 2002 - 6:00 P.M.

I, Pamela Manning live with my sister,
Lance Manning Scott at 13001 Nagark #11526
Townhouse. If they put in 10 lanes
it would be unbearable. They are going to have
to buy my sister's townhouse. Right now the
noise is so bad it shakes & vibrates the
bed where I sleep at the bed of the
Townhouse.

Name: Pamela Manning
Address: 13001 Nagark #11526
Houston, Texas 77059
Phone #: 281-481-5071
E-mail: L Mann 1526 @ AOL

Please include your name and mailing address with all written comments. Comment sheets and/or letters should be mailed to: Lance Olenius, Environmental Coordinator, P.O. Box 1386, Houston, Texas, 77251-1386 or faxed to (713) 802-5896. All written comments mailed by December 23, 2002, will be included in the official meeting record. If you have any questions, please contact Lance Olenius at (713) 802-5271.

COMMENT SHEET

Public Meeting
IH 45 South: From Beltway 8 to FM 518

Clear Brook High School
December 11, 2002 - 6:00 P.M.

I, LaRee Manning Scott, live at 13001 NYACK, #11526, Windswept Townhome association at I-45 @ Leasedale Blvd. With 6 lanes across, my bed shakes all night long. The huge retainer wall seemed to help at first. Perhaps the freeway traffic has increased so much; however, the noise from vehicles themselves plus stereo music contributes to my not sleeping at nights. That makes it difficult to get to work the next day. If 4 more lanes are added, I need to sell my townhome unit. There is no way I can continue to live there. I've been at Windswept Townhomes since 1977 and, the noise and shake, rattle, and roll gets worse.

My bedroom faces road at the front of my townhome.

Name: LaRee Manning Scott
WINDSWEPT TOWNHOMES
Address: 13001 NYACK # 11526
Houston, Texas 77089-6223
Phone #: 281-481-5031
E-mail: 1MANN1526 @ AOL.COM

Please include your name and mailing address with all written comments. Comment sheets and/or letters should be mailed to: Lance Olenius, Environmental Coordinator, P.O. Box 1386, Houston, Texas, 77251-1386 or faxed to (713) 802-5896. All written comments mailed by December 23, 2002, will be included in the official meeting record. If you have any questions, please contact Lance Olenius at (713) 802-5271.

COMMENT SHEET

Public Meeting
IH 45 South: From Beltway 8 to FM 518

Clear Brook High School
December 11, 2002 - 6:00 P.M.

James & Gretchen Hardy
REALTORS®



Prudential

GARY GREENE, REALTORS®

17000 El Camino Real, Suite 201
Houston, TX 77058
Bus 281 486-1900 Fax 281 486-9201
ghardy@garygreene.com

An independently owned and operated member of The Prudential Real Estate Affiliates, Inc.

Please come to our office and give us more information on upcoming road improvements and proposed road improvements affecting our real estate market areas.

Our Office manager is

P.S. We have over 100 Realtors at this office

Priscilla Thorpe. Call her and ask for an appointment to give us a presentation for 30 minutes or so.

Name: Her phone # is 281-486-1900

X211.

Address: _____

Phone #:

E-mail:

Please include your name and mailing address with all written comments. Comment sheets and/or letters should be mailed to: Lance Olenius, Environmental Coordinator, P.O. Box 1386, Houston, Texas, 77251-1386 or faxed to (713) 802-5896. All written comments mailed by December 23, 2002, will be included in the official meeting record. If you have any questions, please contact Lance Olenius at (713) 802-5271.

Lance O.



COMMENT SHEET



Public Meeting
IH 45 South: From Beltway 8 to FM 518

Clear Brook High School
December 11, 2002 - 6:00 P.M.

There is no indication of a special access for
the Magnolia St. extension of NASA Rd. 1
(i.e. FM 528). I suggest that one is necessary,
perhaps even another overpass for exiting south
bound traffic flow.

Name: David B. Letson
Address: 4331 Evergreen Elm Ct.
Houston, TX 77059
Phone #: 281-480-8112
E-mail: dbletson@hal-pc.org

Please include your name and mailing address with all written comments. Comment sheets and/or letters should be mailed to: Lance Olenius, Environmental Coordinator, P.O. Box 1386, Houston, Texas, 77251-1386 or faxed to (713) 802-5896. All written comments mailed by December 23, 2002, will be included in the official meeting record. If you have any questions, please contact Lance Olenius at (713) 802-5271.

DDP -

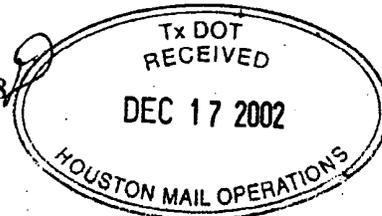
Lance O.



COMMENT SHEET

Public Meeting
IH 45 South: From Beltway 8 to FM 518

Clear Brook High School
December 11, 2002 - 6:00 P.M.



I'm on the Board of Directors of Pine Brook Homeowners' Assn. Pine Brook is on the east end of Clear Lake City Blvd / 2357 between El Dorado & Middlebrook.

1. The HOV entrance between Bay Area / El Dorado is not appropriate. El Dorado is remaining 4 lanes divided while CLCB will go to 6 lanes because of traffic and population. Pine Brook has 1081 homes alone! The traffic is off CLCB because of CL subdivisions & Friendswood subdivisions. The HOV should be from CLCB / El Dorado.
2. The right turn lanes off CLCB to I-45 feeder roads should be 2 lanes - not one. You can not believe the traffic on the Blvd for I-45, particularly from Friendswood right now.
3. Why are entrance / exit ramps flipped? Existing traffic will be cutting across cars on the feeder that are heading for entrance ramps.

4 - Thank you - we need improvement, but why no rail option space? Rail is the answer to commute. I'm from NYC/Chicago!

Name: Eileen Groves
Eileen A. Groves
Address: 16002 Park Center Dr
Houston, TX 77059

Phone #: 281-218-6191

E-mail: msecag@aol.com

Please include your name and mailing address with all written comments. Comment sheets and/or letters should be mailed to: Lance Olenius, Environmental Coordinator, P.O. Box 1386, Houston, Texas, 77251-1386 or faxed to (713) 802-5896. All written comments mailed by December 23, 2002, will be included in the official meeting record. If you have any questions, please contact Lance Olenius at (713) 802-5271.

DPD -



COMMENT SHEET

Public Meeting
IH 45 South: From Beltway 8 to FM 518

Clear Brook High School
December 11, 2002 - 6:00 P.M.

SEE ATTACHED LETTER

Name: STEPHEN B. BHL

Address: CDC HOUSTON

910 TRAVIS, SUITE 1970, HOUSTON, TX 77002

Phone #: 713 658 9467

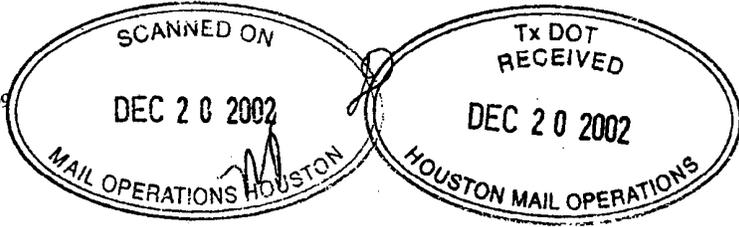
E-mail: pbhl@cdc-houston.com

Please include your name and mailing address with all written comments. Comment sheets and/or letters should be mailed to: Lance Olenius, Environmental Coordinator, P.O. Box 1386, Houston, Texas, 77251-1386 or faxed to (713) 802-5896. All written comments mailed by December 23, 2002, will be included in the official meeting record. If you have any questions, please contact Lance Olenius at (713) 802-5271.

Lance O



Bank One Center
910 Travis, Suite 1970
Houston, Texas 77002-5809
(713) 658-9467 Fax (713) 658-1109



Reference: 591/13-A & 31-A

December 18, 2002

Texas Department of Transportation
Mr. Lance Olenius
Environmental Coordinator
P.O. Box 1386
Houston, Texas 77251-1386

Via U.S. Mail and Fax

Re: **Public Meeting (IH 45 South: From Beltway 8 to FM 518)**

Dear Sir:

In response to the recent public hearing conducted on December 11, 2002 at the Clear Brook High School, on the proposed improvements to IH-45 South from just north of Beltway 8 (Sam Houston Tollway) to Farm Rd. Market (FM 518) in Harris and Galveston Counties, please know that CDC Houston is developing a tract of land along IH-45 that is greatly dependant upon access to the IH-45 frontage roads.

In this connection, the proposed alignment will have profound and severe effects on the development and access to it.

In order to accommodate the needs of the State, CDC Houston would be pleased to meet with TXDOT and other coordinating entities to develop an acceptable plan.

The courtesy of your earliest response to the above would be appreciated.

Sincerely yours,

Stephen B. Pohl
Vice President

(Enclosure)
SBP/bm

DPD

Baker

Michael Baker Jr., Inc.

**16225 Park Ten Place, Suite 420
Houston, TX 77084
(281) 579-4579
FAX (281) 579-4646**

February 13, 2002

Mr. Norman Sears
US EPA, Region 6
1445 Ross Ave., Ste. 1200
Dallas, TX 75202-2733

**RE: Interstate Highway (IH) 45 South
From Beltway 8 to Farm-to-Market Road (FM) 518
Harris and Galveston County, Texas
Environmental Assessment**

Dear Norman:

The Texas Department of Transportation (TxDOT) has contracted the services of Michael Baker Jr., Inc. (Baker) to perform environmental studies required by the National Environmental Policy Act (NEPA) to widen IH 45 South from Beltway 8 to FM 518 in Harris and Galveston County, Texas. Baker will be directly responsible for environmental studies including an environmental assessment (EA), permitting and mitigation planning, and public involvement.

The proposed action is located along a 10-mile section of IH 45 South that begins approximately 0.6 miles north of Beltway 8 in Harris County and ends at FM 518 in Galveston County. The studies will address the proposed widening and improvements to IH 45S from 6 lanes to 10 lanes; frontage road improvements; extending the HOV lane; and various interchange/grade separation improvements. The proposed improvements are based on the recommendations of the IH 45 South Corridor Major Investment Study (TxDOT, 1999). A map showing the project limits is attached.

An EA is a detailed environmental study that utilizes a systematic interdisciplinary approach to project planning to assure that full consideration is given to all appropriate social, economic, and environmental effects of proposed project. Specifically, Baker will perform, among other tasks, the social, economic and environmental studies for the proposed action and implement coordination of the public and agency involvement program during the study process.

The purpose of this project is to reduce traffic congestion, improve hurricane evacuation, and provide travel options while maintaining minimal impacts to the environment in a cost-effective manner. This study will help to achieve safe and efficient transportation needs and also to achieve national, state, and local environmental protection goals.

ChallengeUs.

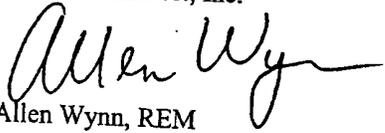
Baker

In order to ensure that pertinent environmental issues relating to this project have been adequately addressed, we request your input and concerns, including applicable regulations administered by your agency which may require special attention in the proposed project area. We also request information about current or previous environmental studies in the region that may be relevant to this project. This request is required at your earliest convenience to facilitate timely completion of the project.

The requested input, as well as the name of an appropriate contact within your staff for all future coordination, should be mailed to Michael Baker Jr., Inc., 16225 Park Ten Place, Suite 420, Houston, Texas 77084. If additional information is needed or you have any questions or comments regarding this request, please call Mr. Eddie George at (281) 579-4541, or me at (281) 579-4606.

Sincerely,

Michael Baker Jr., Inc.



Allen Wynn, REM
Senior Environmental Specialist

Attachment

Baker

Michael Baker Jr., Inc.

16225 Park Ten Place, Suite 420
Houston, TX 77084
(281) 579-4579
FAX (281) 579-4646

February 13, 2002

Mr. Gary Green
Harris County Flood Control District
9900 N.W. Freeway
Houston, TX 77092

**RE: Interstate Highway (IH) 45 South
From Beltway 8 to Farm-to-Market Road (FM) 518
Harris and Galveston County, Texas
Environmental Assessment**

Dear Gary:

The Texas Department of Transportation (TxDOT) has contracted the services of Michael Baker Jr., Inc. (Baker) to perform environmental studies required by the National Environmental Policy Act (NEPA) to widen IH 45 South from Beltway 8 to FM 518 in Harris and Galveston County, Texas. Baker will be directly responsible for environmental studies including an environmental assessment (EA), permitting and mitigation planning, and public involvement.

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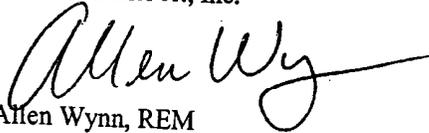
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Sincerely,

Michael Baker Jr., Inc.



Allen Wynn, REM
Senior Environmental Specialist

Attachment

Baker

Michael Baker Jr., Inc.

16225 Park Ten Place, Suite 420
Houston, TX 77084
(281) 579-4579
FAX (281) 579-4646

February 13, 2002

Mr. Bennie Billington
Harris County District Conservationist
Natural Resource Conservation District
16151 Cairnway Dr., Ste. 107-E
Houston, TX 77084

**RE: Interstate Highway (IH) 45 South
From Beltway 8 to Farm-to-Market Road (FM) 518
Harris and Galveston County, Texas
Environmental Assessment**

Dear Bennie:

The Texas Department of Transportation (TxDOT) has contracted the services of Michael Baker Jr., Inc. (Baker) to perform environmental studies required by the National Environmental Policy Act (NEPA) to widen IH 45 South from Beltway 8 to FM 518 in Harris and Galveston County, Texas. Baker will be directly responsible for environmental studies including an environmental assessment (EA), permitting and mitigation planning, and public involvement.

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ChallengeUs.

Baker

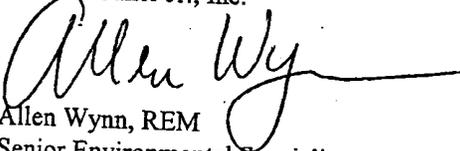
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Sincerely,

Michael Baker Jr., Inc.


Allen Wynn, REM
Senior Environmental Specialist

Attachment

Baker

Michael Baker Jr., Inc.

16225 Park Ten Place, Suite 420
Houston, TX 77084
(281) 579-4579
FAX (281) 579-4646

February 13, 2002

Mr. Grady Dillard
Waters Davis Soil and Water Cons. Dist.
209 East Mulberry, Ste. 300
Angleton, TX 77515

**RE: Interstate Highway (IH) 45 South
From Beltway 8 to Farm-to-Market Road (FM) 518
Harris and Galveston County, Texas
Environmental Assessment**

Dear Grady:

The Texas Department of Transportation (TxDOT) has contracted the services of Michael Baker Jr., Inc. (Baker) to perform environmental studies required by the National Environmental Policy Act (NEPA) to widen IH 45 South from Beltway 8 to FM 518 in Harris and Galveston County, Texas. Baker will be directly responsible for environmental studies including an environmental assessment (EA), permitting and mitigation planning, and public involvement.

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ChallengeUs.

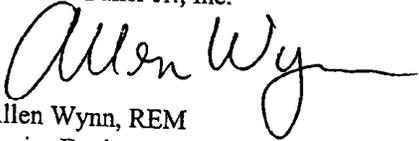
Baker

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Sincerely,

Michael Baker Jr., Inc.



Allen Wynn, REM
Senior Environmental Specialist

Attachment

Baker

Michael Baker Jr., Inc.

16225 Park Ten Place, Suite 420
Houston, TX 77084
(281) 579-4579
FAX (281) 579-4646

February 13, 2002

Mr. John Sedlak
Metro – Vice President
Planning and Development
1201 Louisiana
PO Box 61429
Houston, TX 77208-1429

**RE: Interstate Highway (IH) 45 South
From Beltway 8 to Farm-to-Market Road (FM) 518
Harris and Galveston County, Texas
Environmental Assessment**

Dear John:

The Texas Department of Transportation (TxDOT) has contracted the services of Michael Baker Jr., Inc. (Baker) to perform environmental studies required by the National Environmental Policy Act (NEPA) to widen IH 45 South from Beltway 8 to FM 518 in Harris and Galveston County, Texas. Baker will be directly responsible for environmental studies including an environmental assessment (EA), permitting and mitigation planning, and public involvement.

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ChallengeUs.

Baker

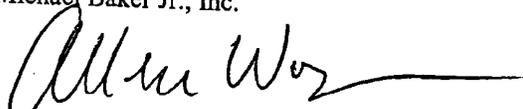
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Sincerely,

Michael Baker Jr., Inc.



Allen Wynn, REM
Senior Environmental Specialist

Attachment

Baker

Michael Baker Jr., Inc.

16225 Park Ten Place, Suite 420
Houston, TX 77084
(281) 579-4579
FAX (281) 579-4646

February 13, 2002

Mr. David Kocurek
Galveston County Consolidated Drainage District
1301 W. Parkwood
Friendswood, TX 77546

**RE: Interstate Highway (IH) 45 South
From Beltway 8 to Farm-to-Market Road (FM) 518
Harris and Galveston County, Texas
Environmental Assessment**

Dear David:

The Texas Department of Transportation (TxDOT) has contracted the services of Michael Baker Jr., Inc. (Baker) to perform environmental studies required by the National Environmental Policy Act (NEPA) to widen IH 45 South from Beltway 8 to FM 518 in Harris and Galveston County, Texas. Baker will be directly responsible for environmental studies including an environmental assessment (EA), permitting and mitigation planning, and public involvement.

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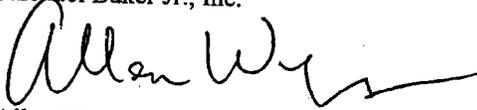
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Sincerely,

Michael Baker Jr., Inc.

A handwritten signature in black ink that reads "Allen Wynn". The signature is written in a cursive style with a long horizontal flourish extending to the right.

Allen Wynn, REM
Senior Environmental Specialist

Attachment

Baker

Michael Baker Jr., Inc.

16225 Park Ten Place, Suite 420
Houston, TX 77084
(281) 579-4579
FAX (281) 579-4646

February 13, 2002

National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Galveston Laboratory
4700 Avenue U
Galveston, TX 77551-5997

**RE: Interstate Highway (IH) 45 South
From Beltway 8 to Farm-to-Market Road (FM) 518
Harris and Galveston County, Texas
Environmental Assessment**

To Whom It May Concern::

The Texas Department of Transportation (TxDOT) has contracted the services of Michael Baker Jr., Inc. (Baker) to perform environmental studies required by the National Environmental Policy Act (NEPA) to widen IH 45 South from Beltway 8 to FM 518 in Harris and Galveston County, Texas. Baker will be directly responsible for environmental studies including an environmental assessment (EA), permitting and mitigation planning, and public involvement.

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The purpose of this project is to reduce traffic congestion, improve hurricane evacuation, and provide travel options while maintaining minimal impacts to the environment in a cost-effective manner. This

ChallengeUS.

Baker

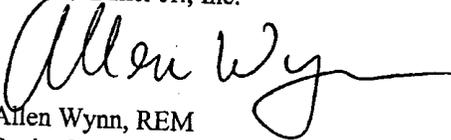
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Sincerely,

Michael Baker Jr., Inc.



Allen Wynn, REM
Senior Environmental Specialist

Attachment

Baker

Michael Baker Jr., Inc.

16225 Park Ten Place, Suite 420
Houston, TX 77084
(281) 579-4579
FAX (281) 579-4646

February 13, 2002

Mr. James Box
Harris-Galveston Coastal Subsidence
1660 W. Bay Area Blvd.
Friendswood, TX 77546

**RE: Interstate Highway (IH) 45 South
From Beltway 8 to Farm-to-Market Road (FM) 518
Harris and Galveston County, Texas
Environmental Assessment**

Dear James:

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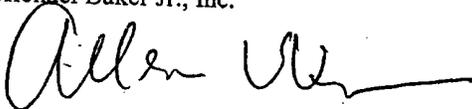
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Allen Wynn, REM
Senior Environmental Specialist

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Baker

Michael Baker Jr., Inc.

16225 Park Ten Place, Suite 420
Houston, TX 77084
(281) 579-4579
FAX (281) 579-4646

February 13, 2002

Mr. Robert Heinly
US Army Corps of Engineers
PO Box 1229
Galveston, TX 77553

**RE: Interstate Highway (IH) 45 South
From Beltway 8 to Farm-to-Market Road (FM) 518
Harris and Galveston County, Texas
Environmental Assessment**

Dear Robert:

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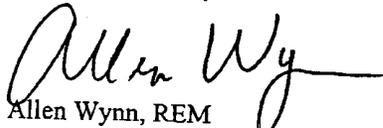
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Michael Baker Jr., Inc.


Allen Wynn, REM
Senior Environmental Specialist

Attachment

Baker

Michael Baker Jr., Inc.

16225 Park Ten Place, Suite 420
Houston, TX 77084
(281) 579-4579
FAX (281) 579-4646

February 13, 2002

Mr. Pat Alba
Coastal Permitting Assistance Office
6300 Texas A&M University, Ste. 2800
Natural Resource Center
Corpus Christi, TX 78412

**RE: Interstate Highway (IH) 45 South
From Beltway 8 to Farm-to-Market Road (FM) 518
Harris and Galveston County, Texas
Environmental Assessment**

Dear Pat:

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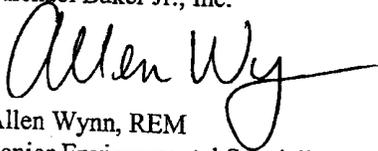
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Allen Wynn, REM
Senior Environmental Specialist

Attachment

Baker

Michael Baker Jr., Inc.

16225 Park Ten Place, Suite 420
Houston, TX 77084
(281) 579-4579
FAX (281) 579-4646

February 13, 2002

Mr. James Thomas
TCEQ
5425 Polk Ave. Ste. H
Houston, TX 77023

**RE: Interstate Highway (IH) 45 South
From Beltway 8 to Farm-to-Market Road (FM) 518
Harris and Galveston County, Texas
Environmental Assessment**

Dear James:

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Sincerely,

Michael Baker Jr., Inc.

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Allen Wynn, REM
Senior Environmental Specialist

Attachment

Baker

Michael Baker Jr., Inc.

16225 Park Ten Place, Suite 420
Houston, TX 77084
(281) 579-4579
FAX (281) 579-4646

February 13, 2002

Ms. Edith Erfling
US Fish and Wildlife Service
17629 El Camino Real, Ste. 211
Houston, TX 77058

**RE: Interstate Highway (IH) 45 South
From Beltway 8 to Farm-to-Market Road (FM) 518
Harris and Galveston County, Texas
Environmental Assessment**

Dear Edith:

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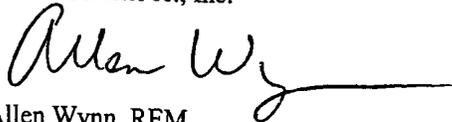
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Allen Wynn, REM
Senior Environmental Specialist

Attachment

Baker

Michael Baker Jr., Inc.

16225 Park Ten Place, Suite 420
Houston, TX 77084
(281) 579-4579
FAX (281) 579-4646

February 13, 2002

Mr. Joseph Chow
City of Houston
Planning and Development Dept.
Houston, TX 77251

**RE: Interstate Highway (IH) 45 South
From Beltway 8 to Farm-to-Market Road (FM) 518
Harris and Galveston County, Texas
Environmental Assessment**

Dear Joseph:

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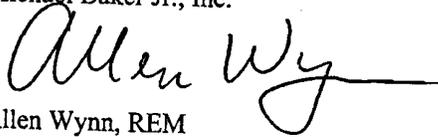
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Baker

Michael Baker Jr., Inc.

16225 Park Ten Place, Suite 420
Houston, TX 77084
(281) 579-4579
FAX (281) 579-4646

February 13, 2002

Mr. Woody Woodrow
Texas Parks and Wildlife Department
1322 Space Park Drive, Ste. B-180
Houston, TX 77058

**RE: Interstate Highway (IH) 45 South
From Beltway 8 to Farm-to-Market Road (FM) 518
Harris and Galveston County, Texas
Environmental Assessment**

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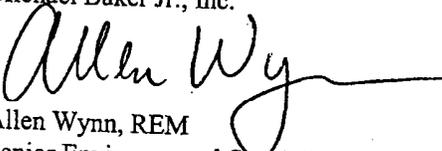
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Michael Baker Jr., Inc.

16225 Park Ten Place, Suite 420
Houston, TX 77084
(281) 579-4579
FAX (281) 579-4646

February 13, 2002

Mr. Paul Selman
Galveston County
123 Rosenberg, Rm 4110
Galveston, TX 77550

**RE: Interstate Highway (IH) 45 South
From Beltway 8 to Farm-to-Market Road (FM) 518
Harris and Galveston County, Texas
Environmental Assessment**

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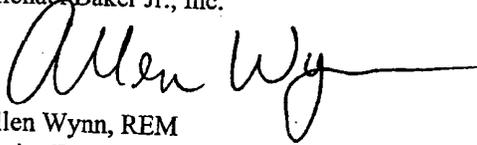
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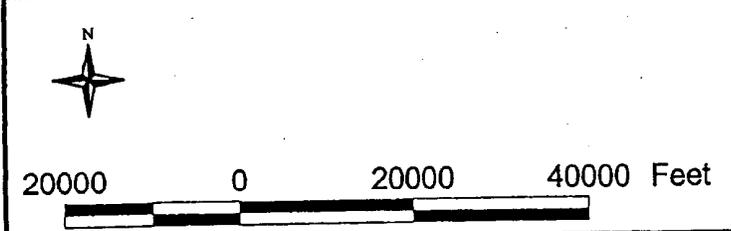
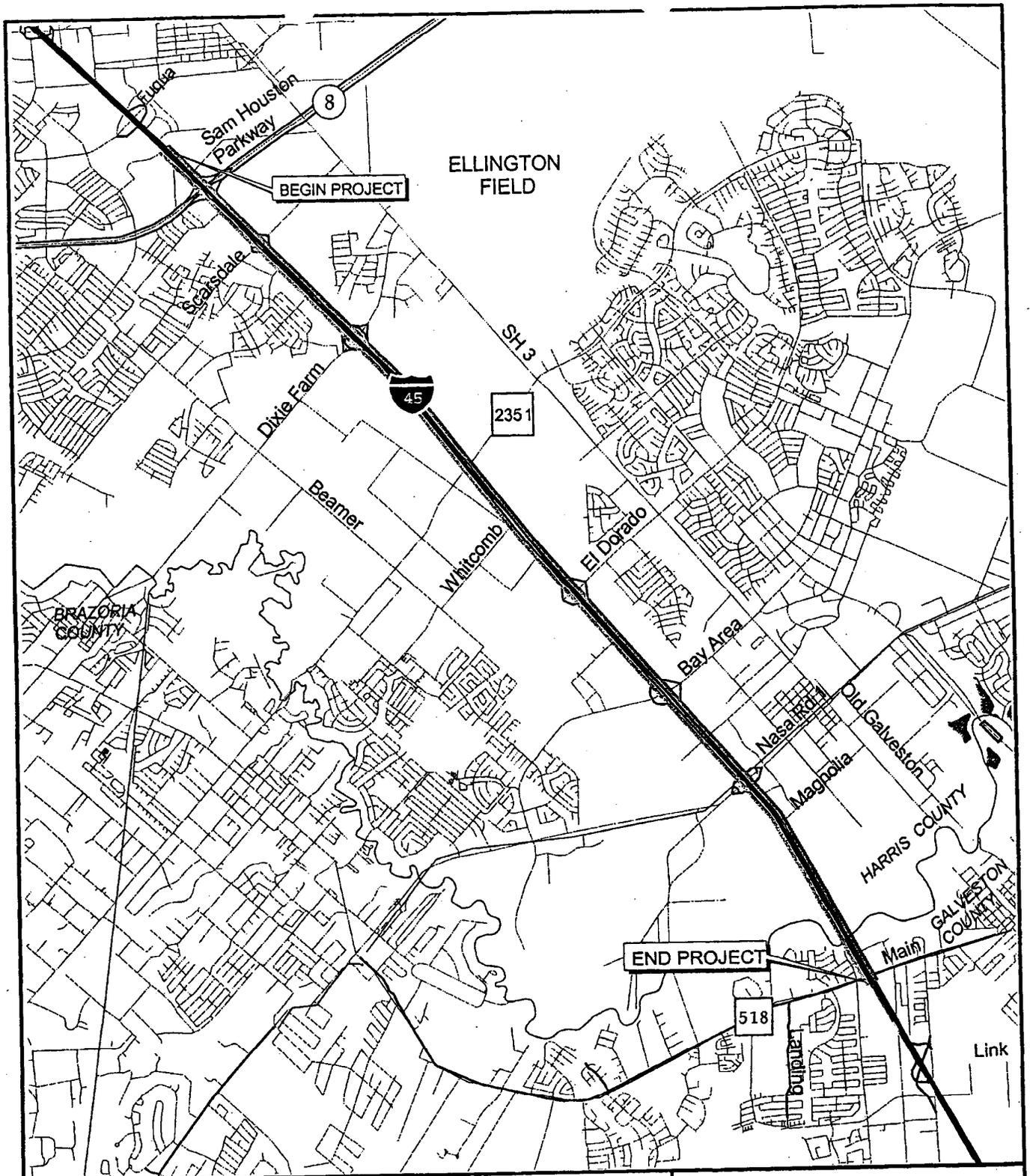
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Allen Wynn, REM
Senior Environmental Specialist

Attachment



**IH 45 SOUTH
FROM BELTWAY 8 TO FM 518
HARRIS AND GALVESTON
COUNTIES, TEXAS**

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U.S. Department
of Transportation

United States
Coast Guard

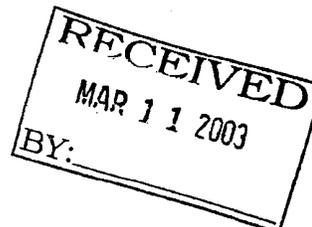


Commander
Eighth Coast Guard District
Hale Boggs Federal Building

501 Magazine Street
New Orleans, LA 70130-3396
Staff Symbol: obc
Phone: 504-589-2965
FAX: 504-589-3063

16590
February 27, 2003

MR ALLEN WYNN
MICHAEL BAKER INC
16225 PARK TEN PLACE SUITE 420
HOUSTON TX 77084

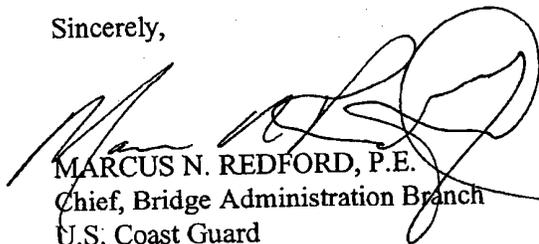


Dear Mr. Wynn:

Please reference your letter dated February 13, 2002 that we received on February 19, 2003 regarding the Texas Department of Transportation contracting of Michael Baker, Inc. to provide an environmental assessment for the proposed widening of IH 45 South from Beltway 8 to FM 518 in Harris and Galveston Counties, Texas.

As plans are developed, we will provide input as required as to the need for a Coast Guard bridge permit and where appropriate, act upon application for permitting requirements. You can obtain a Coast Guard Bridge Permit Application Guide from our web site at <http://www.uscg.mil/hq/g-o/g-opt.htm>. If we can be of any further assistance, please contact this office.

Sincerely,


MARCUS N. REDFORD, P.E.
Chief, Bridge Administration Branch
U.S. Coast Guard
By direction



TEXAS
HISTORICAL
COMMISSION

The State Agency for Historic Preservation

RICK PERRY, GOVERNOR

JOHN L. NAU, III, CHAIRMAN

F. LAWRENCE OAKS, EXECUTIVE DIRECTOR

February 27, 2003

Mr. Allen Wynn, REM
Michael Baker Jr., Inc.
16225 Park Ten Place, Suite 420
Houston, Texas 7084

Re: Project review under Section 106 of the National Historic Preservation Act of 1966
Request for submission to TxDOT for IH 45 South from Beltway 8 to FM 518 in Harris and Galveston Counties, Texas (TxDOT/FHwA)

Dear Mr. Wynn:

Thank you for your correspondence describing the above referenced project. This letter serves as comment on the proposed undertaking from the State Historic Preservation Officer, the Executive Director of the Texas Historical Commission.

In accordance with 36 CFR Part 800, the regulations of the National Historic Preservation Act, our office has entered into a Programmatic Agreement with the Federal Highway Administration and the Texas Department of Transportation (TxDOT). This agreement stipulates that TxDOT will initiate consultation with our office regarding possible effects federal undertakings may have on cultural resources when this agency is funding, permitting, or approving proposed projects on land owned by this agency. Please submit your request for project review to:

Dr. Nancy Kenmotsu
Environmental Affairs Division
Texas Department of Transportation
Dewitt C. Greer State Highway Bldg.
125 E. 11th Street
Austin, Texas 78701-2483

We look forward to further consultation with your office and hope to maintain a partnership that will foster effective historic preservation. Thank you for your cooperation in this federal review process, and for your efforts to preserve the irreplaceable heritage of Texas. **If you have any questions concerning our review or if we can be of further assistance, please contact Sergio Iruegas at 512/463-8881.**

Sincerely,

A handwritten signature in cursive script, appearing to read "F. Lawrence Oaks".

for
F. Lawrence Oaks, State Historic Preservation Officer

LO/wjm/si

Metropolitan Transit Authority
1201 Louisiana
P.O. Box 61429
Houston, Texas 77208-1429

713-739-4000
www.ridemetro.org



Shirley A. DeLibero
President & Chief Executive Officer

March 12, 2003

Mr. Allen Wynn, REM
Senior Environmental Specialist
Michael Baker Jr., Inc.
16225 Park Ten Place, Suite 420
Houston, TX 77084

RE: Environmental Assessment: Interstate Highway (IH) 45 South From Beltway 8 to FM 518, Harris & Galveston County, Texas

Dear Mr. Wynn:

Thank you for seeking our input regarding environmental issues relative to the Environmental Assessment (EA) for the Gulf Freeway Corridor (IH-45 South) from Beltway to FM 518. METRO is always interested in transportation projects such as this one to reduce traffic congestion and provide travel options while maintaining minimal impacts in a cost effective manner, particularly within METRO's service area.

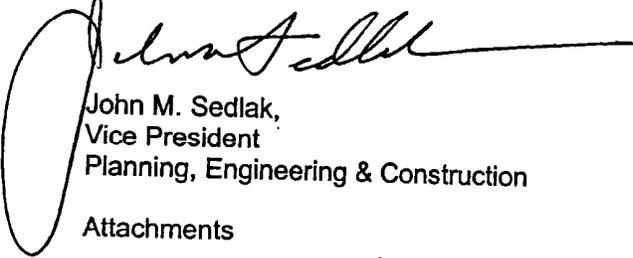
Within the project limits of this study, METRO has an existing reversible HOV lane from approximately 1.25 miles south of the Beltway 8 and extending north in the middle of the freeway to US 59. (See attached Existing/Proposed METRO Transit Facilities map.) Other METRO facilities in the corridor are the *South Point* and *Fuqua Park & Ride lots* that lie approximately one-half mile north of Beltway 8 on the east and west sides of the freeway, respectively. The *Bay Area Park & Pool lot* is located at the southern edge of the METRO service area at Gulf Freeway and Bay Area Boulevard. The *Bay Area Park & Ride lot* is also located along Bay Area Boulevard, slightly more than a mile to the east of I-45. At some point in the future, METRO proposes to expand the parking facilities at Fuqua Park & Ride lot. We are also considering the potential of modifying the existing T-ramp from one-direction to two-directions to facilitate HOV movement into and out of the Fuqua lot for peak direction travel. This investment would improve passenger travel time and help reduce operating costs. METRO is also considering a new park & ride lot along the Gulf Freeway Corridor near El Dorado and Clear Lake City Boulevards near Friendswood. If TxDOT's recommended alternative for diamond lanes is implemented in this section of Gulf Freeway, we would request that appropriate access from this future facility to the diamond lanes be included in the final freeway design.

METRO has not conducted any environmental studies relative to this IH-45S project segment. Minimal impacts for the Preferred Alternative as stated in TxDOT's *I-45 South Corridor MIS, August 1999*, are anticipated. METRO does encourage that the studies be sensitive to impacts such as air quality, wetlands, noise, visual, displacements through additional right-of-way acquisitions, impacts during construction, and plant species and wildlife.

Mr. Allen Wynn, REM
March 12, 2003
Page 2

As always, METRO appreciates TXDOT partnering with METRO and keeping us informed in the early planning stages of its proposed improvements. We would also appreciate that METRO continue to be included in the public and agency outreach efforts during the course of the study. If you should have any questions or in need of assistance at any time during the study, feel free to contact Edmund J. Petry, Senior Environmental Planner at (713) 739-4613.

Sincerely,



John M. Sedlak,
Vice President
Planning, Engineering & Construction

Attachments

Baker

March 19, 2003

Mr. James M. Greenwade
 NRCS
 101 S. Main Street
 Temple, TX 76501-7602

Michael Baker Jr., Inc.
 A Unit of Michael Baker Corporation

16225 Park Ten Place, Suite 420
 Houston, TX 77084-5142

(281) 579-4579
 FAX (281) 579-4646

Re: Farmland Protection - Form CPA-106
 IH 45 Expansion (from Beltway 8 to FM 518)
 Harris and Galveston Counties

Dear Mr. Greenwade:

Enclosed please find a Farmland Conversion Impact Rating Form CPA-106 and project area maps for your review. The maps depict all prime farmland soils found underlying the proposed expansion and urban areas according to the 2000 US Census. We have calculated and checked all acreage impacts for all prime farmlands. No statewide important soils, other than prime farmlands, underlie the proposed expansion. Under Part IV of the CPA-106 form the total acre figures represent our best estimate of prime farmland soils that will be impacted by the proposed expansion. The prime farmland soil map units are as follows:

Soil Symbol	Soil Name	Area in Acres
Harris County		
Ba	Beaumont Clay (Prime Farmland if drained)	1.67
Bd	Bernard Clay Loam	18.7
Be	Bernard-Edna Complex	23.04
LcA	Lake Charles Clay, 0 to 1 Percent Slopes	4.78
Galveston County		
LaA	Lake Charles Clay, 0 to 1 Percent Slopes	0.32
LaB	Lake Charles Clay, 1 to 5 Percent Slopes	0.30

In addition, we have attempted to score the alignments according to Part VI instructions which requires an assessment using a point system, however the overall score requires your input under part VII. We have completed Part VI using the best information we have available; please revise as you feel necessary.

If you have any additional guidance or concerns during this process, please feel free to call me at (281) 579-4641. Thank you for your assistance

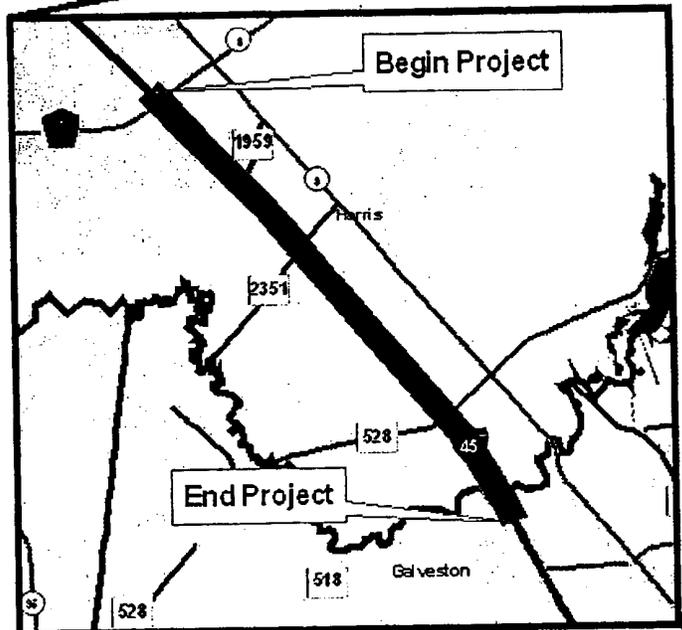
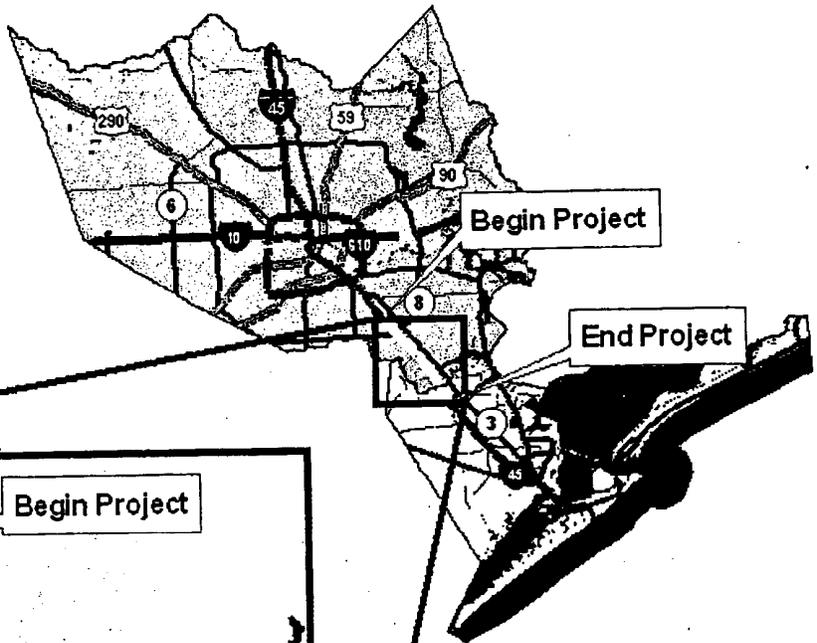
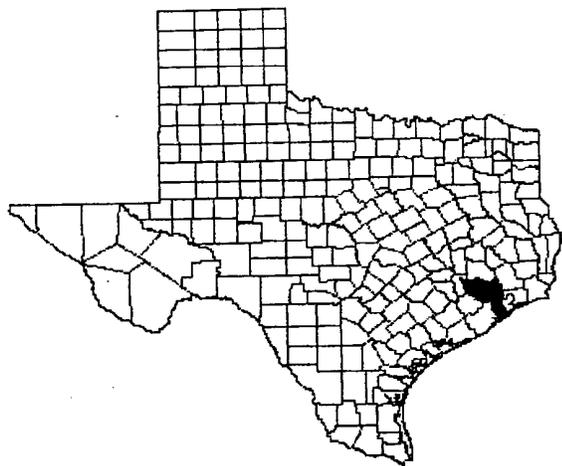
Sincerely,



Jeff Wellman
 Environmental Associate
 Michael Baker Jr., Inc.

ChallengeUs.

25433-001-0002



**Exhibit 1-1:
Project Location**



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Division of Ecological Services
17629 El Camino Real #211
Houston, Texas 77058-3051
281/286-8282 / (FAX) 281/488-5882



March 21, 2003

Allen Wynn
Michael Baker, Jr., Inc.
16225 Park Ten Place, Suite 420
Houston, Texas 77084

Dear Mr. Wynn:

This responds to your letter dated February 13, 2003, requesting information on a 10-mile section of IH-45 South, from Beltway 8 to FM 518 in Harris and Galveston County, Texas. The Texas Department of Transportation (TxDOT) proposes to widen this section of IH-45 from 6 lanes to 10 lanes, with construction activities including frontage road improvements, extension of the HOV lane, and interchange/grade separation improvements. The proposed improvements are based on the recommendations of the IH-45 South Corridor Major Investment Study.

A review of U.S. Fish and Wildlife Service files and your project map indicates that several populations of the endangered plant prairie dawn *Hymenoxys texana* occur to the east of the proposed project site. However, no information specific to your project site was located. If suitable habitat occurs at the project site, a qualified individual would need to conduct a survey to determine the presence or absence of prairie dawn at this site. The best time to conduct the survey is late March to early April. The plants are flowering at this time and thus are more conspicuous.

Prairie dawn is a small annual reaching a height of up to 4 inches that is traditionally found in poorly drained depressions or saline swales around the periphery of low natural pimple (mima) mounds in open grasslands. However, many of the prairie dawn sites around rapidly developing urban areas have been disturbed by the leveling of the mounds. Often brush and other woody vegetation have invaded the area surrounding the small, mostly barren areas where prairie dawn occurs. Normally, these small areas are sparsely vegetated and the soil is covered with a blue-green alga but prairie dawn has also been found in the mowed areas of public parks.

General information on prairie dawn has been enclosed. More precise information can be obtained from Dr. Larry Brown at 281/452-1105.

If you have any questions or if we can be of further assistance, please contact Catherine Yeargan at 281/286-8282.

Sincerely,

Carlos H. Mendoza
Field Supervisor, Clear Lake ES Field Office

Enclosure

STATUS: Endangered (51 FR 8683-March 13, 1986) without critical habitat. Recovery Plan approved in 1989.

DESCRIPTION: This member of the sunflower family (Asteraceae) is a small, single-stemmed or branching annual reaching a height of up to 6 inches. Leaves clustered at the plant base are spoon-shaped, with entire or toothed margins. Stem leaves are alternate, narrow with parallel sides, and no or few teeth on the margin. The small heads (a cluster of flowers) are 0.15 to 0.23 inch long with small yellowish disk flowers and minute ray flowers that appear to be missing. Seeds are cone-shaped, obscurely 4-angled, and hairy.

HABITAT: Occurs in sparsely vegetated areas of fine-sandy compacted soil. Specifically, the species occurs in the northern part of the Gulf Coastal Prairie, where it is found in poorly drained depressions or saline swales around the periphery of low, natural pimple mounds (mima mounds) in open grasslands. These mostly barren areas are sparsely vegetated and the soil is often covered with a blue-green alga (*Nostoc sp.*). It can also occur on disturbed soils such as rice fields, vacant lots, and pastures if the soil structure remains relatively intact.

DISTRIBUTION:

Present: In Texas: Fort Bend and Harris Counties.

Historic: In Texas: Harris County (and possibly La Salle).

THREATS AND REASONS FOR DECLINE: Habitat destruction and alteration due to residential development and road construction. Many of the sites around rapidly developing urban areas have been disturbed, with leveling of the pimple mounds and invasion by brush and other woody species.

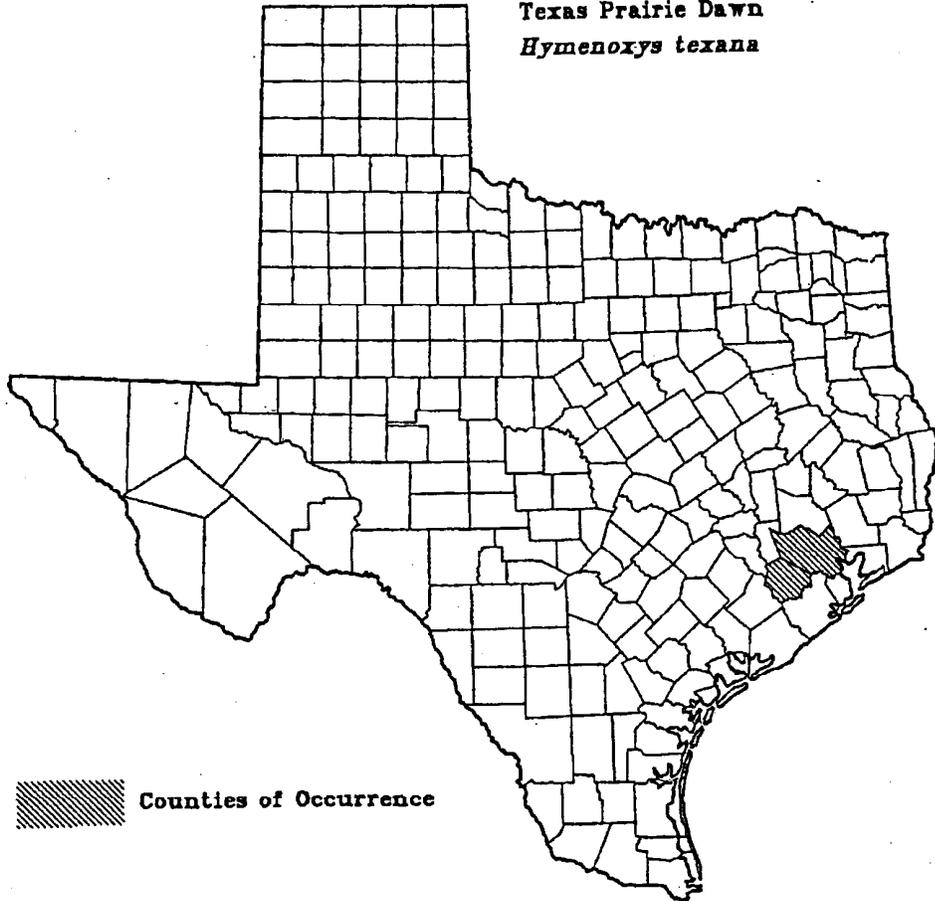
OTHER INFORMATION: This species flowers from March to early April and seeds mature from April to May. Composite thrips (*Microcephalothrips abdominalis*) are suspected pollinators. Recovery Plan approved in 1989. First collected in 1889, the species was considered extinct by many until it was rediscovered in 1981.

REFERENCES:

- Correll, D.S., and M.C. Johnston. 1970. *Manual of the Vascular Plants of Texas*. Texas Research Foundation, Renner, Texas. 1,881pp.
- Mahler, W.F. 1982. Status Report on *Hymenoxys texana*. U.S. Fish and Wildlife Service, Endangered Species Office, Albuquerque, NM. 10pp.
- Poole, J.M., and D.H. Riskind. 1987. *Endangered, Threatened, or Protected Native Plants of Texas*. Texas Parks and Wildlife Department, Austin, Texas.
- U.S. Fish and Wildlife Service. 1989. *Hymenoxys texana* Recovery Plan. Endangered Species Office, Albuquerque, NM. 53pp.



Texas Prairie Dawn
Hymenoxys texana



 **Counties of Occurrence**



United States
Department of
Agriculture

Natural
Resources
Conservation
Service

101 South Main
Temple, Texas
76501-7602

April 2, 2003

Michael Baker., Inc.
16225 Park Ten Place, Suite 420
Houston, Texas 77084-5142

Attention: Jeff Wellman, Environmental Associate

Subject: LNU-Farmland Protection-
IH-45Expansion (Beltway 8 to FM 518)
Harris and Galveston Counties, Texas

We have reviewed the information provided concerning the proposed expansion of IH-45 in Harris and Galveston Counties, Texas. This is part of NEPA evaluation for FWHA and TX DOT. We have evaluated the proposed site as required by the Farmland Protection Policy Act (FPPA).

The proposed site does contain Important Farmland soils and is subject to the FPPA. We have developed a composite rating of the soils of the site based on information provided in your letter of March 19, 2003 and completed the AD-1006 form you submitted. The project will require about 50 acres of Important Farmland. The Total Points in Part VII, of the form is 106. The FPPA states in section 658.4 that "Sites with a total score of less than 160 need not be given further consideration for protection and no additional sites need to be evaluated" No additional consideration will be needed for this project and no additional sites will need to be evaluated.

I have attached the completed AD-1006 (Farmland Conversion Impact Rating) form for this project indicating the approval status of this proposed project. Thanks for the resource materials you submitted to evaluate this project. If you have any questions please call James Greenwade at (254)-742-9960 or Sam Brown at (254)-742-9854, Fax (254)-742-9859.

Thanks,

James M. Greenwade
Soil Scientist
Soil Survey Section
USDA-NRCS, Temple, Texas

FARMLAND CONVERSION IMPACT RATING
FOR CORRIDOR TYPE PROJECTS

PART I (To be completed by Federal Agency)		3. Date of Land Evaluation Request 3-19-03	4. Sheet 1 of _____
1. Name of Project IH 45 Beltway 8 to FM 518		5. Federal Agency Involved FHWA	
2. Type of Project Highway Expansion		6. County and State Harris and Galveston, TX	
PART II (To be completed by NRCS)		1. Date Request Received by NRCS 3-21-03	2. Person Completing Form James Greenwood
3. Does the corridor contain prime, unique statewide or local important farmland? (If no, the FPPA does not apply - Do not complete additional parts of this form). YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>		4. Acres Irrigated Average Farm Size 9438 477	
5. Major Crop(s) Grain Sorghum	6. Farmable Land in Government Jurisdiction Acres: 820,200 % 73	7. Amount of Farmland As Defined in FPPA Acres: 769,800 % 69	
8. Name Of Land Evaluation System Used LESA	9. Name of Local Site Assessment System NONE	10. Date Land Evaluation Returned by NRCS 4-20-03	

PART III (To be completed by Federal Agency)	Alternative Corridor For Segment			
	Corridor A	Corridor B	Corridor C	Corridor D
A. Total Acres To Be Converted Directly	50			
B. Total Acres To Be Converted Indirectly, Or To Receive Services	0			
C. Total Acres In Corridor	50	0	0	0
PART IV (To be completed by NRCS) Land Evaluation Information				
A. Total Acres Prime And Unique Farmland	50			
B. Total Acres Statewide And Local Important Farmland	0			
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted	0.0001			
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value	20			
PART V (To be completed by NRCS) Land Evaluation Information Criterion Relative value of Farmland to Be Serviced or Converted (Scale of 0 - 100 Points)				
PART VI (To be completed by Federal Agency) Corridor Assessment Criteria (These criteria are explained in 7 CFR 658.5(c))				
	Maximum Points			
1. Area in Nonurban Use	15	8		
2. Perimeter in Nonurban Use	10	5		
3. Percent Of Corridor Being Farmed	20	0		
4. Protection Provided By State And Local Government	20	0		
5. Size of Present Farm Unit Compared To Average	10	0		
6. Creation Of Nonfarmable Farmland	25	0		
7. Availability Of Farm Support Services	5	5		
8. On-Farm Investments	20	0		
9. Effects Of Conversion On Farm Support Services	25	0		
10. Compatibility With Existing Agricultural Use	10	0		
TOTAL CORRIDOR ASSESSMENT POINTS	160	18	0	0
PART VII (To be completed by Federal Agency)				
Relative Value Of Farmland (From Part V)	100	88		
Total Corridor Assessment (From Part VI above or a local site assessment)	160	18	0	0
TOTAL POINTS (Total of above 2 lines)	260	106	0	0
1. Corridor Selected: A	2. Total Acres of Farmlands to be Converted by Project:	3. Date Of Selection:	4. Was A Local Site Assessment Used? YES <input type="checkbox"/> NO <input type="checkbox"/>	

5. Reason For Selection:

Signature of Person Completing this Part:

DATE

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



May 15, 2003

Mr. Allen Wynn, REM
Michael Baker Jr., Inc.
16225 Park Ten Place, Suite 420
Houston, TX 77084

COMMISSIONERS

KATHARINE ARMSTRONG
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FORT WORTH

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LEE M. BASS
CHAIRMAN-EMERITUS
FORT WORTH

ROBERT L. COOK
EXECUTIVE DIRECTOR

RE: Proposal to improve 10-mile section of IH 45 South from Beltway 8 to FM 518, Harris and Galveston Counties.

Dear Mr. Wynn:

This letter is in response to your request for information concerning the impacts upon fish, wildlife, and plant resources associated with the project referenced above. Texas Parks and Wildlife Department (TPWD) staff reviewed the map of the project area and provides following comments.

According to the information provided, the Texas Department of Transportation (TxDOT) proposes to widen IH 45 from 6 to 10 lanes and improve frontage roads. There are concerns about impacts to waters of the U.S. (particularly wetlands and Clear Creek), vegetation communities that provide habitat for wildlife, migratory birds, rare species, and unique plant communities. Staff has concerns about impacts to valuable riparian, wetland, and stream habitats associated with Clear Creek and requests specific information in the Environmental Assessment (EA) about potential impacts and TxDOT's plans to avoid, minimize, and mitigate for habitats affected at this location. TxDOT should develop a plan to address concerns about drainage, storm water treatment, and hazardous spills and include those plans in the EA. For assistance in preparation of the EA document, please find the attachment entitled **TPWD Suggested Guidelines for Preparation of Environmental Assessment Documents**. Please submit the draft EA to Kathy Boydston of the Wildlife Habitat Assessment Program at the letterhead address.

The Clean Water Act (CWA) sets the basic regulatory framework for regulating discharges of pollutants to U.S. waters. Section 404 of the CWA establishes a federal program to regulate the discharge of dredge and fill material into waters of the U.S., including wetlands. The U.S. Army Corps of Engineers (COE) and the Environmental Protection Agency (EPA) are primarily responsible for making jurisdictional determinations and regulating wetlands under Section 404 of the CWA. The COE also makes jurisdictional determinations under Section 10 of the Rivers and Harbors Act of 1899. If the proposed construction would impact aquatic resources then the project sponsor should contact the U.S. Army Corp of Engineers (Corpus Christi Regulatory Field Office) for determination of jurisdictional wetlands and for permitting requirements. Compensation may be required for any encroachment into these areas. TxDOT should coordinate all



Take a kid
hunting or fishing

• • •

Visit a state park
or historic site

4200 SMITH SCHOOL ROAD
AUSTIN, TEXAS 78744-3291
512-389-4800

www.tpwd.state.tx.us

To manage and conserve the natural and cultural resources of Texas and to provide hunting, fishing and outdoor recreation opportunities for the use and enjoyment of present and future generations.

Mr. Wynn

Page 2

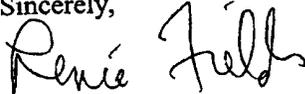
wetland (both jurisdictional and isolated) impacts with TPWD's Resource Protection office in Dickenson prior to submitting the final application to the Corps.

In order to protect migratory birds construction activities should occur outside the March - August migratory bird nesting season of each year the project is authorized and lasting for the life of the project. Construction activities include (but are not limited to) removal of nests or nest structures, tree felling as well as vegetation clearing, trampling or maintenance. Additional information regarding the Migratory Bird Treaty Act may be obtained from the U.S. Fish and Wildlife Service Southwest Regional Office (Region 2) at (505) 248-6879.

Please find the annotated list of special species that occur in Harris and Galveston Counties. **More site-specific information from a search of the BCD database and review of potential project impacts to endangered and threatened species can be obtained for a \$50 fee. For more information about the BCD or threatened and endangered species in the project area please contact Amy Sugeno at (512) 912-7054 or Celeste Brancel-Brown at (512) 912-7021.**

We appreciate the opportunity to participate in your planning activities. If you have any questions contact me in San Marcos at (512) 396-9211.

Sincerely,



Renée Fields

Wildlife Habitat Assessment Program

Wildlife Division

/jrf

Attachment

height of trees, woody shrubs or brush; and estimated canopy coverage of woody vegetation. Total acreage of each cover type disturbed by the project should also be listed.

- *
 - Describe the fauna that would be associated with the dominant vegetation cover types identified above.
 - *
 - Identify "sensitive" ecosystems which occur in the study area such as: springs, streams, rivers, floodplains, vegetation corridors, bottomland hardwoods, wetlands, bays, estuaries, native grasslands, etc.
 - *
 - Describe the occurrence of threatened/endangered species (or their habitats) and unique or rare natural communities which occur in the study area.
 - a. On site inspection of the study area for permanent or seasonal occurrence.
 - b. On site inspection of the study area for occurrence of habitat.
 - c. Interviews with recognized experts on all species with a potential of occurrence.
 - d. Literature review of data applicable to a potential occurring species concerning species distribution, habitat needs, and biological requirements.
2. Cultural Resources
- *
 - Identify public use and open space areas in the vicinity of the proposed project such as parks, natural areas, wildlife preserves and management areas.
 - Identify previous, present, and proposed land uses within the study area.
 - Identify significant archeological features within the study area.
 - Identify significant historical features in the study area with special consideration of "National Register of Historic Places" properties.
 - Identify rights-of-ways, easements, public utilities, and transportation features within the study area.
 - Identify noise pollution sources and current noise levels within the study area.
 - Identify existing and proposed public health and hazardous waste facilities that exist in the study area such as land fills, hazardous waste sites, wastewater treatment facilities, septic tanks, etc.
 - Identify socioeconomic factors, if applicable.

*C. Project Alternatives

List and describe project alternatives (including "no action") and associated impacts (direct and indirect) to described resources. If the project is potentially large in scope, cumulative effects with other similar projects may be required.

***D. Mitigation**

A major responsibility of TPWD is to conserve and protect the state's fish, wildlife, and plant resources. Certain categories of these biotic resources warrant special consideration. These include habitats that are locally and regionally scarce, habitats supporting unique species or communities, stream and river ecosystems, bays, estuaries, wetlands, bottomland hardwoods, and native grasslands. All projects that could adversely affect these resources should be fully evaluated, and where possible, implementation of less damaging alternatives undertaken. If it is determined that a project or action will potentially affect fish, wildlife or plant resources, a process for adverse impact reduction should be initiated. Mitigation measures should be developed and implemented sequentially as follows:

1. **AVOIDANCE:** Avoiding adverse impacts through changes in project location, design, operation, or maintenance procedures, or through selection of other less damaging alternatives to the project or action.

2. **MINIMIZATION:** Minimizing impacts and by project modification or rectification to restore or improve impacted habitat to pre-project condition; or through reducing the impacts over time by preservation and maintenance operations during the life of the project or action.

3. **COMPENSATION:** Compensating for unavoidable impacts by providing replacement or substitute resources (including appropriate management) for losses caused by project construction, operation, or maintenance.

Mitigation should be an integral part of any action or project that adversely affects fish, wildlife, and habitats upon which they depend. Failure to adequately avoid or minimize adverse impacts or to adequately compensate for unavoidable losses of natural resources is a serious deficiency in any project plan and may cause delays in this Department's review and assessment of the adverse impacts upon fish & wildlife resources. In assessing project impacts, reasonable foreseeable secondary and cumulative impacts should be included.

***E. Coordination**

Provide copies of pertinent coordination correspondence.

***F. Document Preparers and Their Qualifications**

***G. Bibliography**

(References: 40 CFR Parts 1500-1508 and various EPA handouts concerning Environmental Assessment documentation.)

HARRIS COUNTY

	Federal Status	State Status
*** AMPHIBIANS ***		
Houston Toad (<i>Bufo houstonensis</i>) - endemic; species sandy substrate, water in pools, ephemeral pools, stock tanks; breeds in spring especially after rains; burrows in soil when inactive; breeds February-June; associated with soils of the Sparta, Carrizo, Goliad, Queen City, Recklaw, Weches, and Willis geologic formations	LE	E
*** BIRDS ***		
American Peregrine Falcon (<i>Falco peregrinus anatum</i>) - potential migrant; nests in west Texas	DL	E
Arctic Peregrine Falcon (<i>Falco peregrinus tundrius</i>) - due to similar field characteristics, treat all Peregrine Falcons as federal listed Endangered; potential migrant	DL	T
Attwater's Greater Prairie-chicken (<i>Tympanuchus cupido attwateri</i>) - this county within historic range; endemic; open prairies of mostly thick grass one to three feet tall; from near sea level to 200 feet along coastal plain on upper two-thirds of Texas coast; males form communal display flocks during late winter-early spring; booming grounds important; breeding February-July	LE	E
Bald Eagle (<i>Haliaeetus leucocephalus</i>) - found primarily near seacoasts, rivers, and large lakes; nests in tall trees or on cliffs near water; communally roosts, especially in winter; hunts live prey, scavenges, and pirates food from other birds	LT-PDL	T
Black Rail (<i>Laterallus jamaicensis</i>) - salt, brackish, and freshwater marshes, pond borders, wet meadows, & grassy swamps; nests in or along edge of marsh, sometimes on damp ground, but usually on mat of previous year's dead grasses; nest usually hidden in marsh grass or at base of Salicornia		
Brown Pelican (<i>Pelecanus occidentalis</i>) - largely coastal and near shore areas, where it roosts on islands and spoil banks	LE	E
Henslow's Sparrow (<i>Ammodramus henslowii</i>) - wintering individuals (not flocks) found in weedy fields or cut-over areas where lots of bunch grasses occur along with vines and brambles; a key component is bare ground for running/walking; likely to occur, but few records within this county		
Mountain Plover (<i>Charadrius montanus</i>) - shortgrass plains and plowed fields (bare, dirt fields); primarily insectivorous; winter resident in this area	PT	
Piping Plover (<i>Charadrius melodus</i>) - wintering migrant along the Texas Gulf Coast; beaches and bayside mud or salt flats	LT	T
Reddish Egret (<i>Egretta rufescens</i>) - resident of the Texas Gulf Coast; brackish marshes and shallow salt ponds and tidal flats; nests on ground or in trees or bushes, on dry coastal islands in brushy thickets of yucca and prickly pear		T
Snowy Plover (<i>Charadrius alexandrinus</i>) - wintering migrant along the Texas Gulf Coast beaches and bayside mud or salt flats		
Swallow-tailed Kite (<i>Elanoides forficatus</i>) - lowland forested regions, especially swampy areas, ranging into open woodland; marshes, along rivers, lakes, and ponds; nests high in tall tree in clearing or on forest woodland edge, usually in pine, cypress, or various deciduous trees		T
White-faced Ibis (<i>Plegadis chibi</i>) - prefers freshwater marshes, sloughs, and irrigated rice fields, but will attend brackish and saltwater habitats; nests in marshes, in low trees, on the ground in bulrushes or reeds, or on floating mats		T

	Federal Status	State Status
White-tailed Hawk (<i>Buteo albicaudatus</i>) - near coast on prairies, cordgrass flats, and scrub-live oak; further inland on prairies, mesquite and oak savannas, and mixed savanna-chaparral; breeding March-May		T
Whooping Crane (<i>Grus americana</i>) - potential migrant	LE	E T
Wood Stork (<i>Mycteria americana</i>) - forages in prairie ponds, flooded pastures or fields, ditches, and other shallow standing water, including salt-water; usually roosts communally in tall snags, sometimes in association with other wading birds (i.e. active heronries); breeds in Mexico and birds move into Gulf States in search of mud flats and other wetlands, even those associated with forested areas; formerly nested in Texas, but no breeding records since 1960		

*** BIRDS-RELATED ***

Colonial waterbird nesting areas - many rookeries active annually

*** FISHES ***

Creek Chubsucker (*Erimyzon oblongus*) - small rivers and creeks of various types; seldom in impoundments; prefers headwaters, but seldom occurs in springs; young typically in headwater rivulets or marshes; spawns in river mouths or pools, riffles, lake outlets, upstream creeks

T

*** MAMMALS ***

Plains Spotted Skunk (*Spilogale putorius interrupta*) - catholic; open fields, prairies, croplands, fence rows, farmyards, forest edges, and woodlands; prefers wooded, brushy areas and tallgrass prairie

Rafinesque's Big-Eared Bat (*Corynorhinus rafinesquii*) - roosts in cavity trees of bottomland hardwoods, concrete culverts, and abandoned man-made structures

Southeastern Myotis (*Myotis austroriparius*) - roosts in cavity trees of bottomland hardwoods, concrete culverts, and abandoned man-made structures

T

*** REPTILES ***

Alligator Snapping Turtle (*Macrochelys temminckii*) - deep water of rivers, canals, lakes, and oxbows; also swamps, bayous, and ponds near deep running water; sometimes enters brackish coastal waters; usually in water with mud bottom and abundant aquatic vegetation; may migrate several miles along rivers; active March-October; breeds April-October

T

Atlantic Hawksbill Sea Turtle (<i>Eretmochelys imbricata</i>) - Gulf and bay system	LE	E
Green Sea Turtle (<i>Chelonia mydas</i>) - Gulf and bay system	LT	T
Gulf Saltmarsh Snake (<i>Nerodia clarkii</i>) - saline flats, coastal bays, & brackish river mouths		
Kemp's Ridley Sea Turtle (<i>Lepidochelys kempi</i>) - Gulf and bay system	LE	E
Leatherback Sea Turtle (<i>Dermochelys coriacea</i>) - Gulf and bay system	LE	E
Loggerhead Sea Turtle (<i>Caretta caretta</i>) - Gulf and bay system	LT	T
Smooth Green Snake (<i>Liochlorophis vernalis</i>) - Gulf Coastal Plain; mesic coastal shortgrass prairie vegetation; prefers dense vegetation		
Texas Diamondback Terrapin (<i>Malaclemys terrapin littoralis</i>) - coastal marshes, tidal flats, coves, estuaries, and lagoons behind barrier beaches; brackish and salt water; burrows into mud when inactive; may venture into lowlands at high tide		

T

	Federal Status	State Status
Texas Garter Snake (<i>Thamnophis sirtalis annectens</i>) - wet or moist microhabitats are conducive to the species occurrence, but is not necessarily restricted to them; hibernates underground or in or under surface cover; breeds March-August		
Texas Horned Lizard (<i>Phrynosoma cornutum</i>) - open, arid and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush or scrubby trees; soil may vary in texture from sandy to rocky; burrows into soil, enters rodent burrows, or hides under rock when inactive; breeds March-September		T
Timber/Canebrake Rattlesnake (<i>Crotalus horridus</i>) - swamps, floodplains, upland pine and deciduous woodlands, riparian zones, abandoned farmland; limestone bluffs, sandy soil or black clay; prefers dense ground cover, i.e. grapevines or palmetto		T

*** VASCULAR PLANTS ***

Coastal gay-feather (<i>Liatris bracteata</i>) - endemic; black clay soils of prairie remnants; flowering in fall		
Houston machaeranthera (<i>Machaeranthera aurea</i>) - endemic; seasonally wet, saline barren areas, around the base of mima mounds in coastal prairies, or barren to somewhat vegetated openings in grasslands, including pastures and roadsides, on loamy to sandy loam soils; flowering October-November		
Texas windmill-grass (<i>Chloris texensis</i>) - endemic; sandy to sandy loam soils in open to sometimes barren areas in prairies and grasslands, including ditches and roadsides; flowering in fall		
Texas meadow rue (<i>Thalictrum texanum</i>) - endemic; mesic woodlands or forests, including wet ditches on partially shaded roadsides; flowering March-May		
Texas prairie dawn (<i>Hymenoxys texana</i>) - endemic; in poorly drained depressions or base of mima mounds in open grasslands or almost barren areas on slightly saline soils; flowering March-early April	LE	E
Threeflower broomweed (<i>Thurovia triflora</i>) - endemic; black clay soils of remnant grasslands, also tidal flats; flowering July-November		

LE,LT - Federally Listed Endangered/Threatened
 PE,PT - Federally Proposed Endangered/Threatened
 E/SA,T/SA - Federally Endangered/Threatened by Similarity of Appearance
 C1 - Federal Candidate, Category 1; information supports proposing to list as endangered/threatened
 DL,PDL - Federally Delisted/Proposed Delisted
 E,T - State Endangered/Threatened
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Species appearing on these lists do not all share the same probability of occurrence. Some species are migrants or wintering residents only, or may be historic or considered extirpated.

GALVESTON COUNTY

	Federal Status	State Status
*** BIRDS ***		
American Peregrine Falcon (<i>Falco peregrinus anatum</i>) - potential migrant; nests in west Texas	DL	E
Arctic Peregrine Falcon (<i>Falco peregrinus tundrius</i>) - due to similar field characteristics, treat all Peregrine Falcons as federal listed Endangered; potential migrant	DL	T
Attwater's Greater Prairie-chicken (<i>Tympanuchus cupido attwateri</i>) - open prairies of mostly thick grass one to three feet tall; from near sea level to 200 feet along coastal plain on upper two-thirds of Texas coast; males form communal display flocks during late winter-early spring; booming grounds important; breeding February-July	LE	E
Bald Eagle (<i>Haliaeetus leucocephalus</i>) - found primarily near seacoasts, rivers, and large lakes; nests in tall trees or on cliffs near water; communally roosts, especially in winter; hunts live prey, scavenges, and pirates food from other birds	LT-PDL	T
Black Rail (<i>Laterallus jamaicensis</i>) - salt, brackish, and freshwater marshes, pond borders, wet meadows, & grassy swamps; nests in or along edge of marsh, sometimes on damp ground, but usually on mat of previous year's dead grasses; nest usually hidden in marsh grass or at base of Salicornia		
Brown Pelican (<i>Pelecanus occidentalis</i>) - largely coastal and near shore areas, where it roosts on islands and spoil banks	LE	E
Henslow's Sparrow (<i>Ammodramus henslowii</i>) - wintering individuals (not flocks) found in weedy fields or cut-over areas where lots of bunch grasses occur along with vines and brambles; a key component is bare ground for running/walking; likely to occur, but few records within this county		
Mountain Plover (<i>Charadrius montanus</i>) - shortgrass plains and plowed fields (bare, dirt fields); primarily insectivorous; winter resident in this area	PT	
Piping Plover (<i>Charadrius melodus</i>) - wintering migrant along the Texas Gulf Coast; beaches and bayside mud or salt flats	LT	T
Reddish Egret (<i>Egretta rufescens</i>) - resident of the Texas Gulf Coast; brackish marshes and shallow salt ponds and tidal flats; nests on ground or in trees or bushes, on dry coastal islands in brushy thickets of yucca and prickly pear		T
Snowy Plover (<i>Charadrius alexandrinus</i>) - wintering migrant along the Texas Gulf Coast beaches and bayside mud or salt flats		
Sooty Tern (<i>Sterna fuscata</i>) - predominately "on the wing"; does not dive, but snatches small fish and squid with bill as it flies or hovers over water; breeding April-July		T
Swallow-tailed Kite (<i>Elanoides forficatus</i>) - lowland forested regions, especially swampy areas, ranging into open woodland; marshes, along rivers, lakes, and ponds; nests high in tall tree in clearing or on forest woodland edge, usually in pine, cypress, or various deciduous trees		T
White-faced Ibis (<i>Plegadis chibi</i>) - prefers freshwater marshes, sloughs, and irrigated rice fields, but will attend brackish and saltwater habitats; nests in marshes, in low trees, on the ground in bulrushes or reeds, or on floating mats		T
White-tailed Hawk (<i>Buteo albicaudatus</i>) - near coast on prairies, cordgrass flats, and scrub-live oak; further inland on prairies, mesquite and oak savannas, and mixed savanna-chaparral; breeding March-May		T
Whooping Crane (<i>Grus americana</i>) - winters in and around Aransas NWR and migrates to Canada for breeding; only remaining natural breeding population of this species; potential migrant	LE	E

Federal Status	State Status
	T

Wood Stork (*Mycteria americana*) - forages in prairie ponds, flooded pastures or fields, ditches, and other shallow standing water, including salt-water; usually roosts communally in tall snags, sometimes in association with other wading birds (i.e. active heronries); breeds in Mexico and birds move into Gulf States in search of mud flats and other wetlands, even those associated with forested areas; formerly nested in Texas, but no breeding records since 1960

*** BIRDS-RELATED ***

Colonial waterbird nesting areas - many rookeries active annually
 Migratory songbird fallout areas - oak mottes and other woods/thickets provide foraging/roosting sites for neotropical migratory songbirds

*** MAMMALS ***

Plains Spotted Skunk (*Spilogale putorius interrupta*) - catholic; open fields, prairies, croplands, fence rows, farmyards, forest edges, and woodlands; prefers wooded, brushy areas and tallgrass prairie
 West Indian Manatee (*Trichechus manatus*) - Gulf and bay system; opportunistic, aquatic herbivore

LE	E
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*** REPTILES ***

Alligator Snapping Turtle (*Macrolemys temminckii*) - deep water of rivers, canals, lakes, and oxbows; also swamps, bayous, and ponds near deep running water; sometimes enters brackish coastal waters; usually in water with mud bottom and abundant aquatic vegetation; may migrate several miles along rivers; active March-October; breeds April-October

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LE	E
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Kemp's Ridley Sea Turtle (*Lepidochelys kempii*) - Gulf and bay system

LE	E
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LE	E
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T

Federal State
Status Status

*** VASCULAR PLANTS ***

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- Correll's false dragon-head (*Physostegia correllii*) - wet soils including roadside ditches and irrigation channels; flowering June-July
- Grand Prairie evening primrose (*Oenothera pilosella* ssp. *sessilis*) known in Texas from a single collection made in the 1850's from Galveston Island; elsewhere known from sandy soils in low rises in Mississippi Delta; flowering May-June
- Houston machaeranthera (*Machaeranthera aurea*) - endemic; seasonally wet, saline barren areas, around the base of mima mounds in coastal prairies, or barren to somewhat vegetated openings in grasslands, including pastures and roadsides, on loamy to sandy loam soils; flowering October-November
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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Division of Ecological Services
17629 El Camino Real #211
Houston, Texas 77058-3051
281/286-8282 / (FAX) 281/488-5882



June 9, 2003

Casey Sherrill
Crouch Environmental Services, Inc.
402 Teetshorn
Houston, Texas 77009

Dear Mr. Sherrill:

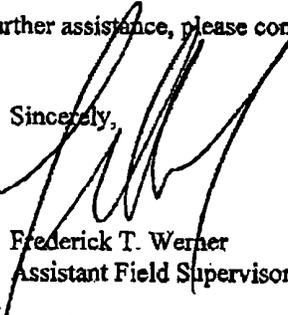
This responds to your letter dated May 20, 2003, requesting information on a proposed road widening and improvement project planned for Interstate 45 from FM 1959 south to FM 518 in Houston and Galveston Counties, Texas.

A review of U.S. Fish and Wildlife Service files and your project map indicates that several populations of the endangered plant prairie dawn *Hymenoxys texana* occur to the east of the proposed project site. However, no information specific to your project site was located. If suitable habitat occurs at the project site, a qualified individual would need to conduct a survey to determine the presence or absence of prairie dawn at this site. The best time to conduct the survey is late March to early April. The plants are flowering at this time and thus are more conspicuous.

Prairie dawn is a small annual reaching a height of up to 4 inches that is traditionally found in poorly drained depressions or saline swales around the periphery of low natural pimple (mima) mounds in open grasslands. However, many of the prairie dawn sites around rapidly developing urban areas have been disturbed by the leveling of the mounds. Often brush and other woody vegetation have invaded the area surrounding the small, mostly barren areas where prairie dawn occurs. Normally, these small areas are sparsely vegetated and the soil is covered with a blue-green alga but prairie dawn has also been found in the mowed areas of public parks.

General information on prairie dawn has been enclosed. More precise information can be obtained from Dr. Larry Brown at 281/452-1105.

If you have any questions or if we can be of further assistance, please contact Catherine Yeargan at 281/286-8282.

Sincerely,


Frederick T. Werner
Assistant Field Supervisor, Clear Lake ES Field Office

Enclosure

Texas Prairie Dawn-flower *Hymenoxys texana*

STATUS: Endangered (51 FR 8683-March 13, 1986) without critical habitat. Recovery Plan approved in 1989.

DESCRIPTION: This member of the sunflower family (Asteraceae) is a small, single-stemmed or branching annual reaching a height of up to 6 inches. Leaves clustered at the plant base are spoon-shaped, with entire or toothed margins. Stem leaves are alternate, narrow with parallel sides, and no or few teeth on the margin. The small heads (a cluster of flowers) are 0.15 to 0.23 inch long with small yellowish disk flowers and minute ray flowers that appear to be missing. Seeds are cone-shaped, obscurely 4-angled, and hairy.

HABITAT: Occurs in sparsely vegetated areas of fine-sandy compacted soil. Specifically, the species occurs in the northern part of the Gulf Coastal Prairie, where it is found in poorly drained depressions or saline swales around the periphery of low, natural pimple mounds (mima mounds) in open grasslands. These mostly barren areas are sparsely vegetated and the soil is often covered with a blue-green alga (*Nostoc sp.*). It can also occur on disturbed soils such as rice fields, vacant lots, and pastures if the soil structure remains relatively intact.

DISTRIBUTION:

Present: In Texas: Fort Bend and Harris Counties.

Historic: In Texas: Harris County (and possibly La Salle).

THREATS AND REASONS FOR DECLINE: Habitat destruction and alteration due to residential development and road construction. Many of the sites around rapidly developing urban areas have been disturbed, with leveling of the pimple mounds and invasion by brush and other woody species.

OTHER INFORMATION: This species flowers from March to early April and seeds mature from April to May. Composite thrips (*Microcephalothrips abdominalis*) are suspected pollinators. Recovery Plan approved in 1989. First collected in 1889, the species was considered extinct by many until it was rediscovered in 1981.

REFERENCES:
 Correll, D.S., and M.C. Johnston. 1970. Manual of the Vascular Plants of Texas. Texas Research Foundation, Renner, Texas. 1,881pp.
 Mahler, W.F. 1982. Status Report on *Hymenoxys texana*. U.S. Fish and Wildlife Service, Endangered Species Office, Albuquerque, NM. 10pp.
 Poole, J.M., and D.H. Riskind. 1987. Endangered, Threatened, or Protected Native Plants of Texas. Texas Parks and Wildlife Department, Austin, Texas.
 U.S. Fish and Wildlife Service. 1989. *Hymenoxys texana* Recovery Plan. Endangered Species Office, Albuquerque, NM. 53pp.



REV. DATE 6/95



August 7, 2003

Mr. Casey Sherrill
Crouch Environmental Services, Inc.
402 Teetshorn Street
Houston, TX 77009

Dear Mr. Sherrill:

This letter is in response to your review request, dated February 3 and received May 23, 2003, for potential impacts to rare and threatened and endangered (T&E) species from proposed widening and improvements to IH-45 between FM 1959 and SH 518 south of Houston, Harris and Galveston counties (Crouch Project No. 15-03).

Given the small proportion of public versus private land in Texas, the TPWD Biological and Conservation Data System (BCD) does not include a representative inventory of rare resources in the state. Although it is based on the best data available to TPWD regarding rare species, the data from the BCD do not provide a definitive statement as to the presence, absence, or condition of special species, natural communities, or other significant features in your project area. These data cannot substitute for an on-site evaluation by your qualified biologists. The BCD information is intended to assist you in avoiding harm to species that may occur on your site.

Based on the project as presented, the TPWD Galveston and Harris county lists, and presently known BCD occurrences, the following species and natural community could be impacted by proposed project activities, if suitable habitat is present:

Federal and State Listed Endangered
Texas prairie dawn (*Hymenoxys texana*)

Federal and State Listed Threatened
Bald Eagle (*Haliaeetus leucocephalus*) (Federally Proposed for Delisting)

State Listed Threatened
Alligator Snapping Turtle (*Macrochelys temminckii*)
Creek Chubsucker (*Erimyzon oblongus*)

Species of Concern
Texas windmill-grass (*Chloris texensis*)

Natural Community
Little Bluestem-Brownseed Paspalum (*Schizachyrium scoparium-Paspalum plicatulum*) Series

hrts IH 45

To manage and conserve the natural and cultural resources of Texas and to provide hunting, fishing and outdoor recreation opportunities for the use and enjoyment of present and future generations.

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Mr. Casey Sherrill, Crouch Environmental
IH-45 Improvements/Harris and Galveston Counties
Page 2

TPWD recommends the Harris and Galveston county lists be reviewed as rare and T&E species may occur on or near the project site or be impacted by project activities. If rare or T&E species are found within or near the project area, TPWD recommends precautions be taken to avoid adverse impacts to them. Additionally, TPWD recommends the US Fish and Wildlife Service (FWS) Houston Ecological Services office be contacted at (281) 286-8282 for more information on Endangered Species Act compliance.

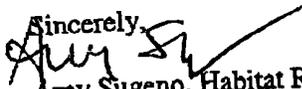
Two Texas windmill-grass occurrences and one Little Bluestem-Brownseed Paspalum Series occurrence have been documented within or possibly within 1 mile of the proposed project site. BCD printouts are enclosed for these occurrences. **Please do not include the occurrence printouts in your draft or final documents. Because some species are especially sensitive to collection or harassment, these records are for your reference only.**

Migratory bird species may not be disturbed and must be dealt with in a manner consistent with the Migratory Bird Treaty Act (MBTA). The MBTA implicitly prohibits intentional and unintentional take of migratory birds, including their nests and eggs, except when authorized under a FWS permit. TPWD recommends construction activities not be conducted during the general bird nesting season, from March to August, to avoid adverse impacts to nesting birds. Additional information regarding the MBTA may be obtained through the FWS Region 2 Migratory Bird Permit Office at (505) 248-7882.

Please find enclosed an updated TPWD "Rare Resources Review Request" form for use with all future review request letters; this form supercedes any previous TPWD "Threatened and Endangered Species Review" request forms. If you have any questions about this form or if you would like this form sent to you electronically, please contact me.

This letter does not constitute a general review of fish and wildlife impacts that might result from the activity for which this information is provided. Should you need such a review, please contact Kathy Boydston, TPWD Wildlife Habitat Assessment Program, Wildlife Division (512) 389-4571.

Thank you for the opportunity to comment on this project. Please contact me if you have any questions or need additional assistance (512) 912-7054.

Sincerely,

Amy Sugeno, Habitat Review Assistant
Wildlife Habitat Assessment Program, Wildlife Division
Threatened and Endangered Species

Enclosures (3)



Notes for
County Lists of
Texas' Special Species



The Texas Parks and Wildlife (TPWD) county lists include:

Vertebrates, Invertebrates, and Vascular Plants on the special species lists of the Texas Biological and Conservation Data System. These special species lists are comprised of all species, subspecies, and varieties that are federally listed; proposed to be federally listed; have federal candidate status; are state listed; or carry a global conservation status indicating a species is imperiled, very rare, or vulnerable to extirpation.

Colonial Waterbird Nesting Areas and Migratory Songbird Fallout Areas are contained on the county lists for coastal counties only.

The TPWD county lists exclude:

Natural Plant Communities such as Little Bluestem-Indiangrass Series (native prairie remnant), Water Oak-Willow Oak Series (bottomland hardwood community), Saltgrass-Cordgrass Series (salt or brackish marsh), Sphagnum-Beakrush Series (seepage bog).

Other Significant Features such as non-coastal bird rookeries, migratory bird information, bat roosts, bat caves, invertebrate caves, and prairie dog towns.

The **revised date** on each county list reflects the last date any changes or revisions were made for that county and reflects current listing statuses and taxonomy.

Species that appear on county lists do not all share the same probability of occurrence within a county. Some species are migrants or wintering residents only. Additionally, a few species may be historic or considered extirpated within a county. Species considered extirpated within the state are so flagged on each list.

This information is for your assistance only; due to continuing data updates, **please do not reprint or redistribute the information, instead refer all requesters to our office to obtain the most current information available.**

Last Revised Date: 10/21/02

Texas Parks & Wildlife
Annotated County Lists of Rare Species

GALVESTON COUNTY

	Federal Status	State Status
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Texas Parks & Wildlife
 Annotated County Lists of Rare Species
GALVESTON COUNTY, cont'd

Last Revision: 26 Aug 1999
 Page 3 of 3

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cc: CRM 3-11-04

Texas Department of Transportation

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

March 5, 2004

Section 106/Antiquities Code of Texas: Archeological Review
Archeological Investigations for IH 45 South Improvements, Harris & Galveston Counties, Texas
TAC Permit #3088 (CSJ: 0500-03-462 & 0500-01-300)

Dr. James E. Bruseth
Department of Antiquities Protection
Texas Historical Commission
P.O. Box 12276
Austin, Texas 78711

Dear Dr. Bruseth:

The proposed project will be undertaken with Federal funding. In accordance with Section 106 (and the Programmatic Agreement among the TxDOT, FHWA, the Advisory Council on Historic Preservation, and the THC) and the Antiquities Code of Texas (and the Memorandum of Understanding between TxDOT and the THC), this letter continues consultation for the proposed undertaking.

The accompanying two copies of the draft report, *Archeological Investigations Technical Report: IH 45 South (Beltway 8 to FM 518), Harris and Galveston Counties, Texas*, are enclosed for your review. TxDOT requests your comments on this draft report. TxDOT concurs with the recommendation of this report and request your concurrence that there is no need for further archeological work or consultation with your office. The final draft would be anticipated shortly after comments to this draft are received. We look forward to receiving your comments and appreciate your time. If you have any questions or have further need of information, please contact Allen Bettis of the TxDOT Archeological Studies Program at (512) 416-2747.

Sincerely,

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

Attachment

cc w/o attachments: Susan Mooney, Michael Baker Jr., Inc. - Austin
Craig Rollins - Houston District Office JKW ACB SBW/JG

Concurrence by:
for F. Lawrence Oaks, State Historic Preservation Officer

3-11-04

Date:

Socioeconomic Data

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Table 1. Population Trends.

	Texas	Galveston County	Harris County	Houston	League City	Webster
Population						
1980	14,229,191	195,940	2,409,547	1,595,167	16,575	2,405
1990	16,986,510	217,399	2,818,199	1,630,553	30,159	4,678
2000	20,851,820	250,158	3,400,578	1,953,631	45,444	9,083
2010 ⁽¹⁾	24,330,643	262,360	3,949,717	n/a	n/a	n/a
2020 ⁽¹⁾	28,005,792	270,405	4,535,967	n/a	n/a	n/a
2025 ⁽¹⁾	29,897,444	272,084	4,845,173	n/a	n/a	n/a
Percent Change						
1980 to 1990	19.4%	11.0%	17.0%	2.2%	82.0%	94.5%
1990 to 2000	22.8%	15.1%	20.7%	19.8%	50.7%	94.2%
2000 to 2010	16.7%	4.9%	16.1%	n/a	n/a	n/a
2010 to 2020	15.1%	3.1%	14.8%	n/a	n/a	n/a
2020 to 2025	6.8%	0.6%	6.8%	n/a	n/a	n/a

Sources: U.S. Bureau of the Census (1960, 1970, 1980, 1990, and 2000 data) and Texas State Data Center (2025 projected data)
 Notes: (1) Projected based on the One-Half 1990-2000 Migration (0.5) Scenario; n/a = not available

Table 2. Racial and Ethnic Populations.

Block Groups ⁽¹⁾	2000 Population	Number White	Percentage White	Number Ethnic Minority	Percentage Ethnic Minority
Census Tract 3211, Block Group 1	1,771	843	48%	928	52%
Census Tract 3401, Block Group 1	1,559	898	58%	661	42%
Census Tract 3409, Block Group 1	4,151	2,475	60%	1,676	40%
Census Tract 3504, Block Group 1	1,599	770	48%	829	52%
Census Tract 3506, Block Group 1	3,978	2,634	66%	1,344	34%
Census Tract 3401, Block Group 2	1,169	754	64%	415	36%
Census Tract 3410, Block Group 2	5,441	3,709	68%	1,732	32%
Census Tract 3411, Block Group 2	889	319	36%	570	64%
Census Tract 3504, Block Group 2	3,972	1,530	39%	2,442	61%
Census Tract 3505, Block Group 2	3,076	848	28%	2,228	72%
Census Tract 7205, Block Group 2	1,581	1,350	85%	231	15%
Census Tract 7207, Block Group 2	2,701	2,080	77%	621	23%
Census Tract 3505, Block Group 3	1,422	473	33%	949	67%
Census Tract 7205, Block Group 3	2,189	1,537	70%	652	30%
Census Tract 3340, Block Group 4	1,437	555	39%	882	61%
Census Tract 7205, Block Group 4	2,971	2,118	71%	853	29%
Census Tract 3412, Block Group 6	1,405	457	33%	948	67%
Census Tract 7205, Block Group 6	3,130	2,251	72%	879	28%
Block Group Average	44,441	25,601	55%	18,840	45%
Texas	20,851,820	10,933,313	52%	9,918,507	48%
Galveston County	250,158	157,851	63%	92,307	37%
Harris County	3,400,578	1,432,264	42%	1,968,314	58%
Houston	1,953,631	601,851	31%	1,351,780	69%
League City	45,444	34,807	77%	10,637	23%
Webster	9,083	5,046	56%	4,037	44%

Sources: U.S. Bureau of the Census 2000

Notes: (1) Block Groups in the 3000 series are located in Harris County; Block Groups in the 7000 series are located in Galveston County. (2) The study area is defined as all Census Block Groups adjacent to or within 2,000 feet of the existing corridor.

Table 3. Income Data.

Block Groups ⁽¹⁾	1999 Population	Total Below Poverty in 1999	Percentage Below Poverty in 1999
Census Tract 3211, Block Group 1	1,789	282	16%
Census Tract 3401, Block Group 1	1,594	89	6%
Census Tract 3409, Block Group 1	4,130	531	13%
Census Tract 3504, Block Group 1	1,639	45	3%
Census Tract 3506, Block Group 1	3,978	116	3%
Census Tract 3401, Block Group 2	1,215	51	4%
Census Tract 3410, Block Group 2	5,497	291	5%
Census Tract 3411, Block Group 2	854	172	20%
Census Tract 3504, Block Group 2	3,912	221	6%
Census Tract 3505, Block Group 2	2,968	389	13%
Census Tract 7205, Block Group 2	1,627	36	2%
Census Tract 7207, Block Group 2	2,710	36	1%
Census Tract 3505, Block Group 3	1,452	89	6%
Census Tract 7205, Block Group 3	2,276	219	10%
Census Tract 3340, Block Group 4	1,391	73	5%
Census Tract 7205, Block Group 4	3,014	110	4%
Census Tract 3412, Block Group 6	1,240	411	33%
Census Tract 7205, Block Group 6	2,991	36	1%
Block Group Average	44,277	3,197	8%
Texas	20,287,300	3,117,609	15%
Galveston County	245,887	32,510	13%
Harris County	3,360,536	503,234	15%
Houston	1,925,274	369,045	19%
League City	44,856	2,142	5%
Webster	8,592	1,135	13%

Sources: U.S. Bureau of the Census 2000

Notes: (1) Block Groups in the 3000 series are located in Harris County; Block Groups in the 7000 series are located in Galveston County. (2) The study area is defined as all Census Block Groups adjacent to or within 2,000 feet of the existing corridor.

HARRIS COUNTY

Table 1: State and Federal Threatened and Endangered Species of Harris County

Common Name	Scientific Name	State Status	Federal Status	Habitat Description	Habitat Present
AMPHIBIANS					
Houston Toad	<i>Bufo houstonensis</i>	E	E†	Sandy soil, breeds in ephemeral pools	No
BIRDS					
American Peregrine Falcon	<i>Falco peregrinus anatum</i>	E	DM†	Potential migrant, nest in west Texas	TM
Arctic Peregrine Falcon	<i>Falco peregrinus tundrius</i>	T	DM†	Potential migrant	TM
Attwater's Greater Prairie Chicken	<i>Tympanuchus cupido attwateri</i>	E	E†	Thick 1-3' tall grass from 0'-200' above sea level along coast	No
Bald Eagle	<i>Haliaeetus leucocephalus</i>	T	T,AD	Near water areas, in tall trees	No
Black Rail	<i>Laterallus jamaicensis</i>	SOC	SOC†	Brackish and freshwater marshes, nest at base of <i>Salicornia</i>	Yes
Brown Pelican	<i>Pelecanus occidentalis</i>	E	E†	Island near coastal areas	No
Henslow's Sparrow	<i>Ammodramus henslowii</i>	SOC	SOC†	Weedy fields with bunch grasses	Yes
Mountain Plover	<i>Charadrius montanus</i>	SOC	*	Shortgrass plains; plowed, bare fields	No
Piping Plover	<i>Charadrius melodus</i>	T	T†	Beach and bayside mud or salt flats	No
Reddish Egret	<i>Egretta rufescens</i>	T	SOC†	Brackish marshes and tidal flats	No
Snowy Plover	<i>Charadrius alexandrinus</i>	SOC	SOC†	Beach and bayside mud or salt flats	No
Swallow-tailed Kite	<i>Elanoides forficatus</i>	T	SOC†	Lowland forest swamps	No
White-faced Ibis	<i>Plegadis chihi</i>	T	*	Freshwater marshes, but some brackish or salt marshes	Yes
White-tailed Hawk	<i>Buteo albicaudatus</i>	T	*	Coastal Prairies	Yes
Whooping Crane	<i>Grus americana</i>	E	E†	Winters in Aransas NWR	No
Wood Stork	<i>Mycteria americana</i>	T	*	Prairie ponds and flooded pastures	Yes
BIRDS-RELATED					
Colonial waterbird nesting areas		SOC	*	N/A	No
FISHES					
Creek Chubsucker	<i>Erimyzon oblongus</i>	T	SOC†	Variety of small rivers and creeks, prefers headwaters	No
MAMMALS					
Black Bear	<i>Ursus americanus</i>	T	SAT†	Bottomland hardwoods; large, undisturbed forested areas	No
Louisiana Black Bear	<i>Ursus americanus luteolus</i>	T	T†	Bottomland hardwoods; large, undisturbed forested areas	No
Plains Spotted Skunk	<i>Spilogale putorius interrupta</i>	SOC	*	General; woods, fields, prairies, shrub	Yes
Rafinesque's Big-Eared Bat	<i>Corynorhinus rafinesquii</i>	T	SOC	Cavity trees in hardwood forest, concrete culverts, abandon buildings	Yes
Southeastern Myotis	<i>Myotis austroriparius</i>	SOC	SOC†	Cavity trees in hardwood forest, concrete culverts, abandon buildings	Yes
REPTILES					
Alligator Snapping Turtle	<i>Macrolemys temminckii</i>	T	SOC	Deep water of rivers and canals	Yes
Atlantic Hawksbill Sea Turtle	<i>Eretmochelys imbricata</i>	E	E†	Gulf and bay system	No
Green Sea Turtle	<i>Chelonia mydas</i>	T	T†	Gulf and bay system	No
Gulf Saltmarsh Snake	<i>Nerodia clarkii</i>	SOC	*	Salt meadows, swamps, marshes	Yes
Kemp's Ridely Sea Turtle	<i>Lepidochelys kempii</i>	E	E†	Gulf and bay system	No
Leatherback Sea Turtle	<i>Dermochelys coriacea</i>	E	E†	Gulf and bay system	No
Loggerhead Sea Turtle	<i>Caretta caretta</i>	T	T†	Gulf and bay system	No
Smooth Green Snake	<i>Liochlorophis vernalis</i>	T	*	Gulf coastal prairies, prefers dense vegetation	Yes
Texas Diamondback Terrapin	<i>Malaclemys terrapin littoralis</i>	SOC	SOC†	Coastal marshes or tidal flats behind barrier islands	Yes
Texas Garter Snake	<i>Thamnophis sirtalis annectens</i>	SOC	*	Wet, moist micro habitats, mostly, central Texas	Yes
Texas Horned Lizard	<i>Phrynosoma cornutum</i>	T	SOC†	Open, semi-arid regions, with bunch grass	Yes

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Timber/Canebrake Rattlesnake	<i>Crotalus horridus</i>	T	SOC†	Swamps/floodplains of hardwood/upland pine	Yes
VASCULAR PLANTS					
Coastal gay-feather	<i>Liatris bracteata</i>	SOC	SOC	Black clay soils of prairie remnants	Yes
Houston machaeranthera	<i>Rayjacksonia aurea</i>	SOC	SOC	Seasonally wet, saline barren areas	Yes
Texas meadow rue	<i>Thalictrum texanum</i>	SOC	SOC(H)	Mesic woodlands, partially shaded ditches	Yes
Texas prairie dawn	<i>Hymenoxys texana</i>	E	E	Poorly drained areas in open grasslands; pimple mounds	Yes
Texas windmill-grass	<i>Chloris texensis</i>	SOC	SOC	Sandy/sand loam in open/barren grasslands	Yes
Threeflower broomweed	<i>Thurovia triflora</i>	SOC	SOC	Black clay soils of remnant grasslands	Yes

* These species occur on the State listing of threatened or endangered species; however, they are not federally listed at this time by the U.S. Fish and Wildlife Service (September 2002).

† These species are listed by the U.S. Wildlife Service, however, they are not listed to occur within this county by the Clear Lake office of the U.S. Fish and Wildlife Service (September 2002).

-- Not listed for Texas Parks and Wildlife for this county

E = endangered T = threatened H = historical occurrence I = introduced population C = candidate species SOC = species of concern DM = delisted taxon, recovered, being monitored first five years AD = proposed delisting SAT = similarity of appearance to a threatened taxon

GALVESTON COUNTY

Table 1: State and Federal Threatened and Endangered Species* of Galveston County

Common Name	Scientific Name	State Status	Federal Status	Habitat Description	Habitat Present
BIRDS					
American Peregrine Falcon	<i>Falco peregrinus anatum</i>	E	DM†	Potential migrant, nest in west Texas	TM
Arctic Peregrine Falcon	<i>Falco peregrinus tundrius</i>	T	DM†	Potential migrant	TM
Attwater's Greater Prairie-chicken	<i>Tympanuchus cupido attwateri</i>	E	E	Thick 1-3' tall grass from 0'-200' above sea level along coast	No
Bald Eagle	<i>Haliaeetus leucocephalus</i>	T	T,AD†	Near water areas, in tall trees	No
Black Rail	<i>Laterallus jamaicensis</i>	SOC	SOC†	Brackish and freshwater marshes, nest at base of Salicornia	Yes
Brown Pelican (Nesting)	<i>Pelecanus occidentalis</i>	E	E	Island near coastal areas	No
Eskimo Curlew	<i>Numenius borealis</i>	--	E	Nonbreeding; grasslands and pastures	No
Henlow's Sparrow	<i>Ammodramus henslowii</i>	SOC	SOC†	Weedy fields with bunch grasses	Yes
Mountain Plover	<i>Charadrius montanus</i>	SOC	*	Shortgrass plains; plowed, bare fields	No
Piping Plover (Wintering)	<i>Charadrius melodus</i>	T	T	Beach and bayside mud or salt flats	No
Reddish Egret	<i>Egretta rufescens</i>	T	SOC	Brackish marshes and tidal flats	No
Snowy plover	<i>Charadrius alexandrinus</i>	SOC	SOC	Beach and bayside mud or salt flats	No
Sooty Tern	<i>Sterna fuscata</i>	T	*	Maritime bird	No
Swallow-tailed Kite	<i>Elanoides forficatus</i>	T	SOC†	Lowland forest swamps	No
White-faced Ibis	<i>Plegadis chihi</i>	T	*	Freshwater marshes, but some brackish or salt marshes	Yes
White-tailed Hawk	<i>Buteo albicaudatus</i>	T	*	Coastal Prairies	Yes
Whooping Crane	<i>Grus americana</i>	E	E†	Winters in Aransas NWR	No
Wood Stork	<i>Mycteria americana</i>	T	*	Prairie ponds and flooded pastures	Yes
BIRDS-RELATED					
Colonial waterbird nesting areas		SOC	*	N/A	No
Migratory songbird fallout areas		SOC	*	N/A	No
MAMMALS					
Black Bear	<i>Ursus americanus</i>	T	SAT†	Bottomland hardwoods; large, undisturbed forested areas	No
Louisiana Black Bear	<i>Ursus americanus luteolus</i>	T	T†	Bottomland hardwoods; large, undisturbed forested areas	No
Plains Spotted Skunk	<i>Spilogale putorius interrupta</i>	SOC	*	General; woods, fields, prairies, shrub	Yes
West Indian Manatee	<i>Trichechus manatus</i>	E	E†	Gulf and bay system	No
REPTILES					
Alligator Snapping Turtle	<i>Macrolemys temminckii</i>	T	SOC†	Deep water of rivers and canals	Yes
Atlantic Hawksbill Sea Turtle	<i>Eretmochelys imbricata</i>	E	E	Gulf and bay system	No
Green Sea Turtle	<i>Chelonia mydas</i>	T	T	Gulf and bay system	No
Gulf Saltmarsh Snake	<i>Nerodia clarkii</i>	SOC	*	Salt meadows, swamps, marshes	Yes
Kemp's Ridley Sea Turtle	<i>Lepidochelys kempii</i>	E	E	Gulf and bay system	No
Leatherback Sea Turtle	<i>Dermochelys coriacea</i>	E	E	Gulf and bay system	No
Loggerhead Sea Turtle	<i>Caretta caretta</i>	T	T	Gulf and bay system	No
Smooth Green Snake	<i>Liochlorophis vernalis</i>	T	*	Gulf coastal prairies, prefers dense vegetation	Yes
Texas Diamondback Terrapin	<i>Malaclemys terrapin litoralis</i>	SOC	SOC	Coastal marshes or tidal flats behind barrier islands	Yes
Texas Garter Snake	<i>Thamnophis sirtalis annectens</i>	SOC	*	Wet, moist micro habitats, mostly, central Texas	Yes
Texas Horned Lizard	<i>Phrynosoma cornutum</i>	T	SOC	Open, semi-arid regions, with bunch grass	Yes
Timber/Canebrake Rattlesnake	<i>Crotalus horridus</i>	T	SOC†	Swamps/floodplains of hardwood/upland pine	Yes
VASCULAR PLANTS					
Coastal gay-feather	<i>Liatis bracteata</i>	SOC	SOC	Black clay soils of prairie remnants	Yes

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Correll's false dragon-head	<i>Physostegia correllii</i>	SOC	*	Wet soils	Yes
Grand Prairie evening primrose	<i>Oenothera pilosella ssp. sessilis</i>	SOC	*	Galveston Island (sandy soil in low rises)	No
Houston machaeranthera	<i>Rayjacksonia aurea</i>	SOC	SOC	Seasonally wet, saline barren areas	Yes
Texas windmill-grass	<i>Chloris texensis</i>	SOC	SOC	Sandy/sand loam in open/barren grasslands	Yes

* These species occur on the State listing of threatened or endangered species; however, they are not federally listed at this time by the U.S. Fish and Wildlife Service (September 2002).

† These species are listed by the U.S. Wildlife Service, however, they are not listed to occur within this county by the Clear Lake office of the U.S. Fish and Wildlife Service (September 2002).

-- Not listed for Texas Parks and Wildlife for this county

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Photograph 1 – The typical section of the existing facility is 3 main lanes in each direction and one-way two lane frontage roads.



Photograph 2 – The northern portion of the study area is typified by commercial properties.



Photograph 3 - Much of the study area is urban land use with man-made swales along the existing frontage roads.



Photograph 4 - View of Clear Creek, a water of the United States



Photograph 5 – Riparian forest adjacent to Clear Creek



Photograph 6 – View of an inundated tidally-influenced marsh adjacent to Clear Creek.



Photograph 7 – Another representative tidal marsh



Photograph 8 – Representative freshwater wetland