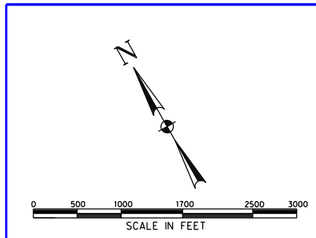
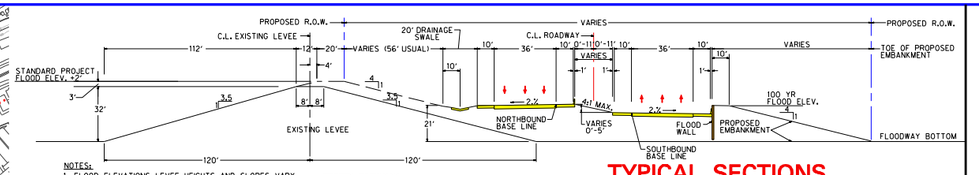
PLATE 2-15 A

ALTERNATIVE 3B – STAGED CONSTRUCTION (NORTH)

NTTA
NORTH TEXAS TOLLWAY AUTHORITY





TYPICAL SECTIONS ALONG FLOODWAY

MATCH LINE

EXAMPLE ONLY OF PROPOSED STAGED CONSTRUCTION. SIMILAR STAGING WOULD APPLY TO ALL ALTERNATIVES.

* – 2 LANES EACH WAY INITIAL CONSTRUCTION WITH SPACE FOR ULTIMATE EXPANSION TO 3 LANES EACH WAY.

ALIGNMENT SUBJECT TO APPROVAL BY FHWA.

FOR NTTA USE ONLY–
DRAFT DOCUMENT SUBJECT TO CHANGE–
NO THIRD PARTY IS AUTHORIZED TO RELY ON INFORMATION CONTAINED IN THIS DOCUMENT
DATE: OCTOBER 16, 2007

PROFILE LEGEND:

- PROPOSED MAINLANES ON EMBANKMENT
- PROPOSED ELEVATED MAIN LANES
- PROPOSED FLOODWALL ALONG MAIN LANES
- 100-YEAR FLOOD WATER LEVEL
- SPF WATER LEVEL
- EXISTING BRIDGE CROSSING

PLAN LEGEND:

- PROPOSED TRINITY PARKWAY MAIN LANES
- PROPOSED RAMP
- PROPOSED ELEVATED MAIN LANES
- PROPOSED ELEVATED RAMPS
- PROPOSED ARTERIAL OR SERVICE ROAD
- PROPOSED ROADWAY PROJECT (BY OTHERS)
- PROPOSED BRIDGE RECONSTRUCTION
- PROPOSED RAMP TOLL GANTRY (LOCATION SUBJECT TO CHANGE)
- PROPOSED FLOODWALL
- PROPOSED RETAINING WALL

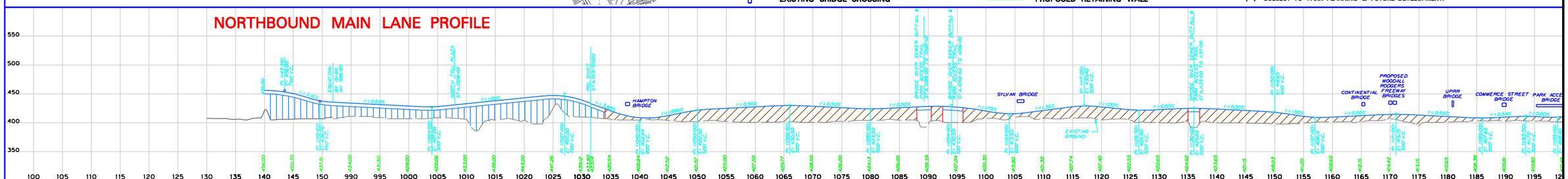
3 NUMBER OF GENERAL PURPOSE LANES ALONG INDICATED MAIN LANE DIRECTION

PARK ACCESS ROUTES:

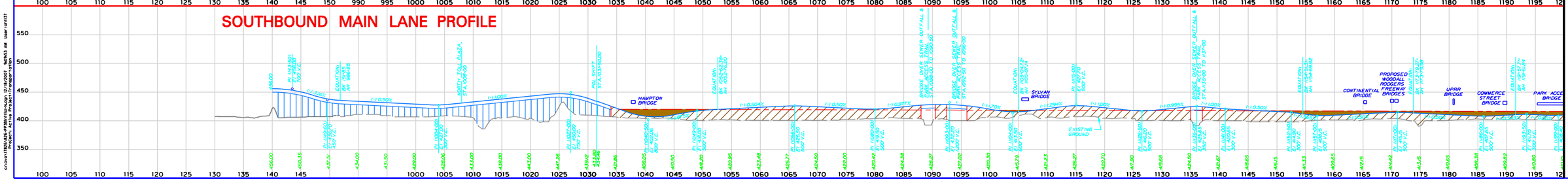
- VEHICULAR / BICYCLE / PEDESTRIAN ACCESS RAMP (BY NTTA)
- BICYCLE / PEDESTRIAN ACCESS BRIDGE (BY NTTA)
- POSSIBLE VEHICULAR / BICYCLE / PEDESTRIAN ACCESS ROUTE (*)
- POSSIBLE BICYCLE / PEDESTRIAN ACCESS ROUTE (**)

(**) – SUBJECT TO PARK PLANNING & FUTURE DEVELOPMENT.

NORTHBOUND MAIN LANE PROFILE



SOUTHBOUND MAIN LANE PROFILE



826-PP3Bintitial-S.DGN

PLATE 2-15 B

ALTERNATIVE 3B – STAGED CONSTRUCTION (SOUTH)

NTTA NORTH TEXAS TOLLWAY AUTHORITY

EXAMPLE ONLY OF PROPOSED STAGED CONSTRUCTION. SIMILAR STAGING WOULD APPLY TO ALL ALTERNATIVES.

PROFILE LEGEND:

- PROPOSED MAINLANES ON EMBANKMENT
- PROPOSED ELEVATED MAIN LANES
- PROPOSED FLOODWALL ALONG MAIN LANES
- 100-YEAR FLOOD WATER LEVEL
- SPF WATER LEVEL
- EXISTING BRIDGE CROSSING

PLAN LEGEND:

- PROPOSED TRINITY PARKWAY MAIN LANES
- PROPOSED RAMP
- PROPOSED ELEVATED MAIN LANES
- PROPOSED ELEVATED RAMPS
- PROPOSED ARTERIAL OR SERVICE ROAD
- PROPOSED ROADWAY PROJECT (BY OTHERS)
- PROPOSED BRIDGE RECONSTRUCTION
- PROPOSED RAMP TOLL GANTRY (LOCATION SUBJECT TO CHANGE)
- PROPOSED FLOODWALL
- PROPOSED RETAINING WALL

PARK ACCESS ROUTES:

- VEHICULAR / BICYCLE / PEDESTRIAN ACCESS RAMP (BY NTTA)
- BICYCLE / PEDESTRIAN ACCESS BRIDGE (BY NTTA)
- POSSIBLE VEHICULAR / BICYCLE / PEDESTRIAN ACCESS ROUTE (*)
- POSSIBLE BICYCLE / PEDESTRIAN ACCESS ROUTE (**)

(**) – SUBJECT TO PARK PLANNING & FUTURE DEVELOPMENT.

2 NUMBER OF GENERAL PURPOSE LANES ALONG INDICATED MAIN LANE DIRECTION

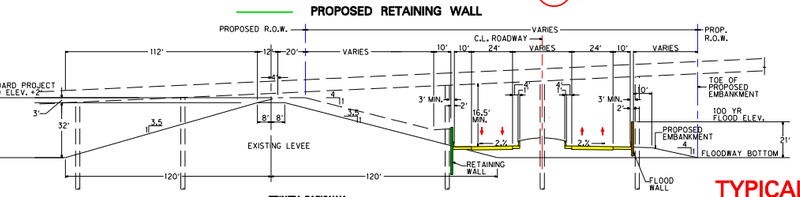
FOR NTTA USE ONLY–
DRAFT DOCUMENT SUBJECT TO CHANGE–
NO THIRD PARTY IS AUTHORIZED TO RELY ON INFORMATION CONTAINED IN THIS DOCUMENT
DATE: OCTOBER 16, 2007

* – 2 LANES EACH WAY INITIAL CONSTRUCTION WITH SPACE FOR ULTIMATE EXPANSION TO 3 LANES EACH WAY.

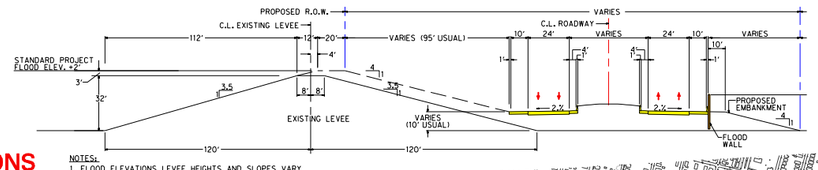
ALIGNMENT SUBJECT TO APPROVAL BY FHWA.

N

0 500 1000 1700 2500 3000
SCALE IN FEET



TRINITY PARKWAY
RIVER SIDE OF EAST LEVEE
CONTINENTAL TO DART RAIL
⊕ EXISTING BRIDGE

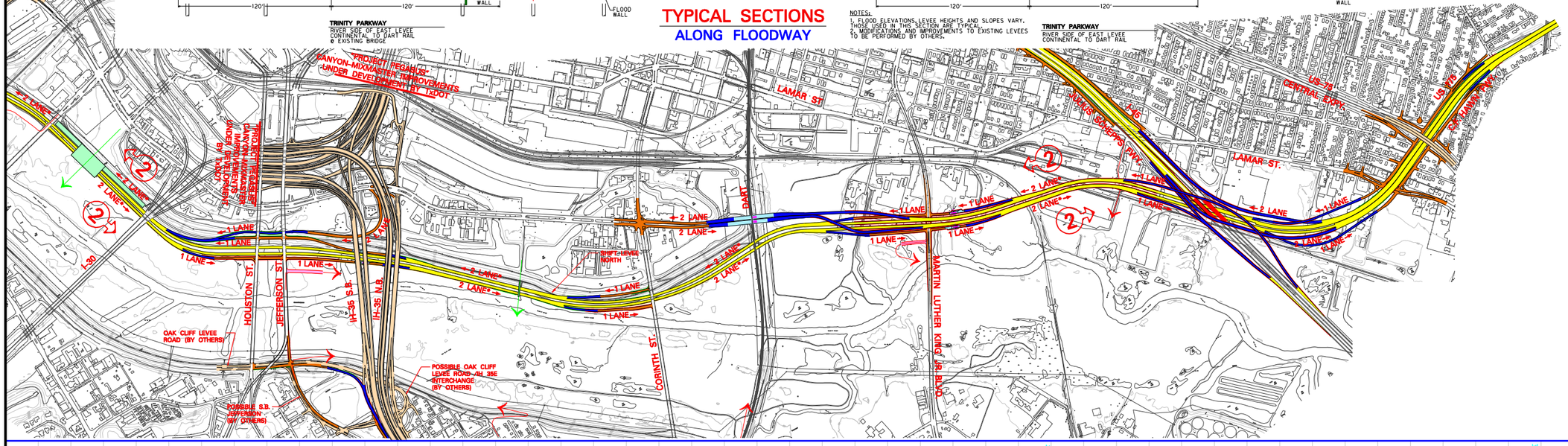


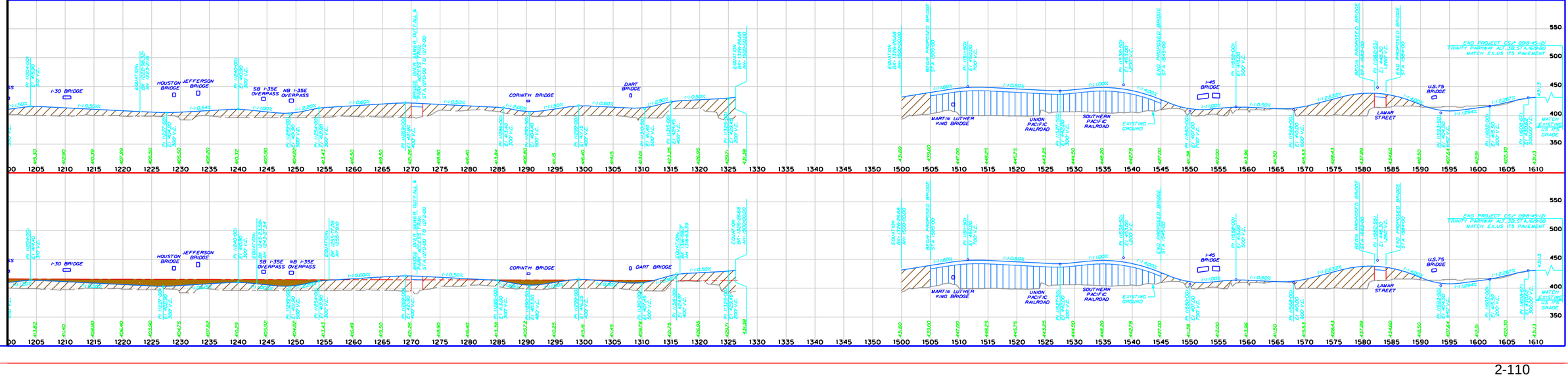
TRINITY PARKWAY
RIVER SIDE OF EAST LEVEE
CONTINENTAL TO DART RAIL

TYPICAL SECTIONS ALONG FLOODWAY

NOTES:
1. FLOOD ELEVATIONS, LEVEE HEIGHTS AND SLOPES VARY. THOSE USED IN THIS SECTION ARE TYPICAL.
2. MODIFICATIONS AND IMPROVEMENTS TO EXISTING LEVEES TO BE PERFORMED BY OTHERS.

MATCH LINE





CHAPTER 3
AFFECTED ENVIRONMENT

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AFFECTED ENVIRONMENT

3.0 INTRODUCTION

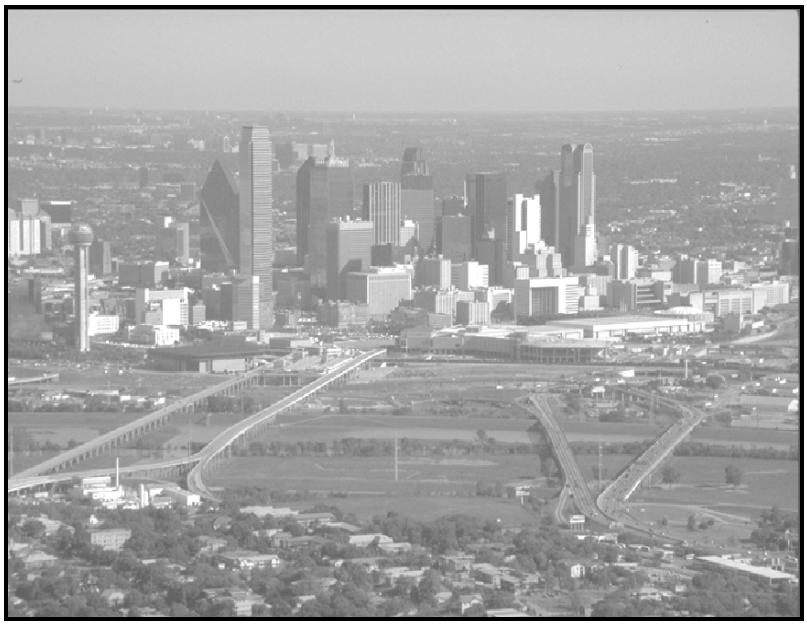
This chapter of the Trinity Parkway SDEIS describes the existing social, economic, and environmental setting for the area affected by the proposed alternatives. Plates illustrating social, economic, and environmental data/information are located at the end of the chapter. Assessments of the potential impacts of each alternative, including the No-Build Alternative, on the existing social, economic, and environmental setting are presented in **Chapter 4 Environmental Consequences**.

3.1 COMMUNITY SETTING

Regional Overview

The Trinity Parkway study area is located south and west of the CBD in the City of Dallas, Dallas County, Texas. Dallas is the largest city in north central Texas, consisting of 246,849 acres of land with a year 2000 population of 1,188,580 (U.S. Census Bureau, 2000). Dallas is a major distribution center and a gateway for trade resulting from NAFTA. **Plate 3-1** provides an aerial view of the project study area and surrounding land use. The study area includes the Dallas Floodway and areas located on either side of the Dallas Floodway that contain residential neighborhoods and a variety of commercial/industrial areas.

DALLAS CENTRAL BUSINESS DISTRICT - LOOKING NORTH



3.1.1 Existing Land Use in the Study Area

The Dallas Floodway is the dominant land use feature in the central portion of the study area. This large grassy open space is classified as flood control parkland and accounts for approximately 50 percent of the land use in the study area.

DALLAS FLOODWAY AT THE IH-35E CROSSING OF THE TRINITY RIVER

Descriptions of the existing land use in the study area, outside of the Dallas Floodway, are presented below.

Northwest Portion of the Study Area

Mixed uses consisting of office, retail, commercial, and industrial are located at the northwestern portion of the study area. This area is referred to as the Trinity Industrial District. Land situated along and surrounding Irving Boulevard consists of industrial and commercial uses. This area is dominated by small to large distribution facilities like Miller Brewing. The Hilton Anatole Hotel, one of the largest hotels in the Dallas area, occupies the west side of Wycliff Avenue. An area of office and retail uses, occupied by Stemmons Place offices, ExxonMobil Oil Corporation, and Aetna Healthcare, is located along the northeast margin of the study area and along the northeast side of Irving Boulevard.

North-Central Portion of the Study Area

The north-central portion of the study area surrounding Irving Boulevard is industrial land use, some of which is being redeveloped as commercial and retail in an area known as the Stemmons/Design District. North of Commerce Street and west of IH-35E are public facilities, including the Dallas County administrative buildings, the Lew Sterrett Justice facility, and the Frank Crowley Criminal Courts buildings, which are categorized as institutional land use.

Southwest Portion of the Study Area

Land use from Hampton Road, north of Singleton Boulevard to the Dallas Floodway and east to the Continental Viaduct is predominantly single-family residential and is referred to as West Dallas. Two schools also exist in this area. In addition, this portion of the corridor contains multi-family use located just west of Sylvan Avenue along Canada Drive. A small retail area is located on the east side of Sylvan Avenue north of Singleton Boulevard.

South-Central Portion of the Study Area

Land use from Singleton Boulevard and Sylvan Avenue to the Dallas Floodway, and south to Houston Street is primarily industrial. Industrial facilities located on Singleton Boulevard and on roads adjacent to Singleton Boulevard in this area include Ryder Truck Rental and Leasing, Pioneer Concrete of Texas, auto garages, auto parts facilities, and scrap metal facilities. Industrial facilities on Commerce Street and on streets adjacent to Commerce Street in this area include a building material supply company (Long Supply Company), a number of bail bond businesses, and Jim Smith Tools. Single-family neighborhoods are situated along Main Street and surrounding streets among commercial/industrial businesses. A Dallas County school bus parking and maintenance yard, Contractors Iron and Steel Company, and Burden Brothers Mechanical Contractors are a few of the industrial facilities near Beckley Avenue.

Southern Portion of the Study Area

The area south of IH-30 is referred to as Oak Cliff and is dominated by single-family residential with mixed commercial retail development. A new townhome development was completed in 2007 adjacent to the west levee just north of Houston Street. An older multi-family residential area is located between the Houston Street and Jefferson Street Viaducts. This area is generally two-story apartment buildings approximately 20 to 30 years old. The former Burnett Field baseball site is a large vacant tract that is located adjacent to the west side of IH-35E. The Oak Farms Dairy is located in this neighborhood adjacent to Jefferson Boulevard.

Small wood-frame houses, vacant lots, and boarded-up houses occur east of IH-35E to the Corinth Street Viaduct in an area referred to as The Bottoms. The Eloise Lundy Recreation Center, located on the corner of Sabine Street and Denley Street, is a City of Dallas Park and Recreation Department park and

recreation center. The Townview Magnet School, also known as the Business Magnet Management Center, is located on 8th Street on the western margin of the single-family neighborhoods.

Southeast Portion of the Study Area

An area in the southeast portion of the study area consists of high-density commercial/industrial land uses, which are located along south Lamar Street south to the Southern Pacific Railroad. This area consists of a high concentration of large, heavy industrial facilities including Willow Distributors, Dimco Steel/Duggar Industries, the Dallas Independent School District (DISD) Transportation Department, Beall Concrete, Orbit Oxychem, and Brockway Standard, Inc. Companies also located in the area are Big City Crushed Concrete, Praxair Gas, Faubion, and ITEX. Land use north of Lamar Street is predominantly single-family residential, characterized by small-frame houses and vacant lots.

Industrial facilities surrounding Industrial Boulevard and Rock Island Street include Dallas Metro Steel, Orr-Reed Wrecking, and Buckley Oil Company. Located adjacent to the Corinth Street Viaduct at Industrial Boulevard is Bighorn Core. Okon Metals and a large warehouse distribution facility are located on the northwest side of Industrial Boulevard. Also along Industrial Boulevard are several bail bond companies and beverage stores. These are in proximity to the Lew Sterrett Justice Center.

3.1.1.1 Local Land Use Plans/Policies

The intensity, timing, and character of development may be directed by local or regional comprehensive plans, general plans, or long-range plans. The goals identified in planning documents may be implemented through a variety of tools, including zoning, capital improvements, and tax incentives. A thorough understanding of these plans and mechanisms is necessary for the analysis of a transportation project's potential effect on land use.

Current land use is regulated through the Dallas City Council according to the city's Comprehensive Land Use Plan, zoning maps, and zoning ordinances. **Plates 3-2** and **3-3** show general land use and zoning within the study area. **Plate 3-4** shows planned land use within the study area. The city has sponsored numerous studies for potential projects along the Dallas Floodway and the Trinity River corridor in southern Dallas. In 1992, the Dallas City Council initiated *The Dallas Plan* to help establish a long-range planning policy for the city. *The Dallas Plan* identified the Trinity River Corridor as a core asset for the City of Dallas. In 1994, the City Council adopted general goals and policies for the Trinity River corridor as one of six citywide strategic initiatives presented by *The Dallas Plan* (1994).

In late 1994, the Honorable Ron Kirk, former Mayor of Dallas, appointed two co-chairs to oversee a citizens' committee - the Trinity River Corridor Citizens Committee (TRCCC) - that would define specific

goals and objectives for the Trinity River corridor. In May 1996, the city council adopted a TRCCC report from the 400-member committee that contained specific goals and objectives relating to flood control, transportation, recreation, economic development, and environmental restoration along the Trinity River corridor. As a result, the City of Dallas has continued to promote the policy of multi-objective management (i.e., multiple uses that can occur within the floodplain) of the Dallas Floodway and the lower Trinity River corridor.

The *Great Trinity Forest Master Plan* (TPWD, 1997) identified several specific initiatives for environmental restoration and recreation along the Trinity River corridor. It proposed an overall plan to improve recreational access to this part of the Trinity River corridor and manage its environmental resources. The plan was completed for Texas Parks and Wildlife Department (TPWD) and adopted by Dallas City Council in March 1997. In September 1997, the Dallas City Council adopted TxDOT's *Trinity Parkway Corridor Major Transportation Investment Study* (MTIS) (TxDOT, 1998a).

Subsequently, the aforementioned plans and studies led to a comprehensive Trinity River Corridor Bond Program that was approved by Dallas citizens in May 1998 (City of Dallas, 1998a). The major initiatives for the Bond Program are listed below:

- Build the Dallas Floodway Extension (DFE);
- Create the Trinity Downtown Lakes;
- Build the Woodall Rodgers Freeway Extension;
- Redesign the Canyon/Mixmaster/Lower Stemmons;
- Develop, design, and build Trinity Trails;
- Develop the Great Trinity Forest;
- Construct the Elm Fork Levee; and
- Develop the Trinity Parkway (proposed action).

The following are additional studies that represent the diversity of planning that has occurred during the last several years in the Trinity River corridor. All of the studies have tried to revitalize the area with renewed recreation, economic development, flood control, environmental restoration, and transportation improvements. These studies include:

- *Oak Cliff Gateway TIF District* (City of Dallas, 1992a) - represents an opportunity to create a tax-increment financing (TIF) district to improve the major entry into Oak Cliff from downtown Dallas and to support economic development and neighborhood revitalization in this community.
- *The Cedars TIF District* (City of Dallas, 1992b) - created a TIF district to promote development by utilizing public investments to attract private investment.

- *CBD Gateways Urban Design Study* (City of Dallas, 1996) - evaluated the need for and locations of potential downtown connections to adjoining neighborhoods.
- *West Dallas Comprehensive Land Use Study* (City of Dallas, 1998b) - adopted by the Dallas City Council in 1998. This study provided an inventory of all West Dallas land uses, as well as zoning, and discussed strategic issues/options to influence the positive redevelopment and stability of the area.
- *10th Street Land Use Study* (City of Dallas, 1999b) - adopted by the Dallas City Council in September 1999. The northern portion of this district is located in the Trinity River corridor. The study provided strategies to revitalize and redevelop the neighborhoods in the study area.
- *Trinity River Corridor Master Implementation Plan, Lake Design and Recreational Amenities Report* (City of Dallas, 1999a) - completed in December 1999. This study was developed to coordinate the various parks, lake, and other recreational improvements within the Trinity River corridor.
- DART *Southeast Corridor MIS* (DART, 2000a) - completed in May 2000. This study was conducted to analyze travel patterns, identify transportation issues and deficiencies, and develop a plan to address these issues in the southeast quadrant of the DART service area.
- DART *Northwest Corridor MIS* (DART, 2000b) - completed in February 2000. This study developed a plan for intermodal transportation investments to improve mobility in the corridor extending from downtown Dallas through northwest Dallas, Irving, Farmers Branch, Carrollton, and Addison.
- *Moore Park Master Plan* (City of Dallas, 2001b) - identified in the *Trinity River Corridor MIP* as a proposed neighborhood gateway leading into the Trinity River. The Dallas Park Board approved this plan in August 2001. Additional details concerning Moore Park are provided in **Section 3.3.2**
- *Stemmons/Design District Land Use Plan* (City of Dallas, 2001a) - adopted by the Dallas City Council in October 2001. This district is located in the north-central portion of the study area adjacent to the Dallas Floodway east levee. The study was conducted to analyze current zoning and development needs, assess the impact of recommendations from several major studies that impact the area (including the proposed action), and determine the potential for a Special Purpose District to address zoning issues that might otherwise impede future economic growth and development.
- *Trinity River Corridor Comprehensive Land Use Plan with Economic Impact Analysis and Implementation Strategy* (City of Dallas, 2002a) - The City of Dallas initiated this plan to analyze the existing land uses within the Trinity River corridor and to develop land use plans related to proposed flood control and recreational improvements. The study also prepared benefit to cost comparisons of the Trinity Parkway Build Alternatives. The key objectives of the plan were to promote compatible land uses, define strategies to stimulate economic revitalization, and maximize the value of the Trinity River project. The methodology utilized in the plan includes

quantitative assessments of alternative land use development options and associated public investments.

- *A Renaissance Plan for Dallas Parks and Recreation in the 21st Century* (City of Dallas, 2002b) - This plan was published in August 2002 by the Dallas Park and Recreation Department (PARD). The overall purpose of the plan was to develop an "innovative, interactive, creative, environmentally sensitive, and state-of-the-art" long-range development plan for the PARD over the next 10 to 20 years (2012 to 2022). The plan includes a Capital Implementation Plan organized according to the six park maintenance districts across the city.
- *A Balanced Vision Plan for the Trinity River Corridor* (City of Dallas, 2003a) - This study amended the MIP and focused on the geographic area of Dallas known as the "Trinity River Corridor" that includes the Dallas Floodway and adjacent residential and commercial/industrial areas, extending approximately 1 mile on either side of the Dallas Floodway. The study was initiated by City of Dallas Mayor Laura Miller, former Dallas County Judge Lee Jackson, and interested citizens to take a new look at the possibilities for the future of the Trinity River Corridor. The study identified several key components that may be subject to coordinated planning and design along with the proposed action (see **Section 3.1.1.4 Coordinated Planning and Design**). The objectives of this study were to review and critique previous study efforts and to propose an urban design vision plan for the corridor. This *BVP* recommends an urban design vision that offers an appropriate balance among the five inter-related issues of:
  - Flood Protection (see **Section 3.5.6**);
  - Environmental Restoration and Management (see **Section 3.5.6**);
  - Parks and Recreation (see **Section 3.3.2**);
  - Transportation (see **Section 3.2**); and
  - Community and Economic Development.

  The community and economic development component of the plan encourages new large-scale development at locations with enhanced access to recreation and transportation. The goal is for these public investments to lead to revitalization and redevelopment that support existing communities and create new business and mixed use areas.
- *Design District TIF District* (City of Dallas, 2005) - TIF District was created to provide a source of funding for public infrastructure improvements that would assist in redeveloping the industrial/warehouse district into a pedestrian friendly, mixed-use neighborhood. The district would create opportunities to take advantage of the expanding DART light rail system and promote transit oriented development, and also improve access to the Trinity River.
- Lake Configuration and Water Quality Study for the Dallas Floodway - The City of Dallas initiated this study to analyze the water quality of the Trinity River and reevaluate alternative lake configurations within the Dallas Floodway. The study was performed to aid the Dallas City

Council in evaluating lake design features in relation to other ongoing studies related to land use, transportation, and flood control plans. The work product included hydraulic modeling for the Dallas Floodway, water quality modeling for the river segment, water quality modeling of the off-channel lakes with respect to algae and dissolved oxygen. The final report was submitted to the City January 16, 2006 (City of Dallas, 2006a).

- *Forward Dallas! Let's Build our Future* (City of Dallas, 2006b) - The City of Dallas prepared and adopted (June 14, 2006) its citywide comprehensive plan to guide growth and development. The plan outlines a long-range vision for the city that focuses on land use, transportation and mobility, and economic development. Related to the Trinity Parkway corridor, the comprehensive plan incorporates many elements of the previously cited studies *Trinity River Corridor Comprehensive Land Use Plan* and *A Balanced Vision Plan for the Trinity River Corridor*.

3.1.1.2 Major Activity Centers

Several major employers or activity centers are located within, or in close proximity to, the study area and are considered major traffic generators. These include the Stemmons Industrial District and the Dallas CBD, which contain the largest concentration of businesses, hotels, and public facilities (e.g., schools, hospitals, and court/prison facilities) in the north central Texas region. These are summarized in **Table 3-1** and their locations are shown on **Plate 3-5**. Thirteen of these major employers are within the study area.

TABLE 3-1. MAJOR EMPLOYERS IN THE STUDY AREA

Plate ID Number	Name	Address	Number of Employees
1	Health & Human Services	2377 Stemmons Freeway	378
2	Omnicom	1999 Bryan Street	1,000
3	Oak Farms*	1114 North Lancaster Avenue	440
4	HC Beck	1700 Pacific Avenue, Suite 3800	300
5	Dallas County Community College	701 Elm Street	748
6	Wyndham International, Inc.	1950 North Stemmons, Suite 6100	450
7	KPMG LLP	8200 Brookriver Drive, Suite 400	1,200
8	KPMG Peat Marwick	200 Crescent Court, Suite 300	1,000
9	American Airlines Center	Woodall Rodgers & Stemmons	1,559
10	TXU	1601 Bryan Street	1,884
11	Comerica Bank	1508 West Mockingbird Lane	371
12	United States Life Insurance	6363 Forest Park Road	450
13	Exxon-Mobil Exploration*	3000 Pegasus Park Drive	1,000
14	Trinity Industries, Inc.	2525 North Stemmons Freeway	500
15	Centex Corp.	2728 North Harwood	1,618
16	Bank Of America	1201 Main Street	980
17	Hunt Oil Co.	1445 Ross Avenue	500
18	Dallas Area Rapid Transit	1401 Pacific Avenue	450
19	Bank Of America	411 North Akard Street	1,230
20	Bank Of America	901 Main Street	1,620
21	Bank Of America	1401 Elm Street	2,280
22	Southwestern Bell	208 South Akard Street	2,400
23	Hyatt Regency Dallas	300 Reunion Boulevard	770
24	Pilgrim's Pride Corp.	2411 Ferris Street	1,800
25	Aetna U.S. Healthcare*	2777 Stemmons Freeway, Suite 300	527

TABLE 3-1. MAJOR EMPLOYERS IN THE STUDY AREA

Plate ID Number	Name	Address	Number of Employees
26	Gardere Wynne Sewell	1601 Elm Street, Suite 3000	415
27	Strasburger & Price	901 Main Street	304
28	US Postal Service	401 DFW Turnpike	2,500
29	El Centro College	Main & Lamar Streets	700
30	City Of Dallas	2721 Municipal Street	500
31	George C. Allen Courts	600 Commerce Street	463
32	Neiman Marcus	1618 Main Street	850
33	Neiman Marcus-Sales Support	1201 Elm Street, Suite 2800	400
34	Blockbuster Entertainment Corp	1201 Elm Street	760
35	Federal Deposit Insurance Corp.	1910 Pacific	410
36	Adams Mark Hotel	400 Olive Street	900
37	Taylor Publishing Co.	1550 West Mockingbird Lane	350
38	St. Paul Medical Center	5909 Harry Hines Boulevard	1,709
39	UT Southwestern Medical Center	5323 Harry Hines Boulevard	3,000
40	Parkland Memorial Hospital	5201 Harry Hines Boulevard	6,857
41	Zale-Lipshy Medical Center	5151 Harry Hines Boulevard	950
42	Children's Medical Center Dallas	1935 Motor Street	4,154
43	Yellow Freight System, Inc.	4500 Irving Boulevard	1,200
44	Hilton Anatole Hotel	2201 North Stemmons Freeway	1,128
45	Federal Reserve Bank Of Dallas	2200 North Pearl Street	1,000
46	Chase Paymentech Solutions	2200 Ross Avenue	400
47	Ernst & Young	2121 San Jacinto Street	1,200
48	Environmental Protection Agency	1445 Ross Avenue, Suite 1200	1,150
49	Federal Bureau Investigations	1801 North Lamar Street	260
50	City Of Dallas	2014 Main Street	1,900
51	US Department of Health & Human Services	1301 Young Street	408
52	City Of Dallas	1500 Marilla Street	2,000
53	The Dallas Morning News	508 Young Street	1,900
54	Methodist Medical Center	1441 North Beckley Avenue	2,395
55	Con-Way Southern*	5020 Calvert	720
56	Locke, Lord, Bissell, and Liddell	2200 Ross Avenue, Suite 2200	300
57	TXU Corp.	1717 Main Street, Suite 2000	427
58	Texas Industries	1341 West Mockingbird Lane	320
59	Mestek	4830 Transport	260
60	Miller Of Dallas*	2730 Irving Boulevard	375
61	Lew Sterrett Justice Center*	111 Commerce	970
62	Price Waterhouse Coopers	2001 Ross Avenue	800
63	Southwestern Financial Services	717 North Harwood	250
64	Adolphus Hotel	1321 Commerce	360
65	Akin Gump Strauss Hauer & Feld LLP.	1700 Pacific Avenue, Suite 4100	284
66	Allegiance Telecom, Inc.	1950 North Stemmons Freeway	300
67	Automatic Data Processing	2735 North Stemmons Freeway	315
68	Bank One	1717 Main Street	430
69	Baylor Health Care System	2001 Bryan Street	825
70	Belo Corp.	400 South Record Street	280
71	Belo Interactive, Inc.	900 Jackson Street, Suite 400	260
72	Blanch Benfield Holdings, Inc.	500 North Akard Street	992
73	Bonnet Resources Corporation	1717 Main Street	400
74	Buckner Retirement Services	600 North Pearl Street	305
75	Builders Firstsource, Inc.	2001 Bryan Street, Suite 1600	850
76	Centex Construction Company	3100 Mckinnon Street, Suite 7	425
77	Citizenship Immigration Services Bureau	1140 Empire Central Place	500
78	Cowboy Cab Company, Inc.	1301 Wall Street	350
79	Crow Holdings	2100 McKinney Avenue, Suite 700	295
80	Dallas County Schools	1710 North Beckley Avenue	300
81	Dallas County Sheriff's Office*	133 North Industrial Boulevard, Suite C18	3,000
82	Dallas Housing Authority*	3939 North Hampton Road	384
83	Dallas Market Center Company	2100 North Stemmons Freeway	250
84	Dallas Museum Of Art	1717 North Harwood Street	250
85	Dallas Police Headquarters	1400 South Lamar Street	900
86	Dean Foods Co.	2323 Bryan Street	350
87	Deloitte & Touche LLP	2200 Ross Avenue	929

TABLE 3-1. MAJOR EMPLOYERS IN THE STUDY AREA

Plate ID Number	Name	Address	Number of Employees
88	Faubion Associates, Inc.*	1000 Forest Avenue	275
89	Firemans Fund Insurance Co.	1999 Bryan Street, Suite 1215	250
90	First Horizon Home Loan*	4932 Sharp Street	300
91	First Southwest Company	325 N Saint Paul St # 800	313
92	Fresh Del Monte Produce, Inc.	1400 Parker St	650
93	JP Morgan Chase Bank	2200 Ross Ave	389
94	Patriot American Hospitality	5201 Harry Hines Blvd	485
95	Potter Concrete, Ltd.*	4820 Gretna St	540
96	Rosewood Property Company	100 Crescent Ct # 1700	500
97	SBC	400 S Akard St	600
98	Silverleaf Resorts, Inc.*	1221 River Bend Drive, # 120	800
99	Smith Alarm Systems	7777 John W Carpenter Freeway	350
100	The Freeman Companies (AVW)	1421 W Mockingbird Lane	300
101	Tracy Locke Partnership	1999 Bryan Street, # 2800	415
102	Trammelll Crow DFW, Inc.	2001 Ross Avenue	450
103	TVMAX, Inc.*	1111 W Mockingbird Lane	700
104	TXU Electric Delivery	1717 Main Street	325
105	UT Southwestern Health Systems	N. Akard Street	250
106	VERIO	1950 N Stemmons Freeway	314
107	Visiting Nurse Association of Texas	1440 W Mockingbird Lane	734
108	WFAA-TV, Inc.	606 Young Street	273
109	Zale Lipshy University Hospital	5201 Harry Hines Boulevard	950
110	UT Southwestern Health Systems	2663 Harry Hines Boulevard	250

Source: NCTCOG, 2007e.
Notes: *Sites within Study Area
Plate ID Numbers correspond to the locations shown on **Plate 3-5** at the end of this chapter.
Major employers in the study area include employment establishments with a minimum of 250 full-time and part-time workers as of January 1, 2007.
An employment establishment may consist of a single building or a collection of adjacent buildings occupied by one employer, such as a college campus or business park.

3.1.1.3 Other Agency Actions

Several local, state, and federal government agencies are in the process of planning, implementing, or constructing various small- and large-scale projects within the Trinity Parkway study area. Representative agencies include the City of Dallas, Dallas County, TxDOT-Dallas District, NCTCOG, and the USACE-Fort Worth District. These projects involve land use planning (see **Section 3.1.1.1**), utilities (see **Section 3.1.5**), recreation (see **Section 3.3.2.3**), and flood control (see **Section 3.5.6**). Details concerning the transportation projects in the study area are provided in **Section 3.2.7 Related Transportation Projects**.

As previously described in **Section 3.1.1.1 Local Land Use Plan/Policies**, the focus of current land use planning efforts along the Trinity River corridor, which includes the Trinity Parkway study area, attempt to revitalize the area with renewed recreation, economic development, flood control, environmental restoration, and transportation improvements. In addition, some of the major planned flood control and recreation projects, or portions thereof, may be subject to coordinated planning and design along with the proposed action. Details are provided in the following section.

3.1.1.4 Coordinated Planning and Design

Certain projects in the Trinity Parkway Corridor, although independent, may be subject to coordinated planning and design along with the proposed action. This is primarily due to the timing and geographic proximity of these projects. These projects include:

- USACE - *Dallas Floodway Extension Project*
- City of Dallas - *Trinity River Corridor Master Implementation Plan/Balanced Vision Plan*
- USACE - *Upper Trinity River Feasibility Study - Dallas Floodway EIS*

The following paragraphs provide a brief descriptive overview of these projects.

USACE DFE Project

The USACE DFE project (USACE, 1999) is a flood control project comprising a "Chain of Wetlands" overflow swale system, levees along the Cadillac Heights and Lamar neighborhoods in Dallas, and related improvements (see **Section 3.5.6.4**). The DFE project is located in the approximately four-mile Trinity River segment downstream of the existing Dallas Floodway terminus to Loop 12. The proposed Lamar Levee would be the only component of this federally-approved project that may be subject to coordinated planning and design with the proposed action, if a levee alternative is selected. This levee would extend from the existing Dallas Floodway east levee terminus at the DART Rail Bridge, and continue southeasterly along the Lamar Street corridor, to connect to the existing Rochester Park levee system. The proposed Lamar Levee would be approximately three miles long. Six of the Trinity Parkway Build Alternatives (Alternatives 3A, 3B, 3C, 4A, 4B, and 5) would follow the riverside edge of the Lamar Levee on a bridge structure for about a mile in the upstream reach, before transitioning to the landside of the levee. The USACE DFE recommended plan is shown on **Plate 3-6**.

Trinity River Corridor MIP/BVP

As described in **Section 3.1.1.1 Local Land Use Plans/Policies**, the City of Dallas Master Implementation Plan (MIP) (City of Dallas, 1999a) and Balanced Vision Plan (BVP) (City of Dallas, 2003a) are intended to provide transportation improvements, flood damage reduction, environmental restoration, recreational amenities, and economic development in the Trinity River corridor. The Trinity River Corridor BVP is shown on **Plate 3-7**. A coordinated development potential exists for utilizing the footprint of the lakes and other features proposed by the City as the borrow sites to build roadway embankments for Trinity Parkway (see **Section 2.4.6**). This opportunity would apply primarily to Trinity Parkway Build Alternatives that occur alongside the river levees (Alternatives 3A, 3B, 3C, 4A, 4B, and 5).

It is conceivable that some excavated material could be used for Alternative 2B (Industrial Boulevard - At-Grade), but this is a relatively small portion of the available material. In comparison, Alternative 2A (Industrial Boulevard - Elevated) is almost entirely on structure and would require even less fill material. A summary of the estimated excavation and fill quantities required for each of the Trinity Parkway Build Alternatives is provided in **Section 4.20.8 Construction Excavation and Fill Requirements**.

The MIP/BVP incorporates Dallas Floodway off-channel lakes; the proposed Trinity Parkway (proposed action); a levee raise for the existing Dallas Floodway; channel meandering (in concept with the USACE's Environmental Quality plan, see **Section 3.5.6.4**) located between the two major off-channel lakes; modification of the AT&SF Railroad bridge to improve hydraulic conveyance; and trail and access development along the length of the Dallas Floodway.

The MIP and amending BVP are conceptual plans the City of Dallas intends to implement in partnership with the USACE; however, the lakes and other features have not been approved by the USACE. Approval of the proposed features is subject to 33 CFR 208.10 or 33 USC 408, as applicable, USACE Pamphlet No. 1150-2-1 (2003) and USACE design standards.

USACE - Upper Trinity River Feasibility Study

The USACE anticipates completion of a Dallas Floodway DEIS by December 2008, a Final EIS by March 2009 and a Record of Decision by July 2009, as part of its Upper Trinity River Feasibility Study (see **Section 3.5.6.4**). This Dallas Floodway EIS will contain detailed descriptions of the direct and indirect impacts for actions considered by the USACE for the Dallas Floodway. The USACE document is expected to incorporate the levee improvements, channel meanders, off-channel lakes, and other related improvements generally described in the City of Dallas BVP. The potential for coordinated planning and design of this project with the proposed action is similar to that described above for the BVP (City of Dallas, 2007a).

While many projects that could affect the Dallas Floodway have independent utility, different purposes and timing, and sponsoring agencies, there remains a need for continued close coordination of the planning and design for these independent projects. The Dallas Floodway exists primarily to ensure that potential floodwaters flow safely through the Central Business District. All projects, regardless of whether their purpose would be for transportation or the enhancement of recreation or natural resources, must be designed and coordinated to ensure that the current and future flood conveyance capacity and integrity of the Dallas Floodway would not be diminished, and that the impacts to the operation and maintenance of the Dallas Floodway would be negligible.

3.1.2 Social and Economic Conditions

This section of the SDEIS discusses the social and economic conditions within the study area, focusing on a comparison of its population, demographic, employment, and income characteristics with the City of Dallas and Dallas County. This socioeconomic information was collected from year 2000 census tracts (U.S. Census Bureau, 2000) that are within or intersected by the study area boundary. This collection of census tracts, including census tract block groups, is referred to as the "project area" in this section of the SDEIS and is shown on **Plate 3-8 Census Tracts and Block Groups**.

3.1.2.1 Population and Demographic Characteristics

Population

Regional Population Growth

As shown in **Figure 1-10** in **Chapter 1 Need and Purpose for Proposed Action,** population in this region has been steadily increasing since 1960. The DFW region was one of the fastest growing areas in the U.S. during the 1980s and 1990s. During the 1990s, over one million people were added to the region, with 70 percent of the growth occurring over the last 5 years of the decade. During this period, the average annual growth was an estimated 100,800 persons (NCTCOG, 2001b). The region experienced growth of more than 150,000 residents per year for 7 consecutive years from 1999 through 2005. The region added 135,350 new residents in 2006, marking the eleventh consecutive year to add over 100,000 residents (NCTCOG, 2007b).

The four core counties (Collin, Dallas, Denton, and Tarrant) captured 85 percent of all regional growth, or 847,100 persons, during the 1990s. Tarrant County experienced the greatest population increase in the 1990s, adding a total of 240,650 persons. With 63 percent of its growth occurring during the last 5 years of the decade, Collin County nearly doubled its population by adding 232,750 persons. Dallas County added 217,900 persons and Denton County added 155,800 persons during this 10-year period. In 2006, these four counties captured 80 percent of all regional growth, adding 108,200 persons. Dallas County added over 17,000 persons in 2006 and now has 2,417,650 persons (U.S. Census Bureau, 1990 and 2000).

Regional Population Projections

As shown in **Table 1-5** in **Chapter 1 Need and Purpose for Proposed Action,** population growth in the region is projected to increase steadily through the year 2030. During the 30-year period from 2000 through 2030, the regional population is expected to increase from approximately 5.1 million in 2000 to

approximately 9.1 million in 2030. This is an increase of approximately 4 million residents (about 135,000 persons per year) at a projected population growth of approximately 56 percent.

Population in the Project Area

The NCTCOG indicates the population for the City of Dallas increased by 181,703 persons from 1,006,877 in 1990 to 1,188,580 in 2000, demonstrating an 18 percent growth rate over this 10-year time period. In comparison, population within the project area increased at a much lower growth rate of 6.5 percent (3,842 persons) from 59,163 in 1990 to 63,005 in 2000. **Table 3-2** shows population data for each of the 18 census tracts in the project area for the years 1990 and 2000. The year 2000 project area census tracts, including census tract block-groups, are shown graphically on **Plate 3-8** at the end of this chapter.

TABLE 3-2. PROJECT AREA POPULATION BY CENSUS TRACT

Census Tract	1990 Census	2000 Census	1990-2000 Total Change	1990-2000 Percent Change
20	6,246	7,271	1,025	16.4
33	1,662	2,066	404	24.3
34	1,665	1,460	-205	-12.3
38	3,018	2,754	-264	-8.7
39.02	2,423	2,099	-324	-13.4
40	1,709	1,496	-213	-12.5
41	1,538	1,440	-98	-6.4
42.01	4,917	5,449	532	10.8
43	4,829	2,860	-1,969	-40.8
86.03	1,971	1,687	-284	-14.4
89	3,528	2,730	-798	-22.6
100	3,265	9,614	6,349	194.5
101.01	4,242	3,766	-476	-11.2
101.02	3,649	3,460	-189	-5.2
102	2,189	2,356	167	7.6
105	2,394	2,378	-16	-0.7
106.01	4,951	5,163	212	4.3
115	4,967	4,956	-11	-0.2
Project Area Total	**59,163**	**63,005**	**3,842**	**6.5**
City of Dallas	**1,006,877**	**1,188,580**	**181,703**	**18.0**

Source: U.S. Census Bureau, 1990 and 2000.
Note: 2000 Census tracts include all or portions of 1990 tracts. Direct comparisons may not be exact.

Demographic Characteristics

Race/Ethnicity

As shown in **Table 3-3**, White residents make up approximately 50 percent of the population of the City of Dallas and the remaining residents consist of persons in some other racial category. The project area as a whole is about 29 percent White residents, and the remaining 71 percent of the project area population is made up of non-White persons. This includes persons in all non-White racial categories, including Black or African American, American Indian, Asian or Pacific Islander, some other race, or two or more

races. The largest racial group in the project area is Black or African American, which accounts for approximately 41.9 percent of the population. Persons of Hispanic ethnic origin (may be of any race) account for approximately 35.6 percent and 46.2 percent of the City of Dallas and project area populations, respectively.

TABLE 3-3. 2000 RACE AND ETHNICITY

Census Geography		Total Area Population	Racial Distribution							Ethnicity
			Percent White	Percent Black or African American	Percent American Indian/ Alaskan Native	Percent Asian-American	Percent Some Other Race	Percent Two or More Races	Percent Racial Minority[1]	Percent Hispanic or Latino[2]
City of Dallas		1,188,580	50.8	25.9	0.5	2.8	17.2	2.7	49.2	35.6
Project Area		63,005	29.0	41.9	0.5	0.5	25.3	2.7	71.0	46.2
Census Tract	**Census Block**	**Project Area Census Tract Demographics**								
20	---	7,271	36.7	11.2	1.1	0.2	48.0	2.8	63.3	83.1
---	1	305	12.5	12.8	0.3	1.0	72.5	1.0	87.5	83.9
---	2	1,659	39.4	25.1	1.3	0.2	31.3	2.7	60.6	64.4
---	5	2,384	40.7	7.8	1.2	0.3	46.7	3.3	59.3	90.0
33	---	2,066	44.1	13.6	1.6	1.1	36.4	3.2	55.9	59.5
---	2	516	41.1	15.9	2.9	0.8	34.3	5.0	58.9	62.6
34	---	1,460	17.9	73.3	0.2	0.4	5.1	3.1	82.1	12.9
---	2	693	8.9	80.8	0.1	0.0	4.9	5.2	91.1	16.7
38	---	2,754	1.0	97.6	0.0	0.3	0.4	0.8	99.0	2.1
---	4	826	1.1	96.5	0.1	0.1	0.6	1.6	98.9	2.4
39.02	---	2,099	8.3	86.4	0.6	0.0	3.9	0.9	91.7	12.8
---	2	921	2.5	92.6	0.9	0.0	2.5	1.5	97.5	7.3
---	3	693	20.6	70.4	0.4	0.0	8.1	0.4	79.4	28.0
40	---	1,496	4.3	85.6	0.1	0.0	9.2	0.9	95.7	12.2
---	1	547	5.5	82.1	0.2	0.0	11.5	0.7	94.5	15.9
---	2	949	3.6	87.7	0.0	0.0	7.8	0.9	96.4	10.0
41	---	1,440	12.9	74.5	0.8	0.4	10.4	1.0	87.1	24.0
---	1	396	9.6	76.5	1.3	0.0	10.1	2.5	90.4	21.0
---	2	1,044	14.2	73.8	0.6	0.6	10.5	0.4	85.8	25.1
42.01	---	5,449	50.9	5.1	0.6	0.6	38.7	4.0	49.1	66.7
---	1	765	91.0	2.1	1.2	0.9	4.1	0.8	9.0	11.2
43	---	2,860	35.2	12.8	0.3	2.7	46.2	2.8	64.8	74.7
---	1	776	36.9	13.8	0.3	4.5	40.1	4.5	63.1	66.5
---	2	793	21.1	30.4	0.0	1.0	45.3	2.3	78.9	66.7
86.03	---	1,687	16.9	51.0	0.4	0.6	29.2	1.8	83.1	47.1
---	1	118	14.4	68.6	3.4	2.5	7.6	3.4	85.6	18.6
---	2	934	27.5	19.1	0.3	0.1	50.9	2.1	72.5	79.6
89	---	2,730	6.6	84.1	0.3	0.4	7.2	1.4	93.4	14.2
---	1	947	7.7	78.5	0.2	1.0	11.8	0.8	92.3	20.1
---	2	637	11.8	73.9	0.2	0.0	11.1	3.0	88.2	22.3
100	---	9,614	49.2	42.2	0.9	0.3	3.2	4.2	50.8	17.7
---	1	338	32.8	55.0	0.9	2.4	4.4	4.4	67.2	15.7
---	2	1,021	13.1	77.0	0.1	0.6	7.0	2.3	86.9	13.9
---	3	8,255	54.3	37.4	1.0	2.2	2.7	4.4	45.7	18.2
101.01	---	3,766	18.3	60.5	0.1	0.3	19.2	1.7	81.7	38.9
---	1	698	10.9	69.5	0.1	0.3	17.0	2.1	89.1	29.4
---	2	980	10.4	75.1	0.1	0.8	10.9	2.7	89.6	23.8
---	3	490	4.1	86.5	0.0	0.0	7.8	1.6	95.9	12.9
---	5	972	33.4	28.5	0.0	0.0	36.5	1.5	66.6	71.4
101.02	---	3,460	42.6	4.1	0.9	0.1	48.7	3.7	57.4	92.2
---	1	1,133	45.7	2.2	0.8	0.0	47.5	3.8	54.3	93.5
---	2	1,636	41.7	6.6	0.6	0.0	47.9	3.3	58.3	89.9
---	3	691	39.7	1.3	1.9	0.0	52.5	4.3	60.3	95.4
102	---	2,356	11.1	76.4	0.4	0.5	10.6	1.1	88.9	21.5
---	1	2,033	12.2	73.8	0.4	0.4	12.0	1.1	87.8	24.0
105	---	2,378	8.8	68.0	0.0	0.0	22.0	1.2	91.2	31.8
---	1	1,316	8.4	64.2	0.0	0.0	25.9	1.4	91.6	35.9
106.01	---	5,163	33.9	4.7	0.7	0.2	55.7	4.9	66.1	91.6
---	1	3,057	30.7	7.6	0.4	0.2	55.4	5.6	69.3	90.0
115	---	4,956	12.7	70.9	0.1	0.2	14.8	1.3	87.3	29.6
---	5	1,018	6.9	84.7	0.1	0.3	7.8	0.3	93.1	14.5

Source: U.S. Census Bureau, 2000.

Notes: Some persons fall into more than one of these categories. As such, these percentages should not be combined to represent the area population, since doing so would result in duplication. For example, the percentages for racial minority populations include all income levels; and low-income populations may be a racial minority, ethnic minority, or any mix of demographic characteristics.

1. Total of persons reporting in non-White racial categories, including Black or African American, American Indian, Asian or Pacific Islander, some other race, or two or more races.
2. Total of persons reporting as Hispanic ethnic origin. As race and ethnic origin are two separate and distinct concepts, these persons may be of any race.

The presence of racial and ethnic minorities in the project area is magnified at the census tract and block group levels, with some percentages in these categories above 90 percent. Racial or ethnic minority groups account for the majority of the population within all 18 census tracts and all but two of the 33 block groups in the project area. The distribution of race and ethnicity among 2000 census tracts in the project area is varied. A large majority of the residents in the northwestern portion of the project area (north of Hampton/Inwood Road and west of Wycliff/Sylvan Avenue) and the southern portion of the project area (south of the Dallas CBD and east of IH-35E) are Black or African American. In contrast, the majority of residents in the west-central portion of the project area (in West Dallas between Hampton/Inwood Road and IH-35E) are of Hispanic origin. Additional information about minority populations within the Trinity Parkway project area is presented in **Section 3.1.3 Neighborhoods**.

Age

A comparison of the ages in the population of the project area with those of Dallas County and the City of Dallas reveals a slightly lower proportion of residents ages 20 to 64 and a slightly higher proportion of younger residents (ages 19 and under) living in the project area. **Table 3-4** shows that for all three geographic areas - the project area, city, and county - population ages generally consist of about 29 to 33 percent in the 19 and under range, 59 to 62 percent in the 20-64 range, and approximately 8 percent of people in the 65 and over range. The median age was similar for each of the areas with the project area having a slightly lower median age.

TABLE 3-4. 2000 AGE COMPARISONS

Category	Project Area	City of Dallas	Dallas County
Total Population	63,005	1,188,580	2,218,899
Ages 19 and under	20,381	350,006	683,865
Percent of total	32.3	29.4	30.8
Ages 20 - 64	37,540	736,273	1,356,162
Percent of total	59.6	62.0	61.1
Ages 65 and over	5,084	102,301	178,872
Percent of total	8.1	8.6	8.1
Median Age	30.0*	30.5	31.1

Source: U.S. Census Bureau, 2000.
Note: *Average of median age for inclusive census tracts.

3.1.2.2 Economic Conditions

The population and employment growth characteristics referenced in **Chapter 1 Need and Purpose for Proposed Action** reflects the generally robust economy experienced throughout the DFW region. The City of Dallas continues to dominate regional employment. From 1990 through 2000, employment for the city grew 28.2 percent from 809,650 in 1990 to 1,038,314 in 2000. During this period, Dallas captured 24 percent of all regional job growth (228,664). These figures represent the number of workers employed by

businesses located within the City of Dallas, regardless of where the employees reside (U.S. Census Bureau, 2000).

Certain economic indicators - such as a growing labor force and declining unemployment rates - provide even more evidence of a healthy economy. **Table 3-5** shows growth in the labor force and a decline in the unemployment rate at the local and regional level between the years 1990 and 2000. More recently, however, **Table 3-5** shows a fluctuation in the unemployment rate at the local and regional level between 2000 and 2006 (most recent available). During this period, the unemployment rate for the City of Dallas fluctuated from 4.7 percent in 2000, to 9.1 percent in 2003, to 5.4 percent in 2006. The annual average labor force also fluctuated at the local and regional level during this same period.

TABLE 3-5. LABOR FORCE STATISTICS

Location	Year	Annual Average Labor Force	Annual Average Employment	Annual Average Unemployment	Annual Average Unemployment Rate (Percent)
Dallas MSA	1990	2,280844	2,163,142	117,702	5.2
	2000	2,845,026	2,742,298	102,728	3.6
	2001	2,893,757	2,757,571	136,186	4.7
	2002	2,925,709	2,736,030	189,679	6.5
	2003	2,935,075	2,740,872	194,203	6.6
	2004	2,971,827	2,799,321	172,506	5.8
	2005	3,026,481	2,871,514	154,967	5.1
	2006	3,111,128	2,962,877	148,250	5.0
Dallas County	1990	1,069,971	1,012,686	57,285	5.4
	2000	1,184,898	1,138,273	46,625	3.9
	2001	1,191,842	1,127,550	64,292	5.4
	2002	1,182,361	1,093,566	88,795	7.5
	2003	1,163,209	1,074,660	88,549	7.6
	2004	1,158,146	1,079,281	78,865	6.8
	2005	1,175,654	1,108,149	67,505	5.7
	2006	1,210,145	1,146,062	64,083	5.3
City of Dallas	1990	574,614	538,104	36,510	6.4
	2000	619,535	590,115	29,420	4.7
	2001	627,740	587,110	40,630	6.5
	2002	628,304	571,992	56,312	9.0
	2003	620,617	564,412	56,205	9.1
	2004	619,052	569,096	49,956	8.1
	2005	600,742	565,656	35,086	5.8
	2006	618,798	585,008	33,790	5.4

Source: U.S. Department of Labor - Bureau of Labor Statistics, 2007; Texas Workforce Commission, 2007.
Notes: **MSA** = metropolitan statistical area
Data represent persons residing within the City of Dallas, Dallas County, and Dallas MSA (includes Dallas, Denton, Collin, Hunt, Rockwall, Kaufman, Ellis, and Henderson counties), regardless of workplace location.

Income and poverty data from the 2000 Census reveal the economic conditions of communities in the project area. **Table 3-6** shows 1999 income and poverty data for the census tract block groups that comprise the Trinity Parkway project area. The median household income for the project area in 1999 was $23,855 (average of median household income for inclusive block groups).

TABLE 3-6. MEDIAN HOUSEHOLD INCOME AND POVERTY STATUS

Area		Median Household Income	Percent of Households Below Poverty Level [2]
City of Dallas		$40,921	14.9
Project Area		$23,855[1]	36.6
Project Area Census Tracts [3]	**Project Area Block Groups [4]**		
20	1	$20,500	43.4
	2	$15,877	44.0
	5	$24,968	32.1
33	2	$27,589	40.0
34	2	$19,444	48.7
38	4	$16,118	39.0
39.02	2	$12,232	49.8
	3	$18,824	25.2
40	1	$15,938	36.2
	2	$15,781	42.3
41	1	$14,205	25.6
	2	$14,432	51.6
42.01	1	$75,703	3.2
43	1	$23,950	33.4
	2	$27,414	31.1
86.03	1	$19,886	25.6
	2	$21,917	20.2
89	1	$19,276	29.7
	2	$19,519	48.1
100	1	$15,208	0.0
	2	$29,132	13.7
	3	$48,750	0.0
101.01	1	$20,865	32.4
	2	$21,818	36.5
	3	$14,667	36.6
	5	$28,542	33.2
101.02	1	$27,159	25.9
	2	$28,594	30.1
	3	$53,750	6.8
102	1	$6,625	78.0
105	1	$31,813	24.5
106.01	1	$29,792	29.8
115	5	$6,620	76.8

Source: U.S. Census Bureau, 2000.

Notes:

1. Average of median household income for inclusive block groups.
2. 1999 poverty level data as reported in the 2000 Census.
3. Census tracts partially or wholly encompassed by the study area boundary.
4. Individual block groups within census tracts that fall within the study area boundary.

The Census Bureau average poverty threshold for a family of four persons was $17,029 in 1999 and the U.S. Department of Health and Human Services Poverty Guidelines for a family of four in 2008 is $21,200 (most recent available). The poverty thresholds are revised annually to allow for changes in the cost of living as reflected in the Consumer Price Index.

At the block group level, median household incomes in the project area ranged from $6,620 to $75,703 in 1999. Out of the 33 block groups within the project area, 11 block groups (20/2, 38/4, 39.02/2, 40/1, 40/2, 41/1, 41/2, 100/1, 101.01/3, 102/1, and 115/5) had median household incomes below the 1999 poverty threshold. However, the most current available federal poverty measure is the 2008 U.S. Department of Health and Human Services Poverty Guidelines, which establish the poverty level for a family of four at $21,200. The median household income for 18 of the census tract block groups in the project area is

below the current poverty threshold. Additional information about low-income populations within the Trinity Parkway project area is presented in **Section 3.1.3 Neighborhoods**.

3.1.2.3 Community Cohesion

Communities within the Trinity Parkway study area are characterized by varying degrees of cohesion. The Federal Highway Administration (FHWA) defines community cohesion as patterns of behavior that individuals or groups of individuals hold in common. Residential subdivisions may develop a sense of community cohesion through social interaction or participation in neighborhood organizations. For instance, if a local church or school provides a location where residents of the neighborhood or community can assemble and associate with one another or a neighborhood association or neighborhood watch program is in place to serve the community and satisfy the residents' economic and social needs, then some sense of cohesion likely exists. Cohesion may also be based on a common characteristic of interest shared by the members of the community, such as religion, ethnicity, or income level (FHWA, 1996a). **Section 3.1.3** describes the various neighborhood districts and neighborhoods where measurable impacts to community cohesion are likely to occur.

3.1.3 Neighborhoods

The study area includes many different neighborhoods and neighborhood districts, which are shown on **Plate 3-9** at the end of this chapter. The neighborhood districts located within, or adjacent to, the study area include:

- Middle Stemmons/Brookhollow;
- Lower Stemmons;
- CBD/Deep Ellum;
- Cedars/Fair Park/East Dallas;
- South Dallas;
- Magna Vista/Cedar Crest;
- East Oak Cliff;
- North Oak Cliff;
- West Dallas - East of Hampton; and
- West Dallas - West of Hampton.

The majority of these neighborhood districts encompass all, or portions of, several distinct residential neighborhoods. Some districts also contain residential areas lacking distinct boundaries or identities.

Each potentially impacted neighborhood and/or district located within the study area is discussed briefly below. A summary of their demographic characteristics is presented in **Table 3-7**. The primary source of demographic data was the 2000 U.S. Census because it is the most comprehensive, complete, and detailed data source currently available. Census block-group level statistics on housing characteristics, racial/ethnic composition, income level, and related information were obtained for each of the project area

districts and neighborhoods that would be potentially affected by the Trinity Parkway. It should be noted that many of the districts and neighborhoods extend beyond project area boundaries.

TABLE 3-7. NEIGHBORHOOD SOCIAL CHARACTERISTICS

Location	Households				Population			
	Percent Owner/ Renter Occupied	Median Value of Owner-Occupied Housing Units	Median Contract Rent [1]	Median Household Income [2]	Percent White	Percent Racial Minority [3]	Percent Ethnic Minority [4]	Percent Elderly [5]
Middle Stemmons/Brookhollow ND	61.2/38.8	$37,450	$426	$22,170	23.0	77.0	14.8	24.6
Residential area along Record Crossing	58.3/41.7	$38,600	$426	$29,132	13.1	86.9	13.9	19.9
-Trinity Industrial District -Brookhollow Industrial Park	64.0/36.0	$36,300	NA	$15,208	32.8	67.2	15.7	29.3
Lower Stemmons ND -Design District -Market/Technology Center	50.0/50.0	$85,000	NA	$48,750	54.3	45.7	18.2	0.8
Cedars/Fair Park/East Dallas ND	15.4/84.6	$75,025	$507	$30,084	30.3	69.7	36.8	6.9
South Dallas HOA	16.6/83.4	$87,950	$379	$27,937	17.5	82.5	13.1	11.8
The Cedars	17.3/82.7	$37,500	$435	$27,589	41.1	58.9	62.6	2.3
South Dallas ND	33.9/66.1	$29,225	$244	$12,344	6.4	93.6	11.1	13.0
South Dallas HOA	28.1/71.9	$30,950	$281	$13,463	4.9	95.1	9.2	16.4
Ideal	51.0/49.0	$36,250	$296	$13,036	2.1	97.9	4.4	17.7
Rochester Park	23.2/76.8	$33,133	$159	$10,241	9.5	90.5	13.6	8.3
West Dallas - West of Hampton ND -West Dallas HOA	54.6/45.4	$36,175	$311	$21,415	12.5	87.5	36.4	9.5
West Dallas - East of Hampton ND	55.6/44.4	$30,090	$346	$26,401	28.0	72.0	60.6	11.1
West Dallas HOA	56.7/43.3	$31,725	$337	$26,613	24.7	75.3	55.7	11.8
La Bajada	51.3/48.7	$23,550	$380	$25,555	41.3	58.7	80.0	8.2
North Oak Cliff ND	33.3/66.7	$94,958	$507	$28,120	42.8	57.2	66.1	4.2
Kessler Park	50.7/49.3	$96,900	$609	$40,598	54.4	45.6	62.2	7.4
Lake Cliff HOA	18.3/81.7	$93,571	$443	$20,322	35.5	64.5	79.0	2.2
East Oak Cliff ND	41.1/58.9	$24,925	$270	$16,858	10.8	89.2	22.1	13.2
Magna Vista/Cedar Crest ND	52.5/47.5	$35,600	$414	$22,598	14.9	85.1	34.3	14.9
Cadillac Heights	57.4/42.6	$33,300	$330	$21,917	27.5	72.5	79.6	7.8
City of Dallas	43.2/56.8	$87,400	$551	$37,628	50.8	49.2	35.6	8.6

Source: U.S. Census Bureau, 2000.

Notes: Census tracts/block groups are shown on **Plate 3-8** and neighborhoods/districts are shown on **Plate 3-9** at the end of **Chapter 3**. **NA** = Not Available; **HOA** = Home owners association; **ND** = Neighborhood district

Neighborhood and district boundaries do not correspond exactly with census tracts or block groups. A rough correlation has been established so that census data can be used to provide a general description of population, income, and housing characteristics.

1. Median contract rent is the monthly rent agreed to or contracted for, regardless of any furnishings, utilities, fees, meals, or services that may be included.
2. Income figures are at the census block-group level. For neighborhoods/districts containing more than one block group, medians were averaged in proportion to the population, income, rental units, or owner-occupied housing units within each group.
3. Total of persons reporting in non-White racial categories, including Black or African American, American Indian, Asian or Pacific Islander, some other race, or two or more races.
4. Total of persons reporting as Hispanic or Latino ethnic origin. As race and ethnic origin are two separate and distinct concepts, these persons may be of any race.
5. 65-years of age or older.

Middle Stemmons/Brookhollow Neighborhood District. This district is located on the north section of the study area east of the Dallas Floodway. It is bounded to the west by the Dallas Floodway east levee and to the south by the Lower Stemmons neighborhood district. The remaining portion to the north and east extends beyond the study area limits. It is predominantly commercial/light-industrial in character. One single-family residential area is located adjacent to the east of the IH-35E/SH-183 interchanges in the vicinity of Record Crossing and the old Elm Fork river channel. Portions of the Trinity Industrial District and Brookhollow Industrial Park are included within this section of the larger district.

Approximately 61 percent of the residences in this district are owner-occupied, which is the highest percentage among project area districts and neighborhoods. The median value of homes is $37,450, and the median contract rent is $426. This district also has a large concentration of racial minority residents (77 percent). The residential area located east of IH-35E along Record Crossing has the largest concentration of racial minority residents (86.9 percent) within the district. This district also contains the highest percentage of residents over the age of 65 (24.9 percent) among all of the project area districts and neighborhoods.

Lower Stemmons Neighborhood District. This district is located on the east-central section of the study area between IH-35E and the Dallas Floodway. It is predominantly commercial/light-industrial in character. The Design District and Market/Technology Center are included within the larger district. These major business centers include a large concentration of market-support businesses (e.g., photography studios, design professionals; display designers, etc.) and market-related businesses (e.g., furniture dealers, antique dealers, interior decorators, etc.).

The percentage of owner-occupied housing in Lower Stemmons is approximately 50 percent. Median house values are relatively high at $85,000. Median household income ($48,750) is the highest in the project area. No reportable median contract rent was available for the district. Lower Stemmons has percentages of racial minorities (45.7 percent) and ethnic minorities (18.2 percent) that are among the lowest of all project area districts and neighborhoods. Lower Stemmons also has the lowest percentage of elderly residents (0.8 percent).

Cedars/Fair Park/East Dallas Neighborhood District. This district is located in South Dallas on the southeast section of the study area adjacent to the south of the Dallas CBD. It is bounded to the west by the Dallas Floodway and to the east by MLK, Jr. Boulevard. The remaining areas to the east extend beyond the study area limits. It is predominantly urban residential in character with commercial/light-industrial facilities along Industrial Boulevard, Lamar Street, and IH-45. The majority of residential properties are located between Lamar Street and IH-45. The Cedars neighborhood and a portion of the South Dallas Home Owners Association (HOA) are included within this section of the larger district.

Due to the prevalence of multi-family housing, the district has a high renter-occupied percentage (84.6 percent) - the highest of all the project area districts and neighborhoods. The owner-occupancy percentage is 15.4 percent. Median house values are variable throughout the district. House values for the South Dallas HOA ($87,950) are much higher than The Cedars ($37,500). However, the South Dallas HOA has a lower median contract rent ($379) than The Cedars ($435). Median household incomes are among the highest in the project area. The distribution of minority residents is also variable throughout the district. The South Dallas HOA has a higher concentration of racial minority residents (82.5 percent) compared to The Cedars (58.9 percent). In contrast, The Cedars has a much higher percentage of ethnic minority residents (62.6 percent) compared to the South Dallas HOA (13.1 percent). The percentage of elderly residents in The Cedars (2.3 percent) is among the lowest in the project area.

South Dallas Neighborhood District. This district is located in South Dallas on the southeast section of the study area. It is bounded to the south by Rochester Park and to the west by MLK, Jr. Boulevard and the MKT Railroad. The remaining areas to the north and east extend beyond the study area limits. It is predominantly residential in character with commercial/light-industrial facilities along Lamar Street, IH-45, and near the US-175/SH-310 interchange. The majority of single-family homes are between Lamar Street and SH-310 and to the north and south of US-175. Portions of the South Dallas HOA, Rochester Park, and Ideal neighborhoods are included within this section of the larger district. The South Dallas HOA neighborhood encompasses the majority of the district. The Rochester Park neighborhood is located southeast of the US-175/SH-310 interchange and consists primarily of single-family homes. The Ideal neighborhood is located northeast of the US-175/SH-310 interchange and also consists primarily of single-family homes.

The Ideal neighborhood is considered more cohesive because of its higher percentage of owner-occupied housing (51.0 percent) when compared to the other district neighborhood areas (South Dallas HOA - 28.1 percent and Rochester Park - 23.2 percent). Ideal neighborhood house values ($36,250) and median contract rent ($296) are also higher than the other district neighborhoods. The median contract rent for Rochester Park ($159) is the lowest among all project area districts and neighborhoods. As a whole, the South Dallas Neighborhood District has the highest percentage of racial minority residents (93.6 percent) and the lowest percentage of ethnic minority residents (11.1 percent) in the project area. The percentage of elderly residents in the district is 13.0 percent. Of the district area neighborhoods, Ideal has the highest percentage of elderly residents (17.7 percent) and Rochester Park has the lowest (8.3 percent).

West Dallas - West of Hampton Neighborhood District. This district is located in West Dallas on the west section of the study area. It is bounded to the north by the Dallas Floodway and to the east by Hampton/Inwood Road. The remaining areas to the south and west extend beyond the study area limits.

It is predominantly residential in character with retail/commercial and light-industrial facilities located along Westmoreland Road, Singleton Boulevard, and other major/minor arterials throughout the district. This district includes portions of the West Dallas HOA, a large neighborhood area located in both the East and West of Hampton neighborhood districts.

The percentage of owner-occupied housing is 54.6 percent. The median house value, median household income, and median contract rent are $36,175, $21,415, and $311, respectively. The district has a high percentage of racial minority residents at 87.5 percent). The percentage of ethnic minority residents is 36.4 percent. The percentage of residents over 65 is 9.5 percent.

West Dallas - East of Hampton Neighborhood District. This district is located in West Dallas on the west section of the study area. It is bounded to the north by the Dallas Floodway; to the east by Beckley Avenue; and the west by Hampton/Inwood Road. The remaining portions to the south extend beyond the study area limits. It is predominantly residential in character with retail/commercial and light-industrial facilities located along Wycliff/Sylvan Avenue, Canada Drive, Singleton Boulevard, Commerce Street, and other major/minor arterials throughout the district. Portions of the West Dallas HOA and La Bajada neighborhoods are included within this section of the larger district. La Bajada is located on the east section of the district between Wycliff/Sylvan Avenue and Beckley Avenue. The Dallas West Mobile Home Park is located near the center of this neighborhood along Commerce Street.

The district's percentage of owner-occupied housing is 55.6 percent. Median house values ($30,090), median household income ($26,401), and median contract rent ($346) are similar to the statistics for the neighborhood district west of Hampton/Inwood Road. The district has a high concentration of minority residents, with 72.0 percent racial minority and 60.6 percent ethnic minority residents, and is known for being racially balanced. The La Bajada neighborhood has the highest percentage of ethnic minority residents (80.0 percent) within the project area. The percentage of elderly residents ranges from 8.2 percent in La Bajada to 11.8 percent in the West Dallas HOA portion of the district.

North Oak Cliff Neighborhood District. This district is located in Oak Cliff on the west-central section of the study area. It is bounded to the north by IH-30 and the Dallas Floodway and to the east by IH-35E. The remaining portions to the south and west extend beyond the study area limits. It is predominantly residential in character with retail/commercial facilities along IH-35E, IH-30, Beckley Avenue, and other major/minor arterials throughout the district. Portions of the Lake Cliff HOA and Kessler Park neighborhoods are included within this section of the larger district. The Lake Cliff HOA is located between Beckley Avenue and IH-35E. Kessler Park is located between Beckley Avenue and IH-30.

North Oak Cliff is the most affluent district in the project area. The percentage of owner-occupied housing (55.6 percent) is among the highest in the project area. North Oak Cliff's median household income is $28,120. However, it is much more variable at the neighborhood level between Kessler Park ($40,598) and the Lake Cliff HOA ($20,322). Median house values (approximately $95,000) are the highest among the project area's districts and neighborhoods. Median contract rent prices range from $433 in the Lake Cliff HOA to $609 in Kessler Park. Rent prices in Kessler Park are the highest in the project area. North Oak Cliff has a high percentage of both racial minority residents (57.2 percent) and ethnic minority residents (66.1 percent), and is known for its racially balanced makeup. The Lake Cliff HOA portion of the district has even higher percentages of minority residents (racial minority - 64.5 percent; ethnic minority - 79.0 percent). It also has among the smallest percentage of elderly residents (4.2 percent) in the project area.

East Oak Cliff Neighborhood District. This district is located in Oak Cliff on the southwest section of the study area. It is bounded to the north by the Dallas Floodway; to the east by MLK, Jr. Boulevard; and to the west by IH-35E. The remaining portions to the south extend beyond the study area limits. There is no identifiable neighborhood within this portion of the district. It is predominantly residential in character with retail/commercial and light-industrial facilities along IH-35E, Corinth Street, MLK, Jr. Boulevard, and other major/minor arterials throughout the district.

Approximately 41 percent of the homes in East Oak Cliff are owner-occupied. The district's median house value ($24,925), median household income ($16,858), and median contract rent ($270) are among the lowest in the project area. East Oak Cliff has a high percentage of racial minority residents (89.2 percent) and a relatively low percentage of ethnic minority residents (22.1 percent). The percentage of residents over 65 is 13.2 percent.

Magna Vista/Cedar Crest Neighborhood District. This district is located in South Dallas on the south section of the study area. It is bounded to the north by MLK, Jr. Boulevard and the Trinity River and to the east by IH-45. The remaining portions to the south and west extend beyond the study area limits. A portion of the Cadillac Heights neighborhoods is included within the larger district. It is predominantly residential in character with retail/commercial facilities along MLK, Jr. Boulevard and other major/minor arterials throughout the district. The Dallas Central Waste Water Treatment Plant (CWWTP) is located on the eastern section of the district.

The district's percentage of owner-occupied housing is relatively high at 52.5 percent. More than 57 percent of the homes in Cadillac Heights are owner-occupied, which is among the highest in the project area. Median house values are $35,600 for the district and $33,300 for Cadillac Heights. Median household incomes are $22,598 for the district and $21,917 for Cadillac Heights. Rent prices range from

$330 for Cadillac Heights to $414 for the district. The district has a high percentage of racial minority residents at 85.1 percent, which is among the highest in the project area. The percentage of ethnic minority residents is 34.3 percent. The Cadillac Heights neighborhood has a high percentage of both racial minority residents (72.5 percent) and ethnic minority residents (79.6 percent) and is known for its racially balanced makeup. As a whole, the district has a percentage of elderly residents of 14.9 percent. The percentage of residents over the age of 65 is 7.8 percent in Cadillac Heights.

3.1.4 Schools, Community Services/Facilities, and Places of Worship

Public schools in the study area are administered by the DISD. Community services and facilities consist of police and fire facilities, community and recreation centers, and numerous places of worship. The schools, community services/facilities, and places of worship in the study area are summarized in **Table 3-8** and their locations are shown on **Plate 3-10**.

TABLE 3-8. SCHOOLS, PLACES OF WORSHIP, AND COMMUNITY SERVICES

Plate No.	Facility	Location
Police and Fire		
1	Lew Sterrett Justice Center/Frank Crowley Courts Building*	111 Commerce Street/133 N. Industrial Boulevard
2	Sheriff Dept. Jail Commanders Academy Training Div.	521 N. Industrial Avenue
3	Fire Station No. 1	1901 Irving Boulevard
4	Fire Station No. 47	7161 Envoy Court
5	Jack Evans Police Department	1400 S. Lamar Street
Schools		
6	DISD Storage and Maintenance Facility	3701 South Lamar
7	C.F. Carr Elementary School	1952 Bayside Street
8	Lorenzo DeZavala Elementary School	3214 Winnetka Avenue
9	Priscilla L. Tyler Elementary School	2333 Calypso Street
10	Yvonde A. Townview Magnet School	1201 E. 8th Street
Community and Recreation Centers		
11	Joseph McMillan Community Center	Canada Drive at Ladd Street
12	West Dallas Community Center	2215 Canada Drive
13	Bataan Community Center	Bataan Street at Coronet Street
14	Eloise Lundy Recreation Center	1229 Sabine Street
15	Debra Lynn Woods Theater	Pear Street at Colonial Avenue
16	Southwest Key Program Youth Center	919 Dragon Street
17	Mattiemash Community Center	3710 N. Hampton Road
18	The Sarah Wilke Youth Center	1000 McBroom Street
Places of Worship		
19	Trinity Valley Church of God in Christ	2043 Canada Drive
20	Dallas Free 7th Day Adventist	Canada Drive at Ivanhoe Lane
21	Galilee Church of God in Christ	4004 Ivanhoe Lane
22	Canada Drive Christian Church	2035 Canada Drive
23	Macedonia Baptist Church	1967 Canada Drive
24	Canada Drive Church of God in Christ	1833 Canada Drive
25	Leath Street Baptist Church	1831 Canada Drive
26	Homeland Street Missionary Baptist Church	3636 Navarro Street
27	Lively Stones Outreach Ministry	Leath Street at Vilbig Road
28	Victory Mission Baptist Church	2313 Canada Drive
29	Iglesia Christiana Canaan	Winnetka Avenue at McBroom Street
30	La Iglesia Methodista Unida Nueva Esperanza	Winnetka Avenue at Toronto Street
31	Abundant Faith Church of God in Christ	3930 N. Hampton Road
32	Mt. Nebo Baptist Church	Bayside Street at Harston Street
33	House of Refuge Pentecostal Church	1823 Bayside Street
34	Sweet Home Baptist Church	3810 Vilbig Road
35	Kingdom Hall Jehovah's Witness	Vilbig Road at Bayside Street
36	Church of the Living God	1710 Bayside Street
37	Trinity River Mission	1018 Gallagher Street
38	New Mt. Gilead Baptist Church	115 Morgan Avenue
39	Shiloh Missionary Baptist Church	1114 Comal Street
40	Golden Gate Missionary Baptist Church	1101 Sabine Street
41	True Purpose Missionary Baptist Church	434 N. Moore Street
42	Christ's Willing Worker Baptist Church	2213 Lowery Street
43	New Hope Baptist Church	5002 S. Central Expressway
44	Harding Street Baptist Church	223 Harding Street
45	St. Paul Baptist Church	1600 Pear Street
46	Mosley Chapel CME Church	2246 Anderson Street
47	Faith Tabernacle Church of God in Christ	2308 Lowery Street
48	Church of the Living God	2414 Bethurum Avenue
49	South Dallas Baptist Church	2202 Hatcher Street
50	Iglesia Camino de Vida	Conroe and Nomas
51	Bethlehem Pentecostal Holiness Church	1826 Bickers Street
52	Community Care Fellowship Church	1915 Bayside Street
53	Holiness Church of God in Christ	2026 Calypso Street

Notes: Plate ID numbers correspond to the locations shown on **Plate 3-10** at the end of **Chapter 3**.
* - The Frank Crowley Courts Building also contains the Dallas County Law Library. No other public libraries were identified in the study area.
Source: City of Dallas, 2007b; City of Dallas, 2007c; DISD, 2007; USA Church, 2007.

3.1.5 Utilities

Major components of an extensive urban utility infrastructure are situated throughout the study area. This includes major service lines for drinking water, stormwater, natural gas, telephone, television, sanitary sewer, and electricity. Major utilities located in the study area are shown on **Plates 3-11** through **3-13**. A brief summary of these major utilities is provided in the following paragraphs.

Because of the location of the study corridor with respect to the Dallas CBD, industrial and retail areas, as well as residential locations, nearly all types of modern urban utilities have been identified at various locations. The major utilities that have been identified include:

- Storm Drainage Facilities/Pump Stations;
- Sanitary Sewers;
- Water Lines;
- Gas/Petroleum Pipelines;
- Electrical Transmission Lines/Substations;
- Telephone Cable;
- Fiber-Optic Cable; and
- Television Cable.

Drinking Water: Drinking water in the study area is provided by Dallas Water Utilities (DWU), which serves the City of Dallas and 27 additional towns and cities throughout the region. The DWU water system consists of five storage reservoirs, three water purification plants, 23 pump stations, 21 water storage tanks, and 4,781 miles of water distribution mains. DWU has 10 major water distribution mains, ranging from 20 inches in diameter to 66 inches, in the study area, along with an extensive network of smaller distribution mains.

Sanitary Sewer: The sanitary sewer system in the study area is operated by the City of Dallas through DWU. The City has two major wastewater treatment plants including the Southside Wastewater Treatment Plant and CWWTP. The Southside and CWWTP process and discharge approximately 90 million and 150 million gallons of wastewater effluent to the Trinity River per day, respectively. The city has six major sanitary interceptor sewer mains, ranging from 10 inches to 120 inches in diameter, along the corridor with an extensive network of smaller service lines located throughout the study area. The 120-inch West Bank interceptor line is located within the Dallas Floodway.

Cadiz Pump Station New Interceptor Sewer Line

The Cadiz pump station is located near the intersection of Industrial Boulevard and Cadiz Street. In the summer of 2000, the pump station experienced a power failure during a major weather event. As a

result, several million gallons of untreated sewage was diverted to a bypass pipe that discharged into the old Trinity River sump and was subsequently pumped into the Trinity River. To prevent future discharges, a new gravity sewer line has been designed to connect to the 120-inch West Bank Interceptor sewer line located on the west side of the Trinity River channel. The new sewer line will cross under the east levee and river channel and would be constructed by tunnel boring. Once operational, the existing 60-inch interceptor line that parallels the west bank of the river channel may be abandoned in place.

Electricity: Electrical service in the study area is provided by Oncor. Oncor has nine major overhead transmission lines, ranging from 138 kilovolts (kV) to 345 kV in size, several electrical substations, and an extensive network of smaller underground and overhead service lines in the study area. Oncor is planning a new power transmission line in the project area and received approval of a Certificate of Convenience and Necessity (CCN) application for the new 345 kV West Levee-Norwood transmission line from the Public Utility Commission (PUC) on June 7, 2007. The proposed West Levee - Norwood Project would route the new transmission line between the West Levee switching station, located near the west levee south of Singleton Boulevard, to the Norwood switching station, located between Loop 12 and the Trinity River in Irving (City of Dallas, 2006d). The new West Levee - Norwood 345 kV line would be constructed underground along Canada Drive, cross the Dallas Floodway above ground at Sylvan Avenue, and be placed on single poles in the median of Irving Boulevard. Irving Boulevard (State Highway 356) would be taken off-system from TxDOT and maintenance would be taken over by the cities of Dallas and Irving.

Natural Gas: Four major natural gas distribution mains, ranging from 16 inches to 30 inches in diameter, and an extensive network of smaller distribution lines are located throughout the study area. Natural gas service in the area is provided by Atmos Energy.

Stormwater Drainage Facilities: Stormwater drainage in the study area is provided by City of Dallas and maintained by the Streets and Sanitation Department. This department utilizes a large network of integrated drainage systems to provide drainage service throughout the city. The Dallas Floodway contains seven pump stations and five major pressure sewers to manage and distribute stormwater runoff. Within the study area, stormwater runoff is eventually discharged to the Trinity River through adjacent tributaries, open drainage channels, and/or by large pressure sewers. For areas on the landside of the Dallas Floodway Levee system, stormwater is collected in large storage sumps (old Trinity River meanders) and transported, via several pump stations, through the levees to outfall channels within the Dallas Floodway. There are 13 major storage sumps and an extensive network of smaller drainage lines within the study area.

3.2 TRANSPORTATION SETTING

This section describes the existing transportation setting within the study area. This includes a description of the existing transportation infrastructure as well as important traffic generators, which affect both the local and regional transportation system. Additional details were presented earlier in **Chapter 1 Need and Purpose for Proposed Action**.

3.2.1 Roads and Highways

The existing roadway system within and adjacent to the study area includes seven major freeways and a network of arterial roads and local streets. The principal freeways within the study area are IH-35E and IH-30. Other important highway facilities include IH-45 (Julius Schepps Freeway), SH-183 (Airport Freeway), Spur 366 (Woodall Rodgers Freeway), US-175 (S.M. Wright Freeway/C.F. Hawn Freeway), SH-310 (Central Expressway), and the Dallas North Tollway (DNT). Major interchanges are located at IH-35E/SH-183, IH-35E/DNT, IH-35E/Spur 366, IH-35E/IH-30, and US-175/SH-310. As shown on **Plate 3-14**, this network of freeways and interchanges are a part of a system of highways that radiate from the freeway loop around downtown Dallas.

IH-35E STEMMONS FREEWAY

IH-35E is the major north-south corridor through the City of Dallas, connecting to densely populated suburban communities both north and south of the city. Major freeway interchanges associated with IH-35E occur at SH-183, the DNT, Spur 366, and IH-30. IH-35E provides direct north-south access to the Dallas CBD and other major population and employment centers located within and/or adjacent to the study area. These include the Stemmons Industrial District, the West End Historic District, and neighborhood communities in south and west Dallas.

In addition to serving the City of Dallas, IH-35E is also a nationally important Interstate highway. IH-35E merges with IH-35W both north and south of the DFW metropolitan area to form a continuous IH-35 corridor. It is the major north-south interstate linking Texas to other states in the central U.S. and beyond. Due to NAFTA, IH-35 also serves as a freight transportation corridor, linking the U.S. with Mexico and Canada. The ability of IH-35 to fulfill its international, national, and statewide function is vital to the economy of the DFW metropolitan area as well as the State of Texas.

The major east-west highway in the study area is IH-30. The only major freeway interchange with IH-30 in the study area occurs at IH-35E (Mixmaster). IH-30 provides direct east-west access to the Dallas CBD and other major population and employment centers located within and/or adjacent to the study area. IH-30 serves as a connecting link to the cities of Arlington, Grand Prairie, and Fort Worth to the west and neighborhoods and communities of east Dallas as well as other towns/cities east of the Dallas city limits.

IH-30 is also an important Interstate highway and is the major east-west facility linking the DFW metropolitan area to the eastern and western U.S. Similar to IH-35, IH-30 also acts as a freight corridor for NAFTA-related truck traffic and serves an important role in the local, statewide, and national economies.

3.2.2 Public Transportation

DART LIGHT RAIL

A major network of DART bus routes, light-rail transit (LRT) and commuter rail, and Amtrak rail lines serves the project study area. These are shown on **Plate 3-15**. DART provides bus, rail, on-call (shared-ride van service), paratransit (van service for the disabled), and vanpool/carpool services, and also manages the HOV system in the Dallas area. Like most U.S. transit systems, most of DART's service is oriented toward a downtown regional hub. Overall, approximately 88 percent of DART's bus riders, and 100 percent of DART's rail riders use routes that are oriented to downtown.

Currently, DART serves Dallas and 12 surrounding cities with more than 130 bus routes, 45 miles of LRT, 31 freeway miles of HOV lanes, and paratransit service for the mobility impaired. DART and the Fort Worth Transportation Authority (the T) jointly operate 35 miles of commuter rail transit (the Trinity Railway Express or TRE), linking downtown Dallas and Fort Worth with stops in the mid-cities and DFW International Airport.

In 2006, annual system-wide (bus, rail, HOV, paratransit, on-call, and vanpool/carpool services combined) ridership was 102.9 million passenger trips, an increase of 4.9 percent from 2005 (98.1

million). Ridership for the light-rail system was approximately 18.6 million in 2006 - up about 6.3 percent from 2005 (17.5 million) (DART, 2006).

Through 2014, the DART rail system is slated to more than double in size to 93 miles. Extensions now in development include the 17.5-mile northwest corridor serving downtown Dallas, American Airlines Center, Dallas Medical Market Center, Love Field Airport, and the cities of Farmers Branch and Carrollton. A 13-mile branch would extend from the northwest corridor to north Irving's Las Colinas Urban Center and DFW International Airport. Another 10.2-mile extension would serve the southeast corridor connecting downtown Dallas, Deep Ellum, Fair Park, South Dallas, and Pleasant Grove. In addition, service would extend from Ledbetter Station in South Oak Cliff south about 3 miles to IH-20 and from downtown Garland Station northeast 5 miles to Rowlett. DART's transit system plan also includes expanding to 110 miles of HOV lanes.

Amtrak operates passenger rail service to the Dallas Union Station located in downtown Dallas. This service connects Dallas to other destinations nationwide. The *Texas Eagle* connects Dallas to points between San Antonio, Austin, and Fort Worth, Texas; St. Louis, Missouri; and Chicago, Illinois; providing twice a day service. In addition, Amtrak passengers may connect to the *Heartland Flyer* train in Fort Worth and the *Sunset Limited* train in San Antonio or Houston via bus service from Dallas.

In October 2000, the USDOT announced the designation of a new high-speed passenger rail corridor, the "South-Central Corridor." This new corridor would have DFW as its hub and may serve destinations in Oklahoma, Arkansas, and Texas. This designation was made pursuant to Section 1103(c) of TEA-21 and brings the total number to 10 of high-speed rail corridors in the U.S. The designations apply to corridor regions, not to specific routes, because in some cases there are two or more existing routes. The designations are intended to provide flexibility to each region before key stakeholders make planning and financing commitments.

3.2.3 Passenger Airports

The majority of airline passengers in the DFW metropolitan area use two primary airport facilities: DFW International Airport and Dallas Love Field. Combined, these airports provide service by eight international and 19 domestic airlines, including DFW-based American Airlines and Dallas Love Field-based Southwest Airlines. Due to their central location in the southern U.S., flight time to any major city in the continental U.S. takes 4 hours or less. In addition, the DFW metropolitan area has a major industrial airport, Fort Worth Alliance Airport, as well as 12 reliever airports.

DFW International Airport

DFW International Airport is located approximately 11 miles west-northwest of downtown Dallas. Within the study area, the majority of traffic traveling to and from this airport use IH-35E, which connects to SH-183 at the north terminus of the study area. DFW is the world's third busiest airport, handling almost 700,000 operations (takeoffs and landings) in 2006 and serving over 60 million passengers. Each day, DFW's seven runways handle an estimated 2,000 departures and arrivals with flights to over 134 destinations, including 36 international destinations. Three existing runways have been extended and an eighth runway is planned for the near future as DFW prepares for future growth and the use of new, larger transcontinental aircraft. Known as the "giant engine" that drives the north Texas economy, DFW International Airport contributes approximately $14.3 billion annually to the DFW area. Businesses in the DFW area employ nearly 270,000 people because of jobs created directly or indirectly by the airport.

Love Field Airport

Owned and operated by the City of Dallas, Love Field Airport is a central hub for regional business and commuter travel. This airport is located approximately 5 miles northwest of downtown Dallas and approximately 2 miles from the IH-35E/SH-183 interchange at the north terminus of the study area. The majority of traffic traveling through the study area to and from Love Field use IH-35E. To access Love Field from IH-35E, motorists use either the DNT or Mockingbird Lane. In 2006, approximately 6.9 million passengers were handled at Love Field. The airport has approximately 20 operational gates and conducts an average of 642 aircraft operations each day. In addition, Love Field directly or indirectly creates more than 24,000 jobs in the area and has an annual economic impact in excess of $2.0 billion to the Dallas economy.

3.2.4 Movement of Freight

The movement of goods and products is extremely important to the economic vitality of the region. North central Texas has one of the most extensive surface and air transportation networks in the world, providing extensive trade opportunities for the more than 600 motor/trucking carriers and almost 100 freight forwarders that operate out of the DFW area. The following sections describe the methods used to transport freight through the study area.

3.2.4.1 Trucking

The primary roadway facilities for truck movements include major highways/freeways and major/minor arterial facilities throughout the study area. The transportation of hazardous materials is controlled by ordinances adopted by the City of Dallas. The City of Dallas Ordinance on the Transportation of Hazardous Materials specifically identifies the following "Prohibited Hazardous Material Areas":

- IH-30 from IH-35E to Oakland Avenue;
- IH-45 from Lamar Street to US-75 elevated bypass;
- US-75 elevated bypass from IH-45 to Bryan Street;
- Woodall Rodgers Freeway; and
- Underground tunnel systems.

The regional movement of trucking is concentrated on IH-35 (IH-35E and IH-35W), IH-30, IH-45, and US-75. The IH-35 corridor was identified in ISTEA as Corridor 23, which designates IH-35 as a national high-priority trade route. Currently, the IH-35 corridor carries approximately 32 percent of all NAFTA-related traffic in relation to other major trade corridors in the state. Referred to as the NAFTA "Superhighway," this major north-south route also serves both the Dallas and Fort Worth CBDs.

3.2.4.2 Freight Railroads

Four major active freight railroad corridors are located within the study area. Several railroad companies own or control these right-of-ways and others operate trains on these tracks, including the UP Railroad Company, Burlington Northern Santa Fe (BNSF) Railway Company, Dallas Garland, and Northeastern Railroad, Inc. (DGNO), DART, and Amtrak. The following is a summary of these major/minor active freight rail corridors:

- DART owns the railroad right-of-way on the northwest portion of the study area between the IH-35E/SH-183 interchange and Commonwealth Drive. This railroad corridor travels east-west and is used by BNSF and UP for freight train operations and by DART for the TRE commuter train service. Switching movements occur at a rail yard located adjacent to the west of the study area.
- UP owns the railroad right-of-way on the central portion of the study area. This railroad bridge crosses the Trinity River between Continental Avenue and Commerce Street. This railroad corridor is used by DGNO and UP to operate freight trains and by Amtrak. A UP-owned spur track splits from the main railroad near the Dallas Floodway east levee. The spur runs parallel with the levee and was used to access former spur tracks within the Stemmons Industrial District. Currently, the spur is used by DGNO on a limited basis to serve one rail customer, Cargill.
- BNSF owns the railroad right-of-way on the southeast portion of the study area. This railroad bridge crosses the Trinity River between MLK and IH-45. This railroad corridor is used exclusively for freight transport by BNSF and UP. It merges with a UP-owned railroad right-of-way near the intersection of Lamar Street and MLK (note the BNSF rail corridor is known locally as the "MKT Railroad," and as a result, is cited as the MKT Railroad in this SDEIS).
- UP also owns the railroad right-of-way on the southeast portion of the study area. This railroad corridor travels southeast-northwest and is used by UP, BNSF, DGNO, and Amtrak. Spur tracks

along this corridor serve a limited number of rail customers, including Texas Industries (TXI), Big City Crushed Concrete, and Oxychem. Switching movements occur along a large rail yard between the old AT&SF Railroad corridor and IH-30 near downtown Dallas.

DART owns additional railroad right-of-way in the southeast portion of the study area. In the early 1990s, DART acquired the former AT&SF Railroad right-of-way located at the southern end of the Dallas Floodway to build an LRT facility. The old AT&SF Railroad has been abandoned, the tracks removed, and the bridge structure across the Trinity River left in place.

3.2.4.3 Intermodal Facilities

Intermodal transport involves more than one mode of transport (ocean vessel, rail, and truck) to move freight throughout the country (and between the U.S., Canada, and Mexico) without any handling of the freight itself when changing modes. Intermodal transport reduces cargo handling, improves security, reduces damages and loss, and allows freight to be transported faster and more efficiently. Goods are moved, transferred, and distributed to destinations across the United States and around the world via truck, rail, and air through the Dallas-Fort Worth region. The region is home to a variety of freight transportation facilities, which are strategically located to take advantage of access to the region's transportation system. These facilities include the Union Pacific Dallas Intermodal Terminal in Wilmer, the Union Pacific Auto Facilities in Mesquite, and Burlington Northern Santa Fe Railway's Intermodal and Carload Transportation Center at Alliance Airport, as well as air cargo terminals at airports and a variety of private freight operations that generate substantial truck traffic. In addition, the City of Dallas plans to develop an Agile Port Center, potentially located near IH-45 and IH-20 in close proximity to the UP Dallas Intermodal Terminal south of the project area, which would facilitate the transition of container movement among trucks, rail, and ships at high velocities. The Agile Port Center would take advantage of the region's intermodal facilities, interstate system, rail service, airports, and warehousing facilities by serving as an inland processing and distribution hub for inbound and outbound containers arriving through seaports such as the Port of Houston.

3.2.4.4 Air Cargo

Surface transportation in the study area is also influenced by freight rail and trucking movements to and from major air cargo facilities located in the DFW region. These major air cargo facilities include DFW International Airport, Dallas Love Field, and Alliance Airport, which provide air cargo service to many regional, national, and international destinations.

DFW International Airport is the focal point of one of the nation's largest intermodal hubs, connecting air, rail, and interstate highway systems. From this airport, shipping companies can link easily with rail, regional superhighways, and coastal water ports. DFW is one of the largest freight airports in the world, handling 834,007 tons of cargo (freight and mail) in 2006. The airport is also host to a 2,500-acre foreign trade zone and has plans to expand the airfreight capability even further. In addition, the airport is within 4 hours flight time, or 48 hours by truck, from 95 percent of the U.S. population. The Capital Development Program at DFW International plans to invest $2.6 billion into the airports infrastructure over a 5-year time frame. This investment will generate an additional $34 billion in economic impact on the DFW regional economy and another 77,000 new jobs over the next 15 years.

Dallas Love Field also maintains air cargo facilities and handles approximately 20,000 tons of domestic cargo per year. Alliance Airport, located north of the City of Fort Worth, is one of the largest commercial/industrial airports in the nation, providing airfreight service for manufacturing, warehousing, and distribution firms throughout the region.

3.2.5 Non-Motorized Transportation: Pedestrian and Bicycle Use

Pedestrian circulation facilities in the study area are provided as a part of the roadway facility cross-section. Specific pedestrian circulation elements have not been developed by the City of Dallas. In 1992, the City of Dallas developed the Greater Dallas Bike Plan Map. The bicycle routes are on-street routes with no separate provision for bicycles. The following designated bike routes are located within the study area:

North-South Signed Bicycle Routes	**East-West Signed Bicycle Routes**
Route 23 on Westmoreland	Route 194 on Canada/Beckley
Route 29 on Hampton/Inwood	Route 192 on Bernal/Bickers
Route 37 on Sylvan/Wycliff	Route 190 on Commerce
Route 45 on Houston	Route 210 on Irving/Industrial
Route 45 on Jefferson	Route 170 on MLK

Several local agencies and organizations are in the process of developing an extensive network of bicycle/pedestrian trail facilities within and adjacent to the study area (i.e., the regional veloweb with planned links to the Katy Trail, Santa Fe Trestle Trail, Trinity Strand Trail, and Great Trinity Trail). These planned trails include biking for transportation as well as recreation (see **Section 3.3.2.3 Planned Parks and Recreational Areas**).

3.2.6 Regional Transportation Plans

As previously described in **Chapter 1 Need and Purpose for Proposed Action**, *Mobility 2030: The Metropolitan Transportation Plan (MTP) for the Dallas-Fort Worth Area* identified the fiscally constrained long-term and short-term transportation strategies and actions planned through the year 2030 (NCTCOG, 2007a). Multimodal improvements are considered, including highway, freight, transit, bicycle, and pedestrian facilities. The 2008-2011 Transportation Improvement Program (TIP) for the Dallas-Fort Worth Metropolitan Area, is a staged, multi-year program of projects proposed for funding by federal, state, and local sources within the DFW metropolitan area. The TIP is developed by the NCTCOG in cooperation with local governments, TxDOT, NTTA, and local transportation authorities. The TIP is developed in accordance with the metropolitan planning requirements set forth in the Statewide and Metropolitan Final Rule (23 CFR § 450, 49 CFR § 613) promulgated in the October 28, 1993, Federal Register as required by the ISTEA of 1991, which was reauthorized as the TEA-21, and more recently reauthorized as the SAFETEA-LU. The 2008-2011 TIP was prepared under guidelines set forth in the United States Code of Federal Regulations (CFR) (referenced above) as updated on April 1, 2004 (NCTCOG, 2007g).

The projects included within the 2008-2011 TIP were selected to implement improvements consistent with *Mobility 2030: The Metropolitan Transportation Plan for the Dallas-Fort Worth Area*. Roadway improvement plans for the study area identified within the 2008-2011 TIP may provide additional traffic-carrying capability to respond to the projected population and employment growth. Despite the existing transportation infrastructure and planned improvements, substantial traffic congestion is anticipated to occur in the study area between now and the year 2030.

The regional Congestion Management Process (CMP) was initiated as a federal requirement in the SAFETEA-LU. The CMP provides information on transportation system performance and considers strategies to provide the most efficient and effective use of existing and future transportation facilities. It also defines parameters for measuring the extent of congestion. The project-level CMP was implemented by the NCTCOG. To respond to federal requirements, there are two objectives to the project-level CMP analysis. The first is to evaluate and compare a congestion alternative to the "build" alternatives to determine whether or not the need for additional capacity can be met by management strategies. The second objective is to identify the congestion management strategies that would provide the most effective use of and support the operation of the selected alternative. Planned congestion management strategies in the project study area were listed previously in **Chapter 1 Need and Purpose for Proposed Action** (see **Table 1-9**).

The proposed action design concept and scope and project cost are not yet consistent with the conforming MTP (*Mobility 2030: The Metropolitan Transportation Plan for the Dallas-Fort Worth Area*)

and the 2008-2011 TIP, as proposed by the NCTCOG, and measures are being taken to address the issue. Prior to FHWA taking final action on this proposed project, it will be consistent with a conforming MTP and TIP/STIP. The project was developed from NCTCOG's operational CMP which meets all requirements of amended 23 U.S.C. 134(k)(3) and 49 U.S.C. 5303(k)(3), amendments incorporating the transportation planning requirements of Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU).

3.2.7 Other Transportation Projects

Several transportation improvement projects, separate from this study, have been implemented, planned, or are currently being constructed in the study area. **Table 3-9** provides a summary of the key transportation projects in the study area.

TABLE 3-9. KEY TRANSPORTATION PROJECTS IN THE STUDY AREA

Project	Proposal	Status
TxDOT - Dallas District		
IH-30 at Trinity River	Bridge Reconstruction	Detailed Design
IH-30 (Canyon)	Reconstruction with HOV	Preliminary Design
IH-30 (Canyon)	Ramp Reversals/Auxiliary Lane Installation	Complete
IH-35E at Trinity River	Bridge Replacement	Preliminary Design
IH-35E (Mixmaster)	Reconstruction with HOV	Preliminary Design
IH-35E (Lower Stemmons)	Reconstruction with HOV	Preliminary Design
IH-35E - Southbound Frontage Road	Extension from Edison Street to Hi Line Drive	Complete
IH-35E - IH-30 to US-67 (South RLT)	Reversible (Interim) HOV Lane Installation	Complete
Corinth Street Viaduct	Bridge Rehabilitation	In Progress
Corinth Street Viaduct	Bridge Couplet	Planning Phase
Houston Street Viaduct	Bridge Rehabilitation	Complete
Continental Avenue Viaduct	Bridge Rehabilitation with Potential Conversion to Pedestrian Only Use	Planning Phase
Hampton/Inwood Bridge	Bridge Replacement	Under Construction
Woodall Rodgers Extension	New Bridge Crossing	Under Construction
City of Dallas and Dallas County		
Sylvan/Wycliff Bridge	Bridge Replacement	Detailed Design
Beckley Avenue	Widen to Six Lanes	Detailed Design
Commerce Street Viaduct	Bridge Maintenance	Complete

Source: City of Dallas, 2008; TxDOT-Dallas District, 2007b-d.
Note: The status indicated is as of August 2008.

As shown in **Table 3-9**, a substantial number of transportation projects are being planned and implemented throughout the Trinity Parkway study area. The following paragraphs provide a descriptive overview of the key transportation projects in the study area.

Road and Bridge Projects

Canyon/Mixmaster/Lower Stemmons Improvements

The Environmental Assessment and Section 4(f) Evaluation for the Canyon/Mixmaster/Lower Stemmons improvements (i.e., Project Pegasus) was completed in January 2005 (FHWA, 2005b) and the FHWA issued a Finding of No Significant Impact (FONSI) in June 28, 2005. Improvements to the Canyon include frontage/collector-distributor road installation, installation of missing direct connections between IH-30 and IH-35E, and removal of deficient left-hand entrance/exit ramps. The project includes the total reconstruction of the Canyon/Mixmaster interchange, Lower Stemmons segment (including the IH-35E/DNT connection), and the installation of a continuous HOV system through the Canyon (TxDOT, 2007c).

IH-35E HOV System Implementation

This project consists of installing a reversible, barrier-separated (interim) HOV lane along the existing medians of US-67 and IH-35E (south R.L. Thornton Freeway) from US-67 to Woodall Rodgers Freeway. In addition to accessing the Stemmons Freeway corridor, it would also tie into the existing Houston Street and Jefferson Street Viaducts, allowing direct access to/from the Dallas CBD.

Woodall Rodgers Freeway Extension

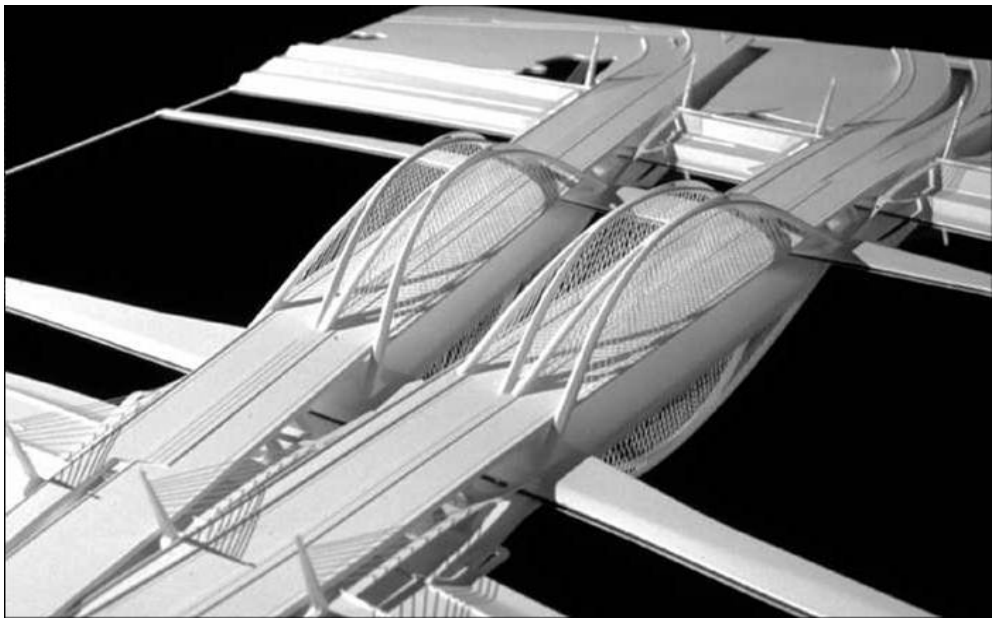
The Woodall Rodgers Extension is a City of Dallas/TxDOT project. The project extends Spur 366 (Woodall Rodgers) freeway westward from its current terminus at IH-35E, across the Trinity River, to the Beckley Avenue/Singleton Boulevard Intersection, and includes limited improvements along Industrial Boulevard and Beckley Avenue. In July 2005, the FHWA issued a FONSI for this project. The City of Dallas and TxDOT have agreed to undertake a “signature” bridge design for the Margaret Hunt Hill Bridge, located between the Continental Avenue and Union Pacific bridges. The groundbreaking ceremony for the initial phase of the project took place on December 9, 2005. Design for the bridge was completed in April 2006 (City of Dallas, 2007d). Construction began in early 2007, and the bridge should be completed in mid-2011 (City of Dallas, 2008).

PROPOSED MARGARET HUNT HILL BRIDGE
(WOODALL RODGERS EXTENSION BRIDGE)

IH-35E (Trinity River) Bridges

This project includes the reconstruction of the existing IH-35E Bridges across the Trinity River. In addition to the main lane structures, the project includes adjacent collector-distributor bridges. The bridges are considered candidates for a "signature" bridge design concept (City of Dallas, 2007d).

DESIGN CONCEPT FOR IH-35 EAST BRIDGES



IH-30 (Trinity River) Bridges

The City of Dallas, in consultation with TxDOT, is preparing the detailed design for the reconstruction of the existing IH-30 bridges across the Trinity River. In addition to the main lane structures, the project includes adjacent collector-distributor bridges. The Margaret McDermott Bridge is proposed to be a "signature" bridge design concept, with funding support from private donations raised by the City (City of Dallas, 2007d).

PROPOSED MARGARET MCDERMOTT BRIDGE (IH-30 SIGNATURE BRIDGE)

Houston Street Viaduct

This transportation enhancement project involves the repair, rehabilitation, and subsequent preservation of the Houston Street Viaduct, which is listed in the National Register of Historic Places (NRHP). Additional details concerning the Houston Street Viaduct are provided in **Section 3.3.1 Cultural Resources** and **Chapter 5 Draft Section 4(f) Evaluation.**

Corinth Street Viaduct

This project includes rehabilitating the existing 4-lane structure over the Trinity River, which is currently in progress. A preliminary couplet design involving this bridge is also planned, so that the existing bridge can be supplemented, increasing capacity from four to six lanes. The Texas State Historic Preservation Officer (SHPO) has determined the Corinth Street Viaduct eligible for the NRHP. Additional details concerning the Corinth Street Viaduct are provided in **Section 3.3.1 Cultural Resources** and **Chapter 5 Draft Section 4(f) Evaluation**.

Continental Avenue Viaduct

The Continental Avenue Viaduct is being evaluated in conjunction with the Woodall Rodgers Bridge extension. The bridge may be converted to a "pedestrian only" facility once the Woodall Rodgers Extension project is complete. The Continental Street Viaduct has been determined eligible for the NRHP by the SHPO. More details concerning the Continental Street Viaduct are provided in **Section 3.3.1 Cultural Resources** and **Chapter 5 Draft Section 4(f) Evaluation**.

Sylvan/Wycliff Bridge

This proposed project would include replacement of the existing at-grade crossing of the Dallas Floodway with an elevated six-lane bridge. The proposed bridge may need to be located so as to preserve the existing Sylvan Street Bridge, which could potentially be used as an at-grade crossing of the proposed Trinity Park access road system, and to avoid impacts with the Sylvan Avenue boat ramp on the Trinity River.

Hampton/Inwood Road Bridge

This TxDOT project is for the replacement of the Hampton/Inwood bridge. The existing bridge over the Trinity River is being replaced with a six-lane divided structure with the outside lanes designed to accommodate bicycle traffic.

Trinity River Corridor MIP/BVP

As previously described in **Section 3.1.1.1**, the City of Dallas has proposed several transportation improvement projects, including the Trinity Parkway, as part of their *Trinity River Corridor MIP/BVP*. The portion of the plan located within the Trinity Parkway study area was shown earlier (see **Plate 3-7**). A summary of the plan's proposed transportation improvements is provided in the following paragraphs.

Transportation

The urban design study from the *BVP* has introduced a concept for transportation improvements referred to as the "Balanced Transportation Concept." This concept has four integrated components. All are described as necessary to meet the plan's objectives:

1. The Trinity Parkway (proposed action);
2. Industrial Boulevard, which would serve as a collector/distributor and simplify the Trinity Parkway's role in providing access to downtown Dallas;
3. An Oak Cliff levee-top road which could serve as a collector/distributor and simplify the Trinity Parkway's role in providing access to downtown Dallas; and
4. Vehicular and pedestrian access to the planned park and lakes.

The plan identifies two primary objectives for the Trinity Parkway:

1. To serve as a permanent reliever route, a part of a remedy for the heavy traffic flows along the Lower Stemmons, Mixmaster, and Canyon (i.e., Project Pegasus); and
2. To fulfill the goal of providing access and visibility for the proposed Trinity River park with context-sensitive solutions.

The "stakeholders" in this balanced transportation concept - the City of Dallas, TxDOT, NTTA, NCTCOG, and the Trinity River Urban Design team - agreed that the Trinity Parkway component of the concept should be evaluated in the Trinity Parkway EIS. The Trinity Parkway component of this balanced concept is called the "Modified-Combined" Alternative (Alternative 3B) and was included in the EIS as one of the Build Alternatives (see **Chapter 2 Alternatives Considered**).

Major components proposed as part of the balanced transportation concept are listed below. The proposed Trinity Parkway is the only roadway component that is being evaluated in this EIS. The other initiatives are not NTTA projects, but may be implemented by others.

Proposed Trinity Parkway

- See **Section 2.3.6,** Alternative 3B (Combined Parkway - Modified)

Proposed Industrial Boulevard Improvements

- Number of lanes: currently six lanes; proposed eight lanes with some additional turning lanes.
- Speed limit: 35 mph.
- Enhanced landscape and street trees.

Proposed South Lamar Improvements

- Number of lanes: currently four lanes; proposed six lanes with some additional turning lanes.
- Speed limit: 35 mph.
- Enhanced landscape and street trees.

Proposed Downtown Levee-Top Road

- Support development on properties near the levee on the downtown side.
- Number of lanes: two travel lanes with on-street parallel parking.
- Speed limit: 30 mph.
- Lane widths: 10 feet vehicular lanes (with 11 feet outside lanes where used for parking and bicycling).

Proposed Oak Cliff Levee-Top Road

- Length of Oak Cliff Levee-top Road: 1.8 miles from Beckley to IH 35.
- Number of lanes: 4 travel lanes with off-peak, on-street parallel parking.

Proposed S.M. Wright Freeway

- Downgrade to surface boulevard status.
- May become a city street.
- Enhanced landscape and street trees.

Proposed Public Transit

- DART service at Union Station, Convention Center, Cedars West, and Moore Park.
- TRE at Union Station.
- Bus connections: Westmoreland, Hampton, Sylvan, and Irving Boulevard routes.
- Bus routes cross Continental, Commerce, Houston, and Jefferson viaducts.

Trail Projects

The TxDOT - Dallas District (in cooperation with others) has several planned, programmed, and funded trails and bicycle routes (i.e., regional veloweb) within the Trinity Parkway study area. This system of trails and bicycle routes is described in the project planning documents: *The Trinity River Corridor MIP* and the *Dallas County Trail Plan* (Dallas County Commissioners Court, 1997). These and other planned bicycle/recreational trails are further described in **Section 3.3.2.3 Planned Parks and Recreational Areas**.

Related Major Investment Studies

DART Northwest Corridor MIS. DART completed the Northwest Corridor MIS in February 2000 (DART, 2000b). The Locally Preferred Investment Strategy (LPIS) adopted by DART consists of LRT on the UP Railroad alignment to Carrollton and light-rail along the University of Dallas/Texas Stadium (UD/TX Stadium) option through the City of Irving and on to the DFW Airport. An 18-mile LRT was planned from downtown Dallas through Farmers Branch to Carrollton. A 14-mile segment was planned to branch from the Northwest Highway/Webb Chapel Road area, past Texas Stadium, to the University of Dallas and Las Colinas in Irving. The recommended LPIS identified 18 potential station locations, which would consist of 11 new stations along the UP alignment and seven along the UD/TX Stadium alignment. DART estimated the $1.4 billion line with 18 stations may carry more than 25,000 riders per day. Planners estimated service could begin in Carrollton and Farmers Branch by 2010 and Irving by 2011. An extension from SH-161 could reach the north end of DFW Airport by 2014. The highway/HOV element

would include a two-lane reversible HOV facility on a portion of IH-35E and a one- or two-lane reversible HOV on SH-114. Also recommended was one additional general-purpose highway lane in each direction on portions of IH-35E and SH-114. The TSM/CMP element would include a freeway bottleneck removal component (nearly 50 projects), intersection improvement projects, and TDM programs. DART published the FEIS for this project in October 2003 (DART, 2007).

Following the above Major Investment Study, an EIS was prepared for both the LRT Line to Farmers Branch/Carrollton and the LRT Line to Irving/DFW Airport. DART published the FEIS for the LRT Line to Farmers Branch and Carrollton in October 2003, with a Record of Decision (ROD) issued in February 2004. Final design has been completed on this rail extension and DART began construction in 2006 with operations scheduled to be phased in from 2009 to 2010 (DART, 2003). A FEIS on the LRT Line to Irving/DFW Airport was published in July 2008. The Irving/DFW LRT was revised to a 9.3-mile LRT project extending from a junction with the Farmers Branch/Carrollton Line north of Bachman Station to the vicinity of Belt Line Road and Valley View Lane in Irving. Eight stations are now proposed for Phase 1, terminating at Belt Line Road. An extension from Belt Line Road to the Central Terminal Area of DFW Airport will be evaluated and constructed at a later date. Factors that contributed to the alignment revisions of the Irving/DFW LRT Line include right-of-way limitations, a lack of transit supportive land uses along the MIS alignment, consideration of alternative ways to provide rail service to DFW Airport, and expressed community desires (DART, 2008).

DART Southeast Corridor MIS. DART completed the Southeast Corridor MIS in May 2000 (DART, 2000a). The LPIS adopted by DART consists of LRT, bus route enhancements, TMA programs, and roadway improvements. The main component, an LRT line, was approved from the CBD to Buckner Boulevard. The alignment is approximately 10.2 miles long with eight proposed stations. The estimated capital cost is $450 million. DART estimates the LRT line could be operational by the year 2009. The daily ridership in the year 2025 is expected to be 19,500 riders. DART published the FEIS for this project in October 2003 and a ROD was issued in February 2004 (DART, 2007).

TxDOT SH-183/West Fork Corridor MIS. The SH-183/West Fork Corridor MIS (2000b), managed by the TXDOT Dallas District as the lead agency, was published in May 2000. This is a 27-mile project from Fort Worth to Dallas, which incorporates the SH 183 corridor in the Dallas District (TxDOT, 2007b). The MIS was performed to develop a locally preferred plan of action to solve existing and future transportation needs along the SH-183 corridor. One element of the recommended plan of action of the MIS was reconstruction of the SH-183 with widening from six to eight general-purpose main lanes and a managed HOV system. The proposed improvements extend from SH-360 on the west to IH-35E on the east.

IH-35E/US-67 (The Southern Gateway). In October 2001, the TxDOT Dallas District initiated an MIS/EA to address transportation deficiencies along IH-35E/US-67 (i.e., The Southern Gateway). The project limits extend from the beginning of South R.L. Thornton Freeway (IH-35E) south of the Dallas CBD to IH-20 and along US-67 from IH-35E to FM-1382 in southern Dallas County. Preliminary design schematics have been completed and the corresponding environmental documentation was completed in May 2006. The FHWA issued a FONSI in June 2006 (TxDOT, 2007d).

3.3 CULTURAL RESOURCES AND PARKLANDS

This section describes cultural resources (both archeological and historic architectural) and parkland areas in the study area and the regulatory requirements that apply to these resources. A description of the historical context of the area as it relates to cultural resources can be found in **Appendix L (L-1)**.

3.3.1 Cultural Resources

An assessment has been conducted to identify cultural resources within each Build Alternative's established Area of Potential Effect (APE) (see APE discussion in **Section 3.3.1.2**). Research has centered upon the identification of prehistoric and historic archeological sites and historic architectural resources (buildings, structures, objects, and districts). To date, the following detailed identification and evaluation reports have been prepared and are on file at TxDOT's Environmental Affairs Division, 118 E. Riverside, Austin, TX 78704:

- *Cultural Resource Review for the Environmental Impact Statement Areas of Potential Effect of the Trinity River Parkway, Dallas, Texas* (Norman Alston Architects, 2000)
- *Historic Resource Survey of Building Displacements for the Trinity River Parkway, Dallas, Texas* (Norman Alston Architects, 2001)
- *The Trinity River Parkway Archival and Archaeological Evaluation Report* (Skinner, 2003)
- *Archaeological Testing Report for the Trinity Parkway* (Skinner, 2006)

3.3.1.1 Regulatory Context

Section 106

Cultural resources include prehistoric and historic archeological sites, buildings, structures, objects or districts that meet specific criteria for "significance." The identification and preservation of significant cultural resources are regulated at the federal level by the Department of the Interior (DOI) under Section 106 of the National Historic Preservation Act (NHPA) [16 USC 470(f)]. Regulations implementing the

policies of Section 106 are found in 36 CFR Part 800: *Protection of Historic Properties*, which is administered by the Advisory Council on Historic Preservation (ACHP), as well as 36 CFR Parts 60 and 63, which address procedural requirements specific to the National Register of Historic Places (NRHP). Cultural resources are also protected by other federal, state, and local legislation and regulations including: Archaeological Land Historic Data Preservation Act (16 USC 469); Texas Parks and Wildlife Code (Chapter 26, § 26.001 to § 26.004); Antiquities Code of Texas (Natural Resources Code Title 9, Chapter 191); and the City of Dallas Development Code (Chapter 51).

As set forth in 36 CFR Section 800.1 of the ACHP regulations pertaining to the protection of historic properties, Section 106 of the NHPA requires a federal agency with jurisdiction over a federal undertaking, or one that is federally-assisted or federally-licensed, to take into account the effect the undertaking will have on sites, buildings, structures, or objects that are listed in or determined eligible for inclusion in the NRHP. The Section 106 process, as defined in 36 CFR Section 800.4, requires the federal agency to identify and evaluate the significance of historic properties that may be affected by the proposed undertaking, in consultation with the SHPO and conforming to the Secretary of the Interior's Guidelines and Standards for NRHP Evaluation.

If the agency head and the SHPO agree that a property potentially affected by a proposed project is NRHP eligible, then they are required to apply the *Criteria of Adverse Effect* found in 36 CFR Section 800.5 to such property. Under this regulation, an "adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics" of the property that make it eligible for the NRHP. An adverse effect may be found when such characteristics are altered "in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association." If an adverse effect is determined, then the regulations require the federal agency and the SHPO to seek ways to avoid the property, minimize the impacts, and mitigate for effects.

In general, cultural resources must meet the threshold criterion of age, and are typically 50 years of age or older, or would be, as of the time construction is expected to be initiated for the proposed project, if approved. In addition, the following broadly defined criteria as described in 36 CFR Section 60.4 are used to evaluate properties 50 years of age or older for eligibility in the NRHP:

> "The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and
> (A) that are associated with events that have made a significant contribution to the broad patterns of our history; or
> (B) that are associated with the lives of persons significant in our past; or

(C) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
(D) that have yielded, or may be likely to yield, information important in prehistory or history."

To be NRHP eligible, and therefore regulated under Section 106, a property must demonstrate "significance" under at least one of the four criteria listed above. For purposes of the evaluation of cultural resources in this SDEIS, discussions have been subdivided into archeological resources and historic architectural resources. Also, the term "cultural resources" as used throughout this SDEIS refers to those archeological and historical architectural resources that are either already listed in the NRHP or meet at least one of the eligibility criteria ("A – D") under 36 CFR 60.4 for NRHP listing. The threshold age criterion used in this SDEIS was 1962, which is 50 years prior to the expected date of construction contract letting for the proposed project (2012), if approved.

Section 4(f)

For transportation projects, Section 4(f) of the Department of Transportation (DOT) Act of 1966 (49 U.S.C. 303) provides an additional regulatory program addressing NRHP eligible cultural resources; FHWA regulations implementing Section 4(f) are found at 23 CFR Part 774. The policies of Section 4(f) prohibit FHWA from approving the use of land from a publicly-owned public park, recreation area, wildlife or waterfowl refuge of national, state, or local significance, or land of an historic site of national, state, or local significance unless it is determined that there is no feasible and prudent avoidance alternative to the use of land from the property and that the action includes all possible planning to minimize harm to the property resulting from such use (see 23 CFR 774.3).

Section 4(f) protections are triggered by the "use" of land from a protected resource. A "use" occurs when protected land is permanently incorporated into a transportation facility, when there is a temporary occupancy of land that is adverse in terms of the preservation purpose, or when there is a constructive use of a Section 4(f) property (23 CFR 774.17). If it appears that a transportation project is likely to impact a protected resource, FHWA's regulations require an analysis of alternatives and impact minimization/mitigation before a use may be authorized; a draft Section 4(f) evaluation for the Trinity Parkway Build Alternatives is included in **Chapter 5** of this SDEIS.

As much of the analysis herein considers the potential for constructive use of Section 4(f) resources, a discussion of the regulations defining it is warranted at this point. A constructive use occurs when the transportation project does not physically incorporate land from a Section 4(f) property, but the project's proximity impacts (i.e., access, visual, noise, or ecological intrusions) are so severe that the protected

activities, features, or attributes that qualify the property for protection under Section 4(f) are substantially impaired (23 CFR 774.15). Substantial impairment occurs only when the protected activities, features, or attributes of the property are substantially diminished (23 CFR 774.15(a)). For example, the regulations indicate that a proposed project could result in a constructive use of a noise-sensitive resource such as a historic site or an urban park where a quiet setting is generally considered a notable aspect to the site's significance. Similarly, if a site's significance stems from its aesthetic qualities and a road project obstructs the view of the site, a constructive use could result. In contrast, FHWA regulations specify conditions which do not reach the level of a constructive use such as elevated noise levels that do not exceed FHWA noise abatement criteria in 23 CFR Part 772.

3.3.1.2 Survey Methodology

In accordance with 36 CFR Section 800, a cultural resources scoping meeting was held on September 8, 1999. Participants in the initial scoping process included representatives from the FHWA, NTTA, TxDOT Environmental Affairs Division, Texas Historical Commission (THC)/SHPO, USACE, and the City of Dallas. All attendants toured the project area with a focus on the proposed Build Alternatives. In consultation with the SHPO and TxDOT, archeological site and historical architectural property APEs were established (pursuant to 36 CFR § 800.4(a)) for the Build Alternatives. These APEs are generally described as follows:

- **APEs for Archeological Resources** - The APEs for all of the Build Alternatives included the areas of proposed physical disturbance for each alternative. For the Build Alternatives that run adjacent to the inside or outside of Dallas Floodway levees, the area of ground disturbance was considered to be within an area extending 100 feet outward from the toe (bottom of slope) of the levee. The combined archeological resources APEs for all Build Alternatives are shown on **Plate 3-16**.

- **APEs for Historic Architectural Resources** - A customized APE for all Build Alternatives was developed by TxDOT in consultation with the SHPO in 2000. At this point in the Section 106 process, a survey of the proposed right-of-way associated with the Build Alternatives and the areas immediately adjacent to each right-of-way has been performed in order to identify historic architectural sites, as shown on **Plate 3-17**.

3.3.1.3 Archeological Resources

Because the location of the APEs are either heavily developed areas (residential, commercial, and industrial) or in areas disturbed by previous floodway and levee construction (areas of low archeological

probability as defined by the THC [THC letter dated February 28, 1996]), no archeological field reconnaissance of the APEs for the proposed roadway alignments was conducted. However, a 2006 intensive survey was conducted within the Dallas Floodway in areas where old river meanders of the Trinity River are located, and also in the general area of potential borrow excavations for roadway embankment material. The findings of the survey are included in the discussion below. Information pertaining to listed and eligible archeological sites was primarily identified through review of archival information and available state records. As directed by the SHPO, additional field surveys for archeological resources would be performed for the preferred alternative with the results documented in the FEIS.

Areas of Low and High Probability for Archeological Resources

As demonstrated by the archival material, state records, and investigative reports (including, but not limited to, subsurface investigations) for other activities conducted in the Dallas Floodway, which include (1) the construction of DART facilities, (2) the West Bank Interceptor project, and (3) the second phase of the Dallas Floodway, there are minimal archeological resources along those sections where the proposed alternatives would be on the river side of the levees. Subsurface investigations inside and just outside APEs associated with construction of the DART Railroad crossing of the Trinity River, found no evidence of historic archeological resources. Similar results were encountered in the corridor of the West Bank Interceptor (sewer line) project and in the second phase of the widening of the Trinity River channel. Two historic sites were, however, found in the first phase of the channel modification project; one was a dump tentatively dated circa 1900 and the other was a well dated post-1940. No prehistoric archeological sites have been recorded inside the levees within the APEs from west of Hampton/Inwood Road to east of the AT&SF Railroad Bridge. This is an area that in the past was designated as having a “high” potential for containing prehistoric archeological resources, but which was found to be too broadly defined. The THC has provided the opinion that the area has little potential for containing preserved prehistoric archeological deposits (Skinner, 2003). The area defined as having low probability for preserved archeological resources is shown on **Plate 3-16**.

Within the study area, the Trinity River has been relocated and channelized between the levees. Remnant meanders of the old river channel are located east of the levee near Irving, Lamar, and Industrial Boulevards. The most likely location for buried archeological sites would be along the old meanders of the Trinity River from just west of Hampton/Inwood Road to east of the AT&SF Railroad Bridge. A 2006 archeological survey was conducted within the Dallas Floodway in an attempt to explore undisturbed areas and old river meanders of the Trinity River floodplain for buried prehistoric or historic sites (Skinner, 2006). Surveys and deep testing downstream in the DFE project area including the areas of the CWWTP, as well as upstream along the Elm Fork and West Fork of the Trinity River, have shown

the presence of shallow and deeply buried prehistoric deposits in floodplain sediments. Additionally, all of the proposed Build Alternatives would cut across the first terrace of the Trinity River and thus have a potential for encountering archeological deposits in terrace sediments. The area defined as having a high probability for archeological resources is shown on **Plate 3-16**.

Archeological resources are not anticipated within the proposed Build Alternative APEs except possibly in those areas where the alternatives cross the now-abandoned and formerly meandering channel of the Trinity River, where alternatives cross a tributary intersecting with the old channel, or where alternatives cut across the first terrace of the Trinity River at the north and south ends of the project (Skinner, 2003).

Known Archeological Resources in the Study Area

Review of archival material, state records, and investigative reports for other activities in the area resulted in the identification of several known archeological sites in the immediate area. There are no archeological sites that are already listed in the NRHP. Four known archeological sites were identified near the archeological APEs through the review of archival information and state records. These sites were variously characterized as being either not eligible (ineligible) for listing in the NRHP, eligible for listing in the NRHP, or those with unknown (i.e., possible) NRHP potential, and are listed below.

- 41DL220 - recorded in 1981, this site was a historic (probably early 1900s) limestone-lined well and an associated packed clay floor. No artifacts were found at the site. Attempts to relocate the site in 1998 failed, as it was likely destroyed during construction of a transmission line. It has been recommended to be ineligible for inclusion in the NRHP.
- 41DL320 - recorded in 1990, this site was an old City of Dallas dump with two areas dated to the 1930s and one area dated to the 1900s. The dump has been looted by bottle collectors and may be eligible for inclusion in the NRHP.
- 41DL370 - recorded in 1996, this site was a brick-lined well and associated trash accumulation that has been dated to post-1940. The site was destroyed during the Phase I widening of the Dallas Floodway and would not be considered eligible for inclusion in the NRHP.
- 41DL371 - recorded in 1996, this site was a trash dump exposed in the side slope of the Phase I widening of the Dallas Floodway. Trash included oyster shells, cut animal bones, and thick earthenware along with drink and medicine bottle fragments. Most of the dated artifacts indicate the use of the dump was in the early 1900s. This site may be eligible for inclusion in the NRHP.

The investigation of archeological resources is ongoing and is being coordinated through TxDOT and the SHPO. As part of the ongoing investigations, additional archeological investigations were conducted in 2006 in an effort to determine the likelihood of significant archeological resources being buried in

floodplain sediments in places where borrow areas may be excavated for fill for the construction of several of the Build Alternatives. The investigations were concentrated in areas along the old river channel where the presence of buried prehistoric site deposits would be most expected. The general areas investigated are shown on **Plate 3-16**. The THC issued a project-specific antiquities permit for the 2006 archeological investigation in which 41 backhoe trenches were excavated to search for buried archeological resources. The trenches uncovered materials that ranged from demolition debris, modern trash, limestone rock, gravel fill, and intact floodplain deposits. Two additional archeological sites were recorded near the APEs and are listed below; by letter dated October 17, 2007, the SHPO concurred with the eligibility recommendations in the survey report (see **Appendix B**, page 36).

- 41DL440 - recorded in 2006, this site was an early 20th century trash accumulation. It has been recommended to be ineligible for inclusion in the NRHP.
- 41DL441 - recorded in 2006, this site was a fire hearth that contained charcoal that dated to 230±40 BP and 170±40 BP, and requires additional investigation to determine NRHP eligibility.

The hearth (41DL441) appeared intact and further investigation has been recommended to ascertain the presence of other features or artifacts and to determine NRHP eligibility. If a floodway alternative is selected as the preferred alternative and as engineering design progresses, further archeological investigations of the hearth site and possibly other areas would continue as part of the Section 106 process.

A TxDOT archeologist will evaluate the potential for the proposed undertaking to affect archeological historic properties or State Archeological Landmarks in the APE. Section 106 review and consultation will proceed in accordance with the First Amended Programmatic Agreement among the FHWA, TxDOT, the Texas SHPO, and the Advisory Council on Historic Preservation Regarding the Implementation of Transportation Undertakings (PA-TU), as well as the Memorandum of Understanding (MOU) between the THC and TxDOT. In the event that unanticipated archeological deposits are encountered during construction, work in the immediate area will cease and TxDOT archeological staff will be contacted to initiate post-review discovery procedures under the provisions of the PA-TU and MOU.

3.3.1.4 Historic Architectural Resources

Between December 2000 and February 2001, a consulting historical architect carried out a historic resources constraints survey of the proposed project area (Norman Alston Architects, 2000 and 2001). The survey was not comprehensive; that is, it did not identify all historic-age resources within the APE, but only those that would be within the proposed ROW of the alternative alignments. All historic aged properties that could be potentially displaced by any of the proposed project's alternatives were

photographed, mapped, described, and categorized. The survey identified a total of 317 buildings 50 years of age or older at the time of the anticipated project letting in 2012. The consultant evaluated the architectural significance of each resource and designated it as having high, medium, or low priority. Based on the survey recommendations, TxDOT determined that six properties were eligible for listing in the NRHP. In a letter dated July 2, 2002, the SHPO concurred that six properties were eligible and the remaining 311 resources were not eligible (see **Appendix B**, page 1). The SHPO also stated that no potential NRHP historic districts exist within the defined APE. The six properties (Plate IDs 9 through 14) determined to be eligible for listing in the NRHP, as well as properties previously listed in or determined eligible for listing in the NRHP (Plate IDs 1 through 8) are shown on **Plate 3-17** and are listed in **Table 3-10**. A brief description of each resource is provided following the table, with details available in the reports on file with TxDOT's Environmental Affairs Division.

Consultation is ongoing between TxDOT and the SHPO (in accordance with the First Amended PA-TU between the FHWA, the Texas SHPO, ACHP, and TxDOT) regarding the eligibility of identified resources for inclusion in the NRHP, and would continue upon identification of a preferred alternative. The proposed undertaking's potential to affect identified resources would be documented in the FEIS and would be used to complete the Section 106 consultation and finalize the Draft Section 4(f) Evaluation for the Trinity Parkway project included in **Chapter 5** of this SDEIS.

TABLE 3-10. HISTORIC ARCHITECTURAL RESOURCES

Plate ID No.	Resource
NRHP-Listed Historic Districts	
1	Colonial Hill Historic District
NRHP-Listed Resources	
2	Houston Street Viaduct, individually listed in NRHP
NRHP-Eligible Resources	
3	Union Pacific Railroad Bridge (formerly Southern Pacific Railroad Bridge)
4	Corinth Street Viaduct
5	AT&SF Railroad Bridge
6	MKT Railroad Bridge
7	Continental Street Viaduct
8	Commerce Street Viaduct
9	2255 Irving Boulevard, City and County Levee Operations Pump Station B
10	3701 South Lamar, DISD Storage and Maintenance Facility (formerly Procter & Gamble)
11	1715 Market Center Boulevard, Pettigrew Associates
12	1202 North Industrial Boulevard, ACF Corporation
13	1000 South Industrial Boulevard, Sportatorium (demolished and removed by others since eligibility determination)
14	1212 South Industrial Boulevard, Oak Cliff Box Company

Source: Norman Alston Architects, 2001.
Note: Plate ID numbers correspond to the locations shown on **Plate 3-17** at the end of **Chapter 3**.

NRHP-Listed Historic Districts

- **Colonial Hill Historic District** - The American Foursquare bungalows and cottages of the late 1910s, 1920s, and 1930s characterize the Colonial Hill Historic District. This long, narrow district is flanked by major freeways/roadways: Central Expressway (US-75) on the northeast, and IH-45 and South Lamar on the west and southwest. The district incorporates approximately thirteen blocks north to south, and contains 489 buildings. Of these, 353 (approximately 72 percent) are contributing properties (pre-1945 buildings that are essentially unaltered or have reversible alterations that have not drastically changed the character of the building). The district is a premier example of Dallas' streetcar suburbs along an original streetcar route. Contextually, the district relates to the influence of the streetcar on the development of suburban lands in South Dallas; therefore, the district was nominated under NRHP Criterion A in the area of Community Planning and Development as one of Dallas' largest intact and most illustrative examples of the classic streetcar suburban pattern. The district was also nominated under NRHP Criterion C in the area of architecture on the basis of its large grouping of intact historic domestic architecture, consisting primarily of one-story frame bungalows and two-story frame houses. The Colonial Hill Historic District, with its early 20th-century buildings and readily apparent traffic patterns, is a vivid architectural and cultural reminder of Dallas' early suburban streetcar development. It was listed in the NRHP on March 23, 1995.

NRHP Individually-Listed Resources

- **Houston Street Viaduct** - The Houston Street Viaduct extends across the Trinity River and is one of the longest viaducts ever built with reinforced concrete arches. The viaduct, completed in 1912, was built to re-establish the connection between the Dallas CBD and Oak Cliff after the disastrous 1908 flood. The viaduct plus embankments is 6,562 feet in total length, with spans totaling 5,840 feet and a width of 56 feet. The viaduct spans the river and floodplain with 80-foot-wide arches and a 100-foot center steel span. The viaduct was listed on the Texas Historic Engineering Site Inventory in 1975 and in the NRHP in 1984. At the time it was constructed, the Houston Street Viaduct was the longest reinforced-concrete bridge in the world. The Houston Street Viaduct continues to serve as a major traffic artery. Newer bridges nearby spanning the river are higher, but none has the solidity or visual prominence of the Houston Street Viaduct. The northern downtown sections of the bridge begin at Union Terminal and continue over a network of railroad tracks, IH-30, and Reunion Arena. The context of the southern half of the bridge remains little changed, crossing the floodplain into an early and intact section of the Oak Cliff suburb.

NRHP-Eligible Resources

- **Union Pacific Railroad Bridge (formerly Southern Pacific Railroad Bridge)** - is significant as a good example of a Warren through-truss bridge (eligible under Criterion C, Engineering).
- **Corinth Street Viaduct** - is one of five reinforced-concrete bridges spanning the Trinity River built between 1910 and 1935. The bridge was designed and constructed in 1935 by F.D. Hughes and Jean H. Knox (eligible under Criteria A, Community Development, and C, Engineering).
- **AT&SF Railroad Bridge** - pre-dates the construction of the flood-control levees and is significant as a good example of a Pratt through-truss bridge dating from the period of 1890-1910. This steel truss and wooden trestle railroad bridge is a free span over the Trinity River which features approaches supported by wood piers and earthen embankments at each end. The central span across the river is supported on stone piers. It was determined eligible for inclusion in the NRHP in 1990 (eligible under Criterion C, Engineering).
- **MKT Railroad Bridge** - is a good example of a Parker through-truss bridge commonly used by railroads at the turn of the century (circa 1900) (eligible under Criterion C, Engineering).
- **Continental Street Viaduct** - is one of five reinforced-concrete bridges spanning the Trinity River and was constructed in 1930 (eligible under Criteria A, Community Development, and C, Engineering).
- **Commerce Street Viaduct** - is one of five reinforced-concrete bridges spanning the Trinity River and was designed and constructed in 1915 by F.D. Hughes and Jean H. Knox (eligible under Criteria A, Community Development, and C, Engineering).
- **2255 Irving Boulevard, City and County Levee Operations Pump Station B** - c. 1925 facility eligible under Criterion C, Architecture, at the local level.
- **3701 South Lamar, DISD Storage and Maintenance Facility** - a 1920 manufacturing facility (formerly Procter & Gamble) eligible under Criteria A, Community Development, and C, Architecture, at the local level.
- **1715 Market Center Boulevard, Pettigrew Associates** - a 1954 shipping/warehouse facility eligible under Criterion C, Architecture, at the local level.
- **1202 North Industrial Boulevard, ACF Corporation** - a 1947 shipping/warehouse facility eligible under Criterion C, Architecture, at the local level.
- **1000 South Industrial Boulevard, Sportatorium** - eligible under Criterion A, Community Development, at the local level. Demolished and removed by others since eligibility determination.
- **1212 South Industrial Boulevard, Oak Cliff Box Company** - comprises a 1948 Art Moderne office building with an attached brick warehouse/shipping facility built in 1950 (eligible under Criterion C, Architecture, at the local level).

3.3.2 Parklands and Recreational Areas

This section identifies the public parks and recreation areas (existing and planned) within the study area and provides an overview of regulatory requirements relating to such areas.

3.3.2.1 Regulatory Requirements

The regulatory provisions of Section 4(f), as outlined in **Section 3.3.1.1**, also apply to transportation projects that require using any of the following resources: publicly owned land of a public park, recreation area, or wildlife/waterfowl refuge (49 USC 303). Additionally, the Texas Parks and Wildlife Code (Title 3, Chapter 26) contains language similar to Section 4(f) concerning the taking of park and recreational lands. TPWD restricts the use or taking of any public land designated and used as a park (recreation area, scientific area, wildlife refuge, or historic site) unless the department, agency, political subdivision, county, or municipality determines that there would be no feasible and prudent alternative and that the project/program includes all reasonable planning to minimize harm to the land.

Section 6(f) of the Land and Water Conservation Fund (LWCF) Act (16 USC 460L) requires that any outdoor recreational facilities acquired with DOI financial assistance under the LWCF may not be converted to non-recreational use unless approval is granted by the National Park Service (see regulations at 36 CFR Part 59).

3.3.2.2 Existing Parks and Recreational Areas

Existing parks/recreational areas were identified based on coordination with the City of Dallas PARD, Dallas Housing Authority (DHA), and property ownership research (as necessary). Copies of correspondence from the City of Dallas PARD are provided in **Appendix A-1**. The locations of existing parks/recreational areas in the study area are shown on **Plate 3-18** (Plate ID Numbers 1 through 14, and 19 through 21). **Table 3-11** lists these existing parks/recreational areas along with a brief description of each. There are a number of other public and privately owned open space lands in the study area, but these do not meet the definition of Section 4(f) or Section 6(f) properties and therefore are not included.

TABLE 3-11. EXISTING PARKS AND RECREATIONAL AREAS

Plate ID	Name	Location	Property Owner	Acres	Function/Usage	Section 4(f)	Section 6(f)
1	Sleepy Hollow Park	1200 Sleepy Hollow Lane	PARD	0.6	Neighborhood urban park with picnic, playground, and multi-use court facilities. The park is located approximately 300 feet east of IH-35E.	Yes	No
2	Pegasus Park	3000 Pegasus Park Drive	PARD	7.4	Urban open space park with no recreational facilities.	Yes	No
3	Trinity River Greenbelt Park (identified as "Trinity Park" within the limits of the Dallas Floodway)	From Northwest Highway to AT&SF Rail-road Bridge	PARD	3,652	Urban open space park with 177 water acres and two soccer fields. Majority extends beyond study area boundaries. The Dallas Floodway encompasses approximately 2,000 acres of this park (Trinity Park). A special feature is Crow Lake located adjacent to the south of Sylvan Avenue. The lake area includes sculptures, a volleyball court, and a 0.66-mile walking trail.	No	No
4	Nash/Davis Park	3700 N. Hampton	PARD	11.9	Community park with a community recreation center. Includes picnic, swimming pool, tennis, sandlot ball field, softball field, playground, and multi-use court facilities. The park is shared with Carr Elementary School. Extends beyond study area boundaries.	Yes	No
5	Bickers Park	1400 Bickers	PARD	2.9	Neighborhood park with softball field, playground, and multi-use court facilities.	Yes	No
6	Shaw Park	3600 Ladd Street	PARD	0.1	Neighborhood park with no recreational facilities.	Yes	No
7	Benito Juarez Park	3352 N. Winnetka	PARD	6.1	Neighborhood park with soccer field and picnic facilities. Extends beyond study area boundaries.	Yes	No
8	Hattie R. Moore Park	3212 N. Winnetka	PARD	3.7	Community park with a community recreation center. Includes picnic, tennis, play-fields, playground, and multi-use court facilities. Park shared with DeZavala Elementary School.	Yes	No
9	Pueblo Park	3226 Bataan Street	PARD	0.6	Neighborhood park with picnic, playground, and multi-use court facilities.	Yes	No
10	Oak Cliff Founders Park	1300 North Zang	PARD	16.1	Urban open space park bounded on each side by Zang Boulevard and Marsalis Avenue (major city arterials). The park has a 0.25-mile hike/bike trail and several sitting benches. Extends beyond study area boundaries.	Yes	No
11	Eloise Lundy Park	1200-1229 Sabine	PARD	3.4	Community park with a community recreation center. Includes picnic, swimming pool, tennis, softball field, playground, and multi-use court facilities.	Yes	No
12	Moore Park	1900 E. Eighth Street	PARD	24.5	Community park with picnic, tennis, baseball and sandlot ball field, playground, swimming pool, and multi-use field and court facilities.	Yes	No
13	Rochester Park	3000 Rochester	PARD	983.3	Regional park with natural areas and trails. Includes playground, picnic, softball, football, soccer, and multi-use court facilities. Special features include a lake and fishing piers. Majority extends beyond study area boundaries.	Yes	Yes
14	Forest Park	2906 Parnell	PARD	2.4	Neighborhood park with picnic, swimming pool, playground, and multi-use court facilities.	Yes	No
19	Martin Luther King Jr. Median Park	1300 to 2300 Martin Luther King Jr. Blvd.	PARD	1.8	Park located within a triangular-shaped landscaped median area near the intersection with Forest Avenue.	Yes	No
20	Trinity Strand Trail Park	Old Trinity channel between I-35E and Farrington	PARD	57.7	Urban open space with proposed hike/bike trail and enhanced landscaping.	Yes	No
21	Kessler Parkway	1821 Kessler Parkway	PARD	22.2	Linear greenbelt.	Yes	No

Sources: City of Dallas PARD 1997b, 1999c, 2007e.
Notes: Plate ID Numbers correspond to the locations shown on **Plate 3-18**.
PARD = Park and Recreation Department (City of Dallas)

3.3.2.3 Planned Parks and Recreational Areas

The Dallas Floodway (Trinity Park) and other portions of the study area have been and currently are major focal points for the planned development of multiple large-scale recreational/open-space projects in Dallas. The majority of these planning efforts have been coordinated and conducted by local, state, and federal agencies, as well as community volunteers and organizations for many years. The following bulleted list provides an overview of the past and current planning efforts that include proposed parks, recreational, and/or open-space elements within the study area. A list of the proposed trails within the study area is presented in **Appendix L**, **Table L-2**. The areas comprising planned recreational development in the study area are shown on **Plate 3-18** (Plate ID Numbers 15 through 18). A more detailed description of the specific elements comprising each park and trail plan is provided in **Appendix L (L-2)**. The following list presents the major park and trail plans within the project area:

- 1959 Parks and Open Spaces Plan (PARD);
- 1969 Coordinated Plan for Open Space Development of the Trinity River System (Dallas Parks Board);
- 1980 Dallas County Open Space Plan (Marvin Springer and Associates and Schrickel, Rolling, and Associates);
- 1991 Dallas County Open Space Plan (Dallas County Commissioners Court);
- Moore Park Master Plan (City of Dallas, 2001b);
- Great Trinity Forest Master Plan (TPWD, 1997);
- Trinity River Corridor MIP/BVP (City of Dallas, 1999a and 2003a);
- Recreation Master Plan included as a part of the Dallas Floodway Extension EIS (USACE, 1999);
- Trinity Trails System (City of Dallas, 1997c);
- Dallas County Trail Plan (Dallas County Commissioners Court, 1997);
- Regional Veloweb;
- Trinity River Boat Ramps, Access Roads, and Parking Areas; and
- 2002 - A Renaissance Plan for Dallas Parks and Recreation in the 21st Century (City of Dallas, 2002b).

3.4 NATURAL RESOURCES

This section provides a description of the ecological resources located within the project study area. It includes baseline vegetation communities, associated wildlife, including special status plant and animal species, and waters of the U.S., including wetlands.

3.4.1 Regulatory Setting

Natural resources within the project area were evaluated in accordance with the provisions of state and federal environmental statutes and regulations. These include Section 404 of the Clean Water Act (CWA), the General Bridge Act of 1946, Section 9 of the Rivers and Harbors Act of 1899, Section 10 of the Rivers and Harbors Act of 1899, State Water Quality Certification Program [completed by the Texas Commission on Environmental Quality (TCEQ)] for Section 404 permits under authority of Section 401 of the CWA, EO 11990 (Protection of Wetlands, 1977), EO 13112 (Invasive Species, 1999), the Endangered Species Act (ESA) of 1973, and the Migratory Bird Treaty Act of 1918. Each of these regulations is mentioned as appropriate in the following sections.

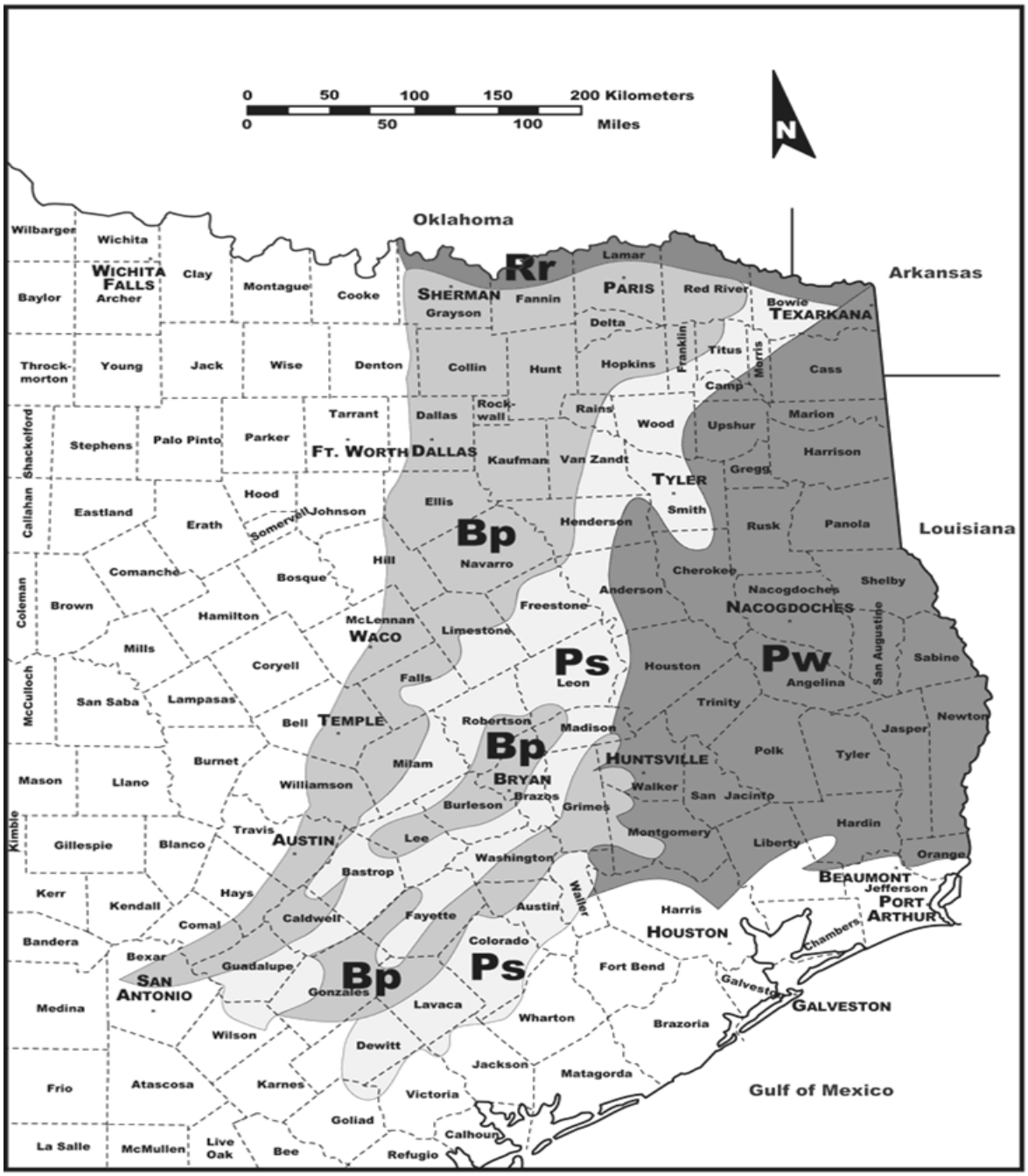
3.4.2 Regional and Local Setting

Regional Setting

TYPICAL UPLAND GRASSLAND

The Trinity Parkway study area is situated within the Blackland Prairie ecoregion of Texas (see **Figure 3-1**). Surface topography is generally level to gently rolling. Soils consist of black, alkaline, organic clays overlying Cretaceous limestone. The native vegetation of the Blackland Prairies consists of little bluestem (*Schizachyrium scoparium* var. *frequens*), big bluestem (*Andropogon gerardii*), yellow Indian grass (*Sorghastrum nutans*), switchgrass (*Panicum virgatum*), hairy grama (*Bouteloua hirsuta*), sideoats grama (*Bouteloua curtipendula*), tall dropseed (*Sporobolus asper* var. *asper*), silver bluestem (*Bothriochloa saccharoides*), and Texas wintergrass (*Stipa leucotricha*). Less than one-half of 1 percent of the Blackland Prairies is believed to remain in a relatively undisturbed state, and the majority of the remnants are relatively small and isolated.

FIGURE 3-1. ECOREGIONS OF EAST TEXAS



Source: Diggs, Lipscomb, and O'Kennon, 1999.

Bp BLACKLAND PRAIRIE
Pw PINEYWOODS
Ps POST OAK SAVANNAH
Rr RED RIVER AREA

Bottomlands within the region are characterized by a variety of woody and herbaceous vegetation. Areas within bottomland floodplains usually contain higher-quality mast-producing trees such as pecan (*Carya illinoensis*), bur oak (*Quercus macrocarpa*), red oak (*Quercus shumardii*), American elm (*Ulmus americana*), and mulberry (*Morus rubra*) with little understory vegetation. Disturbed areas within the floodplain have a greater preponderance of green ash (*Fraxinus pennsylvanica*), hackberry (*Celtis laevigata*), cedar elm (*Ulmus crassifolia*), cottonwood (*Populus deltoides*), and black willow (*Salix nigra*). These areas often have less tree canopy cover, thus permitting a greater abundance of invading forbs and grasses such as ragweed (*Ambrosia* sp.) and Johnsongrass (*Sorghum halepense*).

Local Setting

According to the TPWD publication *The Vegetation Types of Texas* (1984), the study area is located primarily in the urban physiognomic region. A small portion of the Water Oak-Elm-Hackberry Forest vegetation type is located at the far southern terminus of the study area. Commonly associated plants of this vegetation type include cedar elm, American elm, willow oak (*Quercus phellos*), southern red oak (*Quercus falcata*), white oak (*Quercus alba*), black willow, cottonwood, green ash, sycamore (*Platanus occidentalis*), pecan, bois d'arc (*Maclura pomifera*), flowering dogwood (*Cornus florida*), dewberry (*Rubus trivialis*), coralberry (*Symphoricarpos orbiculatus*), dallisgrass (*Paspalum dilatatum*), switchgrass (*Panicum virgatum*), rescuegrass (*Bromus unioloides*), bermudagrass (*Cynodon dactylon*), eastern gamagrass (*Tripsacum dactyloides*), Virginia wildrye (*Elymus virginicus*), Johnsongrass (*Sorghum halepense*), giant ragweed (*Ambrosia trifida*), and Leavenworth eryngo (*Eryngium leavenworthii*) (TPWD, 1984).

In accordance with the TxDOT-TPWD "Memorandum of Agreement for the Finalization of the 1998 Memorandum of Understanding Concerning Habitat Descriptions and Mitigation" (MOU), "Unusual Vegetation Features" include:

- Un-maintained vegetation;
- Trees or shrubs along a fence line (right-of-way) adjacent to a field (fencerow vegetation);
- Riparian vegetation (particularly where fields/cropland extends up to or abuts the vegetation associated with the riparian corridor);
- Trees that are unusually larger than other trees in the area; and
- Unusual stands or islands (isolated) of vegetation.

In addition to the above, "Special Habitat Features" include:

- Bottomland hardwoods;
- Caves;
- Cliffs and bluffs;
- Native prairies (particularly those with climax species of native grasses and forbs);

- Ponds (temporary and permanent, natural and man-made);
- Seeps or springs;
- Snags (dead trees) or groups of snags;
- Water bodies (creeks, streams, rivers, lakes, etc.); and
- Existing bridges with known or easily observed bird or bat colonies.

Based on the above descriptions, unusual vegetation features in the project area include riparian vegetation and unusually large trees (see **Section 3.4.3**). Special habitat features include bottomland hardwoods and water bodies, including the Trinity River and adjacent wetlands and open water features (see **Section 3.4.6**).

The upland areas along the Trinity River floodplain have been developed for residential or industrial use, and most of the lower floodplain areas are confined within the Dallas Floodway. Urbanization, flood control channels, levees, reservoirs, and wastewater discharge have reduced the physical and chemical characteristics of the habitat and waters, which in turn has reduced the diversity and abundance of aquatic and wildlife resources within the study area. Some improvement in water quality has been noted in recent years; however, the Trinity River in this area is still largely dominated by wastewater discharge, which strongly influences the biotic community within the river (United States Fish and Wildlife Service (USFWS), 1997). As the upland and tributary woodland habitat are diminished by urbanization, the remaining river channel, wetlands, open water areas, and forested bottomlands become an increasingly valuable and necessary resource for wildlife.

3.4.3 Vegetation within the Study Area

Of the total study area acreage (7,036 acres), urban areas comprise approximately 56 percent of the area (3,907 acres), maintained grass areas comprise approximately 31 percent (2,198 acres), bottomland and riparian forests comprise approximately 4 percent (290 acres), and water features or aquatic habitats comprise the remaining 9 percent of the area (641 acres). A general description of these areas (with the exception of aquatic habitats, which are discussed in detail in **Section 3.4.6 Waters of the U.S., Including Wetlands**) is provided below. A list of common plant species identified in the study area is provided in **Table 3-12**.

TABLE 3-12. COMMON PLANT SPECIES IN THE STUDY AREA

COMMON NAME	SCIENTIFIC NAME
American Elm	*Ulmus americana*
Bermuda Grass	*Cynodon dactylon*
Black Willow	*Salix nigra*
Box Elder	*Acer negundo*
Brown-Eyed Susan	*Rudbeckia hirta*
Bur Oak	*Quercus macrocarpa*
Cedar Elm	*Ulmus crassifolia*
Cottonwood	*Populus deltoides*
Goldenrod	*Solidago* sp.
Hackberry	*Celtis laevigata*
Johnsongrass	*Sorghum halepense*
Mulberry	*Broussonetia papyrifera*
Pecan	*Carya illinoensis*
Poison Ivy	*Toxicodendron radicans*
Ragweed	*Ambrosia* sp.
Red Oak	*Quercus shrumardii*
Swamp Privet	*Forestiera acuminata*
Vinemesquite	*Panicum obtusum*
Virginia Wildrye	*Elymus virginicus*
Source: Tull and Miller, 1991.	

Urban Landscape

Urban landscaped areas are located beyond the levees and out of the floodplain. These areas are characterized by the presence of buildings, roads, artificial surfaces, and their associated landscapes. Vegetation is usually restricted to landscaped business parks or residential areas, and native plant species are usually excluded from these areas due to manicured landscapes or human disturbance. Landscaped vegetation is not considered to be sensitive habitat for plant or wildlife species.

Floodplain Grasslands

The majority of lands within the Dallas Floodway are composed of the Floodplain Grasslands habitat type, consisting of upland grasses and scattered wetland depressions, with trees common along portions of the river channel and scattered throughout the Dallas Floodway. The City of Dallas conducts mowing and other maintenance activities within the Dallas Floodway and on the levees to preserve the flood control function. Typically, the levees and adjacent 50-foot strips are subject to mowing on a frequent schedule. Other areas are subject to periodic mowing, but generally of less frequent nature. The mowing program prevents the gradual succession of this community into a bottomland hardwood forest. Grass species typically found in the upland areas include Johnsongrass, Bermuda grass, and vine grass. This grassland habitat also supports a variety of flowering species such as brown-eyed Susan, ragweed, and goldenrod. Because this area is continuously disturbed from mowing as part of regular Dallas Floodway maintenance, it is not considered to be a sensitive habitat for plant or wildlife species.

Riparian Bottomland Forests

TRINITY RIVER CHANNEL - DOWNSTREAM OF THE DALLAS FLOODWAY

Within the study area, the riparian bottomland forest begins at the downstream portion of the Dallas Floodway south of the AT&SF Railroad Bridge (**Plate 3-19**). This forested area consists of mixed secondary/mature growth composed predominantly of secondary growth tree species, such as hackberry, American elm, and cedar elm, ranging from 6 to 8 inches in diameter at breast height (DBH). Mature pecan, red oak, mulberry, and bur oak trees are scattered throughout this forested area. Several large cottonwood and black willow trees with a DBH between 24 and 36 inches may be found along the river. These species also comprise the narrow riparian buffer zone that remains along channelized portions of the river within the Dallas Floodway upstream of the AT&SF Railroad Bridge. Ragweed, Virginia wildrye, poison ivy, swamp privet, and box elder saplings are common components of the understory vegetation.

Invasive Species

Executive Order 13112, dated February 3, 1999, directs federal agencies to expand and coordinate their efforts to combat the introduction and spread of "invasive species" (i.e., plants and animals not native to the U.S.). Non-native flora and fauna can cause significant changes to ecosystems, upset the ecological balance, and cause harm to our nation's agricultural and recreational sectors. Transportation systems can facilitate the spread of plant and animal species outside their natural range, both domestically and internationally. Those species that are likely to harm the environment, human health, or economy are of particular concern. The FHWA has implemented guidance concerning EO 13112 effective November 18, 1999 (FHWA, 1999).

Until the National Invasive Species Council defines an approved national list of invasive plants, known invasive plants are defined as those on the official noxious weed list of the state in which the activity occurs. In Texas, the Texas Department of Agriculture (TDA) defines and regulates prohibited and restricted noxious weed seeds in accordance with Texas Agricultural Code, Chapter Section 61.008 (Texas Seed Law). The TDA defines noxious weed seeds as seeds, bulblets or tubers of certain species designated by the Texas Seed Law Regulations and considered highly objectionable and difficult to eradicate. Consistent with TAC Title 4, Part 1, Chapter 9, Subchapter T, Section 19.300(a), noxious and invasive species that may already occur in the study area include alligatorweed (*Alternanthera*

philoxeroides), balloonvine (*Cardiospermum halicacebum*), Chinese tallow (*Triadaca sebifera*) and Japanese dodder (*Cuscuta japonica*).

3.4.4 Wildlife Resources within the Study Area

Historically, Dallas County contained a diversity of habitats that supported a wide variety of wildlife. The wildlife habitat of Dallas County has been altered drastically in the last 150 years, thus eliminating much of the original wildlife community. The prairie was converted to cultivated fields and has been further modified by urbanization, and the forests were cut for building materials and cleared for agriculture. Riparian vegetation has been cleared; however, riparian corridors are still used by waterfowl, shorebirds, and mammals such as beaver and nutria (USACE, 2000). Predator control, indiscriminate hunting, use of pesticides, and various forms of air, water, and land pollution have been responsible for modified distribution of fish and wildlife populations throughout the area. Dallas County wildlife is subject to reduction or elimination by habitat destruction through removal, physical alteration, and/or pollution. The surviving fish and wildlife live in a modified natural habitat within the immediate influence of an encroaching urban complex (USACE, 1999).

The USFWS publication *Urban Development and Fish and Wildlife Habitat of the Dallas/Fort Worth Metroplex* provides an assessment of fish and wildlife resources of the Dallas area (Johnston, 1989). The major wildlife habitats can be subdivided between aquatic and terrestrial resources. In addition to open water, aquatic habitats include vegetated shallows and mudflats. Aquatic habitats support 66 species of fish within the DFW metropolitan area. Terrestrial habitats include both wetlands and uplands, which support 291 species of birds, 36 species of mammals, 68 species of reptiles, and 25 species of amphibians. **Tables 3-13** through **3-16** identify common wildlife species that may be located within the study area.

TABLE 3-13. COMMON FISH SPECIES IN THE STUDY AREA

COMMON NAME	SCIENTIFIC NAME
Alligator Gar	*Lepisosteus spatula*
Longnose Gar	*Lepisosteus osseus*
Bowfin	*Amia calva*
Smallmouth Buffalo	*Ictiobus bubalus*
Carp	*Cyprinus carpio*
Channel Catfish	*Ictalurus punctatus*
Blue Catfish	*Ictalurus furcatus*
Flathead Catfish	*Ictalurus olivaris*
Yellow Bullhead	*Ictalurus natalis*
Black Bullhead	*Ictalurus melas*
Green Sunfish	*Lepomis cyanellus*
Redear Sunfish	*Lepomis microlophus*
Bluegill	*Lepomis macrochirus*
Longear Sunfish	*Lepomis megalotis*
Freshwater Drum	*Aplodinotus grunniens*
Warmouth	*Chaenobryttus gulosus*
Largemouth Bass	*Micropterus salmoides*
Source: McCune, 1971.	

TABLE 3-14. COMMON AMPHIBIAN AND REPTILE SPECIES IN THE STUDY AREA

COMMON NAME	SCIENTIFIC NAME
Broad-Headed Skink	*Eumeces laticeps*
Bullfrog	*Rana catesbiana*
Chorus Frog	*Pseudacris triseriata*
Cottonmouth	*Agkistrodon piscivorus*
Cricket Frog	*Acris crepitans*
Eastern Hognose Snake	*Heterodon platyrhinos*
Green Anole	*Anolis carolinensis*
Ground Skink	*Leiolopisma laterale*
Lesser Siren	*Siren intermedia*
Narrow-Mouthed Toad	*Gastrophryne olicavea*
Pig Frog	*Rana grylio*
Ringneck Snake	*Diadophis punctatus arnyi*
Southern Copperhead	*Agkistrodon contortrix*
Southern Leopard Frog	*Rana pipiens*
Texas Rat Snake	*Elaphe obsolete lindheimeri*
Water Snake	*Natrix* sp.
Western Mud Snake	*Farancia abacura*
Source: Conant, 1975.	

TABLE 3-15. COMMON MAMMAL SPECIES IN THE STUDY AREA

COMMON NAME	SCIENTIFIC NAME
Armadillo	*Dasypus novemcinctus*
Beaver	*Castor candensis*
Bobcat	*Lynx rufus*
Hispid Cotton Rat	*Sigmodon hispidus*
White-Footed Mouse	*Peromyscus leucopus*
Hispid Pocket Mouse	*Peromyscus penicillatus*
Coyote	*Canis latrans*
Eastern Fox Squirrel	*Sciurus niger*
Eastern Wood Rat	*Neotoma floridana*
Feral Hog	*Sus scrofa*
Gray Fox	*Urocyon cinereoargenteus*
Nutria	*Myocastor coypus*
Opossum	*Didelphis marsupialis*
Rabbit	*Sylvilagus aquaticus*
Cottontail Swamp Rabbit	*Sylvilagus floridanus*
Raccoon	*Procyon lotor*
River Otter	*Lutra canadensis*
Short-Tailed Shrew	*Blarina brevicauda*
Striped Skunk	*Spilogale putorius*
White-Tailed Deer	*Odocoileus virginianus*
Source: Burt and Grossenheider, 1976.	

TABLE 3-16. COMMON BIRD SPECIES IN THE STUDY AREA

COMMON NAME	SCIENTIFIC NAME		COMMON NAME	SCIENTIFIC NAME
Waterfowl	**Order Anseriformes**		**Woodpecker**	**Order Piciformes**
Blue-Winged Teal	*Anas discor*		Common Flicker	*Colaptes auratus*
Green-Winged Teal	*Anas crecca*		Red-Bellied Woodpecker	*Melanerpes carolinus*
Mallard	*Anas platyrhynchos*		Yellow-Bellied Sapsucker	*Sphyrapicus varius*
Gadwall	*Anas strepera*		Downy Woodpecker	*Picoides pubescens*
Northern Pintail	*Anas acuta*			
Northern Shoveler	*Anas clypeata*		**Perching Birds**	**Order Passeriformes**
Wood Duck	*Aix sponsa*		Scissor-Tailed Flycatcher	*Tyrannus forficatus*
			Western Kingbird	*Tyrannus verticalis*
Vultures, Falcons, and Hawks	**Order Falconiformes**		Eastern Kingbird	*Tyrannus tyrannus*
Turkey Vulture	*Cathartes aura*		Blue Jay	*Cyanocitta cristata*
Northern Harrier	*Circus cyaneus*		American Crow	*Corvus brachyrhynchos*
Red-Tailed Hawk	*Buteo jamaicensis*		Carolina Chickadee	*Parus carolinensis*
American Kestrel	*Falco sparverius*		Northern Mockingbird	*Mimus polyglottos*
			American Robin	*Turdus migratorus*
Herons and Egrets	**Order Ciconiiformes**		Eastern Bluebird	*Sialia sialis*
Cattle Egret	*Bubulcus ibis*		Ruby Crowned Kinglet	*Regulus satrapa*
Snowy Egret	*Egretta thula*		Logger-Head Shrike	*Lanius ludovicianus*
Great Blue Heron	*Ardea herodias*		European Starling*	*Sturnus vulgaris*
Little Blue Heron	*Egretta rufescens*		White-Eyed Vireo	*Vireo griseus*
Yellow-Crowned Night Heron	*Nycticorax violaceus*		Red-Eyed Vireo	*Vireo olivaceus*
			Black and White Warbler	*Mniotilta varia*
Shorebirds and Gulls	**Order Charadriiformes**		Yellow-Rumped Warbler	*Dendroica coronata*
Killdeer	*Charadrius vociferus*		House Sparrow*	*Passer domesticus*
Lesser Yellowlegs	*Tringa flavipes*		Western Meadowlark	*Sturnella neglecta*
Ring-Billed Gull	*Larus delawarensis*		Red-Winged Blackbird	*Agelaius phoeniceus*
			Common Grackle	*Quiscalus mexicanus*
Pigeons and Doves	**Order Columbiformes**		Brown Headed Cowbird	*Molothrus aeneus*
Mourning Dove	*Zenaida macroura*		Northern Cardinal	*Cardinalis cardinalis*
Rock Dove (Pigeon)*	*Columba livia*		White-Throated Sparrow	*Zonotrichia albicollis*

Source: Pulich, 1990.
Notes: *- Not listed as species covered under the Migratory Bird Treaty Act of 1918.

3.4.5 Threatened and Endangered Species

The purpose of this section is to provide a brief summary of the listing and monitoring procedures employed by the federal and state governments, a list of threatened and endangered species potentially occurring in the project study area, and brief ecological descriptions of these sensitive resources.

3.4.5.1 Listing and Monitoring Process

Federal (USFWS) - The USFWS has legislative authority to list and monitor the status of species whose populations are considered imperiled. This federal legislative authority is for the protection of threatened and endangered species issues from the ESA of 1973, and its subsequent amendments. Regulations supporting this Act are codified and regularly updated in 50 CFR Section 17.

The federal process stratifies potential candidates based upon the species' biological vulnerability. The vulnerability decision is based upon many factors affecting the species within its range and is always linked to the best scientific data available to the USFWS at the time. Species listed as threatened or endangered by the USFWS are provided full protection. This protection includes a prohibition of indirect take such as destruction of critical habitat. Additionally, species that have been proposed for listing (including publication in the *Federal Register*) as threatened or endangered are granted limited protection under the Act until a decision is reached. The ESA and accompanying regulations provide the necessary authority and incentive for the individual states to establish their own regulatory vehicle for the management and protection of threatened and endangered species.

State (TPWD) - Endangered species legislation passed in Texas in 1973 (amended in 1981, 1985, and 1987) and subsequent 1975 and 1981 revisions to the Texas Parks and Wildlife Code established a state regulatory vehicle for the management and protection of threatened and endangered species. Chapters 67 and 68 (the 1975 revisions) of the code authorize the TPWD to formulate lists of threatened and endangered fish and wildlife species and to regulate the taking or possession of the species. A 1981 revision and 1985 amendment to the code provide authority for the TPWD to designate plant species as threatened or endangered and to prohibit commercial collection or sale of these species without permits.

Under this statutory authority, the TPWD regulates the taking, possession, transport, export, processing, selling or offering for sale, or shipping of threatened or endangered species of fish, wildlife, and plants. Neither specific criteria for the listing of plant and animal species, nor protection from indirect take (i.e., destruction of habitat or unfavorable management practices) are found in either one of the above-mentioned statutes or regulations. Functionally, the TPWD oversees endangered resources through the Wildlife Division.

3.4.5.2 List of Threatened and Endangered Species

The federal and state listed threatened and endangered species were obtained from available USFWS and TPWD sources. A list of species of concern was also obtained from the TPWD. Coordination with the TPWD for information from the Texas Natural Diversity Database (NDD) was conducted in June 2008 to obtain a list of known occurrences of any threatened, endangered, or rare species in relation to the project limits. Information from the NDD was checked in conjunction with GIS and compared to the project area to determine if any occurrences were within the project limits. The listed species for Dallas County, current regulatory status, and habitat requirements are presented in **Table 3-17**. Refer to the following section for a description of federally and state listed species for the project area, as well an evaluation of the NDD data.

TABLE 3-17. FEDERAL, STATE LISTED THREATENED/ENDANGERED SPECIES, AND TEXAS PARKS & WILDLIFE DEPARTMENT'S SPECIES OF CONCERN DALLAS COUNTY

Species	USFWS*	TPWD**	Habitat Requirements	Habitat Present	Notes
Birds					
Arctic Peregrine Falcon *(Falco peregrinus tundrius)*	---	T	Potential migrant. Nests in tundra regions; migrates through Texas; winters along gulf coast. Open areas, usually near water.	No (Potential Migrant)	This species is migratory through the area and could temporarily use portions of the study area as stopover locations during migration.
Bald Eagle *** *(Haliaeetus leucocephalus)*	DM	T	Nests and winters near rivers and large lakes; nests in tall trees or on cliffs near large bodies of water; all reservoirs in north central Texas are considered potential nesting habitat.	No	The study area does not contain the preferred habitat for this species.
Black-capped Vireo *(Vireo atricapilla)*	E	E	Oak-juniper woodlands with distinctive patchy, two-layered aspect; shrub and tree layer with open, grassy spaces.	No	The study area does not contain the preferred habitat for this species.
Golden-cheeked Warbler *(Dendroica chrysoparia)*	E	E	Juniper-oak woodlands; dependent on mature Ashe juniper (cedar) for long fine bark strips from mature trees in nest construction; nests in various other trees; forage for insects in broad-leaved trees and shrubs.	No	The study area does not contain the preferred habitat for this species.
Interior Least Tern *(Sterna antillarum athalassos)*	E	E	Nests along sand and gravel bars within braided streams and rivers; also known to nest on man-made structures near water.	Yes	The study area does not contain sand and gravel bars within braided streams or rivers, however, several man-made structures can be found near water.
Piping Plover *(Charadrius melodus)*	T	T	Wintering migrant along the Texas Gulf Coast; prefers beaches and bayside mud or salt flats.	No (Potential Migrant)	This species is migratory through the area and could temporarily use portions of the study area as stopover locations during migration.
American Peregrine Falcon *(Falco peregrinus anatum)*	---	E	Potential migrant. Nests in the Trans-Pecos region of West Texas; nests on high cliff, often near water where prey species are most common.	No (Potential Migrant)	This species is migratory through the area and could temporarily use portions of the study area as stopover locations during migration.
White-Faced Ibis *(Plegadis chihi)*	---	T	Prefers freshwater marshes, sloughs, and irrigated rice fields; nests in marshes, in low trees, in bulrushes or reeds, or on floating mats.	No	The study area does not contain the preferred habitat for this species.
Whooping Crane *(Grus americana)*	---	E	Potential migrant via plains throughout most of the state to the coast; winters in coastal marshes of Aransas, Calhoun, and Refugio counties.	No (Potential Migrant)	This species is migratory through the area and could temporarily use portions of the study area as stopover locations during migration.

Species	USFWS*	TPWD**	Habitat Requirements	Habitat Present	Notes
Wood Stork *(Mycteria americana)*	---	T	Forages in prairie ponds, flooded pastures or fields, ditches, and other shallow standing water; usually roosts in tall snags.	No (Potential Migrant)	This species is migratory through the area and could temporarily use portions of the study area as stopover locations during migration.
Henslow's Sparrow *Ammodramus henslowii*	---	---	Wintering individuals (not flocks) found in weedy fields or cut-over areas where lots of bunch grasses occur along with vines and brambles; a key component is bare ground for running/walking.	No	The study area does not contain the preferred habitat for this species.
Western Burrowing Owl *Athene cunicularia hypugaea*	---	---	Open grasslands, especially prairie, plains, and savanna, sometimes in open areas such as vacant lots near human habitation or airports; nests and roosts in abandoned burrows.	Yes	The study area contains potential habitat; however, there is no recent evidence of this species in this area.
Insects					
Black Lordithon rove beetle *Lordithon niger*	---	---	Historically known from Texas. Believed to utilize hardwood forest habitat.	No	The study area does not contain the preferred habitat for this species.
Mammals					
Cave myotis bat *Myotis velifer*	---	---	Colonial and cave-dwelling; also roosts in rock crevices, old buildings, carports, under bridges, and even in abandoned Cliff Swallow (*Hirundo pyrrhonota*) nests; roosts in clusters of up to thousands of individuals; hibernates in limestone caves of Edwards Plateau and gypsum cave of Panhandle during winter; opportunistic insectivore.	Yes	The study area does not contain caves or rock crevices, but does contain potential man-made habitat (i.e. bridges, etc). There is no recent evidence of this species in this area.
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.	Yes	The study area contains potential habitat, however, there is no recent evidence of this species in the project area.
Mollusks					
Fawnsfoot *Truncilla donaciformis*	---	---	Small and large rivers especially on sand, mud, rocky mud, and sand and gravel, also silt and cobble bottoms in still to swiftly flowing waters; Red (historic), Cypress (historic), Sabine (historic), Neches, Trinity, and San Jacinto River basins.	Yes	The Trinity River and its tributaries provide potential habitat for this species.
Little spectaclecase *Villosa lienosa*	---	---	Creeks, rivers, and reservoirs, sandy substrates in slight to moderate current, usually along the banks in slower currents; east Texas, Cypress through San Jacinto River basins.	Yes	The Trinity River and its tributaries provide potential habitat for this species.
Louisiana pigtoe *Pleurobema riddellii*	---	---	Streams and moderate-size rivers, usually flowing water on substrates of mud, sand, and gravel; not generally known from impoundments; Sabine, Neches, and Trinity (historic) River basins.	Yes	The Trinity River and its tributaries provide potential habitat for this species.
Pistolgrip *Tritogonia verrucosa*	---	---	Stable substrate, rock, hard mud, silt, and soft bottoms, often buried deeply; east and central Texas, Red through San Antonio River basins.	Yes	The Trinity River and its tributaries provide potential habitat for this species.
Rock pocketbook *Arcidens confragosus*	---	---	Mud, sand, and gravel substrates of medium to large rivers in standing or slow flowing water, may tolerate moderate currents and some reservoirs, east Texas, Red through Guadalupe River basins.	Yes	The Trinity River and its tributaries provide potential habitat for this species.
Sandbank pocketbook *Lampsilis satura*	---	---	Small to large rivers with moderate flows and swift current on gravel, gravel-sand, and sand bottoms; east Texas, Sulfur south through San Jacinto River basins; Neches River.	Yes	The Trinity River and its tributaries provide potential habitat for this species.
Texas heelsplitter *Potamilus amphichaenus*	---	---	Quiet waters in mud or sand and also in reservoirs. Sabine, Neches, and Trinity River basins.	Yes	The Trinity River and its tributaries provide potential habitat for this species.
Wabash pigtoe *Fusconaia flava*	---	---	Creeks to large rivers on mud, sand, and gravel from all habitats except deep shifting sands; found in moderate to swift current velocities; east Texas River basins, Red through San Jacinto River basins; elsewhere occurs in reservoirs and lakes with no flow.	Yes	The Trinity River and its tributaries provide potential habitat for this species.

Species	USFWS*	TPWD**	Habitat Requirements	Habitat Present	Notes
Reptiles					
Alligator Snapping Turtle *(Macrochelys temminckii)*	---	T	Perennial water bodies; deep water of rivers, canals, lakes, and oxbows; also swamps and ponds near deep running water.	Yes	The study area contains perennial water bodies; however, there is no recent evidence of this species in this area.
Texas garter snake *Thamnophis sirtalis annectens*	—	—	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.	Yes	The study area contains potential habitat; however, no adverse impacts are expected.
Texas Horned Lizard *(Phrynosoma cornutum)*	---	T	Open, arid, and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush, or scrubby trees.	No	The study area does not contain the preferred habitat for this species.
Timber/Canebrake Rattlesnake *(Crotalus horridus)*	---	T	Swamps, floodplains, upland pine and deciduous woodlands, riparian zones, abandoned farmland, limestone bluffs, sandy soil or black clay. Prefers dense ground cover, i.e. grapevines or palmetto.	Yes	The study area contains riparian zones; however, there is no recent evidence of this species in this area.

Sources: TPWD NDD, Annotated County List of Rare Species as revised 8/8/2007; USFWS - Southwest Region, Endangered Species List for Dallas and Tarrant Counties as of 8/20/2007.

Notes:

* U.S. Fish and Wildlife Service listing (E = Endangered, T = Threatened, DM = Delisted, being monitored through August 8, 2012)

** Texas Parks and Wildlife Department listing (E = Endangered and T = Threatened)

*** Bald Eagle has been delisted as a threatened species by the USFWS effective August 8, 2007

"---" = Species of Concern, but no Regulatory Listing Status

3.4.5.3 Occurrences and Ecological Requirements of Protected or Otherwise Sensitive Species

NDD Search Results

According to the NDD, there are seven Element Occurrence Identification (EOID) numbers within ten miles of the proposed Trinity Parkway project. The first, EOID 2952, is an active rookery located near the project (i.e. within 1.5 miles) in Dallas within the Southwestern Medical Center complex north of IH-35E. A variety of egrets and heron species (*Egretta*, *Ardea*, and *Bubulcus* spp) utilize the small stand of trees maintained by the Medical Center. Vegetation features are typical of those found within many urban rookeries, and include hackberry, cedar elm, and bois d'arc species. The rookery, located approximately one mile removed from the Trinity River corridor, is surrounded by urban development, effectively making it an island of habitat within the area. This location is widely known to be utilized each spring by the colonial species listed above. This is the only EOID identified within 1.5 miles of the project.

The second EOR (EOID 1439) lists an egret and heron rookery northwest of Hutchins, approximately four miles south of the project area. The location, at the intersection of Simpson Stuart and Bonnie View Roads, was identified in 1988 and last observed in 1990. Since then, residential and commercial development has taken place in the area, and correspondence with local wildlife rehabilitation professionals indicates no known rookery still exists. In addition, a field visit in July 2008 produced no evidence of a rookery in the vicinity. While potential habitat does exist along the Five Mile Creek tributary nearby, this does not appear to be a current nesting site.

EOID 432 is located approximately 5.6 miles northeast of the proposed project along White Rock Lake. This listing resulted from a 1948 specimen collection of the Texas Garter Snake (*Thamnophis sirtalis*

annectens) for the Baylor University collection. EOID 561 corresponds to a nesting colony of cattle egret observed in 1981. This location is approximately 8.5 miles southwest of the proposed project.

EOID 2874 and EOID 7284 are identified nesting areas of the Interior Least Tern in Dallas County. EOID 2874, located at the Southside Water Treatment Plant, is approximately 9.5 miles southeast of the proposed project. EOID 7284 is located at a sand and gravel pit approximately 10 miles southeast of the proposed project. The two colonies are located within close proximity to each other, separated by Belt Line Road.

EOID 6868, which is located approximately 10 miles southeast of the proposed project, corresponds with a fish hatchery adjacent to Log Cabin Road. The site was listed in 1990 as an egret and heron rookery.

Migratory Avian Species

Protected or otherwise sensitive birds of potential occurrence within the study area consist largely of migratory species. These include the Arctic and American Peregrine Falcons (*Falco peregrinus tundrius; anatum*), Piping Plover *(Charadrius melodus),* Whooping Crane (*Grus americana*), and Wood Stork (*Mycteria americana*). These species utilize the area primarily as a travel corridor, where various habitats are used for resting and feeding stops. Some of the more important migratory habitats within the Trinity Parkway study area include riparian zones, grasslands, wetlands, and upland woods/brush. The status [(Federal) (State)], ecological requirements, and known localities of each species potentially occurring in the study area are presented below.

Arctic Peregrine Falcon (NL)(T)/American Peregrine Falcon (NL)(E). The Peregrine Falcon nests on cliffs and in cliff-like areas near wetlands and water bodies. The American subspecies (*Falco peregrinus anatum*) breeds throughout the western U.S., Canada, and Mexico, and in the Trans-Pecos region of Texas. The Arctic subspecies (*Falco peregrinus tundrius*) breeds within the tundra regions of Alaska, Canada, and Greenland. Both subspecies migrate through Texas and can be found seasonally along the Texas Gulf Coast. Species decline has been attributed to human disturbance, habitat loss, illegal shooting/collecting, and, most notably, use of the pesticide dichloro-diphenyl-trichloroethane (DDT). Although preferred habitat for these species is generally absent in the project area, their potential use of the project area should be considered incidental relative to the large area considered as part of their migration corridor.

Piping Plover (T)(T). Breeding populations of Piping Plover exist along the Atlantic Coast, within the Northern Great Plains, and within the Great Lakes region of North America. All populations migrate south for the winter, with individuals from both Northern Great Plains and Great Lakes populations wintering along the Texas Gulf Coast. All populations prefer open, sandy beaches, mudflats, and sparsely

vegetated sand and gravel coastlines for nesting. The birds forage for invertebrates in the sand near the water as the tide fluctuates. Species decline has been attributed to human disturbance and habitat loss along waterways. Although preferred habitat for these species is generally absent in the project area, their potential use of the project area should be considered incidental relative to the large area considered as part of their migration corridor.

Whooping Crane (NL)(E). Historically, the whooping crane occurred throughout most of North America. It was almost extirpated during the 20th century due to habitat destruction and human disturbances. Whooping crane populations increased from a low of 18 in 1938-1939 to approximately 300 in 1990. The remaining cranes breed in the wetlands of Wood Buffalo National Park, Northwest Territory, Canada, and winter in the coastal wetlands of the Aransas National Wildlife Refuge in Aransas, Calhoun, and Refugio Counties, Texas. Dallas County lies within the migratory route used by these rare birds. However, their potential use of the project area should be considered incidental relative to the large area considered as part of their migration corridor.

Wood Stork (NL)(T). The preferred habitat of the wood stork consists of low-lying wetland areas that may be seasonably flooded and/or drying. Wood storks feed not by sight but by touch "tacto-location" in shallow and often muddy water full of plants. Fish cannot be seen in those conditions. Walking slowly forward, the stork sweeps its submerged bill from side to side. Touching prey, mostly small fish, the bill snaps shut. Only seasonally drying wetlands (mostly in drying ponds) concentrate enough fish to provide the 440 pounds a pair these big birds require in a breeding season. When natural wetland cycles are upset by human water management wood storks fail to nest successfully. Although preferred habitat for these species is generally absent in the project area, their potential use of the project area should be considered incidental relative to the large area considered as part of their migration corridor.

Other Threatened and Endangered Species

Interior Least Tern (E)(E). The interior least tern is a colonial nesting species adapted to sand and gravel deposition features associated with inland lacustrine and riverine habitats. Active nesting colonies may be found in the Texas Panhandle on the Red and Canadian River systems and in south Texas along the Rio Grande River.

Two colonies of Interior Least Tern have been documented in Dallas County approximately 10 miles from the proposed project (see NDD discussion above regarding EOID 2874 and EOID 7284). No nesting is known to occur in the vicinity of the study area. The potential occurrence and use of the study area is considered incidental.

Alligator Snapping Turtle (NL)(T). The alligator snapping turtle requires perennial water bodies as it is a highly aquatic organism, spending most of its life submerged. Turtles have been known to utilize rivers, creeks, estuaries, ponds, lakes, and wetlands for their habitats. Distribution of this species stretches from East Texas through the southeast to the panhandle of Florida, and north along the Mississippi River Valley. Adults and juveniles are mainly nocturnal, and utilize a fleshy appendage in their mouths to lure prey. Little is known about their life history; however, humans are the main predators on adults. Nest predation by wildlife is believed to be an important factor in hatching success. The study area contains perennial water bodies; however, there is no recent evidence of this species in this area.

Timber Canebrake Rattlesnake (NL)(T). Preferred habitat for the timber/canebrake rattlesnake exists within forested areas with dense ground cover. The distribution of the timber/canebrake rattlesnake stretches from the East Coast westward into Texas, and as far north as New England. In the southern portions of its range, this species prefers to make its den in somewhat swampy, wetland habitats. The DFW Metroplex represents the far western edge of its range, and is characterized by drier conditions than generally preferred by this snake. Populations tend to be higher in eastern Texas where greater concentrations of wetlands and humid forests are found. Forested areas located near permanent water sources are also utilized, as fallen debris from trees can act as refugia for the rattlesnake. The timber/canebrake rattlesnake is a shy animal that prefers to live in areas with high amounts of cover and available refuge. This type of habitat is the most likely within the DFW Metroplex to be suitable for this species. Within the proposed project area, possible habitat includes forested areas within the floodplain.

Species of Concern

The Texas Wildlife Action Plan (TWAP) strives to keep “common species common” by gathering information about native species before they become rare. Species that are uncommon or exhibit declining numbers may be designated as species of concern (SOC) by TPWD. Often these designations are placed on species for which little is known as a precautionary measure, and in order to focus attention on gaining insight into the species’ life histories. Preferred habitat determinations for the SOC shown in **Table 3-17** have been made using available data and examining habitat preferences for closely-related species, and are discussed below.

Western Burrowing Owl (SOC). The western burrowing occurs in the western half of North America. Nesting takes place in warmer temperate and sub-tropical regions from southern California to west Texas and south into Mexico. Preferred habitat is typified by shorter vegetation accompanied by abandoned small mammal burrows, which the owl modifies for its own use. This species rarely creates its own burrows, and is thus associated with known habitat for prairie dog, ground squirrel, fox, and similar ground-dwelling mammals.

Cave Myotis Bat (SOC). The cave myotis bat is a permanent resident from Arizona east into Texas, and southern portions of Nebraska south into Mexico. This species is colonial, generally roosting in large groups (numbering into the thousands) in caves and mines. Bridges and other man-made structures are occasionally used.

Plains Spotted Skunk (SOC). The plains spotted skunk prefers forested or brushy habitats, which provide cover and potential den sites. The species is sometimes seen foraging in more open areas, but utilizes abandoned burrows, brush piles, or hollow logs when bearing young. Range information for this species is incomplete, but the species is known throughout the Midwest.

Mollusks (SOC). The Trinity River channel provides potential habitat for the eight species of mollusks listed in **Table 3-17**. Factors influencing mussel population decline include aquatic contaminants, population decline of needed host species (necessary for reproduction), and the damming/impoundment of rivers. Too little is known about the individual species to assess potential risks independently, but it is anticipated effects to any could potentially be felt by all.

Texas Garter Snake (SOC). The Texas garter snake prefers marshy areas and those associated with permanent sources of water. This species occurs in east through central Texas, with a second population stretching from the panhandle of Texas north through Oklahoma and into Kansas. This snake is most abundant in the central Texas portion of its range.

3.4.6 Waters of the U.S., including Wetlands

Wetlands are usually defined in terms of their physical, chemical, and biological characteristics such as hydrologic regime, soil type, and plant species composition. For example, in classifying wetlands for mapping, inventory, and other purposes, Cowardin et al. (1979) defined wetlands as "…lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water…" that are characterized by the presence of hydrophytic vegetation, hydric soils, and surface water during the growing season.

Section 404 of the CWA (PL 95-217) authorizes the Secretary of the Army, acting through the USACE, to issue permits for the discharge of dredged or fill material into waters of the U.S., including wetlands. For the purposes of Section 404 of the CWA, waters of the U.S., including wetlands, are defined at 33 CFR Section 328.3 as:

1. *All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;*
2. *All interstate waters including interstate wetlands;*

3. *All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:*
    i. *Which are or could be used by interstate or foreign travelers for recreational or other purposes; or*
    ii. *From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or*
    iii. *Which are used or could be used for industrial purpose by industries in interstate commerce;*
4. *All impoundments of waters otherwise defined as waters of the United States under the definition;*
5. *Tributaries of waters identified in paragraphs 1-4 above;*
6. *The territorial seas;*
7. *Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs 1-6 above.*

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of the CWA (other than cooling ponds as defined in 40 CFR Section 123.11(m) which also meet the criteria of the above definition) are not waters of the U.S.

Jurisdictional Determination Methodology for Waters of the U.S., including Wetlands

In April 1994, a wetland delineation was prepared as required for a Section 404 Individual Permit that was subsequently issued for the Dallas Floodway Channel Modification Project (Project No. 199300146). This earlier delineation was used as a reference and field verified in multiple field visits conducted during 1998, 1999, 2001, 2003, and 2005. Before these field investigations, aerial photographs, soil survey maps, and USFWS National Wetlands Inventory (NWI) maps were reviewed. Due to the large amount of available information, field verification consisted of the USACE routine determination method, as described in the 1987 Wetland Delineation Manual (USACE, 1987). For an area to be considered a wetland, hydric soils, hydrophytic vegetation, and wetland hydrology must be present. The ordinary high water marks for streams and open waters that are waters of the U.S. were identified based on the presence of shelving and or destruction of terrestrial vegetation.

Potential waters of the U.S., including wetlands in the study area, were digitized based on year 2000 digital topographic engineering maps with a two-foot contour interval and are shown on **Plate 3-19**. A preliminary jurisdictional determination was submitted to the USACE on March 2000 and the project was assigned USACE project number SWF-2000-00308. A field survey was conducted with the USACE in April 2002 and more recently in February and August 2005. A proposed jurisdictional determination was

submitted to the USACE in May 2006. The USACE concurred with the jurisdictional determination in a letter dated June 19, 2006 (see **Appendix G-6**). This concurrence is valid for a period of no more than five years from the date of the letter. Further coordination with the USACE will occur during the Section 404 standard Individual Permit application process, which will occur once a preferred alternative is selected.

Wetland Functions and Values

Wetlands are especially valued by many members of society because of their location on the landscape, the variety of functions they perform, and uniqueness of their plant and animal communities. Individual landowners and members of the general public also value wetlands for their open space and aesthetic qualities, as locations of important historic and archeological sites, and as locations for conveying floodwaters.

The primary function of wetlands relates to their physical, chemical, and biological attributes. Examples of functions include flood flow alteration, wildlife habitat, and groundwater discharge. The term "values" may be used to describe those functions that are generally regarded as beneficial to society. Recreation and uniqueness are examples of values. All or part of society may not value some wetland functions. For example, nutrient removal and transformation may not be considered a value if that function leads to algal blooms and noxious odors. **Table 3-18** provides a summary of typical wetland functions and values.

TABLE 3-18. TYPICAL WETLAND FUNCTIONS AND VALUES

Functions Related to Hydrologic Process	Value
Short-Term Storage of Surface Water: the temporary storage of surface water for short periods.	On-Site: Replenish soil moisture, import/export materials, conduit for organisms. Off-Site: Reduce downstream peak discharge and volume, and help maintain and improve water quality.
Long-Term Storage of Surface Water: the temporary storage of surface water for long periods.	On-Site: Provide habitat and maintain physical and bio-geochemical processes. Off-Site: Reduce dissolved and particulate loading and help maintain and improve surface water quality.
Dynamic Surface Water Storage: capacity to detain moving water from overbank flow for short duration when flow is out of the channel.	On-Site: Reduces timing of passage of flood wave. Off-Site: Results in reduced downstream peak flows and delayed timing of peak flows.
Moderation of Groundwater Flow or Discharge: the moderation of groundwater flow or groundwater discharge.	On-Site: Maintain biogeochemical processes. Off-Site: Recharge surficial aquifers and maintain base flow and seasonal flow in streams.
Dissipation of Energy: the reduction of energy in moving water at the land/water interface.	On-Site: Contributes to nutrient capital of ecosystem. Off-Site: Reduced downstream particulate loading helps maintain or improve surface water quality.
Functions Related to Biogeochemical Processes	**Value**
Cycling of Nutrients: the conversion of elements from one form to another through abiotic and biotic processes.	On-Site: Contributes to nutrient capital of ecosystem. Off-Site: Reduced downstream particulate loading helps maintain or improve surface water quality.
Removal of Elements and Compounds: the removal of nutrients, contaminants, and other elements and compounds on a short-term or long-term basis through burial, incorporation into biomass, or biochemical reactions.	On-Site: Contributes to nutrient capital of ecosystem. Contaminants are removed, or rendered innocuous. Off-Site: Reduced downstream particulate loading helps maintain or improve surface water quality.
Retention of Particulates: the retention of organic and inorganic particulates on a short-term or long-term basis through physical processes.	On-Site: Contributes to nutrient capital of ecosystem. Off-Site: Reduced downstream particulate loading helps maintain or improve surface water quality.
Export of Organic Carbon: the export of dissolved or particulate organic carbon.	On-Site: Enhances decomposition and mobilization of metals. Off-Site: Supports aquatic food webs and downstream biogeochemical processes.
Functions Related to Habitat	**Value**
Maintenance of Plant and Animal Species: the maintenance of plant and animal community that is characteristic with respect to species composition, abundance, and age structure.	On-Site: Maintain habitat for plants and animals (e.g., endangered species and critical habitats), forest and agricultural products, and aesthetic, recreational, and educational opportunities. Off-Site: Maintain corridors between habitat islands and landscape/regional biodiversity.
Source: USACE, 1995b.	

Functions and Value Methodology for Waters of the U.S., including Wetlands

Waters of the U.S., including wetlands, in the study area are shown in **Table 3-19A**. Those aquatic features (type/class) within the study area (i.e., man-made linear sumps) that are not waters of the U.S., including wetlands, are shown in **Table 3-19B**. Drainage sumps that are portions of the historic river channel were classified as waters of the U.S., classified as open waters, and included in the jurisdictional determination. Also included in **Table 3-19A** is a qualitative designation (i.e., low, medium, or high) assigned to each aquatic feature. The designation is based on a quantitative assessment on selected functions previously displayed in **Table 3-18**. A hydrogeomorphic approach for riverine wetlands similar to that described by the USACE (1995c) was used to select specific functions and influencing variables that best represent the functional range of wetland variation within the study area, and that could be readily identified and evaluated in the field. Functions and variables that were considered included:

- Dynamic surface water storage - determined by frequency of overbank flow, average depth of inundation, micro depressions, shrub/sapling density, tree density, coarse woody debris, and tree basal area;

- Long-term surface water storage - determined by visual observation of surface water;
- Energy dissipation - determined by frequency of overbank flow, micro depressions, coarse woody debris, and tree density;
- Retention of particulates - determined by frequency of overbank flow, surface inflow, herbaceous density, micro depressions, shrub/sapling density, tree density, coarse woody debris, and tree basal area;
- Maintenance of characteristic plant communities - determined by species composition, shrub/sapling density, tree density, canopy cover, and tree basal area; and
- Maintenance of interspersion and connectivity - determined by frequency of overbank flow, duration of inundation, ground cover, surface hydraulic connections, and contiguous cover between habitats.

The hydrogeomorphic approach is an assessment tool developed by the USACE, and assigns an objective quantitative index of function to wetlands based on comparison of ecological characteristics (e.g., landscape setting, water source, water movement through the system) to a wetland reference standard. Prior to evaluating the functions of the areas delineated as waters of the U.S., including wetlands, a reference wetland was identified in the study area that was determined to have the highest array of functions based on the provided list of variables. The reference wetland standards represent the highest level of function in the regional landscape and were the basis of comparison for other wetlands in the study area. For each wetland, variables were assigned a numerical index value between 0 and 1, and a final index per function was calculated. The index value presented in **Table 3-19A** is the arithmetic mean of the individual function scores. Average index ranges were then assigned a qualitative designation (i.e., low, medium, or high) for simple comparative purposes.

TABLE 3-19A. WATERS OF THE UNITED STATES, INCLUDING WETLANDS, WITHIN THE STUDY AREA

ID. NO.	FEATURE TYPE/CLASS	AREA (ACRES)	LENGTH (LINEAR FEET)	FUNCTION INDEX	QUALITY RATING*
3	Open Water - Perennial	5.92	---	0.23	Low
4	Emergent Wetland	11.83	---	0.54	Medium
5	Emergent Wetland	0.20	---	0.40	Low
6	Emergent Wetland	7.03	---	0.40	Low
9	Emergent Wetland	4.17	---	0.45	Low
14	Emergent Wetland	0.38	---	0.40	Low
15	Emergent Wetland	1.07	---	0.40	Low
16	Emergent Wetland	0.60	---	0.39	Low
17	Emergent Wetland	0.04	---	0.49	Low
18	Emergent Wetland	1.45	---	0.49	Low
19	Emergent Wetland	1.66	---	0.50	Medium
20	Emergent Wetland	3.73	---	0.51	Medium
21	Emergent Wetland	0.08	---	0.37	Low
22	Emergent Wetland	1.42	---	0.39	Low
24	Trinity River (Perennial Stream)	162.18	49,005	0.53	Medium
25	Emergent Wetland	2.74	---	0.48	Low
26	Emergent Wetland	1.29	---	0.58	Medium

ID. NO.	FEATURE TYPE/CLASS	AREA (ACRES)	LENGTH (LINEAR FEET)	FUNCTION INDEX	QUALITY RATING*
27	Emergent Wetland	3.98	---	0.45	Low
28	Open Water - Intermittent	0.64	1,300	0.23	Low
29	Emergent Wetland	7.98	---	0.48	Low
30	Open Water - Intermittent	2.18	1,850	0.23	Low
31	Emergent Wetland	11.64	---	0.62	Medium
32	Emergent Wetland	6.49	---	0.44	Low
33	Emergent Wetland	5.19	---	0.54	Medium
34	Open Water - Intermittent	3.87	1,200	0.23	Low
35	Open Water - Intermittent	2.58	1,240	0.23	Low
36	Emergent Wetland	20.76	---	0.70	Medium
37	Crow Lake (Open Water - Perennial)	6.72	---	0.20	Low
42	Emergent Wetland	0.53	---	0.40	Low
43	Open Water - Intermittent	1.58	1,035	0.23	Low
44	Emergent Wetland	25.03	---	0.58	Medium
46	Emergent Wetland	3.28	---	0.45	Low
47	Open Water - Intermittent	1.99	935	0.23	Low
48	Emergent Wetland	2.61	---	0.43	Low
49	Open Water - Intermittent	0.87	650	0.23	Low
50	Emergent Wetland	0.15	---	0.40	Low
51	Open Water - Intermittent	1.75	950	0.23	Low
52	Emergent Wetland	2.42	---	0.40	Low
53	Emergent Wetland	4.24	---	0.40	Low
54	Emergent Wetland	7.95	---	0.63	Medium
55	Historic Trinity River Channel	5.44	3,500	0.35	Low
56	Emergent Wetland	0.95	---	0.39	Low
57	Open Water - Intermittent	1.65	900	0.23	Low
58	Open Water - Intermittent	1.62	975	0.23	Low
59	Emergent Wetland	2.03	---	0.47	Low
60	Emergent Wetland	1.70	---	0.52	Medium
61	Open Water - Intermittent	1.32	725	0.23	Low
62	Open Water - Intermittent	2.32	750	0.23	Low
63	Open Water - Intermittent	1.39	695	0.23	Low
65	Emergent Wetland	6.80	---	0.63	Medium
66	Emergent Wetland	7.80	---	0.51	Medium
67	Emergent Wetland	6.30	---	0.65	Medium
68	Emergent Wetland	8.88	---	0.63	Medium
69	Emergent Wetland	57.13	---	0.68	Medium
70	Historic Trinity River Channel	25.63	6,300	0.35	Low
71	Emergent Wetland	0.86	---	0.43	Low
74	Emergent Wetland	6.23	---	0.43	Low
75	Emergent Wetland	2.21	---	0.40	Low
76	Forested Wetland	2.77	---	1.00	High
77	Cedar Creek (Perennial Stream)	4.82	4,050	0.79	High
78	Intermittent Stream	0.21	400	0.56	Medium
79	Historic Trinity River Channel	1.72	2,400	0.35	Low
80	Historic Trinity River Channel	10.57	8,400	0.35	Low
81	Historic Trinity River Channel	2.80	3,375	0.35	Low
82	Historic Trinity River Channel	8.25	9,650	0.35	Low
83	Historic Trinity River Channel	.29	360	0.35	Low
85	Emergent Wetland	27.9	---	0.81	High
86	Open Water	2.6	---	0.20	Low
87	Open Water	2.9	---	0.20	Low
88	Open Water	5.9	---	0.20	Low
	TOTAL	**541.21**	**100,645**		

Source: USACE 1995c; USDA, 1998.

Notes: ID Nos. corresponds to **Plates 4-23** through **4-25** in **Chapter 4**.

* The function index ranges associated with the quality rating are as follows: 0.00 to 0.49 = low; 0.50 to 0.75 = medium; 0.76 to 1.00 = high.

TABLE 3-19B. AQUATIC FEATURES DETERMINED NOT TO BE WATERS OF THE U.S., INCLUDING WETLANDS, WITHIN THE STUDY AREA

ID NO.	FEATURE TYPE	AREA (ACRES)
7	Man-Made Linear Sump	7.36
8	Man-Made Linear Sump	6.33
23	Man-Made Linear Sump	12.69
38	Man-Made Linear Sump	28.29
39	Man-Made Linear Sump	7.46
40	Man-Made Linear Sump	12.80
41	Man-Made Linear Sump	4.49
45	Man-Made Linear Sump	10.5
64	Man-Made Linear Sump	1.30
72	Man-Made Linear Sump	8.17
73	Man-Made Linear Sump	1.75
TOTAL		**101.14**

The results of the index analysis showed three sets of data:

- Long-term surface water storage received high values since all of the wetlands demonstrate the ability to store water for long periods comparable to the reference wetland.
- Functions associated with plant communities received relatively low scores due to the lack of development beyond the herbaceous layer.
- The remaining functions of dynamic surface water storage, energy dissipation, retention of particulates, and habitat interspersion and connectivity had values that averaged near or just below 0.5. These middle values are the result of vegetation variables that were departures from the reference wetland combined with hydrology and geomorphology variables that were quite similar to the reference wetland.

Stream results provided in **Table 3-19A** was based on a stream visual assessment methodology from the U.S. Department of Agriculture (1998). In contrast to the hydrogeomorphic approach used with wetlands, a range of variables (i.e., channel condition, channel alteration, bank stability, in-stream cover, pool/riffle complexes) were measured based on variable characteristics rather than using a comparison to some regional reference. The stream visual assessment methodology is indicative of stream disturbances or man-made influences on the stream. This is reflected in the table by comparison of results from Cedar Creek (least disturbed) to the historic river channel segments (most disturbed). Qualitative designations used a similar scale to that used for wetlands.

Most of the wetland areas were located in depressions or drainages between 396 and 400 feet above mean sea level on either side of the Trinity River channel (**Plate 3-19**). A few disjunct water bodies were delineated as open water instead of wetlands based on their depths and lack of emergent vegetation. These water bodies were considered waters of the United States. The Trinity River is considered a navigable waterway under the Rivers and Harbors Act of 1899 (see **Section 3.5.7**), and is therefore considered to be a water of the U.S. Linear drainage sumps located along the exterior perimeter of the

Dallas Floodway were considered not to be waters of the U.S., including wetlands, because they are man-made features constructed in an upland area and do not replace any functions of the historic river meanders of the Elm Fork Trinity River and West Fork Trinity River.

Predominant aquatic habitat types within the study area include wetland, river channel, drainage sump, and open water habitats. Together, they comprise approximately 9 percent (approximately 642 acres) of the total study area. The various types of aquatic habitat include wetlands (forested and emergent, approximately 271 acres), river channels (perennial and intermittent, approximately 169 acres), historic Trinity River channels (approximately 54 acres), man-made linear sumps (approximately 101 acres), interior drainage sumps (open water - intermittent, approximately 23 acres), and other open water features (open water and open water-perennial, approximately 24 acres).

Wetlands

DALLAS FLOODWAY LOOKING SOUTH TOWARD CORINTH STREET VIADUCT

Wetlands within the Dallas Floodway portion of the study area consist primarily of shallow depressions that seasonally flood and then dry out, becoming exposed mud flats during summer months. These areas contain a variety of emergent plant species such as water primrose (*Ludwigia peploides*), smartweed (*Polygonum* sp.), umbrella sedge (*Cyperus* sp.), flat sedge (*Carex* sp.), spikerush (*Eleocharis* sp.), and curly dock (*Rumex crispus*). These depressions attract a variety of waterfowl species when inundated and are popular foraging areas for shorebirds and wading birds as the depressions dry up and the mud flats become exposed.

Downstream of the Dallas Floodway, several isolated depressions varying in depth and size are intermixed with the elm-hackberry forest as described above. Plant species are similar to those in the elm-hackberry forest but are dominated by the more water-tolerant species such as green ash (*Fraxinus pennsylvanica*), swamp privet (*Forestiera acuminata*), buttonbush (*Cephalanthus occidentalis*), and black willow (*Salix nigra*).

Trinity River Channel

The jurisdictional limits of the Trinity River extend to the ordinary high-water mark of the channel, which may be defined as the line on the bank established by fluctuations of water and indicated by physical characteristics such as a clear natural line on the bank, shelving, destruction of terrestrial vegetation, presence of debris, or other appropriate means that consider the characteristics of the area. The ordinary high-water mark of the Trinity River may vary between 100 and 200 feet throughout the Dallas Floodway. Associated with the river channel is a very narrow riparian buffer that consists mostly of cottonwood (*Populus deltoides*), black willow, American elm (*Ulmus americana*), hackberry (*Celtis laevigata*), and green ash.

Downstream of the Dallas Floodway, the Trinity River retains its natural characteristics and may have an ordinary high-water mark between 100 and 150 feet. Vegetation along this portion of the river is similar to the species listed above; however, the width of the riparian corridor is notably wider (1,500 to 2,000 feet). Cedar Creek is also jurisdictional and enters the Trinity River between the AT&SF Railroad Bridge and MLK. Coombs Creek, another tributary of the Trinity River, enters the western portion of the study area just south of IH-30. Coombs Creek is a perennial stream and drains into the Dallas Floodway through the west levee by a pressure sewer and outfall channel. These riparian corridors may serve as migration corridors for wildlife present within the study area.

Historic river meanders of the Elm Fork Trinity River and West Fork Trinity River channels are also located within portions of the study area. These meanders have been traversed and surrounded by development and are predominantly open channels with scattered tree growth in a maintained urban setting. The historic meanders of the West Fork Trinity River, along with the main stem of the Trinity River, are considered navigable waters of the United States and are regulated under the General Bridge Act of 1946, Section 9 of the Rivers and Harbors Act of 1899 (administered by the U.S. Coast Guard), and Section 10 of the Rivers and Harbors Act of 1899 (administered by the USACE), in addition to being subject to regulation under Section 404 of the CWA. Additional discussion regarding the navigable waterway designation for the Trinity River is presented in **Section 3.5.7 Navigation**.

Open Water

Open water habitats were classified on the basis of depth of inundation and lack of rooted emergent or woody vegetation. These habitats are substantially deeper than the wetland depressions and are ponded throughout most of the year. Crow Lake, located within the Dallas Floodway near Sylvan Avenue, is a particularly hard-edged open water area and contains minimal emergent vegetation. Emergent vegetation in the few ponds east of the MKT Railroad Bridge usually consists of isolated patches of cattail (*Typha latifolia*) along the immediate shoreline. In some of the shallower areas, pondweed (*Potamogeton* sp.) and spikerush (*Eleocharis* sp.) are common.

Several steep-sloped drainage sumps collect local stormwater runoff, which eventually drains into the Dallas Floodway and empties directly into the Trinity River (see **Section 3.5.6.2**). The sumps originate as drainage ditches on the upland side of the levees and are often bordered by residential, commercial, or industrial development. The sumps vary in depth and are usually deep and steep-sloped, which limits the vegetative diversity. Cattails are the most dominant species and often form a continuous stand around the sumps.

Drainage is conveyed through the Dallas Floodway to the Trinity River by several pump stations located along each levee. Stormwater is directed through steep-sloped channels aligned perpendicular to the levee and the river channel. These channels were classified as intermittent open waters in the jurisdictional determination of waters of the U.S. within the Dallas Floodway. As flood levels recede, these channels usually drain entirely with the exception of a few isolated pools. Black willow and cottonwood saplings represent the majority of the vegetative species that have become established on the steep side slopes. Isolated pools that remain after flood waters recede may provide foraging opportunities for a variety of heron or egret species (see **Table 3-16**).

3.4.7 Wild and Scenic Rivers

The National Wild and Scenic Rivers System was created by Congress in 1968 to preserve certain rivers with outstanding natural, cultural, or recreational features in a free-flowing condition for the enjoyment of present and future generations. According to the National Wild and Scenic Rivers System, a 191.2-mile stretch of the Rio Grande River from the Chihuahua-Coahuila border in Mexico to the Terrell-Val Verde County line is the only river segment in the State of Texas protected under the Wild and Scenic Rivers Act (USFS, 1990).

3.4.8 Prime and Unique Farmland

Coordination with the Natural Resources Conservation Service (NRCS) determined the project area, which is located in an urbanized area of the City of Dallas, does not meet the definition of farmland as defined in 7 CFR Section 658. Therefore, the provisions of the Farmland Protection Policy Act (FPPA) of 1984 do not apply to this project.

3.5 PHYSICAL ENVIRONMENT SETTING

This section provides a description of the physical environment within and around the study area. Topics include geography, topography, climatology, geology, soil types, hydrology, and water quality.

3.5.1 Geography and Topography

The DFW metropolitan area is located in north central Texas, approximately 250 miles north of the Gulf of Mexico. It is near the headwaters of the Trinity River, which lies in the upper margins of the Gulf Coastal Plain. The rolling hills in the area range from approximately 500 to 800 feet in elevation above mean sea level (msl).

The City of Dallas is located in Dallas County and serves as the county seat. Dallas is 35 miles east of Fort Worth and 245 miles north-northwest of Houston. Dallas is the third largest city in Texas and is the largest inland city in the U.S. without direct transportation access by a navigable water body. **Table 3-20** presents a summary of geographic data for the City of Dallas.

TABLE 3-20. SUMMARY OF GEOGRAPHIC DATA - DALLAS, TEXAS

Geographic Latitude	32°51' North
Geographic Longitude	96°51' West
Total Land Area	384.7 square miles
Water	4,400 acres
Average Elevation (above msl)	463 feet
Source: City of Dallas, 2007f. **Notes:** **msl** = mean sea level	

3.5.2 Climatology

The DFW metropolitan area is located in a region of temperate mean climatological conditions, experiencing occasional extremes of temperature and precipitation of relatively short duration. According to the National Oceanic and Atmospheric Administration (NOAA) at Fort Worth, Texas, the 30-year average rainfall amount is 34.73 inches per year. The extreme annual rainfall data since 1887 is a maximum of 53.5 inches in 1991 and a minimum of 17.9 inches in 1921. The mean relative humidity is 65 percent, with an average annual temperature of 65.8°F. The average first freeze date is November 17, while the average last freeze date is March 14 (NOAA, 2007a).

Generally, the major storms experienced in the study area are produced by heavy rainfall from frontal-type storms, which occur during the spring and summer months. However, heavy rainfall totals can also be produced by intense localized thunderstorms. These thunderstorms may occur at any time during the year, but are more common in spring and summer months. **Table 3-21** presents a summary of climate statistics for the DFW area.

TABLE 3-21. CLIMATE STATISTICS FOR DALLAS/FORT WORTH, TEXAS

PRECIPITATION	
Average Annual (1899-1996)	34.7 inches
Maximum Annual (1991)	53.5 inches
Minimum Annual (1921)	17.9 inches
Maximum 24-Hour Total (September 1932)	9.6 inches
TEMPERATURE	
Average Daily	65.8°F
Daily Maximum (June 1980)	113°F
Daily Minimum (February 1899)	-8°F
RELATIVE HUMIDITY	
Average A.M.	82 percent
Average P.M.	56 percent
Source: NOAA, 2007a. **Note**: Climate statistics are based on 108 years of recorded data.	

The highest temperatures of summer are associated with fair skies, westerly winds, and low humidity levels. Characteristically, summer heat waves are broken into 3- to 5-day periods by thunderstorm activity. There are only a few nights each summer when the low temperature exceeds 80°F. Summer daytime temperatures can exceed 100°F. Average high and low temperatures range from 37°F in January to 98°F in August (NOAA, 2007b).

The prevailing winds for the DFW area are from the south, except during portions of winter months. During this time, occasional high-pressure polar air masses, locally known as “blue northers,” move into the area from the north, resulting in cool/cold north winds. **Table 3-22** presents average wind speed/calm data for the DFW area.

TABLE 3-22. AVERAGE WIND SPEED/CALM DATA FOR DFW, TEXAS

WIND DATA	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**	**AUG**	**SEP**	**OCT**	**NOV**	**DEC**	**ANNUAL AVERAGE**
Wind Speed (mph)	11.0	11.7	12.6	12.4	11.1	10.6	10.0	9.1	9.4	9.9	11.0	11.1	10.8
Percent Calm Winds	3.6	2.9	3.0	4.5	4.6	4.0	3.0	8.3	7.5	5.9	4.0	4.5	4.6

Source: NOAA, 2007c and TCEQ, 2007a.
Notes: **mph** = miles per hour
Average wind speeds are based on 51 years of data. Calm wind percentages are based on data from 1984 through 1992.

Table 3-22 indicates the average monthly wind speeds in the DFW area range from 9.1 mph in August to 12.6 mph in March. The average annual wind speed is 10.8 mph. The percentage of calm winds ranged from 2.9 percent in February to 8.3 percent in August. During any given year, calm winds occur approximately 4.6 percent of the time.

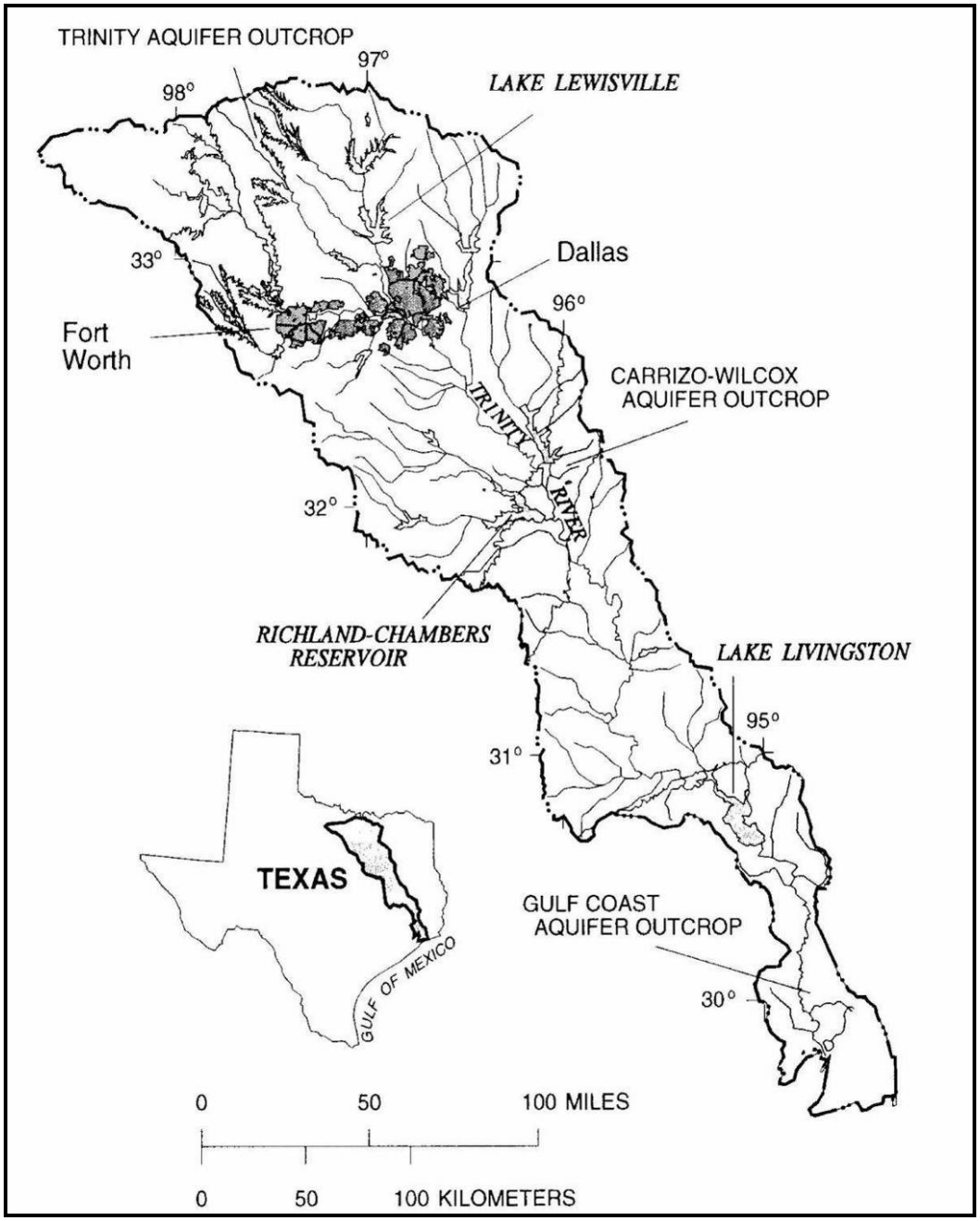
3.5.3 Geology and Soils

This subsection describes the physiographic setting, geology, mineral resources, and soil types within the study area.

3.5.3.1 Physiographic Setting

The Trinity River Basin (or watershed) drains approximately 18,000 square miles from just south of the Oklahoma border in north central Texas to Galveston Bay on the Gulf of Mexico in southeast Texas (see **Figure 3-2**). Altitudes range from 1,500 feet above msl in the upper extreme reaches of the basin to sea level at the mouth in Trinity Bay near Houston. The gradient of the river decreases from almost 4 feet per mile to approximately 0.8 feet per mile toward the south. The basin is situated within two physiographic provinces, the Central Lowland province in the headwaters, with rock outcrops indicative of the Pennsylvanian and Permian age, and the Coastal Plain province, which includes varying outcrops throughout the basin. In the extreme upper basin, moderately rugged eastward-facing escarpments and stream valleys with narrow and steep-sided floodplains are indicative of a newly forming erosion cycle. The topography changes to primarily flat to gently rolling in the mid-basin prairies and Cross Timbers regions, becomes gently rolling to hilly through the east Texas timber belt, and then gradually levels out to very flat treeless areas (in uplands) in the Coastal Prairie.

FIGURE 3-2. TRINITY RIVER BASIN



The Trinity Parkway study area is located within the northernmost section of the Gulf Coastal Plain, which is characterized as flat to gently dipping unconsolidated terrace and floodplain deposits. All physiographic features within this area were formed during the Cenozoic Era (approximately 65 million years ago to the present) and are of sedimentary origin. The exposed bedrock is composed of near shore and shoreline marine sediments deposited at the edge of the Gulf Coast Embayment by a shallow Cretaceous sea that existed approximately 100 million years ago. These Cretaceous sediments were deposited unconformably on top of the older Pennsylvanian and Permian sediments and were subsequently covered by Tertiary and Quaternary sediments of marine and continental origin. These formations dip gently to the southeast at a rate steeper than the land surface, producing a banded outcrop pattern with progressively younger formations outcropping in the downstream direction. The rate of dip and thickness of the individual formations increases in a gulfward direction.

3.5.3.2 Geology

The shallow geologic setting within the study area is mainly characterized as fluvial terrace deposits and alluvial deposits of Quaternary age. These deposits occupy the floodplain area of the Trinity River and consist of gravel, sand, silt, and clay. The underlying bedrock consists of the lower and middle members of the Austin Chalk Formation, a chalky limestone with thin bentonitic beds scattered throughout, and the Eagle Ford Shale Formation, a sequence of dark shale beds with minor amounts of limestone.

The Quaternary sediments range in age from 1.5 million years to the present. These sediments, composed of unconsolidated sand, gravel, silt, and clay are found in and above the river and creek floodplains. A typical floodplain alluvial sequence would consist of silt or clay underlain by sand with a basal gravel layer. The highest terraces located at the outer edge generally represent the oldest remnant floodplain.

The differing geologic units within the study area have distinct mineral properties and stability characteristics; therefore, the study area's suitability for urban development is varied. In general, limestone and calcareous cemented alluvial gravels exhibit strong stability, while clays show very weak stabilities. However, these very general characterizations are subject to variability. For instance, if a layer of limestone is underlain by clay, then the stability of the limestone is jeopardized by the weakness and plasticity of the clay. The Eagle Ford Shale is easily eroded and forms soft slopes. The most favorable substrate for urban development is the Austin Chalk. These soft limestones generally have very high foundation strength and form stable slopes.

Mineral Resources

Mineral resources in the study area are limited to near-surface deposits of sand and gravel that are used in construction aggregate. Historically, extensive areas of sand and gravel extraction have occurred along the floodplain/terrace complexes of the Trinity River, as well as some of the smaller features in the study area. Such deposits provide a potential source for road-base fill and other construction uses. Another potential rock/mineral resource along the corridor includes the Austin Chalk, which is quarried elsewhere in north central Texas as an ingredient in the manufacture of Portland cement. No active quarrying activities for these mineral resources occur within the study area.

3.5.3.3 Soils

This subsection describes the soil types found in the study area according to their functions in the ecosystem and their utility or limitations associated with the construction of the proposed tollway facility. Also listed are the dominant soil associations and the extent of other soils found in the study area.

General Soil Attributes

Soils are a major component in ecological systems. Various physical, chemical, and biological processes filter water that percolates through soil. These include aeration, microbial digestion, ion exchange, and the uptake of nutrients by plants. Through these actions, low-quality runoff may be upgraded as it passes through the soil zone. The thick, clayey soil types are especially active in terms of their chemical activity. Because of this activity, the soil zone functions as an environmental buffer in which the quality of runoff, from a roadway for example, may be upgraded.

Aside from the ecological values of these soils, there are also engineering constraints. These constraints are related to the weak, plastic properties displayed by both soil and substrate across much of the terrain in the corridor. The engineering properties of soil, which must be considered in designing a highway, include compressive strength, shrink-swell potential, slope stability, permeability, excavation potential, and corrosion potential. Clayey soils all have low compressive strength, low slope stability, low permeability, high shrink-swell potential, and high corrosion potential.

Soil Map Units

According to the *Soil Survey of Dallas County, Texas* (USDA, 1980), two major soil map units are located within the majority of the study area and include the Trinity-Frio and the Silawa-Silstid-Bastsil (**Plate 3-20**). The Trinity-Frio unit comprises approximately 19 percent of Dallas County and the majority of the study area, while the Silawa-Silstid-Bastsil unit comprises approximately 4 percent of the county and the portion of the study area between the Trinity River and the US-175/SH-310 interchange (southern terminus).

The soils within the Dallas Floodway are composed of the Trinity-Frio map unit. The Trinity-Frio unit consists of deep, nearly level, clayey soils found in floodplains. Trinity-Frio soils are moderately alkaline, somewhat poorly drained- and well-drained soils that have slopes of 0 to 1 percent. Trinity soils make up approximately 56 percent of the unit and are somewhat poorly drained soils located on broad bottomlands along the Trinity River and its larger tributaries. Frio soils make up approximately 19 percent of the unit and are well-drained soils located on broad bottomlands along the larger streams. Minor soils make up the remaining 25 percent of the unit and consist of Arents soils in areas where sand and gravel have been removed and Gowen, Ovan, and Seagoville soils on floodplains. The soils in this map unit are used mainly as cropland and pasture, but many small areas are strip mined for sand and gravel. The flood hazard, clayey texture, very slow to moderately slow permeability of the soils, and the very high shrink-swell potential of the Trinity soils are the main limitations to urban and recreation uses with the Trinity-Frio unit.

The Silawa-Silstid-Bastsil map unit consists of deep, nearly level to sloping, loamy, and sandy soils found on stream terraces. Silawa-Silstid-Bastsil soils are slightly acidic to medium acidic, well-drained soils that have slopes of 0 to 8 percent. Silawa soils make up approximately 40 percent of this unit and are gently sloping to sloping soils on ridges and side slopes of uplands. Silstid soils make up approximately 28 percent of this unit and are nearly level to gently sloping soils on uplands. Bastsil soils make up approximately 11 percent of this unit and are nearly level to gently sloping soils on high terraces. Minor soils make up the remaining 21 percent and consist of Arents soils in small areas where soil has been removed in excavating for sand and gravel; Altoga, Lewisville, and Sunev soils in sloping areas near streams; the nearly level Axtell and Rader soils on high terraces; Dutek soils on low ridges; and the sandy Eufaula soils on low ridges near floodplains. The soils in the Silawa-Silstid-Bastsil map unit are used mainly as pasture and for urban uses and have no major limitations to use as cropland or to urban uses.

A compilation and review of known geotechnical data and historical resources associated with public works projects in the Dallas Floodway was conducted to better understand the extent and types of materials found in the study area. The information gathered was consistent with known activities and soil classifications described in the *Soil Survey of Dallas County, Texas*. A summary of the individual soil types located in the study area is presented in **Table 3-23**.

TABLE 3-23. SOIL TYPES IN THE STUDY AREA

Soil Type	Soil Characteristics	Soil Potentials and Limitations
Arents, loamy, gently undulating (1 to 5 percent slopes)	Areas mined for gravel and sand are lower than surrounding landscape. No uniform layers, but some layers of sandy clay loam. These soils have a moderate permeability.	These soils have a low potential for urban development. Limitations include the hazard of flooding and corrosivity to steel.
Arents, loamy, hilly (10 to 30 percent slopes)	Discarded overburden of mining operations left mounds and ridges in gravel pits. The soil is moderately alkaline, light yellowish brown gravelly sandy clay loam to a depth of 80 inches. Permeability is moderate, and available water capacity is medium.	This soil has a very low potential for urban development. Limitations include the hazard of flooding and corrosivity to steel.
Axtell-Urban land complex (1 to 5 percent slopes)	Deep, gently sloping, moderately well drained, upland soils. Surface layer is slightly acidic, dark grayish brown fine sandy loam about 4 inches thick. Permeability is very slow, and the available water capacity is high.	This soil has a medium potential for urban uses. Limitations include a high shrink-swell potential, low strength, corrosivity, and the hazard of erosion, which is moderate.
Bastsil-Urban land complex (0 to 2 percent slopes)	Nearly level to gently sloping soils and Urban land, well drained. Permeability is moderate and available water capacity is high. The surface layer is medium acidic, brown fine sandy loam about 8 inches thick.	This soil has a high potential for urban use. Limitations include corrosivity and low strength of soil. The hazard of erosion is moderate.
Eddy-Urban land complex (4 to 8 percent slopes)	Gently sloping to sloping, shallow and very shallow, well drained soils and Urban land. Permeability is moderately slow, and available water capacity is very low. Surface layer is moderately alkaline, grayish brown clay loam 4 inches thick.	This soil has a medium potential for urban use. Limitations include shallowness to rock, corrosivity, and the severe hazard of erosion.
Frio-Urban land complex	Deep, nearly level, well-drained soils and Urban land on floodplains of small streams. Permeability is moderately slow and available water capacity is high. Surface layer is moderately alkaline, dark grayish brown silty clay 7 inches thick.	This soil has a low potential for urban use due to the flooding hazard. Limitations include low strength and corrosivity of soil. Hazard of erosion is slight.
Lewisville-Urban land complex (0 to 4 percent slopes)	Deep, nearly level, and gently sloping soils and Urban land well drained. Permeability is moderate and available water capacity is high. Surface layer is moderately alkaline, dark grayish brown silty clay 17 inches thick.	This soil has a medium potential for urban use. Limitations include high shrink-sell potential, corrosivity, and low strength of soil. Hazard of erosion is moderate.
Pits and Dumps	Limestone or shale removal areas. Areas are 8 to 75 feet below original surface.	Water stands in low parts. A few areas have been smoothed for use as building sites.
Silawa-Urban land complex (2 to 6 percent slopes)	Deep, gently sloping and sloping soil and Urban land, well drained. Permeability is moderate and available water capacity is medium. Surface layer is slightly acidic, grayish brown fine sandy loam 6 inches thick.	This soil has a high potential for urban use. Limitations include the moderate erosion hazard, corrosivity, and low strength of soil.
Silstid-Urban land complex (0 to 6 percent slopes)	Nearly level, gently sloping, and sloping soils and Urban land. Permeability is moderate and available water capacity is low. Surface layer is dark grayish brown, neutral loam 5 inches thick.	This soil has a high potential for urban uses. Limitations include the corrosivity of the soil. Wind erosion is a severe hazard on a bare surface.
Trinity clay, frequently flooded	Deep, nearly level, somewhat poorly drained, located on floodplains. Permeability is very slow, available water capacity is high. Surface layer is moderately alkaline, dark gray clay 7 inches thick.	This soil has a very low potential for urban and recreational use. Limitations include frequent flooding and wetness, corrosivity, very high shrink-swell potential, and clayey texture, also walls of excavations tend to cave or slough. Hazard of erosion is slight.
Trinity-Urban land complex	Deep, nearly level soils and Urban land, somewhat poorly drained. Permeability is very slow and available water capacity is high. Surface layer is moderately alkaline, very dark gray clay 30 inches thick.	These soils have a very low potential for urban and recreational use. Limitations include flooding, very high shrink-swell potential, corrosivity, low strength, and wetness of soil. Also walls of excavations tend to cave or slough. Hazard of erosion is slight.
Urban land	Extensively built-up areas with 75 percent or more of the surface covered with buildings and pavement.	Residential areas make up 10 percent.

Source: USDA, 1980 (most current published USDA Soil Survey available for Dallas County).
Note: This soil survey does not address the wind and water erosion potentials for the identified soil types.

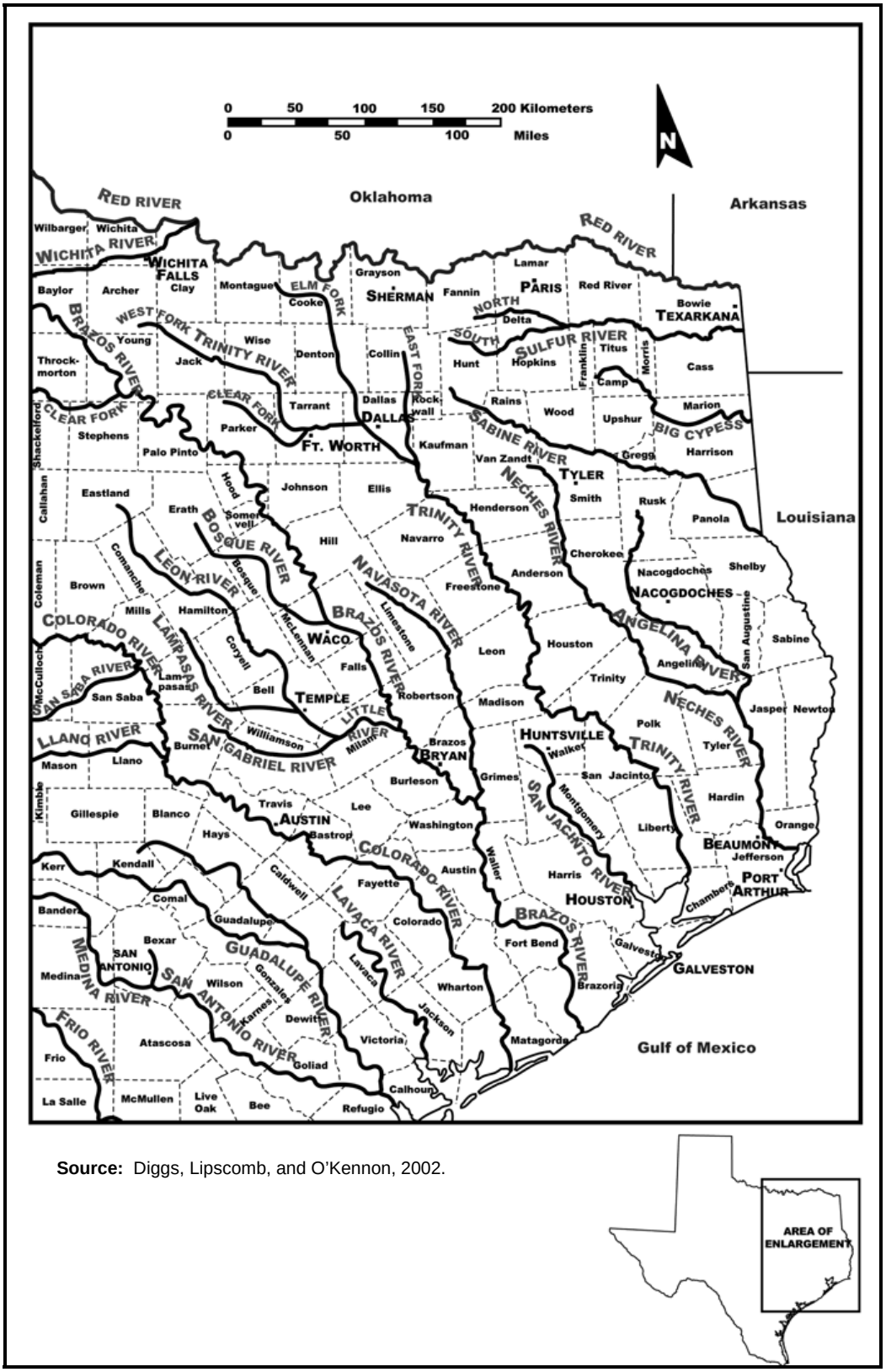
3.5.4 Hydrology and Water Quality

This section describes the existing hydrology and water quality characteristics in the study area. Subsections include descriptions of existing surface water and groundwater characteristics, floodplains and flood control features, and navigation characteristics.

3.5.4.1 Surface Water

The Trinity Parkway study area is located within one of the state's major watersheds - the Trinity River Basin (see **Section 3.5.3.1**). The Trinity River watershed drains approximately 18,000 square miles from just south of the Oklahoma border to Galveston Bay. It is over 300 miles long from north to south and 100 miles wide at its widest point. River elevations range from over 1,000 feet in the headwaters to 550 feet in the DFW area to sea level at the mouth. The river, with its meanders, is about 500 miles long from the mouth to Dallas. **Figure 3-3** shows the location of the Trinity River in relation to other major rivers of east Texas.

FIGURE 3-3. MAJOR RIVERS OF EAST TEXAS



Source: Diggs, Lipscomb, and O'Kennon, 2002.

As shown in **Figure 3-3**, the upper Trinity River begins with four tributaries, the Clear Fork, West Fork, Elm Fork, and East Fork. The headwaters of these four branches are located north, west, and east of the cities of Dallas and Fort Worth, and converge in or near the DFW metropolitan area. The main stem begins with the junction of the Elm and West Forks at Dallas.

The majority of surface water bodies in the study area have been substantially modified from their natural conditions. These changes began in the late 1920s when the City of Dallas began a major effort to control flooding of the Trinity River in and around the downtown area. The most substantial change involved the diversion of the Trinity River (old river channel) to its current location within the Dallas Floodway. Within the study area, the old river channel along with other major tributaries provide additional flood control through a network of storage sumps located on the landside of the Dallas Floodway levees. Details concerning the network of flood control features in the study area are provided in **Section 3.5.6 Floodplains and Flood Control Features**. **Table 3-24** provides a summary of the major surface water bodies in the study area. Their locations are shown on **Plate 3-21**.

TABLE 3-24. MAJOR SURFACE WATER BODIES IN THE STUDY AREA

Name	Description
Trinity River Mainstem (Dallas Floodway)	Primary surface water feature in the study area. Primarily consists of a man-made channel situated between flood control levees from the west end of the study area, just west of Westmoreland Road, to the AT&SF Railroad Bridge. Channel returns to the natural river channel at AT&SF Railroad Bridge and continues north-south through remaining portion of study area.
Elm Fork of the Trinity River (Old River Channel)	Enters the northern portion of the study area near IH-35E/SH-183 interchange. The majority of the "Old River Channel" is used for flood control, serving as a network of drainage storage sumps. Drainage from the sumps is discharged into the Dallas Floodway by pressure sewers and pump stations.
West Fork of the Trinity River (Old West Fork River Channel)	Enters the northwest portion of the study area near Westmoreland Road. The Dallas Floodway bisects the Old West Fork. The eastern section intersects with the Elm Fork near Hampton Road. The majority is used for flood control storage sumps on both sides of the Dallas Floodway. Drainage from the sumps is discharged into the Dallas Floodway by pressure sewers and pump stations.
Cedar Creek	This tributary enters the southwest portion of the study area near Corinth Street. Cedar Creek is a third-order, perennial stream and drains into the Trinity River just south of the AT&SF Railroad Bridge.
Coombs Creek	This tributary of the Trinity River enters the western portion of the study area just south of IH-30. Coombs Creek is a first-order, perennial stream and drains into the Dallas Floodway through the west levee by a pressure sewer and outfall channel.
Crow Lake	This small man-made lake is situated within the Dallas Floodway just east of Wycliff/Sylvan Avenue. Its primary use is for recreation.
Sources: USGS, 1981a-c; FEMA, 2007a-f	

3.5.4.2 Groundwater

The primary source of groundwater for the Upper Trinity River Basin (including the study area) is supplied by the Lower Cretaceous Trinity Group; a major aquifer composed of (in descending order) the Paluxy, Glen Rose, and Twin Mountains Formations. The Trinity Group aquifer ranges in thickness from 100 to 1,200 feet with yields ranging from 50 to 1,900 gallons/minute. The water quality of the Trinity Group is acceptable for most municipal and industrial purposes and ranges from fresh to slightly saline with salinity increasing with

depth. This aquifer has been overdeveloped in the DFW metropolitan area and, therefore, the water table is low, dropping as much as 1,200 feet below the surface. Currently, water supplied to the area comes from surface water reservoirs and other river systems generally located north and east of the City of Dallas.

Data concerning the movement of groundwater in the Trinity Group indicates that it moves generally in an easterly direction, approximately at right angles to the strike of the beds. Local variations in the direction of movement result from cones of depression that have been caused by pumping, especially in Dallas and Tarrant Counties. The rate of groundwater movement in the Trinity Group is on the order of a few feet to tens of feet per year.

The Woodbine aquifer (a minor aquifer) also produces water in the upper part of the Trinity River Basin near the study area. This Upper Cretaceous aquifer consists of fine-grained sand and sandstone interbedded with clay. Lignite and sandy clay layers occur in the upper part of the aquifer with 50 percent commonly consisting of sand. Maximum thickness is approximately 600 feet. Usable water is produced to a maximum depth of approximately 2,000 feet. However, the quality of water produced is relatively poor, exceeding 1,500 parts per million (ppm) dissolved solids in some areas.

Groundwater in floodplain terraces and deposits is in hydraulic connection with the Trinity River, its major tributaries, and larger local lakes. The primary source of this near-surface groundwater is rainwater infiltration on the surface of the alluvial terrace and floodplain deposits. Most water accumulating in floodplain deposits is discharged into surface water bodies, evaporated, or transpired. Relatively shallow or "perched" groundwater conditions occur locally within the study area, especially in inactive creek channels present above the limestone bedrock. Several inactive creek beds are known to exist near and within the study area.

3.5.5 Water Quality

3.5.5.1 Background

The Trinity Parkway study area is located in the NCTCOG-designated "Trinity Mainstem Watershed." This watershed contains 397,659 acres and includes 26 incorporated cities situated fully or partially within this watershed. Approximately 44 percent of the watershed (175,201 acres) is classified as urban, while 56 percent (222,458 acres) can be classified as rural. The amount of urbanization within the watershed can have a variety of effects on water quality. Urban stormwater runoff carries pollutants from many sources and activities - automobiles, oil and grease on roads, atmospheric deposition, processing and salvaging facilities, wastewater effluent, chemical spills, pet wastes, industrial plants, construction site erosion, and the disposal of chemicals used in homes and offices.

Urban rivers inherit some problems from upstream, notably sediment, nutrients, and pesticides from non-point sources. However, cities can also add a variety of pollutants to rivers and other water bodies, including bacteria, oil and grease, heavy metals, toxic substances, and trash and debris.

In compliance with Sections 305(b) and 303(d) of the CWA, the TCEQ evaluates water bodies in the state and identifies those that do not meet uses and criteria defined in the Texas Surface Water Quality Standards (TSWQS). Guidance developed by the Environmental Protection Agency (EPA) directs each state to document and submit the results of its evaluation to the EPA biennially, in even numbered years. The TCEQ also publishes the results as the Texas Water Quality Inventory and 303(d) List. This report describes the status of water quality in all surface water bodies of the state that were evaluated for a given assessment period. The 2008 Texas Water Quality Inventory and 303(d) List (TCEQ, 2008) was approved by the EPA on July 9, 2008.

Data for the report are gathered by many different organizations that all operate according to approved quality control guidelines and sample collection procedures. The guidelines and sample collection procedures are developed by the TCEQ through a stakeholder process. Individuals representing diverse organizations and interests are invited to participate in the revision of current guidance and to develop, review, and comment on new draft guidance every three to five years. The stakeholder group includes but is not limited to, state agencies such as TPWD, environmental consultants, river authorities, environmental groups, industry, agricultural interests, and municipalities. After the evaluation is complete, EPA guidance requires that all water bodies be placed into one of five categories as part of a strategy for overall management of water quality. The categories indicate the status of water quality in a given Stream Segment as defined in the TSWQS (Categories 4 and 5 are further divided into subcategories that outline specific strategies the state is using, or plans to use, to address surface waters that are not meeting standards as defined in the TSWQS). The five categories for segments are:

1. All standards are attained; no evidence that nonattainment of any standard will occur in the near future.
2. Some standards are attained; no evidence that nonattainment of any standard will occur in the near future; and insufficient or no data and information are available to determine if the remaining standards are attained.
3. Insufficient or no data and information to determine if any standard is attained.
4. Standard is not attained or nonattainment is predicted in the near future due to one or more parameters, but no TMDLs (a quantitative plan that determines the amount of a particular pollutant that a water body can receive and still meet its applicable water quality standards) are required.
    a. All TMDLs have been completed and approved by EPA.

b. Other control requirements are reasonably expected to result in the attainment of all standards.

c. Nonattainment of the standard for one or more parameters is shown to be caused by pollution, not by pollutants and that the water quality conditions cannot be changed by the allocation and control of pollutants through the TMDL process.

5. Standard is not attained or nonattainment is threatened in the near future for one or more parameters.
   a. TMDLs are underway, scheduled, or will be scheduled for one or more parameters.
   b. A review of the standards for one or more parameters will be conducted before TMDLs are scheduled.
   c. Additional data or information will be collected for one or more parameters before TMDLs are scheduled.

Strategies for water bodies in Categories 1, 2, and 3 include additional data collection and assessment, routine monitoring and other preventive actions. Strategies for water bodies in Categories 4 and 5 are summarized in the subcategories ("a" through "c"), and generally include review of water quality standards; development and implementation of projects to characterize the sources, extent, and severity of impairments; and projects to improve water quality or restore support of an impaired use. The strategies implemented for Category 4 and 5 Stream Segments target individual stream reaches within the overall segment and the uses that are impaired. These reaches are termed Assessment Units (AUs) and uses are defined in the TSWQS as Aquatic Life Use, Recreation Use, Domestic Water Supply Use, and Other Uses. The use categories identified by the TCEQ in the 2008 report include six Designated Use Categories:

- Aquatic Life Use
- Recreation Use
- General Use
- Fish Consumption Use
- Public Water Supply Use
- Oyster Waters Use

All Stream Segments that receive a Category 5 ranking make up what is termed the Texas 303(d) List - those water bodies that do not meet applicable water quality standards or are threatened for one or more designated uses by one or more pollutants. The 303(d) List is an important management tool produced as part of the assessment. It identifies waters for which preventive measures - such as permits that limit discharges of wastewater and the technology used by the dischargers - are not sufficient to achieve water quality standards.

3.5.5.2 Upper Trinity River (State Stream Segment 0805)

The Trinity Mainstem Watershed has one TCEQ classified State Stream Segment: *Upper Trinity River 0805*. As defined by the TSWQS, this segment extends 100 miles from a point immediately upstream of the confluence of the Cedar Creek Reservoir discharge canal in Henderson/Navarro County to a point immediately upstream of the confluence of the Elm Fork in Dallas County. According to the TSWQS, Stream Segment 0805 is designated for Contact Recreation and High Aquatic Life uses. As part of the 2008 Inventory, Stream Segment 0805 has been subcategorized into the following AUs:

- 0805-01 - 25 mile reach near FM 85;
- 0805-02 - 25 mile reach near SH 34;
- 0805-03 - 11 mile reach near South Loop 12;
- 0805-04 - Upper 8 miles;
- 0805-05 - Remainder of the segment; and
- 0805-06 - From 15.57 miles upstream of SH 34 to 4.71 miles downstream of South Loop 12.

AU 0805-04 runs the length of the majority of the study area (approximately 8 miles) with AU 0805-03 comprising the remaining 1.5-mile length within the study area.

As part of the 2008 Inventory (TCEQ, 2008), the TCEQ has identified a “Level of Support” based on several measured parameters for each Designated Use Category associated with each AU. The Level of Support for each Designated Use associated with Segment 0805 is provided in **Table 3-25** below. For comparison purposes, the table also includes data for impaired stream segments located immediately upstream of Segment 0805 (Stream Segment 0822 - Elm Fork Trinity River Below Lewisville Lake and Stream Segment 0841 - Lower West Fork Trinity River). This information is important because drainage from these segments flow into Segment 0805 and, thereby, influences water quality conditions in the study area.

TABLE 3-25. 2008 LEVEL OF SUPPORT FOR DESIGNATED USES AND ASSESSMENT UNIT CATEGORY

Stream Segment -AU	Aquatic Life Use	Recreation Use	General Use	Fish Consumption Use	Public Water Supply Use	Oyster Waters Use	AU Category [1]
0805 (Upper Trinity River)							**5a**
-01	Fully Supporting or No Concern	No Concern[2]	Concern[4]	Not Supporting	N/A	N/A	5a
-02	Fully Supporting or No Concern	Concern[3]	Concern[4]	Not Supporting	N/A	N/A	5a
-03	Fully Supporting or No Concern	Not Supporting	Concern[4]	Not Supporting	N/A	N/A	5a
-04	Fully Supporting or No Concern	Not Supporting	Concern[4]	Not Supporting	N/A	N/A	5a
-05	Not Assessed	Not Assessed	Fully Supporting	Not Supporting	N/A	N/A	5a
-06	Fully Supporting or No Concern	Fully Supporting	Concern[4]	Not Supporting	N/A	N/A	5a
0822 (Elm Fork Trinity River Below Lewisville Lake)							**5a**
-02	Fully Supporting or No Concern	Not Supporting	Fully Supporting or No Concern	Fully Supporting	Fully Supporting or No Concern	N/A	5a
0841 (Lower West Fork Trinity River)							**5a**
-01	Fully Supporting or No Concern	Not Supporting	Concern[4]	Not Supporting	N/A	N/A	5a
-02	Fully Supporting or No Concern	Fully Supporting	Concern[4]	Not Supporting	N/A	N/A	5a

Source: TCEQ, 2008.
Notes:
1. The category assigned to a given Stream Segment is dependent on the categories of all the AUs which are a part of it. Individual AUs are assigned to categories and based on given parameters, it is then decided whether or not that particular AU is supportive of a particular use. These determinations are then used to assign a category to the entire Stream Segment.
2. Limited data indicate no concern for one or more measured parameters.
3. Concern for near non-attainment levels for one or more measured parameters.
4. Concern for screening levels for one or more measured parameters.

N/A – Not Applicable
-- – Data not available
Category 5 - The water body does not meet applicable water quality standards or is threatened for one or more designated uses by one or more pollutants.
Category 5a - A Total Maximum Daily Load (TMDL) is underway, scheduled, or will be scheduled.

As demonstrated in the table, 0805-04 and 0805-03 (the areas of Stream Segment 0805 that run through the study area) are "Not Supporting" recreation and fish consumption uses. These AUs (as well as downstream AUs [0805-01, 02, 05, and 06] and upstream AUs associated with Stream Segments 0822 and 0841) have led to the overall TCEQ designation of Stream Segment 0805 as a "Category 5a" stream - the water body does not meet applicable water quality standards or is threatened for one or more designated uses by one or more pollutants and a TMDL is either underway, scheduled, or will be scheduled. As such, and in accordance with Section 303(d) of the CWA which requires the TCEQ to identify water bodies for which effluent limitations are not stringent enough to implement water quality standards, Stream Segment 0805, as well as Segments 0822 and 0841, have been listed in the 2008

Texas 303(d) List (TCEQ, 2008). **Table 3-26** presents the reason for listing (parameter or pollutants/water quality conditions that screening procedures indicate are the reason the water standards are not met), and whether point sources or nonpoint sources of pollution have contributed to the designation.

TABLE 3-26. REASON(S) FOR INCLUSION IN THE 2008 303(d) LIST

Segment AU	Parameter	Point Source Pollution	Nonpoint Source Pollution	Category
Segment 0805 (Upper Trinity River)				
0805-01 (25 mile reach near FM 85)	PCBs in edible tissue	Y	Y	5a
0805-02 (25 mile reach near SH 34)	PCBs in edible tissue	Y	Y	5a
0805-03 (11 mile reach near South Loop 12)	PCBs in edible tissue Bacteria	-- Y	-- Y	5a 5a
0805-04 (Upper 8 miles)	PCBs in edible tissue Bacteria	Y Y	Y Y	5a 5a
0805-05 (Remainder of segment)	PCBs in edible tissue	--	--	5a
0805-06 (From 15.57 mi. upstream of SH 34 to 4.71 mi. downstream of S. Loop 12)	PCBs in edible tissue	Y	--	5a
Segment 0822 (Elm Fork Trinity River Below Lewisville Lake)				
0822-02 (4.5 miles upstream to 7.5 miles downstream DWU intake)	Bacteria	--	--	5a
Segment 0841 (Lower West Fork Trinity River)				
0841-01 (Lower 14 miles of segment)	PCBs in edible tissue Bacteria	-- --	-- --	5a 5a
0841-02 (Upper 13 miles of segment)	PCBs in edible tissue	--	--	5a

Source: TCEQ, 2008.
Notes: PCBs - polychlorinated biphenyls
-- - Indicates pollutant source is unknown
Y - Yes
Category 5a **-** Total Maximum Daily Load (TMDL) is underway, scheduled, or will be scheduled.

Analytical results for key parameters as provided by the TCEQ, Texas Clean Rivers Program (CRP) (TCEQ, 2007c) from sampling events conducted in 2004 are included in **Appendix L (L-3)**.

3.5.6 Floodplains and Flood Control Features

3.5.6.1 Floodplains

Protection of floodplains and floodways is required by EO 11988, *Floodplain Management* (1977); USDOT Order 5650.2, *Floodplain Management and Protection*; FHPM 6-7-3-2, *Location and Hydraulic Design of Encroachments on Floodplains*; 23 CFR Section 650 Subpart A (23 CFR 650A), and FEMA regulations outlined in 44 CFR 65. At the local level, floodplain regulations are contained in Sections 51A-5.101 through 5.107 of the City of Dallas Development Code. In addition, the 1988 Trinity Regional Environmental Impact Statement (TREIS) by the USACE provides specific criteria developed to reduce hydraulic impacts along the Trinity River floodplains (see **Section 3.5.6.3 History of Flood Control Measures)**.

A floodplain is a lowland area bordering a stream or river that is usually dry, but is subject to flooding. A "Base Flood" as defined by 23 CFR 650A is the flood (or tide) having a one percent (1%) chance of being exceeded in any given year. (This is also sometimes referred to as a "100-year Flood"). A "Base Floodplain" means the area subject to flooding by the base flood. Base floodplains are typically mapped by FEMA and shown on Flood Insurance Rate Maps (FIRMs). The "Floodway" of a stream is a FEMA term, defined as the stream channel, plus any adjacent floodplain areas, that must be kept free of encroachment so that the base flood can be carried out without any substantial increases in flood elevations. Federal standards limit such increases to 1.0 foot maximum, provided that hazardous velocities are not produced.

As described in 23 CFR 650A, floodplains provide natural and beneficial values serving areas for fish, wildlife, plants, open space, natural beauty, scientific study, outdoor recreation, agriculture, aquaculture, forestry, natural flood moderation, water quality maintenance, and groundwater recharge. The intent of these regulations is to prevent or minimize highway encroachments within floodplains, where practicable, and to avoid supporting land use development where it is incompatible with floodplains.

The FEMA administers the National Flood Insurance Program (NFIP), of which the City of Dallas and Dallas County are participating members. In accordance with 23 CFR Section 650A, the design studies required by Subpart A "apply to all encroachments and to all actions which affect base floodplains" therefore, in order to determine the extent of floodplains and floodways in the corridor, Dallas County Preliminary Digital Flood Insurance Rate Maps (DFIRMs) published by FEMA in June 2007 were assessed. The extent of floodplains (FEMA Zone AE and X) in the study area is shown graphically on **Plate 3-22**. **Table 3-27** summarizes the FEMA designated base flood zones (Zone AE) for specific areas within the study area.

TABLE 3-27. BASE FLOOD ZONES LOCATED IN THE STUDY AREA

Flood Zone and Location [1]	Flood Zone Descriptions and Boundaries
Trinity River and Dallas Floodway	*Zone AE:* The base flood elevation ranges from approximately 416 feet on the south part of the study area east of the Corinth Street Viaduct to 422 feet on the north part of the study area west of the Hampton Street Bridge.
Record Crossing Sump	*Zone AE:* The sump base flood elevation is approximately 404 feet. The Record Crossing Sump drains to the Hampton-Oak Lawn Sump.
Hampton-Oak Lawn Sump	*Zone AE:* The sump base flood elevation is approximately 405 feet.
Pumping Plant A Sump	*Zone AE:* The sump base flood elevation is approximately 393 feet.
Westmoreland-Hampton Sump and Pumping Plant B Sump	*Zone AE:* The sump base flood elevation is approximately 407 feet.
Pavaho Sump	*Zone AE:* The sump base flood elevation is approximately 409 feet.
Pumping Plant C Sump	*Zone AE:* The sump base flood elevation is approximately 404 feet.
Corinth Street Sump	*Zone AE:* The sump base flood elevation is approximately 400 feet.
Source: FEMA, 2007a-I, Preliminary Dallas County DFIRMS, June 22, 2007. **Notes:** Zone AE - Special flood hazard areas inundated by the 100-year flood. 1. Locations are shown on **Plate 3-22** at the end of the chapter.	

Historical Flood Data

DALLAS COUNTY COURTHOUSE DURING 1908 FLOOD

Major floods at Dallas originate from precipitation occurring in a drainage area of 6,106 square miles upstream from the city. At present, USACE reservoirs regulate runoff from a total of 3,016 square miles of this area. Reservoirs owned by others also affect, to a limited degree, the flows at Dallas from an additional 2,274 square miles leaving a completely uncontrolled drainage area of 816 square miles, much of which is urbanized area.

The Trinity River frequently exceeds its channel capacity and floods its banks. A number of major floods have been recorded in the study area prior to and since 1900. The USGS maintains a stream gauge on the Commerce Street Viaduct where continuous stream flow measurements for the Trinity River are taken. These records have been kept since 1904. **Table 3-28** summarizes significant flood events and the stream flow recorded for each year.

TABLE 3-28. HISTORICAL PEAK STREAM FLOW ALONG STREAM SEGMENT 0805

Year	Stream Flow [1]	Year	Stream Flow	Year	Stream Flow	Year	Stream Flow
1904	7,630	1929	34,800	1954	4,640	1979	29,800
1905	22,600	1930	34,200	1955	6,010	1980	8,480
1906	21,400	1931 [2]	9,210	1956	7,320	1981	14,600
1907	10,200	1932	44,000	1957	75,300	1982	37,400
1908	184,000	1933	17,500	1958	23,200	1983	9,010
1909	8,220	1934	10,000	1959	7,590	1984	13,000
1910	5,800	1935	76,700	1960	21,400	1985	12,400
1911	8,600	1936	25,900	1961	12,200	1986	19,600
1912	8,680	1937	10,100	1962	13,200	1987	12,400
1913	5,300	1938	67,500	1963	13,200	1988	8,650
1914	44,500	1939	10,800	1964	32,600	1989	58,700
1915	39,600	1940	18,100	1965	26,900	1990	82,300
1916	54,700	1941	77,000	1966	42,100	1991	11,700
1917	8,600	1942	111,000	1967	7,800	1992	62,200
1918	9,710	1943	21,300	1968	25,000	1993	23,600
1919	50,300	1944	22,700	1969	67,000	1994	20,400
1920	54,000	1945	52,900	1970	20,000	1995	30,500
1921	18,200	1946	38,900	1971	5,650	1996	5,970
1922	69,600	1947	34,000	1972	33,400	1997	27,600
1923	37,900	1948	46,300	1973	32,900	1998	28,100
1924	43,100	1949	82,500	1974	15,100	1999	14,800
1925	17,700	1950	28,800	1975	27,000	2000	13,200
1926	11,500	1951	9,350	1976	22,400	2001	31,200
1927	14,000	1952	7,570	1977	36,800		
1928	11,200	1953	16,600	1978	4,540		

Source: USGS, 2007.
Notes:
1. All measurements in cubic feet per second (cfs).
2. All 1931 and beyond discharges affected by either water regulations or water diversion.

3.5.6.2 Flood Control Features

The primary flood control feature in the study area is the Dallas Floodway, which protects areas along both sides of the Dallas Floodway levees. The Dallas Floodway has several adjacent storage sumps, which were created from the drainage basins bisected from construction of the Dallas Floodway (e.g., West Fork and Elm Fork). These sumps represent a wide variety of storage capacities, drainage area, and land use. There are 7 sump areas in the study area with six having pumping stations that consist of both high- and low-rate pumps. The pumps start operating when sump water levels reach pre-programmed elevation values. In some instances, the sumps are drained in part by gravity sluices. These pump stations and pressure sewers drain most of the interior areas on the landside of the levees.

As stormwater flows toward the levee system, the pump stations and pressure sewers drain stormwater to the Trinity River.

Stormwater is intercepted and temporarily stored by the sumps before eventual release to the river by a gravity sluice, pumping over the levees, or gravity flow through the sump system until it reaches the river. Although the flow of stormwater through the sump system is regulated solely by flood control requirements, the sumps may function as sedimentation basins that potentially provide purification of stormwater. **Table 3-29** provides a description of the major flood control features in the study area. These are shown graphically on **Plate 3-23**.

TABLE 3-29. MAJOR FLOOD CONTROL FEATURES IN THE STUDY AREA

Map ID	Name	Description/Location
1E	Record Crossing Sump	The Old Elm Fork River Channel intersects the study area south of the IH-35E/SH-183 interchange. It flows west to the Record Crossing Sump and then to the intake structure at the Hampton Road Pump Station.
H	Hampton Pump Station	
2E	Hampton-Oak Lawn Sump	Cedar Springs Branch intersects the study area north of Oak Lawn and flows south under IH-35E to join the Hampton-Oak Lawn Sump. Turtle Creek overflows that do not enter the Turtle Creek pressure sewer intersect the study area near the intersection of IH-35E and the Dallas North Tollway and flow west before entering the Hampton-Oak Lawn Sump. The sump flows to the intake structure at Pumping Station B.
B	Pump Station B	
3E	Pumping Plant A Sump	The Pumping Plant A Sump parallels the east levee and is located west of Industrial Boulevard. It flows to the intake structure for Pumping Station A located between Houston and Jefferson Streets.
A	Pump Station A	
1W	Westmoreland-Hampton Sump	The Old West Fork River Channel intersects the study area south of Industrial Boulevard and flows west to east joining the Old Elm Fork River Channel to begin the Dallas Floodway. The old channel meanders in areas south of the west levee to form sump storage for the Westmoreland-Hampton Sump. The Westmoreland-Hampton Sump parallels the west levee and is located south of the west levee between Westmoreland Avenue and Hampton Road. It flows to the intake structure for Pumping Station D located just west of Hampton Road.
D	Pump Station D	
2W	Pavaho Sump	The Pavaho Sump parallels the west levee and is located south of the Sylvan Street Bridge. It flows to the intake structure at Pavaho Pump Station.
P	Pavaho Pump Station	
3W	Pumping Station C Sumps	Pumping Station C Sumps parallel the west levee from north of the Houston Street Viaduct extending south to R.L. Thornton Freeway. Flows to intake structure at Pumping Station C. The Corinth Street Sump parallels the west levee north of Corinth Street. The storm sewer pipe carries Corinth Street Sump water to an outfall north of IH-35E unless the river stage is too high, in which case it drains to the sump for Pumping Station C.
4W	Corinth Street Sump	
C	Pump Station C	
PS1	Turtle Creek Pressure Sewer	Turtle Creek flows between 4,000 and 5,000 cfs reach the Trinity River via the Turtle Creek Pressure Sewer. The pressure sewer diverts flows through the east levee into the Dallas Floodway that would otherwise have to be pumped. A gated outlet prevents river flows from entering protected areas behind the east levee at higher river storages.
PS2	Woodall Rodgers Pressure Sewer	The Woodall Rodgers Pressure sewer intersects the study area south of Continental Avenue and north of Woodall Rodgers Freeway. The pressure sewer discharges through the east levee into the Trinity River just north of Woodall Rodgers Freeway.
PS3	Dallas Branch Pressure Sewer	The Dallas Branch Pressure Sewer intersects the study area via 12-foot circular conduit. It flows southwest to the Trinity River diverting runoff to the Dallas Floodway. The pressure sewer enters through the east levee just above the UP Railroad Bridge.
PS4	Bellevue Pressure Sewer	The Bellevue Pressure Sewer intersects the study area south of the IH-35E Bridge and north of the Corinth Street Viaduct. The pressure sewer takes flows from the Mill Creek Watershed and areas north of the MKT Railroad switchyard and Industrial Boulevard south through the east levee.
PS5	Old Coombs Creek Pressure Sewer	The Old Coombs Creek Pressure Sewer intersects the study area south of IH-30 as a 6-foot diameter storm sewer. The old pressure sewer takes flows from IH-30, Kidd Springs diversion sewer, and overflow from Coombs Creek through the west levee. The Coombs Creek Pressure Sewer intersects the study area south of IH-30 as an 18.5-foot semi-elliptical conduit and takes flows from Coombs Creek for floods less that then 1-percent-annual-chance storm. The outfall is located about 300 feet south of the old pressure sewer outfall and about 800 feet south of IH-30.
PS6	Coombs Creek Pressure Sewer	
PS7	Lake Cliff Pressure Sewer	The Lake Cliff Pressure Sewer intersects the study area just north of the Houston Street Viaduct as a 6-foot by 8-foot conduit. Flows from the Lake Cliff area drain north and through the west levee above Houston Street.

Sources: FEMA 2007a-i.
Note: Map ID numbers correspond to the locations shown on **Plate 3-23** at the end of **Chapter 3**.

3.5.6.3 History of Flood Control Measures

Consideration of flood control in the study area began in earnest after the record flood of May 25, 1908. This flood event caused the death of 11 persons and extensively damaged the Dallas CBD and other industrial areas. The flood dramatized the need for protective planning and construction, which have continued to the present. The following paragraphs provide a historical overview concerning the extensive flood control measures implemented by the City of Dallas within the study area.

Dallas Floodway

The Dallas Floodway was constructed through the creation of the Dallas City and County Levee Improvement District in 1926. Construction of the Dallas Floodway improvements occurred from 1928 through 1932, and the Dallas Flood Control District was formed in 1945 to operate and maintain the Dallas Floodway project. The Dallas Floodway improvements consist of parallel levees, approximately 2,000 feet apart, located near the center of the Trinity River floodplain from a point upstream of the AT&SF Railroad to the confluence of the West Fork and Elm Fork. From the confluence, the left bank or east levee extends upstream along the Elm Fork approximately 4 miles to IH-35E. The right bank or west levee extends upstream on the West Fork about 2 miles. The levee system also includes a portion of an original agricultural levee, the northwest levee, which was constructed by the Dallas County Levee Improvement District Number 5. The northwest levee is located on the right bank of the Elm Fork from Grauwyler Road to upstream of SH-183. Cities bordering the Elm Fork, such as Carrollton, Irving, and Farmers Branch also have constructed levees along the river.

The present river channels were excavated as part of the project and portions of the old river channels are contained within the reclaimed areas. The USACE completed additional improvements to the Dallas Floodway in 1960, which included strengthening of the levees, clearing of the Dallas Floodway on the West Fork and Elm Fork, increasing the existing pump and sump capacities at pumping stations A, B, C, and D, and construction of pressure sewers, additional pumping stations, diversions, and gravity outlets to improve the interior drainage. The Dallas Floodway original design discharge, the Standard Project Flood (SPF) produced by a design storm centered on the uncontrolled area of the West Fork, is 226,000 cubic feet per second (cfs) with 4 feet of freeboard at the Dallas Floodway levees.

The downstream end of the Dallas Floodway levees is located at the abandoned AT&SF Railroad Bridge. The east levee has a terminal section extending perpendicular to the river along the AT&SF Railroad tracks and directly beneath the newly constructed DART LRT Bridge to high ground. A portion of this extension of the east levee is an earthen embankment with a design crest elevation of 425.2 feet, while the remainder is a concrete floodwall up to 7 feet in height extending to the high ground limit. The concrete floodwall portion of the levee has a design crest elevation of 423 feet and includes two integral

stop-log closure sections. One of these stop-log structures provides passage for a dual-track SP Railroad line. The other stop-log structure formerly served the same purpose, but the tracks have been removed as part of the construction of the DART LRT Bridge.

3.5.6.4 Additional Floodway Related Efforts and/or Projects

Since the construction of the levee system, a variety of USACE projects have been undertaken throughout the years to reinforce the levees and improve the Dallas Floodway. The project has reclaimed 10,500 acres of floodplain, most of which is now highly developed industrial property. On several occasions, federal, state, and municipal agencies have proposed the use of Dallas Floodway land for navigation, recreation, and/or transportation.

Trinity Regional Environmental Impact Statement

The TREIS was prepared by the USACE in the mid-1980s to address extensive floodplain development that was occurring along the Trinity River within the region. The TREIS focused on actions requiring permits under Section 10 of the River and Harbors Act and Section 404 of the CWA, as amended, with emphasis on addressing cumulative impacts of granting multiple permits. The Record of Decision (ROD) for the TREIS was signed in 1988. Major items from the ROD are summarized below. A full copy of the ROD is attached in **Appendix E**.

The TREIS ROD applies to all project actions requiring a permit under either Section 10 or Section 404 within the SPF floodplain. In general, the criteria developed to reduce hydraulic impacts include the provision for no rise in the 100-year flood or SPF water surface elevations from dredging and/or fill activities along the Trinity River main stem, West Fork, and Elm Fork and tributaries with drainage areas in excess of 100 square miles. The criteria require a maximum loss in storage capacity for the 100-year flood and SPF of 0 percent and 5 percent, respectively, within the same area. For projects proposed on tributaries with drainage areas of 100 square miles or less, criteria allow for up to 15 percent reduction of valley storage within the 100-year floodplain and up to 20 percent reduction of the SPF floodplain valley storage. Requested projects on tributaries that would increase water surface elevations to a point of inducing additional flooding or damage to others are not to be permitted.

The TREIS ROD also established guidelines for mitigation of environmental habitat losses caused by projects in floodplain areas covered by the TREIS. The criteria of the TREIS ROD apply only to navigable waters under Section 10 and jurisdictional waters and wetlands of the United States under Section 404. It does not apply to projects for which the USACE has no regulatory authority. The TREIS raised awareness that a large area of floodplain lands within the Upper Trinity River Basin could be developed outside the jurisdiction of the USACE and that if developed following only FEMA requirements, significant

increases in flooding frequency and extent would continue to occur in adjacent and downstream areas. Subsequently, the Corridor Development Certificate process (see **Section 4.13**) was established as a means to address those floodplain actions that were not associated with activities effecting waters of the United States, including wetlands administered by the USACE.

Final Programmatic EIS - Upper Trinity River Basin

As previously described in **Chapter 1 Need and Purpose for Proposed Action**, the FPEIS was completed in June 2000 and a ROD was signed in September 2000. The FPEIS includes an examination of past actions of the USACE and other entities within the study area. It defines the baseline conditions within the basin and examines reasonably foreseeable actions of the USACE and of others (including the proposed action) that may affect water and related land resources. During the course of the *Upper Trinity River Feasibility Study*, approximately 90 preliminary projects addressing flood damage reduction, ecosystem restoration, and recreation were initially identified for further study within the PEIS study area. Of these, three USACE projects that currently have local sponsorship are considered to be reasonably foreseeable. These are the Johnson Creek project in the City of Arlington, and the Dallas Floodway and Stemmons North Industrial projects in Dallas.

Upper Trinity River Feasibility Study - Dallas Floodway EIS

The USACE, working in cooperation with the NCTCOG and 14 local governments in the North Central Texas region, initiated the Upper Trinity River Feasibility Study in 1990. The purpose of this study is to identify and carry forward potential projects to address flood damage reduction, water quality, environmental enhancement, recreation, and other related needs throughout the Trinity River Corridor. The Dallas City Council authorized the city's participation in the study for the Dallas Floodway in 1996.

Within the existing Dallas Floodway, the following initiatives are being investigated for federal interest by the USACE; raising of the existing levees by two feet, lake development, channel meandering, tree plantings, modification to the AT&SF Railroad Bridge, and recreation facilities (trails, parking, etc). These initiatives would address additional flood protection, environmental restoration, and recreation for the existing Dallas Floodway. Any USACE project that emerges from this ongoing feasibility study would be compatible with the selected alignment of the Trinity Parkway (the proposed action) and the city's Balanced Vision Plan for the Dallas Floodway. This study represents an EIS that is being conducted in concert with the ongoing EIS for the Trinity Parkway. Several of the initiatives identified in the study and as part of the MIP/BVP (discussed in the following paragraphs) have been further planned with several already being initiated (e.g., Trinity Lakes design underway, project design for the river relocation and lake amenities is underway, etc.). The USACE will continue with its Dallas Floodway feasibility study and EIS preparation. This EIS will establish federal interest (cost participation) in a project for the Dallas Floodway in concert with the city.

Trinity River Desiltation Project

This project involved desilting (or removing excess sediment) from the existing Trinity River channel from just downstream of the AT&SF Railroad Bridge to approximately 1,500 feet upstream of Westmoreland Road. The design criteria specified that the existing channel bottom be excavated to produce a width of 70 feet and the channel side slopes be excavated to a 6:1 slope, with a gentler benched slope on alternating sides of the river. This project was permitted through the USACE Section 404 permit program (USACE Permit No. 199300146). The first phase of the project occurred in 1997 at a cost of $4.5 million and extended from the AT&SF Railroad Bridge to 2,300 feet upstream of the Corinth Street Viaduct. Phase two of the project was completed in 2000 at a cost of $3.8 million and extended to the Houston Street Viaduct. The primary purpose of the project was to restore the original flood conveyance capacity of the river channel and improve interior drainage within the existing levees.

The silt removed from the channel bottom was deposited in borrow pits located within the Dallas Floodway. The excavated clay from the silt disposal areas was used to strengthen and raise the existing Dallas Floodway levees to their original design grade. The levees have been raised approximately 2 feet and the riverside of the levee has been flattened to an approximate 4:1 slope. This levee work has occurred from the downstream end of the Dallas Floodway to the vicinity of IH-30. All of the riparian vegetation from the AT&SF Railroad Bridge to the Houston Street Viaduct (primarily black willow) has been removed from the channel banks as the result of this construction project.

Trinity River Corridor MIP/BVP

In 2002 and 2003, a privately funded urban design study was conducted to reassess the MIP for the Dallas Floodway that was completed in 1999. A final report entitled BVP for the Trinity River Corridor was produced in late 2003 with the Dallas City Council adopting the final report that same year as a modification to the 1999 MIP for the Dallas Floodway. As previously described in **Section 3.1.1.1 Local Land Use Plans/Policies**, the city's *MIP*/*BVP* includes various flood control measures as part of the plan. A portion of these planned flood control improvements are considered projects that could be subject to coordinated planning and design along with the Trinity Parkway (see **Section 3.1.1.4 Coordinated Planning and Design**). These flood protection features are a continuation of several on-going projects. The major components of the flood protection plan include:

- Construct Lamar Levee extension (3.1 miles) to SPF protection;
- Remove 417 acres of low-lying lands (mostly occupied by industrial uses) from the 100-year floodplain;
- Construct Cadillac Heights levee extension (2.2 miles) to SPF protection level;
- Remove 205 acres of low lying lands (mostly composed of residential uses) from the 100-year floodplain;
- Realign the river channel at IH-45;

- Raise the existing CWWTP levee - Improves flood projection from current 140-year flood protection to 500-year flood projection;
- Raise the existing Rochester Park Levee - Improves flood projection from current 110-year flood protection to the SPF protection level;
- Construct a chain of wetlands to replace approximately 230 acres of bottomland hardwoods with wetlands. Year round water supply for wetlands if provided by the CWWTP;
- Elm Fork Flood Protection Project - The Elm Fork of the Trinity River converges with the main stem of the Trinity River at the western end of the Dallas Floodway;
- Existing Dallas Floodway - The proposed combination of roadways, lakes, and river meandering within the Dallas Floodway will be designed to maintain the current flow characteristics of the Dallas Floodway;
- Dallas Floodway Levee Modifications - This includes:
    - Increase levee height to provide up to an additional 2 feet of freeboard above the SPF elevation.
    - Design of the recommended method for raising the flood protection height to insure the integrity of the flood protection works under all operating conditions. USACE design guidelines will be utilized.
- Environmental Restoration and Management - Proper reconstruction of the Dallas Floodway will protect the investments in the Great Trinity Forest. Several hundred acres of new wetlands at the pumped stormwater outfalls and additional screening of stormwater will provide additional water quality improvements, stormwater cleaning and removal of floating trash and sediment. The habitat created by new wetlands in the Dallas Floodway will expand the ecosystem of the Great Trinity Forest and reconnect it to the West and Elm Forks. Inclusion of two off-channel lakes will create additional diversity for natural habitat and recreational choices within the Dallas Floodway, potentially including fishing and other outdoor activities.
- Major components of the Environmental Restoration and Management activities include:
    - Reestablish meanders or sinuosity to the Trinity River within the Dallas Floodway.
    - Proposed stormwater wetlands:

      <u>Area of proposed sump-fed wetlands</u>

        - Pavaho
        - Hampton

      <u>Proposed headwater wetlands</u>

        - Size of proposed headwater wetlands: 70 acres.
        - Quantity of CWWTP water to move through the headwater wetlands: 5 million gallons/day.
        - Total quantity of CWWTP water to be used to supply lakes: 50 million gallons/day.

- Proposed Habitat for Wildlife:
    - Total acres within the Dallas Floodway: approximately 2,000 acres.
    - Amount of proposed wetlands within Dallas Floodway: 495 acres.
    - Amount of open water for aquatic species and bird sanctuary: 205 acres.

Title V, Section 5121 of the Water Resources Development Act of 2007 (PL 110-114), which authorizes various flood control, navigation, and environmental projects and studies by the USACE and provides federal funds subject to annual congressional appropriations for conservation and development of water and related resources, directs the USACE to review the City of Dallas' Trinity River Corridor BVP. If the project elements of the BVP are determined by the Secretary of the Army to be technically sound and environmentally acceptable, the Act authorizes the USACE to construct the Dallas Floodway projects at a total cost of $459 million.

USACE - Old Trinity River Channel Wildlife Restoration

The USACE is designing an ecosystem restoration project for West Dallas River Meanders Conservation Area. This project includes flood control improvements along remnants of the West Fork channel. This would be accomplished through modification of the Pavaho (formerly Bickers Street) sump; construction of a water surface elevation control structure at the Westmoreland Road crossing; and restoration of the lower Shadrack Creek channel by construction of an overbank wetland. In addition, the USACE is designing a trail component compatible with planned trail systems in the study area.

Dallas Floodway Extension

As previously described in **Chapter 1 Need and Purpose for Proposed Action**, the DFE is a flood control project proposed by the USACE with the City of Dallas as the local sponsor. Originally authorized in 1965 under the Rivers and Harbors Act of 1965 (PL 89-298), the DFE project was modified by the Water Resources Development Act of 1999 (PL 106-053) to include environmental restoration and recreation as project purposes. Additionally, a flood control credit for advanced construction costs for comparable portions of previously constructed non-Federal levees (Rochester Park and CWWTP) was authorized in accordance with Section 351 of the Water Resources Development Act of 1996 (PL 104-303). **Plate 3-6** shows the major features of the DFE Authorized Plan.

The DFE project area is located along the main stem of the Trinity River from the end of the existing Dallas Floodway levees downstream to IH-20, including the lower end of White Rock Creek. The DFE project has authorized purposes of flood damage reduction, ecosystem restoration, recreation, and environmental mitigation. Features of the project include a "chain of wetlands," a realignment of the river channel at the IH-45 Bridge, construction of a levee in the Lamar Street area, the construction of a levee near the Cadillac Heights subdivision, recreation features, and environmental mitigation. Recreation

amenities would be compatible with the regional recreation master plan and would include linear hike/bike trails, equestrian trails, nature trails, and pavilions.

The original plan, which included channels and levees along the river and some tributaries, was never built due to lack of funding and local support. Due to the flood events in 1989 and 1990, the City of Dallas requested that the USACE reevaluate the recommendations of the plan and assess structural as well as non-structural alternatives.

On August 28, 1996, the Dallas City Council approved the "chain of wetlands" concept. On March 26, 1997, protective levees for the Lamar and Cadillac Heights neighborhoods were also approved by the City Council as the LPP for the DFE project. The City of Dallas plans to use the voter-approved $24.7 million in General Obligation Bonds for its share of the $127 million project.

The LPP, developed jointly by the City of Dallas and USACE, consists of a 170-acre "Chain of Wetlands" extending from Cedar Creek to Loop 12 (a distance of approximately 4 miles), a provision for 1,179 acres of land for environmental mitigation, and the construction of protective levees along Lamar Street and Cadillac Heights. These levees would link the existing Dallas Floodway levees from the CBD to the Rochester Park levee on the east, and would extend a levee from Cedar Creek to the CWWTP on the west. This would increase the level of protection for the CBD from the present 300-year flood event to the 800-year SPF and improve protection of Rochester Park from the present 110-year event to the SPF. The protection for the Lamar Street and Cadillac Heights areas would also be the SPF.

Construction of the Cadillac Heights and Lamar Street levees at the SPF level would provide protection to approximately 2,500 structures within the DFE project area, increase flood protection for over 10,000 structures within the existing DFE project area, preserve an estimated 7,863 jobs in the Lamar Street area, and increase flood protection for the CWWTP to the 500-year flood event. The DFE project also involved realignment of the Trinity River channel at IH-45 to protect the bridge structure, which is a designated National Defense Highway. In addition, the plan would provide for ecosystem restoration, recreational facilities, and trail linkages between the proposed Great Trinity Forest Park, the Dallas Floodway (Trinity Park), neighborhoods, and high-density employment areas.

The USACE finalized the General Re-Evaluation Report and Integrated Environmental Impact Statement in February 1999, and the ROD was signed on December 1, 1999. Currently, the project is in engineering design and real estate acquisition phases. Construction of portions of the "Chain of Wetlands" project has commenced. Other portions of the project, including the Lamar Street and Cadillac Heights levees will be scheduled in future years based on availability of federal funding.

3.5.7 Navigation

The USCG has designated the Trinity River as a navigable waterway in accordance with 33 CFR Section 2.05-25, *Navigable Waters of the United States*. As such, the Trinity River is regulated under the General Bridge Act of 1946, Section 9 of the Rivers and Harbors Act of 1899, and Section 10 of the Rivers and Harbors Act of 1899.

Although the Trinity is officially designated a navigable waterway this portion of the river has not been developed or used for that purpose. Navigation on the Trinity (known as the Trinity River Project) was authorized pursuant to the Rivers and Harbors Act of 1965 (PL 89-298). The Trinity River Project included the construction of a multi-purpose channel along the river from the Houston Ship Channel to the City of Fort Worth. This project would have provided a 12-foot by 200-foot navigation channel with 20 locks and dams. Currently, the multi-purpose channel is officially inactive and the USACE has no plans to develop a navigation channel.

FHWA has determined that the proposed project meets the criteria for the Surface Transportation Authorization Act and qualifies for exemption from USCG bridge permit requirements. FHWA has coordinated the proposed undertaking with the USCG, and the USCG has granted exemption from the requirements pertaining to navigable waterways imposed under 33 USC 401 and 525(b), and the lighting and signal requirements imposed under 33 CFR 118.40(b) (see **Appendix A-1** and **Appendix G-6**).

3.6 AIR QUALITY

Air quality is a regional concern with numerous contributing factors. Sources of air pollution are divided into five categories: (1) area, (2) point, (3) on-road mobile, (4) off-road mobile, and (5) biogenic. The following provides a summary of these air pollution sources.

1. *Area* sources are defined as commercial, small-scale industrial, and residential sources too numerous and too small to identify individually (e.g., printing, house paints, industrial coatings, degreasing solvents, leaking underground storage tanks, vehicle refueling, fossil fuel combustion at residences and businesses, outdoor burning, structural fires, etc.).
2. *Point* sources are defined as industrial, commercial, or institutional plants/operations responsible for generating higher levels of volatile organic compounds (VOCs), nitrogen oxides (NO_x), and/or carbon monoxide (CO).
3. *On-road mobile* sources consist of automobiles, trucks, motorcycles, and other internal combustion engine powered vehicles traveling on roadways.

4. *Off-road mobile* sources are considered as aircraft, marine vessels, recreational boats, trains, construction equipment, lawn mowers, etc.
5. *Biogenic* sources are essentially all types of plant life in the biosphere including forests, crops, grass, and other types of vegetation.

The remainder of this section describes the existing project area air quality and identifies the primary sources of air pollution, especially transportation-related sources. Included is a discussion of how air quality can be influenced by local meteorology and topographic conditions. The legal and regulatory requirements that apply to air quality are also discussed.

3.6.1 Regulatory Context

The CAAA of 1990 requires the EPA to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. The EPA has established NAAQS for six principal pollutants, which are called “criteria” pollutants. These criteria pollutants and their primary and secondary NAAQS are presented in **Table 3-30**.

TABLE 3-30. NATIONAL AMBIENT AIR QUALITY STANDARDS

POLLUTANT	PRIMARY[1]	SECONDARY[2]
Carbon Monoxide (CO)		
8-Hour Average[3]	9 ppm (10 mg/m^3)	None
1-Hour Average[3]	35 ppm (40 mg/m^3)	None
Nitrogen Dioxide (NO_2)		
Annual Arithmetic Mean	0.053 ppm (100 μg/m^3)	Same as Primary
Ozone (O_3)		
1-Hour Average[4]	0.12 ppm (235 μg/m^3)	Same as Primary
8-Hour Average[5]	0.075 ppm (2008 standard)	Same as Primary
8-Hour Average[6]	0.08 ppm (1997 standard)	Same as Primary
Lead (Pb)		
Rolling 3-Month Average[7]	0.15 μg/m^3	Same as Primary
Quarterly Average	1.5 μg/m^3	Same as Primary
Particulate Matter ($PM_{2.5}$)		
Annual Arithmetic Mean[8]	15 μg/m^3	Same as Primary
24-Hour Average[9]	35 μg/m^3	Same as Primary
Particulate Matter (PM_{10})		
24-Hour Average[10]	150 μg/m^3	Same as Primary
Sulfur Dioxide		
Annual Arithmetic Mean	0.03 ppm (80 μg/m^3)	None
24-Hour Average[3]	0.14 ppm (365 μg/m^3)	None
3-Hour Average[3]	None	0.50 ppm (1,300 μg/m^3)

Source: EPA, 2008.

Notes:

1. Primary standards set limits to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly.
2. Secondary standards set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings.
3. Not to be exceeded more than once per year.
4. Applies only in limited areas. The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is <1. As of June 15, 2005, the EPA revoked the 1-hour ozone standard in all areas except the 8-hour ozone nonattainment Early Action Compact (EAC) Areas.
5. To attain this standard, the 3-year average of the fourth highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm (effective May 27, 2008).
6. To attain this standard (1997 standard), the 3-year average of the fourth highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm. The 1997 standard, and the implementation rules for that standard, will remain in place for implementation purposes as EPA undertakes rulemaking to address the transition from the 1997 ozone standard to the 2008 ozone standard. The 1997 standard was used as the basis for the current non-attainment designation for the Dallas-Fort Worth area.
7. Final rule signed October 15, 2008.
8. To attain this standard, the 3-year average of the weighted annual mean $PM_{2.5}$ concentrations from single or multiple community-oriented monitors must not exceed 15.0 μg/m^3.
9. To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 μg/m^3 (effective December 17, 2006).
10. Not to be exceeded more than once per year on average over 3 years.

ppm = parts per million (by volume)
mg/m^3 = milligrams per cubic meter of air
μg/m^3 = micrograms per cubic meter of air
PM_{10} = particles <10 microns in size
$PM_{2.5}$ = particles <2.5 microns in size

3.6.2 Requirements for Conformity

Under the 1990 CAAA conformity requirement, transportation activities cannot be federally funded or approved if they involve a regionally significant roadway unless they are consistent with state air quality goals. This means conformity with 40 CFR Section 51 and Section 93 (i.e., conformity rule) must be

demonstrated as part of the project approval process. To meet conformity, the proposed project must meet the following provisions:

- Must not cause or contribute to any new violations of the NAAQS;
- Must not increase the frequency or severity of existing NAAQS violations; and
- Must not delay timely attainment of the NAAQS.

The FHWA, in accordance with federal air quality standards, has set forth a policy to examine potential air quality impacts of proposed transportation projects in order to ensure the preservation and enhancement of air quality.

3.6.3 Local Meteorology and Topography

Once pollutants are emitted into the atmosphere, the prevailing weather conditions determine their dispersion. Atmospheric stability controls the dispersion of pollutants near a source. This factor is especially important to the assessment of primary pollutant impacts. Stability is affected by thermal and mechanical turbulence of the atmosphere and wind velocity of the layer of air closest to the ground. When the atmosphere is unstable, usually during daytime, dispersion of airborne particulates increases. DFW meteorological data provided by the TCEQ indicate that on an annual basis unstable conditions occur approximately 18.2 percent of the time, neutral conditions approximately 52.4 percent of the time, and stable conditions approximately 29.4 percent of the time. Therefore, it can be assumed that relatively good vertical dispersion occurs about 70.6 percent of the time in the DFW area.

Another meteorological element that influences dispersion is the mixing height. The mixing height is the height above the ground through which relatively vigorous vertical mixing occurs. The mixing layer dilutes pollutants released in it. Annual average mixing heights over the DFW area range from approximately 1,640 feet in the morning to approximately 4,920 feet in the afternoon.

Ozone problems tend to occur during the summer months because, in addition to being dependent upon emissions of NOx and VOCs, O_3 formation is enhanced by summer meteorological conditions. During summer months, the sun is higher on the horizon, which increases the temperature and ultraviolet radiation available to the chemical reactions that form O_3. The higher temperatures increase biogenic activity as well as evaporation of VOCs. In addition, lighter winds allow O_3 and the pollutants that form it to accumulate.

CO concentrations generally follow the temporal and spatial distributions of vehicular traffic and are also influenced by meteorological factors, such as wind speed and atmospheric stability. Concentrations of

CO are the greatest during periods of moderate to heavy vehicular use and when stable atmospheric conditions (which limit the atmosphere's ability to disperse pollutants) and calm winds can trap CO emissions near the surface. These conditions occur most often during the late fall and early winter (see **Table 3-22**).

The level to rolling terrain of the DFW metropolitan area allows air masses to move easily over the region. Generally, the terrain would not trap pollutants and may allow for their dispersion. As a result, long-term air pollution episodes resulting from stagnant air masses are relatively uncommon. The study area varies from relatively undeveloped open space to dense commercial and residential development with few high-rise buildings to restrict wind movement. The primary physical feature in the study area is the Dallas Floodway. The Dallas Floodway is primarily level, open space with bridge crossings and scattered trees. In comparison to the surrounding land use, the lack of major obstructions (i.e., houses, buildings, and dense vegetation) within the Dallas Floodway allows wind movement to occur more easily through the area.

3.6.4 Existing Project Area Air Quality

The amount of pollution emitted into the atmosphere from year to year is the net effect of several factors, including shifts in economic and industrial activity, technology, fuel use, traffic, and other activities. **Table 3-31** shows the amount (in tons per year) of criteria air pollutant emissions (all sources) for Dallas County from 1986 through 2002 (most recent available). The EPA has not produced data at the county level since the 2002 National Emissions Inventory (NEI). It should be noted that due to a change in air quality analysis methodology, criteria air pollutant emission measurements after 1995 are not comparable with previous year's data. Overall, criteria air pollutant emissions in Dallas County have decreased steadily during the 17-year reporting period (with some noted yearly fluctuations).

TABLE 3-31. TONS OF CRITERIA AIR POLLUTANT EMISSIONS (TONS PER YEAR)

Year	SO_2	NO_x	VOC	CO	$PM_{2.5}$	PM_{10}
1986	35,797	161,084	192,389	920,492	---	444,101
1987	40,480	151,733	181,950	863,350	---	422,808
1988	32,658	150,784	178,110	817,250	---	420,664
1989	30,988	156,958	163,886	745,923	---	423,624
1990	11,094	116,365	121,301	658,217	---	107,054
1991	10,368	115,416	126,832	646,263	---	121,145
1992	10,079	116,385	124,812	631,172	---	132,227
1993	10,424	111,783	122,859	603,172	---	135,286
1994	9,837	124,520	135,815	710,862	---	157,910
1995	9,857	129,031	128,439	597,767	---	134,031
1996	4,159	92,580	102,683	833,367	15,331	54,137
1997	4,247	96,624	99,186	795,924	15,531	54,949
1998	4,364	100,441	97,191	769,991	16,487	59,113
1999	4,537	99,917	90,840	749,414	17,361	61,235
2000	3,732	95,418	84,289	700,459	18,238	63,744
2001	3,629	81,080	77,116	657,129	13,464	48,928
2002	3,501	77,452	75,013	550,278	11,332	60,869

Source: EPA, 2001b; EPA, 2001c; EPA, 2002.
Note: Data on lead emissions are not available at the county level. Data reflects the most recent information available from the EPA for Dallas County, Texas. Data not available for $PM_{2.5}$ before 1996.

The remainder of this discussion focuses on transportation-related pollutants or on-road mobile sources, since the proposed action is a planned toll road facility.

Transportation-Related Pollutants

The main air pollutants emitted from motor vehicles are VOCs and other hydrocarbons, NOx, CO, and particulate matter.

Volatile organic hydrocarbons and NOx can react in the air in sunlight to form ground-level ozone (O_3), a toxic pollutant. Because the reactions take place over several hours, maximum concentrations of O_3 are often far downwind of the precursor sources. Thus, O_3 is a regional problem and not a local condition.

Hydrocarbons in motor vehicle emissions are created by incomplete combustion. Some of these hydrocarbons contribute to O_3 and smog formation, while others, such as benzene and formaldehyde, are toxic or carcinogenic. Trucks and older cars emit much more hydrocarbons than newer cars. VOCs are a class of hydrocarbons that are especially reactive in O_3 and smog formation.

NOx are created inside the combustion chambers of motor vehicles when, under high heat and pressure, nitrogen molecules in air are split into reactive nitrogen atoms, which then combine with oxygen. NOx

also react with oxygen and organic compounds in the atmosphere to form O_3 and smog. Motor vehicles produce the least emissions of NOx per mile between 20 and 30 miles per hour. NOx emissions per mile increase as vehicles go either slower or faster, so simply increasing or decreasing average traffic speed can increase NOx emissions.

CO is a very reactive gas that can cause asphyxiation. Because of its high reactivity, it does not persist in the air long after it is emitted, and therefore CO is a local problem where it occurs.

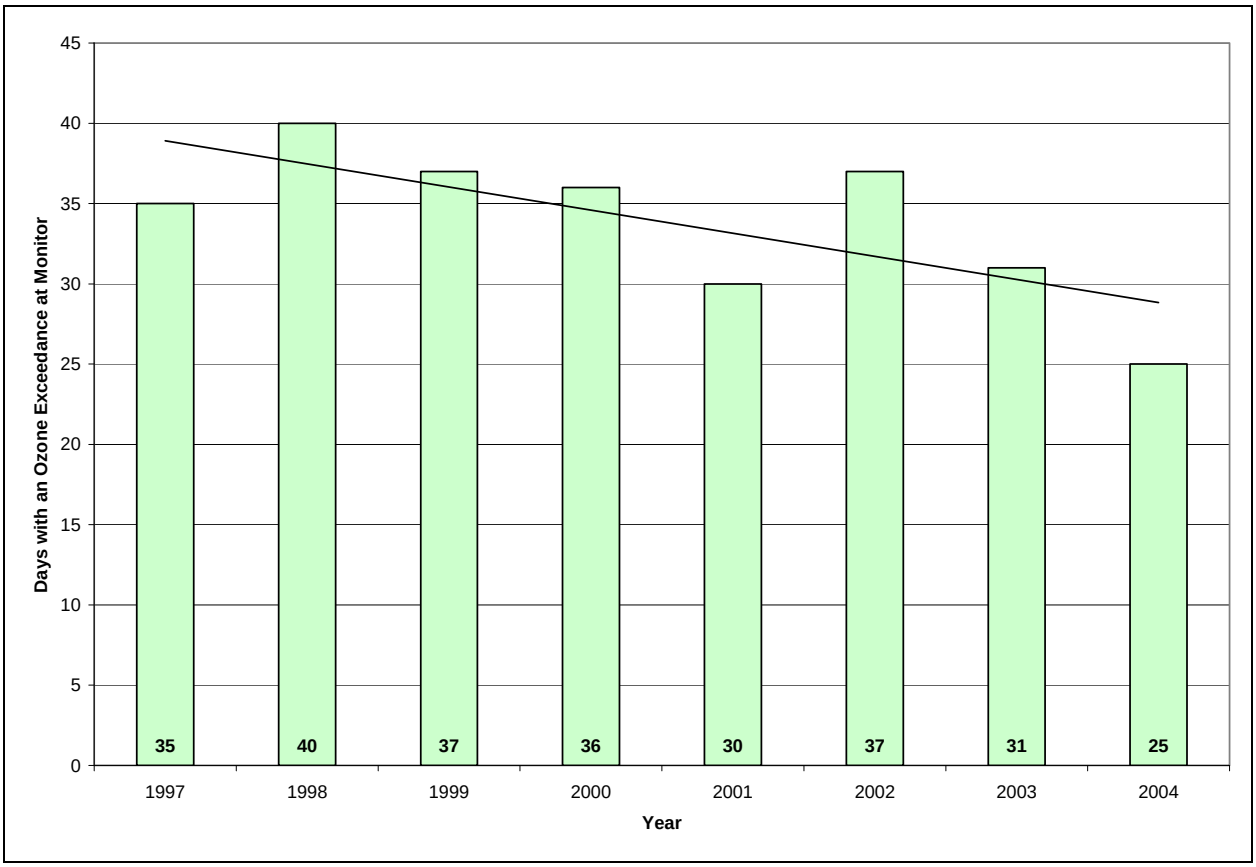
Particulate matter consists of tiny particles that are emitted by vehicle engines (especially the diesel engines of trucks), brake pads, tires, and other moving parts of motor vehicles. These particles contribute to smog and haze, and at certain levels may be dangerous to human health, especially to people with respiratory conditions. The EPA provides health criteria for particles smaller than ten microns (about one-seventh the width of a human hair) and for particles smaller than 2.5 microns.

DFW Attainment Status

The Trinity Parkway study area is located in Dallas County, which is part of the EPA designated nine-county non-attainment area for the 8-hour standard (1997 standard) for the pollutant ozone. The area is currently in attainment for all other NAAQS. With implementation of the 8-hour O_3 standard (1997 standard) on June 15, 2004, the EPA designated Collin, Dallas, Denton, Tarrant, Ellis, Johnson, Kaufman, Parker, and Rockwall Counties as non-attainment and set the attainment date for the region as June 15, 2010. The 8-hour standard was 0.08 ppm at that time. By promulgating the 8-hour standard, the EPA placed an emphasis on protecting the public against prolonged exposure to O_3. On March 12, 2008, the EPA announced a new 8-hour ozone NAAQS rule and set the new level at 0.075 ppm. The new standard became effective on May 27, 2008. Non-attainment designations under the revised 8-hour ozone standard are currently expected to occur in 2010.

Although the area remains in non-attainment of the 8-hour standard (1997 standard), statistical trends show that the area is making progress towards attainment. **Figure 3-4** illustrates the number of days the federal 8-hour O_3 standard (1997 standard) was exceeded in the North Central Texas non-attainment area from 1997 through 2004.

FIGURE 3-4. DAYS EXCEEDING THE 8-HOUR FEDERAL OZONE STANDARD IN THE NORTH CENTRAL TEXAS NON-ATTAINMENT AREA



Source: NCTCOG, 2007e.

Note: Line on graph indicates the statistical trend for the period 1997 through 2004.

As demonstrated by **Figure 3-4**, the number of days where the federal 8-hour O_3 standard was exceeded has statistically decreased. In the last decade, the North Texas area has made strides in improving regional air quality. Air quality continues to improve with the help of strategies at the local, state, and federal levels. These include a variety strategies being employed in the region including mass transit, high-occupancy vehicle lanes, vehicle inspection and maintenance financial assistance, clean vehicle technologies, speed limit reductions, congestion reduction, intersection improvements, and traffic-signal progression improvements. Additional initiatives have included encouraging businesses and residents to reduce emissions through car and vanpooling and alternative work schedules. To meet the 8-hour O_3 standard, the region is continuing to develop and implement new ways to reduce emissions.

Mobile Source Air Toxics (MSATs)

The CAAA identified 188 air toxics, also known as hazardous air pollutants. EPA has assessed this expansive list of toxics and identified a group of 21 as MSATs, which are set forth in an EPA final rule,

Control of Emissions of Hazardous Air Pollutants from Mobile Sources (66 FR 17235). EPA also extracted a subset of this list of 21 that it now labels as the six priority MSATs. These are acetaldehyde, acrolein, benzene, 1,3-butadiene, formaldehyde, and diesel particulate matter/diesel exhaust organic gases.

Air toxics analysis is a continuing area of research. While much work has been done to assess the overall health risk of air toxics, many questions remain unanswered. In particular, the tools and techniques for assessing project-specific health impacts from MSATs are limited. These limitations impede the ability to evaluate how mobile source health risks should factor into project-level decision-making. In addition, EPA has not established regulatory concentration targets for the six relevant MSAT pollutants appropriate for use in the project development process. Nonetheless, air toxics concerns are being raised more frequently on transportation projects in Texas and elsewhere in the nation. FHWA has several research projects underway to more clearly define potential risks from MSAT emissions associated with transportation projects. While this research is ongoing FHWA has issued interim guidance on how MSATs should be addressed in NEPA documents for highway projects. **Section 4.14.5** provides the project analysis for MSATs.

FHWA has completed a review of several studies that have attempted to address how MSAT concentration levels may behave based on the distance from a roadway. Dispersion studies have shown that the distance where the highest decrease in concentration starts to occur is approximately 100 meters (328 feet). By 500 meters (1,640 feet), most studies have found difficulty distinguishing between background levels of a given pollutant and the elevated levels that may be found directly adjacent to the roadway. Sensitive receptors are defined as schools both public and private, licensed day care facilities, hospitals, and senior citizen care facilities. An assessment of sensitive receptors within 100 meters and 500 meters of the build alternatives was conducted for this project and is included in **Tables 4-42A** and **4-42B** of **Section 4.14.5.2**.

3.7 EXISTING NOISE ENVIRONMENT

This section provides a brief overview of noise characteristics, describes the existing land use in the study area, describes the methodology for determining the existing noise levels in the study area, and identifies the major sources contributing to those noise levels.

3.7.1 Introduction

Sound travels through the air as waves of air pressure fluctuations. In general, sound waves travel away from the source as an expanding spherical surface. Thus, the energy contained in a sound wave is spread

over an increasing area as it travels away from the source, resulting in a decrease in loudness at greater distances from the source. Sound is commonly measured in decibels (dB). Because the human ear is most sensitive to frequencies in the middle and upper audible range, these frequencies are given greater weight than others in averaging sound contributions from audible sources. Sound level values adjusted in this manner are designated as "A-weighted." Sound levels measured in dB and A-weighted are denoted "dBA." **Table 3-32** provides a listing of sound levels related to common indoor/outdoor sources.

TABLE 3-32. COMMON SOUND/NOISE LEVELS

OUTDOOR	dBA	INDOOR
Pneumatic hammer	100	Subway train
Gas lawn mower at 3.2 feet		
	90	Food blender at 3.2 feet
Downtown (large city)	80	Garbage disposal at 3.2 feet
		Shouting at 3.2 feet
Lawn mower at 98.4 feet	70	Vacuum cleaner at 9.8 feet
Commercial area		Normal speech at 3.2 feet
Air conditioning unit	60	Clothes dryer at 3.2 feet
Babbling brook		Large business office
Quiet urban (daytime)	50	Dishwasher (next room)
Quite urban (nighttime)	40	Library

Source: TxDOT, 1996.

The term "loudness" is used to describe the manner in which humans perceive the intensity of sound. The human ear is a far better detector of relative (comparative) differences in sound levels than absolute levels. **Table 3-33** summarizes the relationship between changes in sound levels and the perceived loudness.

TABLE 3-33. SOUND LEVEL CHANGE VS. LOUDNESS

Sound Level Change	Relative Loudness
1 dBA	No perceptible change
3 dBA	Barely perceptible change
5 dBA	Readily perceptible change
10 dBA	Perceived to be twice as loud

Source: TxDOT, 1996.

Highway-related noise is dependent on traffic volumes, vehicle types, speed, roadway geometry, and distance from the roadway to a receiver. Noise from highway traffic is generated primarily from a vehicle's tires, engine, and exhaust. The majority of highway noise created by cars and light trucks is generated by the sound of tires on pavement. Medium- and heavy-duty trucks produce tire noise along with engine and exhaust noise. Because highway traffic noise 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. The FHWA uses a peak 1-hour noise measurement; that is, the hour with the highest noise level. This is described in terms of the Leq(h). Leq(h) is the equivalent steady-state sound

level, which in a stated period of time (i.e., 1-hour) would contain the same acoustical energy as a time-varying sound level during the same period (TxDOT, 1996).

3.7.2 Land Use in the Study Area

As described in **Section 3.1.1 Existing Land Use in the Study Area**, the Trinity Parkway study area is located in a heavily developed urban area adjacent to the south and west of downtown Dallas. Major freeways, high-volume arterial roadways, railroads, and other transportation facilities are as described in **Section 3.2 Transportation Setting**.

3.7.3 Existing Noise Levels

Pursuant to Section 23 CFR 772 *Procedures for Abatement of Highway Traffic Noise and Construction Noise* (FHWA, 1982), analysis of the project area noise levels must include a comparison of the existing levels to those predicted to occur at some point in the future as a result of the implementation of the proposed action. The key findings of the existing noise conditions are summarized as follows:

- Noise levels at receivers near and adjacent to existing high-volume arterial roadways and highways, such as Hampton Road, Continental Avenue, Jefferson Street, Houston Street, IH-35E, IH-30, and US-175 ranged from 64 to 77 dBA.
- Noise levels at front row receivers along Irving/Industrial Boulevard and Lamar Street ranged from 60 to 69 dBA.
- Noise levels at front row receivers along smaller roadways such as Canada Drive ranged from 60 to 66 dBA.
- The quietest interior residential neighborhood noise level (away from dominant road noise sources) was 47 dBA.
- Noise levels within the Dallas Floodway ranged from highs of 69 dBA near the IH-30 bridge crossing to lows of 42 to 50 dBA in areas within the floodway that are secluded and far away from crossing roads.

Other sources of noise contributing to the existing noise levels in the study area are commercial and industrial facilities, primarily along Irving/Industrial Boulevard and Lamar Street, passenger/freight trains, and aircraft using Dallas Love Field. The major contributors, however, are the existing highways and high-volume arterial roadways within the study area.

3.8 VISUAL AND AESTHETIC CONDITIONS

The NEPA regulations identify aesthetics - the perception of an element of the environment that is apprehended through the senses: sight, taste, smell, sound, and touch - as one of the components of the environment to be considered in evaluating the effects of a project. In addition, Section 136 of the Federal-Aid Highway Act of 1970 (PL 91-605) requires consideration of aesthetic values in the highway planning process. Although aesthetic perceptions generally require the consideration of all of the senses simultaneously, visual perception or sight is perhaps the most dominant. Activities that cause changes to the existing visual characteristics of a place, therefore, affect aesthetics by changing the human sensory perception of that environment.

Actions or activities can alter the distinguishable characteristics or quality of the perceived environment in many ways and the magnitude of these changes can vary from person to person based on each individual's visual perceptions and preferences. Visual perception and preference are strongly influenced by spatial properties (an area's expansiveness and the scale and arrangement of landscape features or structures), content (whether an area appears human-influenced or natural and the presence of landmarks and features of symbolic importance), and an individual's previous experiences. Visual character of environments associated with roadways may be altered by actions associated with construction, transportation, and other activities that modify the landscape and the appearance of that landscape. Views toward as well as from a given location in the landscape can be affected by these modifications.

In order to assess the impact on the study area's aesthetics through changes in visual character, the current visual character of the study area must first be examined. This analysis will (1) identify specific user groups who would each experience changes in visual character differently, (2) describe the visual typologies in the study area, (3) deconstruct the study area into specific landscape units, (4) provide observations of the overall visual characteristics of the project study area, and (5) rate the visual quality of each landscape unit based on the visual quality assessment methodology found in the FHWA's *Visual Impact Assessment for Highway Projects* (FHWA, 1988). This methodology observes a view-shed's visual vividness, intactness, and unity and applies a numerical rating to depict the combined quality of these three factors. Finally, the perception and visual preferences of individual viewer groups will be discussed and a set of goals for preserving and enhancing the visual quality of the study area will be outlined.

3.8.1 Viewer Groups

As mentioned above, visual perception and preference affect how an individual perceives changes in visual character. Therefore, visual quality is evaluated with regard to specific viewer groups. Viewers are categorized into groups based on activities and function (or purpose) within the study area. Viewers within the study area can be classified into the two general groups: (1) those with a view *of* the proposed roadway and (2) those with a view *from* the proposed roadway. Viewers with a view from existing and proposed roadways - motorists - will all generally experience the visual landscape similarly. Those with views of the proposed road, however, could potentially respond to visual changes differently - this second group can be split into sub-groups of viewers that have varying types of views and impressions of the proposed roadway or surrounding landscape. Therefore, the following four primary viewer groups will be used throughout the visual analysis:

Groups with a view from surrounding roads	***Groups with a view of the proposed road***
Motorists	Residents
	Recreational Users
	Business Employees/Patrons

3.8.2 Project Study Area

A description of the existing land use characteristics of the Trinity Parkway study area was provided earlier in **Section 3.1.1 Existing Land Use in the Study Area**. The existing aesthetic attributes of the study area can be characterized as a substantially developed urban area interspersed with man-made features, vegetation, open space, and expansive views. Development consists primarily of commercial/industrial facilities, residential neighborhoods (see **Section 3.1.3 Neighborhoods**), parks and open space (see **Section 3.3.2 Parklands and Recreational Areas**), transportation corridors (see **Section 3.2 Transportation Setting**), and public utilities (see **Section 3.1.5 Utilities**).

The vegetation, level topography, and existing development within the study area limit long-range distant views in many areas; yet areas such as road crossings over the open landscape of the Trinity River floodplain and the tops of the levees provide expansive views of neighborhoods, industrial districts, and downtown Dallas, which serves as a backdrop or focal point for many views within the area. Virtually the only topographical relief within the study area is that associated with the flood control levees, which parallel the Trinity River and frame the Dallas Floodway. Other long-range distant views of note are views as seen from high-rise buildings within and outside of the study area. The greatest concentrations of views of this type are from the downtown Dallas area.

3.8.3 Landscape Units and Visual Image Typologies

Land use categories provide a convenient and logical method for dividing the study area into smaller, more manageable areas for visual consideration. The Trinity Parkway study area has several unique visual typologies; **Table 3-34** provides a general description of the major land use typologies established for the study area to illustrate the existing visual setting of the landscape.

TABLE 3-34. SUMMARY OF LAND USE TYPOLOGIES

Land Use/Typology	Description
Commercial/Industrial	Aged, closely-spaced, low-lying buildings (typically one storey) having either shallow set-backs from the road or a parking lot between the building and the road. Power lines, billboards, and loading bays are common sites, as are graffiti and chain-link fences. Vegetation is not prevalent. Includes the portion of the study area adjacent to Irving/Industrial Boulevard and South Lamar and the area adjacent to the north-northeast of the east levee.
Residential	Typically consists of neighborhoods of small houses clad in wood siding (often with peeling paint) on small lots. Empty lots are prevalent in many areas, as are mature trees and shrubs. Newer neighborhood areas are characterized by larger, brick masonry houses and newer infrastructure. Small-scale retail and numerous religious institutions pepper residential areas. Includes the portion of the study area to the south and west of the floodplain and the southeast tip of the study area.
Transportation Corridors	This focuses on the transportation corridors that traverse the Trinity River floodplain and the major transportation corridors located in the study areas that do not cross the floodplain. This would include the MLK overpass, the DART Rail Bridge, the Commerce Street and Continental Street Bridges, the Corinth Viaduct, the Houston and Jefferson Street Viaducts, the Hampton/Inwood Bridge, the Westmoreland Bridge, Wycliff/Sylvan Avenue, the Union Pacific and MKT Railroad Bridges, the IH-30, IH-35E, and I-45 Bridges, and the Irving/Industrial Boulevard and South Lamar Street corridors.
Parkland/Open Space Areas	Includes areas within the boundaries of the east and west Trinity River levees (this area extends from Westmoreland to the DART Rail Bridge) and parks and open areas outside of the Dallas Floodway. Parkland within the Dallas Floodway consists of areas of riparian vegetation along the river channel, large un-manicured grasslands with tall grasses and wildflowers, and ponds of varying sizes. Parks (as well as churchyards) outside of the Dallas Floodway are typically mown and include recreational amenities such as picnic tables, recreational fields, and playgrounds. Residual open space around the flood-control sumps and original river meanders consists of un-manicured and native grasses, shrubs, some trees, and generally contains large amounts of litter.
High-Rise Buildings	Though not located adjacent to any of the alternative alignments, many high-rise residential and office buildings are visible from within the Dallas Floodway and the industrial and residential areas that surround it. From within the Dallas Floodway, these tall buildings appear to sit atop the levees, as views of low-lying surrounding development are obscured by the levees themselves. Though often functionally different, these buildings all exhibit similar visual characteristics such as size and massing - the height of each building is typically three to four times its width. These buildings are mostly located on the northeast side of the Dallas Floodway and are concentrated around the Market/Technology Center, Uptown, and especially downtown Dallas.

Landscape units - based on shared land use, age of existing structures, and functional typology of the area - were defined for the study area in order to provide clarity, facilitate classification, and aid in the visual description of the study area. Each landscape unit, defined in **Table 3-35** below, aligns with one of the first four typologies described in **Table 3-34**.

TABLE 3-35. SUMMARY OF LANDSCAPE UNITS

Landscape Unit	Location	Land Use[1]
Commercial/Industrial		
Brookhollow Industrial Park	North of the Union Pacific Railroad and west of the Dallas Market Center. This area is bisected by SH-183 and IH-35E.	Office, Institutional, Industrial, Hotel, Retail, Flood Control, Vacant, Parking, Utilities
Trinity Industrial District	South of the IH-35E/SH-183 interchange. This area is bordered by IH-35E to the north, the northeast levee to the south, and Wycliff to the west. An additional portion extends from Wycliff, south of Farrington Street, to Cole Street.	Industrial, Flood Control, Office, Retail, Parking, Transportation, Vacant, Parks
Market/Technology Center	From Irving Boulevard just north of the Irving/Industrial Boulevard merge, past IH-35E to Harry Hines. Bounded by Motor Street to the north and Oak Lawn Avenue to the south.	Industrial, Flood Control, Hotel, Parks, Parking, Office, Retail, Institutional
Design District	Boundaries include Turtle Creek Boulevard to the north, IH-35E to the east, Irving/Industrial Boulevard, Cole Street, and the east levee to the west, and Continental Avenue to the south.	Industrial, Retail, Office, Parking, Institutional, Vacant
Mixmaster/Riverside	Positioned between the east levee and IH-35E/IH-30 Mixmaster, bounded by Continental Avenue to the north and the IH-35E to the south.	Industrial, Institutional, Parking, Retail, Flood Control, Vacant, Utilities
CBD (Downtown Dallas)	Boundaries include US-75 to the east, IH-30 to the south, IH-35E to the west, and Woodall Rodgers Freeway to the north.	Office, Institutional, Parking, Retail, Hotel, Parks, Transportation, Multi-Family
Cedars West	Bounded by the Union Pacific Rail Road on the north, the east levee on the south, IH-35E on the west, and the DART Rail Line on the east.	Industrial, Flood Control, Vacant, Utilities
Southern Lamar	The corridor along South Lamar Street and the Union Pacific Railroad south of the DART Rail Line and extending past IH-45 to join with SM Wright Freeway.	Industrial, Vacant, Transportation, Retail
West Commerce Riverside	Boundaries include the Union Pacific Rail Road on the north, IH-30 on the south, Sylvan Avenue on the west, and the west levee on the east.	Industrial, Single-Family, Flood Control, Mobile Homes, Institutional, Parking, Transportation, Vacant
Residential Neighborhood		
West Dallas	Boundaries include the west levee to the north, IH-30 to the south, North Hampton Road on the west, and Sylvan Avenue on the east.	Single-Family, Multi-Family, Vacant, Institutional, Retail, Parks, Industrial, Office, Hotel
La Bajada (also includes Los Altos)	Sylvan Avenue on the west, the Union Pacific Rail Road to the south, the levee to the north, and Beckley Avenue to the east.	Industrial, Single-Family, Transportation, Retail, Vacant
Oak Cliff	IH-35E to the east, SH-180 to the south, Beckley Avenue to the west, and Dealey to the north.	Single-Family, Multi-Family, Parks, Retail, Industrial, Mobile-Homes, Vacant, Transportation, Institutional
Kessler Park	IH-30 to the north, Beckley Avenue to the east, Sylvan Avenue to the west, and Colorado Boulevard the south.	Single-Family, Retail, Institutional, Vacant, Parks
South Dallas/Forest Heights/Ideal/Colonial Hill Historic District	Bordered by South Lamar Street on the south, Grand Avenue on the west, and the Union Pacific Rail Line on the east.	Multi-Family, Single-Family, Retail, Vacant, Industrial, Parks, Institutional
Colonial Hill Historic District	Bordered by Pennsylvania Avenue on the north, IH-45 on the west, SM Wright Freeway on the east, and Hatcher Street on the south.	Single-Family, Retail, Vacant, Institutional, Office, Multi-Family
Rochester Park	Bordered by US-175 to the north, SM Wright Freeway to the west, and the Rochester Park levee to the south and east.	Single-Family, Multi-Family, Industrial, Park, Institutional, Transportation, Flood Control, Vacant
Cadillac Heights	Surrounded by Cedar Crest to the northwest, the Union Pacific Rail Road on the east, and Southerland Boulevard to the southeast.	Industrial, Single-Family, Retail, Vacant, Utilities, Institutional, Multi-Family
Skyline Heights	Includes Moore Park on the north and is bordered by Corinth Street on the west, Morrell Avenue on the south, and Cedar Crest Boulevard on the east.	Parks, Industrial, Vacant, Single-Family, Retail, Institutional, Office
The Bottoms	The west levee to the north, Corinth St. to the east, 8th St. to the south, and IH-35E to the west.	Single-Family, Flood Control, Institutional

TABLE 3-35. SUMMARY OF LANDSCAPE UNITS

Landscape Unit	Location	Land Use[1]
Westmoreland Heights/ Dallas Housing Authority	Boundaries include the west levee to the north, Westmoreland Road to the west, the Union Pacific Rail Road to the south, and Hampton Road to the east.	Single-Family, Multi-Family, Vacant, Institutional, Retail, Industrial, Office
Arlington Park	Bordered by Record Crossing Drive to the north, IH-35E to the west, Lee Hall Drive to the east, and the Trinity Railway Express to the south.	Single-Family, Vacant, Utilities, Institutional, Retail, Industrial, Motel, Office
Park/Open Space		
North Trinity River Greenbelt	Located between the levees with the Westmoreland Road Bridge to the west and the Sylvan Bridge to the east.	Parks, Flood Control
Crow Lake Area	Located east of the Sylvan Road Bridge and between the east levee and the Trinity River channel.	Parks, Flood Control
Central Trinity River Greenbelt	Bordered by Crow Lake Area/Sylvan Road on the west, the IH-35E Bridges on the east, and the levees on the north and south.	Parks, Flood Control
South Trinity River Greenbelt	Boundaries include the IH-35E Bridges on the west, the DART Rail Line on the east, and the levees on the north and south.	Parks, Flood Control
Secondary Succession	Located between the DART Rail Line to the west, the Martin Luther King Boulevard Bridge to the east, and the levees to the north and south.	Parks, Flood Control, Vacant
Great Trinity Forest	These areas are located south of the Martin Luther King Boulevard Bridge and extends south past the IH-45 overpass.	Vacant, Parks
Old Trinity River Meanders	These areas are located between the Dallas Floodway and IH-35E and run from the SH-183/IH-35E interchange to approximately Oak Lawn Ave. Additional areas are located south of the Dallas Floodway, west of Hampton Road.	Flood Control, Vacant, Parks
Transportation Corridors		
IH-45	IH-45 merges with US-75 and connects Dallas with Houston. For the purposes of this study, the section of IH-45 under consideration begins at its intersection with Martin Luther King Boulevard and extends south through the Southern Lamar Boulevard area to the Great Trinity Forest.	Roadway
SH-310	Also known as SM Wright Freeway, this roadway merges with IH-45 just north of MLK and runs south, parallel to IH-45, through South Dallas, Colonial Hill, the Ideal Neighborhood, and Rochester Park.	Roadway
US-175	Also referred to as C.F. Hawn Freeway, US-175 is the easternmost major transportation corridor affected by the proposed action. The portion of US-175 that falls within the study area includes the area to the west of the SP Railroad to its merge with SH-310 and continues north to the intersection with Hatcher St. to the north.	Roadway
MKT Railroad	Southeast of the MLK overpass bridge.	(None Listed)
Martin Luther King Blvd.	Connects East Oak Cliff and Cadillac Heights with South Dallas	Roadway
DART overpass	The DART light rail overpass is northwest of the MLK overpass.	(None Listed)
Corinth Street Viaduct	The Corinth Street Viaduct is north of the DART overpass and connects Oak Cliff with the Lower Cedars Industrial Area.	Roadway
IH-35E	IH-35E overpass connects both sides of the Trinity River, serving as a link between Oak Cliff and downtown Dallas. The northbound bridge is the original Cadiz St. bridge; the southbound bridge is a standard concrete beam bridge.	Roadway
Houston/Jefferson Street	The Houston/Jefferson Street Viaducts are two separate bridges that connect the Oak Cliff Neighborhood with downtown Dallas.	Roadway
IH-30	IH-30 is located north of the Houston/Jefferson Street Viaducts and connects downtown Dallas with Kessler Park, Arlington, and downtown Fort Worth.	Roadway
Commerce Street	The Commerce Street Bridge spans the Trinity River north of IH-30. It has historic character and connects downtown Dallas with West Dallas.	Roadway

TABLE 3-35. SUMMARY OF LANDSCAPE UNITS

Landscape Unit	Location	Land Use[1]
Union Pacific Railroad	Crosses the Dallas Floodway between the Commerce Street and Continental Avenue Bridges.	(None Listed)
Continental Avenue	The Continental Bridge shares a similar design and profile to both the Commerce Street and Houston Street Bridges and is a potential historic bridge. It connects West Dallas and La Bajada to the Design District and downtown Dallas	Roadway
Sylvan Road	Sylvan Road is the only "at-grade" crossing through the Trinity Corridor. The road terminates at an elevated bridge structure on either side of the floodplain. It connects Oak Cliff, Kessler Park, and La Bajada with the Trinity Industrial District and the Market/Technology Center.	Roadway
Hampton/Inwood Road	This bridge is currently being upgraded as part of a separate project. It connects West Dallas with the Trinity Industrial District and Uptown.	Roadway
Westmoreland Road	The Westmoreland Road/Mockingbird Bridge is the northernmost bridge in the study area. It connects West Dallas with the Trinity Industrial District, Brookhollow Industrial Park, and Love Field Airport.	Roadway
Irving/Industrial Boulevard and South Lamar Street	Runs parallel to (and is in between) the Dallas Floodway and IH-35E. This corridor connects the Trinity Industrial District, the Market/Technology Center, the Design District, Lower Cedars, and the Southern Lamar Boulevard area.	Roadway

Source: [1] Land use data from the North Central Texas Council of Governments, 2000a.

The location of each landscape unit is shown on **Plate 3-24**. These landscape units will be used in describing the existing visual character and existing visual quality of the landscape, which will form the visual baseline condition for the study area. To create this baseline, the following methodology (FHWA, 1988) is used in documenting existing visual resources in a study area:

- *Description of the character of the surrounding area* - A descriptive assessment of the area that simply states what is present without evaluating the area's visual quality (**Section 3.8.4 Existing Visual Character**);
- *Description of the existing visual quality* - An evaluative assessment of the area that applies a rating to the quality of the existing visual environment (**Section 3.8.5 Visual Quality Rating for Landscape Units**);
- *Concern of viewer groups for visual quality* - Considering the varying perceptions and preferences of differing user groups when describing existing visual quality (**Section 3.8.6 Perceptions and Preferences of Viewer Groups**); and
- *Goals or objectives for protecting and enhancing visual quality* - Identifying areas of existing visual quality which should be protected or enhanced and goals for protecting and enhancing visual quality for individual viewer groups (**Section 3.8.7 Goals for Protecting and Enhancing Visual Quality**).

3.8.4 Existing Visual Character

The overall visual character of the study area can be illustrated by dividing the area into three bands of landscape and describing each - the Irving/Industrial Boulevard and Lamar Street corridor, the Dallas Floodway, and the band of residential areas south of the Dallas Floodway:

The Irving/Industrial Boulevard and Lamar Street corridor, which constitutes the northern part of the study area, stretches parallel to the Dallas Floodway, and constitutes the majority (but not all) of commercial and industrial land use in the study area, is largely made up of aged industrial and commercial development and some residential areas on the southeast end of the corridor. Much of the development along the corridor predates the citywide landscaping and sign regulations enacted in the 1970s, which, consequently, did not influence the visual character of the study area, thereby allowing a cluttered environment to evolve. In addition, many existing utilities along the corridor are situated above ground, including utility poles and transmission towers, which add to the visual clutter. Low-lying buildings constitute the majority of structures along the corridor; these buildings have irregular set-backs yet are of uniform scale and massing.

View looking north-northwest toward the Irving/ Industrial/Market Center Boulevard intersection from approximately 1300 Industrial Boulevard.

The Dallas Floodway at the center of the study area visually differs greatly from the areas surrounding it. This parkland lacks significant topographic variation other than the presence of levees on the northeast and southwest; the Dallas Floodway itself is an expansive flat area relieved by strands of trees along the river channel and bridges crossing the floodplain. The combination of the Dallas Floodway and levees creates a valley and meadow-like feel to someone standing in the Dallas Floodway. Several transportation links cross the Dallas Floodway; these links range in intensity from a two-lane road which crosses the Dallas Floodway at-grade (Wycliff/Sylvan Avenue) to major interstate highway bridges. Many of the bridges which cross the Dallas Floodway are stark concrete-beam structures typical of most highway interchanges while some bridges are of historic character and include unique design components such as arches and decorative railings. The most apparent visual characteristic of this parkland is its uniqueness in an area that is so highly urbanized. When considered in relation to the surrounding land use, the park provides a visual break between the urban environment of the Dallas CBD and industrial areas to the northeast and the neighborhoods to the southwest. In a similar fashion, the Dallas Floodway serves as a buffer for the neighborhoods that lie to the southwest of the floodplain and facilitates the transition from an urban environment to a less intense land use. A unique visual characteristic of the Dallas Floodway is the manner in which it “sets the stage” for dramatic views toward the skyline of downtown Dallas during both day and night.

View looking along Dallas Floodway toward the Sylvan Avenue Bridge.

The band of residential areas south of the Dallas Floodway constitutes the third general band of development in the study area. This area typically consists of neighborhoods of small houses on small lots; generally the houses are visibly aged but not dilapidated (though in some areas, the houses have fallen into disrepair). In many areas, however, empty lots are as prevalent as lots with houses on them. Mature trees and shrubs are abundant in this area, which allows a greater diversity of color and visual texture than that found in the industrial corridor to the north. Small-scale retail and numerous religious institutions of scales and massing consistent with the nearby houses are spread throughout the area. The southwest levee is visible from many of these neighborhoods; this increases the amount of green space visible from these areas, but introduces a visual barrier to the Dallas Floodway.

View looking north on Avenue F near East 11th Street.

3.8.5 Visual Quality Rating for Landscape Units

The landscape units identified and discussed in **Table 3-35** were rated for visual quality based on the FHWA's (1988) methodology. This methodology provides a visual quality rating for each landscape unit, based on visual qualities like vividness, intactness, unity, and uniqueness of each area. There are seven visual quality values applicable to each landscape unit based on these three criteria:

1 = very low - the area does not display vividness/intactness/unity;
2 = low;
3 = moderately low;
4 = moderate;
5 = moderately high;
6 = high; and
7 = very high - the area is visually extremely vivid/completely intact/unified.

Each landscape unit was assigned a visual quality value ranging from 1-7. **Table 3-36** identifies the landscape unit, provides brief descriptions, and indicates the assigned visual rating.

TABLE 3-36. VISUAL RATING FOR LANDSCAPE UNITS

Landscape Unit	Description	Visual Rating
Commercial/Industrial		
Brookhollow Industrial Park	• This area contains a mixture of large, tall buildings - set off of tree-lined streets and surrounded by parking lots - and smaller, low buildings set in a denser pattern that includes smaller-scale parking areas.	4
Trinity Industrial District	• Generally large, non-descript buildings without any unique visual characteristics fronting the roadway. • Truck rental and sales (as well as other outdoor vehicle storage spaces, billboards, and overhead power lines) create visual clutter throughout the district.	3
Market/Technology Center	• Contains a high concentration of properties with landscaping surrounding structures and parking lots. • The area consists of several large-scale buildings and large expanses of parking lots.	4
Design District	• Eclectic mix of old and new development. • Structures exhibiting historical character that may be prime locations for redevelopment.	5
Mixmaster/Riverside	• Decayed industrial/commercial area with high amounts of visual clutter and litter. • Though the commercial buildings are old and poorly constructed, the newer State Jail/Criminal Justice Center dominates the landscape.	2
CBD (Downtown Dallas)	• Densely developed area. • Large concentration of high-rise buildings. • Focal point for Dallas Floodway, transportation corridors, and community spaces. • Icon of Dallas.	6
Cedars West	• Isolated pockets of small industry between the levee and flood control sumps • Large refrigerated storage facility (currently under demolition).	2
Southern Lamar	• Heavy-industry corridor. • Some vacant and dilapidated industrial businesses. • Recycling and scrap metal lots.	1
West Commerce Riverside	• Includes a wide variety of commercial and industrial building types, sizes, and ages as well as several salvage and truck storage yards which contributes to an un-unified, cluttered appearance of the area.	3
Residential Neighborhood		
West Dallas	• Single-Family residences; cluttered front yards; disrepair of property. • Consistency in building type. • Variety of exterior sheathing materials.	2
La Bajada (also includes Los Altos)	• Attractive single-family residences behind unattractive, aged, decaying commercial and industrial buildings. • A large amount of open space present in the neighborhood.	3
Oak Cliff	• Higher percentage of multifamily, industrial, and commercial land uses than other residential districts. • Housing types are less consistent. • Contains a mixture of older housing units (lower-quality houses and apartments, redeveloped housing (houses and housing tower), and new housing (apartments and condos).	4
Kessler Park	• Low residential densities. • Mature canopy vegetation adds unity and character to the neighborhood. • Higher quality of housing. • Topographic variation adds visual interest.	7
South Dallas/Forest Heights/Ideal/Colonial Hill Historic District	• Most areas are characterized by aged, decayed residences, un-managed yards, trash, and other visual clutter. • A few, isolated areas of old, yet higher-quality housing exist; in these areas, building style, size, and age is uniform.	2
Rochester Park	• This area includes a mixture of multi-family housing that is repetitive and reminiscent of Soviet-era construction, single-family houses of low-quality and poor condition, and a large Dallas Water Utilities plant that dominates the area.	2

TABLE 3-36. VISUAL RATING FOR LANDSCAPE UNITS

Landscape Unit	Description	Visual Rating
Cadillac Heights	• Small, generally well-kept houses on small lots in an area of abundant, mature vegetation. • Neighborhood streets are narrow and without curb and gutter; there are many cars and trucks in front of houses (sometimes they are parked in front yards). • Surrounding the residential portion of the neighborhood is a high concentration of industrial/manufacturing businesses.	3
Skyline Heights	• Topographically varying area affording views of downtown high-rises • Houses are small and uniform in appearance with typically well-kept yards and facades.	3
The Bottoms	• Small houses on small lots set in a low-lying area; several lots are empty, but the area still maintains a sense of cohesion.	3
Westmoreland Heights/ Dallas Housing Authority	• Tall, mature trees along original river meander; large lots, small houses; feels like a small town neighborhood. • Uniform houses/duplexes/apartments in open fields; few trees, little character to the neighborhood; higher quality housing, though.	3
Arlington Park	• Quaint neighborhoods with typically well-kept yards and facades; houses are all of similar size, style, and age.	4
Park/Open Space		
North Trinity River Greenbelt	• Key characteristics of this area include marshes, riparian trees lining the river channel, and open meadows of mostly native turf grasses, sedges, herbaceous perennials, annuals, and isolated woody persistents peppered with second-growth mature trees. • Because of the height of the levees, structures exterior to the floodplain - including electric transmission towers and buildings located in the Trinity Industrial District, Brookhollow Industrial Park, and the CBD - become a part of the park experience. • The Westmoreland/Mockingbird, Hampton/Inwood, and Wycliff/Sylvan Bridges are located in this area and visually frame and divide the landscape. None of the bridges are aesthetically unique.	6
Crow Lake Area	• This area includes a lake affording expansive views toward Downtown, as well as a quiet walk/jog trail around the lake and a parking area adjacent to Sylvan Avenue. • Dramatic views of CBD Dallas/Oak Cliff. • Flat, Horizontal expanse of native grasses with several mature trees.	6
Central Trinity River Greenbelt	• This area is narrower than other parts of the Greenbelt and is characterized by open meadows consisting of vegetation similar to that found in the North Trinity River Greenbelt, riparian trees along the river channel, and nine sump outfalls which appear as long, narrow coves that extend from the river channel to one levee or the other. • This portion of the Greenbelt appears more urban than other areas; the CBD is much more visually prominent here than elsewhere in the Dallas Floodway, as are power transmission lines and numerous bridges. • Eight bridges cross or border this portion of the Dallas Floodway (Wycliff/Sylvan, the Continental Viaduct, Commerce Street, IH-30, the Houston and Jefferson Street Viaducts, and two separate IH-35E bridges. Four of these structures (Continental, Commerce, Houston, and the north-bound IH-35E bridge [formerly the Cadiz Street bridge]) exhibit historic character in terms of construction style and material while the other bridges are not visually unique.	6
South Trinity River Greenbelt	• This portion of the Greenbelt is noticeably dissimilar to other areas in the Dallas Floodway; the river channel is much closer to the northeast levee than the southwest levee in this area and is largely devoid of riparian vegetation which allows almost uninterrupted views of the levee on the opposite side of the Dallas Floodway. This area also has the largest amount of marshlands in the study area, which varies from the predominately meadow-like nature of other parts of the Dallas Floodway. • The CBD and Reunion Tower are both visible from this area, but are not as prominent as the large open area between the levees. • The northbound IH-35E Bridge and the Corinth Street Bridge are visually prominent due to the small number of trees in the area; these bridges - built in the early part of the 20th century - exhibit a simple yet elegant design. Just south of the DART Rail Bridge (a simple, modern concrete bridge) lies the abandoned wooden Santa Fe Railroad bridge and trestle; this bridge has vegetation growing up its sides, which adds to its rustic appearance.	6

TABLE 3-36. VISUAL RATING FOR LANDSCAPE UNITS

Landscape Unit	Description	Visual Rating
Secondary Succession	• The most visually prominent feature of this area is the large amount of dense, established hardwood tree growth, which spreads across the entire portion of the Dallas Floodway. • Other visual features include the beginnings of the river channel meanders and the Martin Luther King Blvd. Bridge, which is abutted by trees through its entire traverse across the Dallas Floodway. Because of its location within the trees, the bridge is not a prominent visual focus to viewers in the Dallas Floodway. Similarly, viewers from the bridge (primarily motorists) see only tree canopy.	5
Great Trinity Forest	• Climax dominant woodland species indigenous to the Trinity floodplain. • The dense trees and understory shorten the view and create a series of intimate, personal spaces. The trees serve as a visual buffer, blocking the views of land uses exterior to the floodplain.	6
Old Trinity River Meanders	• Green strands through the Trinity Industrial District and Market/Technology Center areas, which provide visual relief from the grey urban environment of the industrial area. • Vegetation consists largely of un-manicured and native grasses, shrubs, and some trees which typically catch and hold liter from the storm drainage that flows through the area.	4
Transportation Corridors		
IH-45	• Continuous, six-lane steel girder bridge constructed in the late 1960s to early 1970s. Substructure is a series of exposed steel "I" beams supported by grouped piers. There are 36 spans. • Passes through the Great Trinity Forest, Southern Lamar, Forest Heights, and Colonial Hill landscape units and affords views of downtown Dallas.	4
SH-310	• Four-lane divided "at-grade" highway, which is a principal arterial for the City of Dallas, built to standard TxDOT specifications. • Passes through or near the Colonial Hill, South Dallas, Ideal, Rochester Park, Southern Lamar, and Great Trinity Forest Landscape Units.	3
US-175	• Four-lane, undivided at-grade alignment, which serves as a principal arterial through South Dallas. • Passes through the Ideal Neighborhood landscape unit.	2
MKT Railroad	• Steel plate girder bridge constructed in the late 1920s with 32 spans and a 200-foot steel truss over the Trinity. • The bridge is not widely visible because if its location in the Great Trinity Forest.	4
Martin Luther King Blvd.	• Four-lane divided principal arterial roadway. • Passes through Skyline Heights and Cadillac Heights, serves as a border between the Secondary Succession and the Great Trinity Forest, passes over Southern Lamar, and cuts through Forest Heights.	4
DART overpass	• Constructed in the 1990s, the bridge's main spans over the Trinity River are continuous welded steel plate girder bridges, clothed in a concrete fascia with a steel guardrail. • Passes by Skyline Heights, between the South Trinity River Greenbelt and the Secondary Succession, and between Cedars West and Southern Lamar.	4
Corinth Street	• A low-speed four-lane undivided roadway in need of repair; the bridge over the Dallas Floodway was constructed with a simple, classic design, and has potential for historic status. • Crosses the South Trinity River Greenbelt and passes through Cedars West; expansive views of downtown Dallas.	5
IH-35E	• This is one of the busiest highways in Dallas and in the nation. The bridge consists of two distinct structures with dissimilar construction styles; northbound traffic travels across a structure built in the 1920s as the Cadiz Street Bridge while southbound lanes travel across a more modern steel plate girder bridge. • Passes between Oak Cliff and the Bottoms, crosses between the Central Trinity River Greenbelt and the South Trinity River Greenbelt, and passes between the Mixmaster/Riverside and Cedars West areas; views of downtown.	4

TABLE 3-36. VISUAL RATING FOR LANDSCAPE UNITS

Landscape Unit	Description	Visual Rating
Houston/Jefferson Street	• These are two separate roads which run parallel to each other. The bridges are of two different eras and two different styles; the Jefferson Street Bridge was constructed in 1975 as a steel plate girder bridge with a concrete deck and is generally unattractive while the Houston Street Bridge was constructed in the early 1900s with 51 individual concrete arches and is designated as an historic structure and an ASCE National Civil Engineering Landmark. • These streets pass through Oak Cliff, across the Central Trinity River Greenbelt, through the Mixmaster/Riverside area; downtown is prominent to northbound motorists.	5
IH-30	• Another high-traffic highway, this is a modern interstate highway with a continuous plate girder bridge spanning over 2,200 feet across the floodplain. • Passes between Kessler Park and West Commerce Riverside, crosses the Central Trinity River Greenbelt, and passes through the Mixmaster Riverside area; downtown is prominent to eastbound motorists.	5
Commerce Street	• 1929 construction as a part of the Kessler Development Plan; the bridge was developed contemporaneously with the Continental and Cadiz Street Bridges. • Cuts through West Commerce Riverside, the Central Trinity River Greenbelt, and the Mixmaster Riverside area; downtown is visible to eastbound motorists, though it is partially obscured by the State Jail/Criminal Justice Center.	5
Union Pacific Railroad Bridge	• This is a concrete pier bridge with a rusted, steel trestle crossing the river channel. Many of the concrete piers are covered with graffiti. • This bridge is visible from the Central Trinity River Greenbelt, the Continental Viaduct, and the Commerce Street Bridge.	3
Continental Avenue	• Constructed as a part of the triad of "C" bridges (Commerce, Continental, and Cadiz), this road crosses the floodplain via a concrete span bridge with a haunched-cantilever steel girder. • Passes through West Dallas, La Bajada, the Central Trinity River Greenbelt, and between the Design District and the Mixmaster Riverside area; downtown is very prominent to eastbound motorists.	5
Sylvan Road	• This two-lane undivided roadway is the only "at-grade" crossing of the Trinity River; it does not have barriers, paved shoulders, or landscape improvements during its crossing of the floodplain. Bridges at the east and west levees are continuous steel plate girder bridges. On either side of the Dallas Floodway, this road expands to four lanes with medians. • Passes between West Dallas and La Bajada and the North Trinity River Greenbelt, Crow Lake Area, and the Central Trinity River Greenbelt, runs through the Trinity Industrial District, and skirts the Market/Technology Center; downtown is visible from portions of the road, but is not entirely prominent.	4
Hampton/Inwood Road	• A four-lane principal arterial for the City of Dallas. The bridge, constructed in 1951, is a continuous steel plate girder bridge with an exposed steel "I" beam substructure and galvanized metal railing over flush concrete curbs. • Runs between the Dallas Housing Authority area and West Dallas, crosses the North Trinity River Greenbelt, and passes through the Trinity Industrial District.	4
Westmoreland Road	• This is a high-volume, six-lane road that is a principal arterial for the city; the bridge over the floodplain is an unattractive concrete structure with a steel railing along the edges. • This road passes through Westmoreland Heights, the North Trinity River Greenbelt, and the Trinity Industrial District.	4
Irving/Industrial Boulevard and South Lamar Street	• The roadways which make up this corridor are typically four to six lanes wide and alternate between having medians, center turn lanes, and no division between directions of travel. • Passes through the Trinity Industrial District, Market/Technology Center, Design District, the Mixmaster Riverside area, Cedars West, and Southern Lamar.	3

3.8.6 Perceptions and Preferences of Viewer Groups

As discussed in **Section 3.8.1 Viewer Groups**, there are four viewer groups that are prominent in the study area - motorists, residents, recreational users, and business employees/patrons. Each of these viewer groups visually experiences the landscape of the study area differently based on the user's

function in the area and whether the user is viewing the landscape in motion or from a more or less fixed point. Each of these groups will have differing visual preferences and perceptions of visual information and should therefore be considered individually.

Though all user groups perceive the visual quality of the landscape differently, motorists have their visual perception further altered by the speed with which they move through the landscape and their necessary focus on driving responsibilities and the road ahead of them. Because of this, motorists typically see less than other users; rather than focusing on the detail of the landscape, motorists focus on objects in front of them in the distance (which are focal points, such as a tall building or hill) and perceive less of the landscape on either side of the road - observing the massing, size, use, and general color of the landscape rather than individual pieces of vegetation, rock formations, or architectural details of buildings. Continuous roadside details, however, such as overhead power lines and billboards are positioned (intentionally, in the case of billboards) in such a way that they are more visually prominent to motorists, resulting in additional visual clutter of the landscape. Examining changes to the visual quality of an environment from the perspective of a motorist should focus on determining whether a proposed action would result in the loss of long-range views towards focal points in-line with motorist direction of travel or increases in visual clutter (such as through the addition of fly-over ramps).

Visual preferences for this group favor the creation of focal points for the road (such as downtown), installing clear, visible signage, and avoiding a cluttered visual environment along and above the roadway. Architectural treatments of bridges and ramps crossing over the proposed and existing roadways would reduce the sense of clutter and disorder - many of the existing, historic-character bridges exhibit these qualities.

Residents are one of the more vulnerable user groups with regard to visual changes because of their permanency within the area. While other user groups visit the study area occasionally or work within the area, residents come home to this area every day, spend their weekends here, and recreate here - no other user group spends as much time in the study area as residents do. There are likely differences within this user group based on individual preference for the quality of the area's visual environment; for example, a resident from Kessler Park might have a different perception of the visual quality of The Bottoms Neighborhood than would a resident of that neighborhood. The perception of visual quality change from a resident may be heavily influenced by other factors related to a roadway project, such as increased noise and local pollution, traffic on side streets, and indirectly lowered property values. Because residents perform many activities in their neighborhoods, the changes in visual quality should be considered not only from residential properties, but also from local streets, community spaces, parks, and religious institutions. It should also be considered that while some residents might view the affected

landscape actively (such as while sitting on the front porch), residents are typically more likely to experience views in passing during their day-to-day activities.

With regard to transportation facilities, the visual preferences of residents favor small-scale, low-speed streets, rather than high-speed facilities, which imply changes in property values and increased noise, traffic, and air pollution. Such high-speed facilities also act as barriers (visual and otherwise) between neighborhoods or between a neighborhood and a park.

Recreational users - those using one or more of the parks or trails within the study area - will also be sensitive to changes in the visual character of the landscape. A considerable portion of time spent by recreational users in this area focuses on actively viewing the landscape, often while positioned in one location - they also view *farther* than other viewer groups because of the nature of recreational activities. Therefore, changes in visual information and visual quality will be more apparent to this group than to other groups. However, the recreational user viewer group is currently the smallest of the four viewer groups and the majority of recreational activity happens at Crow Lake Area, on the river channel (by canoe), and on the levee-top trails (the latter of these two linear areas span considerable portions of the Dallas Floodway). Therefore, while future recreational users may be more numerous and may view more portions of the study area, changes in visual quality as seen by the current viewer group will be experienced in specific locations by a limited number of individuals; measuring changes in visual quality should be focused on these areas.

While visual preferences among this group favor architecturally unique bridges (as well as open spaces, varied landscape patterns, and expansive views of downtown Dallas), they likely do not favor transportation facilities that alter the visual landscape along the entire Dallas Floodway. The appearance of a roadway along the Dallas Floodway - which is characterized by bridges crossing the Dallas Floodway, not roads lining the Dallas Floodway - would seem out-of-place and invasive.

Like those in the residential viewer group, business employees and patrons typically view the landscape in passing during their daily activities, though some users are likely to view the landscape actively - such as someone with a window office in a high-rise building. Whether viewed actively or passively, changes in visual quality are still important to this user group as visual quality implies the quality of the business itself. Changes in visual quality for business employees and patrons should be considered from the point of view of whether views of the business are obscured or enhanced and whether the roadway will indirectly improve or degrade the image of the business.

Visual preferences within this group favor nearby high-volume transportation facilities because of the increased perception of accessibility to businesses (and therefore increased sales) and the potential for better business visibility to motorists.

3.8.7 Goals for Protecting and Enhancing Visual Quality

Protecting visual quality in the study area should be of prime concern; enhancing visual quality where possible should also be a priority. Specific portions of the study area have been rated highly for visual quality - this quality should be protected. In addition, the varying needs of the four viewer groups should be considered in protecting visual quality. Therefore, two sets of goals - visual resource goals and user group goals - have been established for the protection and enhancement of visual quality in the study area. Some of these goals can be accomplished through choosing an alternative alignment sensitive of high-quality areas and viewer group needs while other goals will be met through mitigation.

Visual Resource Goals:
Protect the visual quality of the following landscape units:

- *Commercial/Industrial*
  - Design District
  - CBD
- *Residential*
  - Kessler Park
  - Arlington Heights
  - Oak Cliff
- *Parks/Open Space*
  - Trinity River Greenbelt
  - Crow Lake Area
  - Great Trinity Forest
- *Transportation*
  - Corinth
  - Houston/Jefferson
  - IH-30

While the focus of most of these goals is on protecting the visual quality of the landscape unit within the landscape unit, some goals are aimed at protecting a slightly different type of visual resource. The goal of protecting the visual quality of the CBD does not mean - for this project - that the street-level visual quality of the CBD should be protected; rather, this goal focuses on protecting longer-distance views of

the CBD from the study area, as the tall buildings in the CBD provide a focal point and serve as an icon of Dallas. Goals for preserving visual quality for the three transportation corridors listed focus on preserving the views from the roadway - though two of the bridges found along these corridors (the Corinth Street and Houston Street Viaducts) are themselves visually interesting and each has historical character.

User Group Goals:

- *Motorists*
  - Road clutter should be avoided; overpasses or ramps over existing bridges and roads should be minimized and/or architecturally interesting.
  - Ramps and overpasses should not be placed in such a way as to confine existing views of downtown (or any other focal point) for motorists.
- *Residents*
  - Road should not create visual barriers between neighborhoods or between a neighborhood and a park area.
  - The roadway should not have prominence in views from neighborhoods.
- *Recreational Users*
  - Road should not be visible to park users; special care should be given around Crow Lake Area, river channel, and the Levee-top trail as these are currently what are used.
  - Do not obscure views from the Dallas Floodway toward the CBD or those bridges that are architecturally unique.
- *Business Employees/Patrons*
  - Road should not obscure view of business, rather, it should increase business visibility.
  - Road design should be attractive, which will improve the image of existing businesses and business properties.

3.9 HAZARDOUS/REGULATED MATERIALS

A search of publicly available records to identify potential hazardous waste/material sites was conducted for each of the eight Build Alternatives. The search focused on hazardous waste/material sites located within 500 feet either side of the proposed alternative alignments. The following list of EPA and TCEQ databases were reviewed for this study.

EPA Regulatory Databases

Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) Database - CERCLIS contains data on potentially hazardous waste sites that have been reported to the EPA pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and

Liability Act (CERCLA) and contains sites that are either proposed to or on the NPL and sites in the screening and assessment phase for possible inclusion on the NPL.

National Priority List (NPL) - The NPL is a subset of CERCLIS and is a list of priority sites the EPA has determined to pose a threat to human health and/or the environment and where remedial action is required.

Resource Conservation and Recovery Information System (RCRIS) Treatment, Storage or Disposal (TSD) Database - RCRIS, under the Resource Conservation and Recovery Act (RCRA), provides information concerning facilities that generate, transport, treat, store, and/or dispose of hazardous waste as federally defined. The RCRIS TSD is a subset of the RCRIS list, which tracks facilities that treat, store, and/or dispose of hazardous waste.

RCRIS Generators Database - The RCRIS generators database tracks facilities that generate or transport hazardous waste. A conditionally exempt small quantity generator (SQG) is a facility that produces less than 220.5 pounds of hazardous waste per month; a SQG produces at least 220.5 pounds per month, but less than 2,204.7 pounds of hazardous waste per month; and a large quantity generator (LQG) produces more than 2,204.7 pounds of hazardous waste per month.

RCRIS Corrective Action (CORRACTS) Database - The RCRIS CORRACTS database lists sites with RCRA corrective action activity.

RCRA Administrative Action Tracking System (RAATS) Database - The RAATS database tracks facilities that have had administrative enforcement and civil actions issued by the EPA prior to September 1995 pertaining to major RCRA violators.

Integrated Compliance Information System (ICIS) - The ICIS supports the needs of the national enforcement and compliance program. Currently, the ICIS database contains all federal administrative and judicial enforcement actions.

State of Texas Regulatory Databases

Texas State Superfund List - The Texas State Superfund database is a list of sites that the State of Texas has identified for investigation or remediation.

Solid Waste Facilities/Landfills (SWF/LF) Database - The TCEQ requires municipalities and counties to report known active and inactive landfills. The SWF/LF database is a listing of solid-waste facilities, transfer stations, and processing stations registered and tracked by the TCEQ Solid Waste Division.

Registered Storage Tank (RST) Database - The RST database is a list of facilities with registered underground storage tanks (USTs) and/or aboveground storage tanks (ASTs).

Leaking Underground Storage Tank (LUST) Database - The LUST database is a list of facilities with known releases from an underground storage tank system.

Voluntary Clean-Up Program (VCP) Database - The VCP database is a list of sites participating in the TCEQ VCP, which was established to provide administrative, technical, and legal incentives to encourage the clean up of contaminated sites.

Innocent Owner/Operator Program (IOP) Database - The IOP database is a list of sites contaminated as a result of a release or migration of contaminants from an off-site source or sources, and where the facility owner and/or operator did not cause or contribute to the source or sources of contamination.

Closed Landfill Inventory (CLI) - The CLI database is a list of permitted as well as closed, abandoned, and unauthorized landfill sites.

Enforcement (ENF) Report - The ENF database is a notice of violations listing that includes a listing of permit violations and administrative orders issued to municipal solid waste, petroleum storage tank, and multi-media sites.

3.9.1 Assessment of Contamination Potential

Identified hazardous waste/material sites located within the proposed right-of-way or within 500 feet of a proposed alignment that were considered to have a high probability for contamination are shown on **Plate 3-25**. Examples of these sites include landfills, active Superfund sites, RCRA sites with reported violations, and reported LUST sites that have not attained closure status. **Table 3-37** provides a summary of database information pertaining to these sites and/or facilities.

TABLE 3-37. POTENTIAL HAZARDOUS WASTE/MATERIAL SITES

Plate ID No.	Regulatory Database	Regulatory Reference	Facility Name/ Address	Summary	Adjacent or within ROW (Yes/No)
1	RCRIS-SQG LUST RST IOP VCP	-EPA No. TXD007331788 -LUST No. 94610 -IOP No. 291 -VCP No. 975	Flint Ink Corporation 3120 Halifax Street	Former ink manufacturing facility. VCP Site - 1.9 acres; received into the VCP in 1999; TPH/phase-separated hydrocarbons affected soils/groundwater; VCP Certificate of Completion issued in 2005 with restricted groundwater use as an institutional control. IOP Site - 1.9 acres; received into the IOP in 2002; VOCs affected soils and groundwater; IOP Certificate issued in 2003. Violations concerning RCRA generator requirements. One UST removed from the ground, two USTs abandoned in place. LUST Status[1] - Final concurrence issued, case closed. LUST Priority[2] - Assessment incomplete, no apparent threats or impacts to receptors.	No
2	RCRIS-SQG LUST RST	-EPA No. TXD086273554 -LUST No. 103984	Hylift, Inc. 2928 Irving Boulevard	Violation of the Texas Solid Waste Rule. Wastes included spent halogenated solvents used in degreasing. Two USTs removed from the ground. LUST Status - Final concurrence issued, case closed.	Yes
3	RCRIS-SQG	-EPA No. TXD981914310	The Printing Place, Inc. 3160 Commonwealth Drive	Violations of the Texas Solid Waste Rule.	No
4	LUST RST	LUST No. 112718	Bright Truck Leasing 3020 Irving Boulevard	Two USTs removed from the ground. LUST Status - Monitoring. LUST Priority - Impacted groundwater within 500 feet - 0.25 mile to surface water used by human, endangered species.	Yes
5	LUST RST	LUST No. 113975	Aladdin Car Wash 1449 Inwood Road	Four USTs removed from the ground, one 12,000-gallon gasoline UST in use. LUST Status - Site Assessment. LUST Priority - Impacted groundwater within 500 feet - 0.25 mile to surface water used by human, endangered species.	Yes
6	RCRIS-SQG CERCLIS	EPA Nos. TXR000019042 and TX0000605431	Motor Works/Dallas Battery, Inc. 2743-5 Irving Boulevard	Former retail store (Dallas Battery) that rebuilt and distributed lead-acid batteries, vacated in 1991, subsequently occupied by an automotive engine parts repair shop (Motor Works). Wastes included spent solvents (i.e., tetrachloroethylene). Non-NPL status - Preliminary Assessment start needed. Several violations of the Texas Solid Waste Rule and RCRA generator requirements.	Yes
7	IOP LUST RST	IOP Nos. 244 and 329 LUST No. 115329	Pioneer Concrete of Texas/Hanson Aggregate Central 2151 Irving Boulevard	Former concrete plant. VOCs affected soils and groundwater documented at the site (5.5 acres). IOP Certificates of Completion issued in 2002 and 2003. Two USTs removed from the ground. LUST Status - Preassessment/release determination. LUST Priority - Groundwater impacted no apparent threats or impacts to receptors.	Yes

TABLE 3-37. POTENTIAL HAZARDOUS WASTE/MATERIAL SITES

Plate ID No.	Regulatory Database	Regulatory Reference	Facility Name/ Address	Summary	Adjacent or within ROW (Yes/No)
8	LUST RST	LUST No. 114546	Hargrove Electric Co. 1522 Market Center Boulevard	One UST permanently filled in-place. LUST Status - Pre-assessment/release determination. LUST Priority - Assessment incomplete, no apparent threats or impacts to receptors.	Yes
9	RCRIS-SQG	EPA No. TXD050136290	Manders Premier, Inc. 327 Cole Street	Printing ink manufacturing facility. Violations of RCRA generator requirements and the Texas Solid Waste Rule. Wastes included pigment sludge and wastewater containing organics and metals.	No
10	RCRIS-LQG	EPA No. TXD980810279	Lone Star Wire, Inc. 1310 Dragon Street	Steel wire and related products manufacturing facility. Violation of the Texas Solid Waste Rule recorded for the facility. Wastes included trichloroethylene sludge	No
11	RCRIS-SQG	EPA No. TXD026267591	Manhattan Laundry and Dry Clean 1345 E. Levee Street	Inactive facility. Wastes included spent halogenated solvents (i.e., tetrachloroethylene) and spent non-halogenated solvents (i.e., xylene, acetone, and ethyl acetate). No violations listed.	No
12	LUST RST	LUST No. 110529	Auto Detail and Service 1101 N. Industrial Boulevard	Three USTs removed from the ground, one UST in use. LUST Status - Pre-assessment/release determination. LUST Priority - Assessment incomplete, no apparent threats or impacts to receptors.	Yes
13	LUST RST	LUST No. 101987	Payless Convenience Store 1000 N. Industrial Boulevard	Three USTs removed from the ground. LUST Status - Monitoring. LUST Priority - Groundwater impacted, no apparent threats or impacts to receptors.	Yes
14	IOP	IOP No. 125	3 Vaughan Company 918 Dragon Street	Distribution warehouse. VOCs and metals affected soils and groundwater identified at the site (0.6 acres). Entered the IOP in 1999. IOP Certificate of Completion issued February 2000.	No
15	RCRIS-SQG ICIS	EPA No. TXD000836460 and 110005030778	TU Electric Payne Street Service Center (Dallas Power and Light Materials Reclaim) 100 Payne Street	Violation concerning RCRA generator requirements. Violations resulting in enforcement action under the Toxic Substances Control Act (TSCA) Wastes include halogenated (e.g., chlorinated) solvents, PCB-contaminated solids, wet cell batteries, lubricating oil, oil skimmings, PCB capacitors, asbestos, paint solvents, lead waste, metal scrap, PCB transformer oil, and used ethylene glycol.	Yes
16	RCRIS-SQG LUST RST	-EPA No. TXD006438626 -LUST No. 102415	Greyhound Lines, Inc. 315 Continental Avenue	Violation of the Texas Solid Waste Rule recorded for the facility. Wastes included spent halogenated solvents (i.e., tetrachloroethylene) and paint waste. Eight USTs removed from the ground. Three USTs in use. LUST Status - Final concurrence issued, case closed.	No

TABLE 3-37. POTENTIAL HAZARDOUS WASTE/MATERIAL SITES

Plate ID No.	Regulatory Database	Regulatory Reference	Facility Name/ Address	Summary	Adjacent or within ROW (Yes/No)
17	RCRIS-SQG	EPA No. TXD050836170	AUM, Inc./Silver Services Recycler 324 Singleton Boulevard	Violations of the Texas Solid Waste Rule.	No
18	LUST RST	LUST No. 113012	Star Grocery (GLOCO [Good Luck Oil Co.] #40) 353 Singleton Boulevard	One 4,000-gallon and two 8,000-gallon gasoline USTs in use. LUST Status - Monitoring. LUST Priority - Groundwater impacted, no apparent threats or impacts to receptors.	No
19	RCRIS-SQG	EPA No. TXD007322530	Oak Cliff Plating Co. 2330 N. Beckley Avenue	Inactive facility. Former electroplating, polishing, anodizing, and coloring facility. Wastes included spent cyanide electroplating bath solutions. Violations concerning RCRA generator requirements.	Yes
20	LUST RST	LUST No. 106272	Jacks Service Station 322 Cadiz Street	Five USTs removed from the ground. LUST Status - Corrective action plan. LUST Priority - Groundwater impacted, no apparent threats or impacts to receptors.	No
21	LUST RST	LUST No. 101691	Kwik Stop (Diamond Shamrock) 418 Corinth Street	Three gasoline USTs in use. LUST Status - Corrective action plan. LUST Priority - Groundwater impacted, no apparent threats or impacts to receptors.	Yes
22	LUST RST	LUST No. 97465	Chevron/Texaco/Gulf/Metro Cost Plus 201 Corinth Street	Four USTs removed from the ground. Two 10,000-gallon gasoline USTs in use. LUST Status - Monitoring. LUST Priority - Groundwater impacted, no apparent threats or impacts to receptors.	Yes
23	RCRIS-LQG LUST RST VCP ENF ICIS	-EPA No. TXD026213769 -LUST No. 95395 -VCP No. 999	Buckley Oil and Chemical 1809 Rock Island Street	Chemical storage/distribution facility. Application to enter the VCP submitted in 1999. Media affected and contaminant categories not reported. VCP Phase - Withdrawal. Wastes included spent halogenated (chlorinated) solvents (i.e., tetrachloroethylene), non-halogenated solvents, glycol, and sorbent used for solvent and oil spills. Violations of RCRA generator requirements and the Texas Solid Waste Rule. Violations resulting in enforcement action under the Clean Water Act. One UST removed from the ground, one UST permanently filled in-place. LUST Status - Cross-reference to another LUST number. LUST Priority - Groundwater other than 1B, site characterization incomplete.	No
24	VCP	VCP No. 402	Atlas Scrap Iron and Metal Company 2209 S. Industrial Boulevard	Scrap metal yard. VCP Site - 1.9 acres Soils impacted by metals, total petroleum hydrocarbons, and VOCs. Excavation/removal of affected media and a surface cap were implemented to satisfy Risk Reduction Standard No. 3 requirements. Conditional certificate of completion issued in 1999.	Yes

TABLE 3-37. POTENTIAL HAZARDOUS WASTE/MATERIAL SITES

Plate ID No.	Regulatory Database	Regulatory Reference	Facility Name/ Address	Summary	Adjacent or within ROW (Yes/No)
25	RCRIS-SQG RST ENF	EPA No. TXD000836494	Faubion Associates, Inc. (Dresser Industries Guiberson Division) 1000 Forest Avenue	SIC Code - 2541, Wood partitions and fixtures manufacturing. Registered wastes included ignitable wastes (e.g., lacquer thinner) and spent non-halogenated solvents. Violations concerning RCRA generator requirements and the Texas Solid Waste Rule. Three USTs removed from the ground.	Yes
26	RCRIS-SQG RCRIS-TSD RAATS RST LUST ICIS	-EPA No. TXD071376404 -LUST No. 92660	Praxair, Inc. (Union Carbide Corp./Linde Gases of the South/Airgas Southwest) 1001 Forest Avenue	Industrial gases manufacturing facility. Violations concerning RCRA generator requirements and the Texas Solid Waste Rule. Violations resulting in enforcement action under the Clean Water Act. Wastes included trichloroethane, caustic cleaning solution, waste oil, and waste propylene glycol Three USTs removed from the ground. LUST Status - Final concurrence issued, case closed.	Yes
27	RCRIS-LQG LUST RST	-EPA No. TXD096813969 -LPST No. 104774	Brockway Standard Southwestern Steel Plant 3301 S. Lamar Street	Metal barrels, drums, and pails manufacturing facility. Wastes generated on-site included tetrachloroethylene, used oil, inks, waste petroleum naphtha, and spent solvents and paint sludge. Violations concerning RCRA generator requirements and the Texas Solid Waste Rule. Six USTs removed from the ground. LUST Priority - Groundwater impacted, no apparent threats or impacts to receptors LUST Status - Final concurrence issued, case closed.	Yes
28	RCRIS-SQG LUST RST	-EPA No. TXD007327166 -LUST No. 104373	Procter and Gamble Manufacturing Co. (Dallas Public Schools Transportation Dept. facility) 1301 McDonald/3701 S. Lamar Street	Former shortening/cooking oils manufacturing facility. Violations of the Texas Solid Waste Rule. LUST Status - Final concurrence issued, case closed. Land filling and elevated concentrations of metals, total petroleum hydrocarbons, and acids documented at the site.	Yes

TABLE 3-37. POTENTIAL HAZARDOUS WASTE/MATERIAL SITES

Plate ID No.	Regulatory Database	Regulatory Reference	Facility Name/ Address	Summary	Adjacent or within ROW (Yes/No)
29	LUST RST RCRIS-SQG VCP ICIS	-LUST No. 109854 -EPA No. TXD000609578 -VCP No. 227	Beall Concrete (Tri-Gas Corp. / Chemetron Corp.) 3301 S. National Street	Tri-Gas described as a welding supply operation. Chemetron described as an industrial gases manufacturing facility. Violations resulting in enforcement action under the Clean Water Act. One acetone UST and one used oil UST in use. LUST Status - Cross-reference to another LUST number LUST Priority - Groundwater impacted, no apparent threats or impacts to receptors. VCP Site - 2.28 acres. Soils/groundwater affected by lime and acetylene condensate. VCP Certificate of Completion issued in 2006 Remedy type - excavation/natural attenuation. Risk Reduction Standard No. 2 requirements satisfied for the site.	Yes
30	RCRIS-LQG RST	EPA No. TXD078383056	Occidental Chemical Corporation Dallas Plant (Diamond Shamrock Corp. Dallas Silicate/Oxychem) 1100 Lenway Street	Industrial inorganic chemicals manufacturing facility - produces sodium silicate. Wastes include sump sludge containing miscellaneous chemicals, used oil, and spent solvents. Preliminary assessment and site inspection conducted by the EPA in 1979. Inactive landfill identified at the facility. Landfill in operation from 1941 to 1971 - contains alkaline product waste, floor sweepings, empty caustic containers, asbestos piping, and empty paint thinner cans.	Yes
31	RCRIS-LQG RST	EPA No. TXD007347875	Okons Iron and Metal Co. (Trinity Recycling) 4801 S. Lamar Street	Elevated lead concentrations identified in soil and groundwater at the site. One diesel AST registered	Yes
32	CLI	TCEQ #34259	Herman Gibbons 5003 S. Lamar Street	Closed landfill site (11.4 acres). Closed 1994; final cover has been applied. Facility accepted household trash, construction/demolition debris, tires, and brush.	Yes
33	LUST RST	LUST No. 114954	Vacant Station 5006 S. Lamar Street	Four USTs removed from the ground. LUST Status - Pre-assessment/release determination. LUST Priority - Groundwater impacted, no apparent threats or impacts to receptors.	Yes
34	LUST RST ICIS	LUST No. 97460 EPA No. 110000504874	Bordens/Meadow Gold Dairy 5327 S. Lamar Street	Violations resulting in enforcement action under the Emergency Planning and Community Right to Know Act. Wastes included solvents, waste petroleum naphtha from cleaning/degreasing, and cleanout of carbon/sand from a water filtration tank. Five USTs removed from the ground. LUST Status - Final concurrence issued, case closed. LUST Priority - Groundwater impacted, no apparent threats or impacts to receptors.	No

TABLE 3-37. POTENTIAL HAZARDOUS WASTE/MATERIAL SITES

Plate ID No.	Regulatory Database	Regulatory Reference	Facility Name/ Address	Summary	Adjacent or within ROW (Yes/No)
35	RCRIS-SQG VCP IOP RST SWF/LF	-EPA No. TXR000012641 -VCP No. 230 and No. 1775 -IOP No. 1 and No. 431 -SWF/LF Permit No. 65023	Brookhollow Warehouse (RS Used Oil Svcs., Inc. and Kroger Distribution Warehouse) 3191 Commonwealth Drive	Industrial storage facility. VCP Site No. 230 - 7.23 acres received into the VCP in 1996; chlorinated hydrocarbons, metals, and total petroleum hydrocarbons affected soils and groundwater; transferred from the VCP to the IOP. VCP Site No. 1775 - 7.17 acres received into the VCP in 2004; VOCs, semi-volatile organic compounds (SVOCs), metals, chlorinated solvents, and TPH affected soils/groundwater; investigation ongoing under TRRP. IOP Site No. 1 - 7.23 acres received into the IOP in 1997; chlorinated solvents affected soils/groundwater; IOP Certificate issued in 1998. IOP Site No. 431 - 7.33 acres received into the IOP in 2004; VOCs affected groundwater; awaiting signed affidavit. Violations of the Texas Solid Waste Rule. One UST removed from the ground. SWF/LF status - not constructed; permit status - pending.	No
36	SWF/LF	Permit No. 128	City of Highland Park Landfill 1261 Conveyor Lane	Sanitary landfill, daily cover required. Grandfather site (in operation prior to 1974). Permit Status - closed site permit issued (final cover complete).	Yes
37	Not Registered	Not Registered	Artistic Furniture Craftsmen 1820 Irving Boulevard	UST system vent pipe and fill port observed at the site. Potential USTs abandoned in place.	Yes
38	Not Registered	Not Registered	Abandoned Gas Station 1129 N. Industrial Boulevard	Three UST system vent pipes and two former dispenser islands observed at the site. Potential USTs abandoned in place.	Yes
39	RCRIS-TSD CORRACTS RCRIS-SQG LUST RST	-EPA No. TXD982813156 -LUST No. 113336	Allied Radiator Service (Vacant Lot/Dealy Ltd.) 2006 N. Beckley Avenue	Violations concerning RCRA TSD and generator requirements. Three USTs removed from the ground. LUST Status - Site assessment. LUST Priority - Groundwater impacted, no apparent threats or impacts to receptors.	No
40	CLI	Unknown	Unnamed Landfill E. Side of Trinity River, S. of MLK	Site closed during 1930s. Origin and use of site unknown. During the mid-1980s, the City constructed a clay berm between the site and the Trinity River to stop seepage.	Yes
41	Not Registered	Not Registered	Former Wrecking Company 4901 S. Lamar Street	UST vent pipe observed at the site. Potential USTs abandoned in place.	Yes
42	Not Registered	Not Registered	Forest Avenue Landfill North of MLK on east side of Trinity River	Inactive municipal solid waste landfill. Closed ca. 1900.	Yes

TABLE 3-37. POTENTIAL HAZARDOUS WASTE/MATERIAL SITES

Plate ID No.	Regulatory Database	Regulatory Reference	Facility Name/ Address	Summary	Adjacent or within ROW (Yes/No)
43	NPL CERCLIS RCRIS-SQG/TSD CORRACTS	EPA No. TXD079348397	Murmur Corporation Site (Murph Metals, Inc./RSR Corporation) 2727 Westmoreland Road	NPL site encompasses 13.6 square miles and consists of areas of contaminated soil located in West Dallas, south of the Dallas Floodway West Levee. A lead smelting facility, in operation from the 1930s until 1984, was located near the center of the NPL site at Westmoreland Road and Singleton Boulevard. Soil sampling identified contamination in areas around the smelter where fallout occurred and where battery chips/slag were used as fill in yards/driveways. In 1995, the site was added to the NPL. The site was divided into five operable units (OUs) consisting of residential areas (OU-1), a DHA public housing area (OU-2), slag piles/landfills (OU-3), the former smelter facility (OU-4), and a battery wrecking facility (OU-5). Removal actions have been performed in OU-1 for soil/debris containing concentrations of the metals lead, arsenic, and cadmium in excess of cleanup levels. In 1994-1995, the DHA conducted removal actions under EPA supervision at OU-2. Records of Decision have been issued for OU-1 and OU-2, which are the only operable units that extend into the study area. Investigation and remediation activities have also been performed for OU-3, OU-4, and OU-5, which are located outside of the study area. A five-year review was completed in 2005, which determined that the remedy for the NPL site is protective of human health and the environment provided certain actions are taken, including creation of institutional controls to maintain the integrity of protective soil covers and caps. The next five-year review is scheduled for completion by September 2010.	Yes
44	VCP IOP	VCP No. 455 IOP No. 167	Dover Elevator 7017-7021 Carpenter Freeway	VCP site (1 acre) described as inactive concrete vaults (oil/water sumps). Received into the VCP in 1997. TPH and VOCs affected soils/groundwater documented at the site. VCP Certificate of completion issued in 2002 with institutional control of non-residential use; satisfied Risk Reduction Standard No. 3 requirements. Remedy for VCP site - Excavation/removal to off-site landfill. IOP site described as a retail business. Received into the IOP in 2000 due to VOCs affected groundwater. IOP Phase - Completed; IOP certificate issued in 2004.	Yes

TABLE 3-37. POTENTIAL HAZARDOUS WASTE/MATERIAL SITES

Plate ID No.	Regulatory Database	Regulatory Reference	Facility Name/ Address	Summary	Adjacent or within ROW (Yes/No)
45	RCRIS-LQG LUST RST	EPA No. TXD981054828 LUST No. 108633	DSI Transports, Inc./Red Ball Shop 3151 Halifax Street/15600 John F. Kennedy Boulevard	Motor freight transport terminal and truck maintenance facility. Violations of the Texas Solid Waste Rule. LUST Status - Final concurrence issued, case closed. LUST Priority - Groundwater impacted, no apparent threats or impacts to receptors.	No
46	RST LUST	LUST No. 102035	Gascard/Conway Southern Express 3130 Halifax Street/5020 Calvert Street	Five USTs removed from the ground. Two 30,000-gallon diesel USTs in use. LUST Status - Final concurrence pending documentation of well plugging. LUST Priority - No groundwater impact, no apparent threats or impacts to receptors.	No
47	RCRIS-SQG VCP	EPA No. TXD987997673 VCP No. 1069	The Allen Group 3184 Quebec	Audio and video equipment manufacturing facility. Wastes include perchloroethylene, lubricating grease, waste mineral spirits, waste freon, adhesive/epoxy waste, paint waste containing toluene and chromium, waste mixtures containing metals, and waste oil. Received into the VCP in 1999 due to perchloroethylene affected soils and groundwater at the site (3.5 acres). VCP Phase - Investigation.	No
48	RCRIS-SQG ENF	EPA No. TXD981046170	United Recyclers, LP (Quemetco Metals Ltd.) 1340 Manufacturing Street	Facility processes and separates used automotive oil filters. Violations concerning the Texas Solid Waste Rule. 500 gallons of motor oil spilled in 1993.	No
49	RCRIS-SQG VCP LUST	EPA No. TXD988040572 VCP No. 1960 LUST No. 104064	North Texas Tollway Authority (NTTA Maintenance Facility/Texas Turnpike Authority) 405 S. Industrial Boulevard	Received into the VCP in August 2006 due to VOCs, SVOCs, metals, and chlorinated solvents affected soils and groundwater at the site (4 acres). VCP Phase - Investigation. Wastes include stripping solution. LUST Status - Final concurrence issued, case closed.	Yes
50	VCP RCRIS-SQG	VCP No. 1252 EPA No. TXD000835124	Commerce Center (Hunt Philip A Chemical Co.) 3310 Quebec Street	Chemical storage facility. Received into the VCP in 2000 due to chlorinated solvents and TPH affected soils and groundwater at the site (2 acres). VCP Phase - Remediation. Remedy types include excavation, hydrogen release compound (HRC) injection, and monitored natural attenuation.	No
51	LUST	LUST No. 116933	Jim Lake Co. Property 166 Howell Street	LUST Priority - Assessment incomplete, no apparent threats or impacts to receptors. LUST Status - Pre-assessment/release determination.	Yes
52	RCRIS-SQG ENF LUST	EPA No. TXD981604887 LUST No. 95212	Volvo & GMC Trucks of Dallas (Summit Wite GMC Trucks/Paint and Body Shop) 2959 Irving Boulevard	Truck sales and service. Wastes include spent antifreeze, paint waste, spent solvents, benzene, cadmium, tetrachloroethylene, and trichloroethylene. Violation of TCEQ air monitoring requirements. Three USTs removed from the ground. LUST Status - Final concurrence issued, case closed.	Yes

TABLE 3-37. POTENTIAL HAZARDOUS WASTE/MATERIAL SITES

Plate ID No.	Regulatory Database	Regulatory Reference	Facility Name/ Address	Summary	Adjacent or within ROW (Yes/No)
53	RCRIS-SQG	EPA No. TXR000046649	Creative Type and Graphics 1201 Oak Lawn Avenue	Commercial printing facility. Wastes include ink solution, used oil, tetrachloroethylene, and benzene.	Yes
54	RCRIS-SQG LUST	EPA No. TXD981902869 LUST No. 95209	Moody Day (Crescent Machinery Co.) 2323 Irving Boulevard	Construction and mining machinery wholesale. Wastes include spent solvents, tetrachloroethylene, and cresols. Three USTs removed from the ground LUST Status - Final concurrence issued, case closed.	Yes
55	RCRIS-SQG	EPA No. TXD988018131	The Drive Shaft Shop 530 S. Industrial Boulevard	Motor vehicle parts and accessories shop. Wastes include metal cleaning wastes, tetrachloroethylene, immersion cleaner, and spent non-halogenated solvents.	Yes
56	ICIS RST	EPA No. 110014421679	Ram Automotive (First Choice, Greenleaf) 5311 S. Lamar Street	Used auto parts distribution/salvage yard. Violations resulting in EPA enforcement action. Wastes include tetrachloroethylene and spent non-halogenated solvents. Three USTs removed from the ground and one UST filled in-place.	Yes
57	ICIS RCRIS-SQG LUST RST	EPA No. TXD987998416 and 110000457112 LUST No. 91794	Oak Farms Dairy (Southern Foods Group) 1114 N. Lancaster Avenue	Manufacturing of dairy products. Violations resulting in enforcement action under the Clean Air Act. Facility reports air emissions, discharges to surface water (i.e., Trinity River), and off-site treatment of chemicals including ammonia, chlorine, phosphoric acid, sodium hydroxide solution, nitric acid, benzene, toluene, and xylenes. Wastes also include parts washing solvent from on-site auto repair. Three USTs removed from the ground, three USTs filled in-place, and one UST in use. LUST Status - final concurrence issued, case closed.	Yes
58	ENF ICIS	TCEQ Air Account No. 925858R EPA No. 77700651 and 110001995306	Big City Crushed Concrete (Recycle Concrete Plant, Downtown Dallas Ready Mix) 1005 Forest Avenue	Concrete recycling and manufacturing facility. Evidence of fill activities. Violations resulting in formal enforcement actions under the Clean Water Act. Violations concerning compliance with special conditions contained in a permit for construction or modification of an air pollution source. Aboveground petroleum storage tanks on-site.	Yes
59	RCRIS-SQG ICIS	EPA No. TXD990798662	Southwest Industrial Gases 538 S. Industrial Boulevard	Violations resulting in enforcement action under the Clean Water Act.	Yes
60	ICIS RST	EPA No. 110010779032	Knox Oil of Texas, Inc. (Knox Super Stop) 2221 Irving Boulevard	Violations resulting in enforcement action under the Clean Water Act. Eight USTs in use.	Yes
61	ICIS	EPA No. 110005010683	Ace Brass and Aluminum Co. 1203 S. Industrial Boulevard	Aluminum foundry (manufacturing of brass and aluminum castings). Violations resulting in enforcement action under the Clean Water Act.	Yes
62	ICIS	EPA No. 110010791321	Okon Metals, Inc. 2110 S. Industrial Boulevard	Violations resulting in enforcement action under the Clean Water Act.	Yes

TABLE 3-37. POTENTIAL HAZARDOUS WASTE/MATERIAL SITES

Plate ID No.	Regulatory Database	Regulatory Reference	Facility Name/ Address	Summary	Adjacent or within ROW (Yes/No)
63	ICIS LUST RST	EPA No. 110010722254 LUST No. 103437	Valvoline Direct Market Dallas (Parrott Oil Corp.) 3116 Quebec	Bulk storage and distribution of lubricating oils and automotive chemicals. Wastes included sorbent material contaminated with lubricating oil from spills/leaks. Violations resulting in enforcement action under the Clean Water Act. Seven USTs removed from the ground. Two USTs filled in-place or out of use. LUST Status - Final concurrence issued, case closed.	No

Sources: Environmental Data Resources, Inc. (EDR), 2007; USACE, 1999.

Notes: Plate ID Numbers correspond to the locations shown on **Plate 3-25**.

1. LUST Status indicates the phase of the site within the TCEQ's risk-based corrective action process as of the date of the database information.
2. LUST Priority indicates the scenario that is determined to be relevant to the site based on release investigation activities as of the date of the database information.

In October 1999, a geotechnical and environmental investigation was conducted as part of the Trinity River Corridor MIP for the City of Dallas. The purpose of this study was to evaluate soil and sediment quality within the Dallas Floodway. The project limits extended from the Hampton/Inwood Bridge to just southeast of the Corinth Street Viaduct. The investigation included the collection of 26 soil samples from 13 soil borings completed within the project limits. The soil samples were submitted for laboratory analysis of pesticides, herbicides, SVOCs, VOCs, and total RCRA metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver). The study also included a review of previous environmental investigations conducted by others within the Dallas Floodway. A total of three sediment samples and 47 soil samples collected from 41 different locations within the Dallas Floodway over a 16-year period between 1984 and 1999 were evaluated as part of this study. No herbicides, PCBs, VOCs, or SVOCs were identified at concentrations above laboratory detection limits. The study identified detectable concentrations of the pesticides aldrin, dieldrin, DDT, dichloro-diphenyl-dichloroethane (DDD), and dichloro-diphenyl-dichloroethylene (DDE) in soils. In addition, detectable concentrations of total RCRA metals and the metals copper, manganese, nickel, and zinc were identified. However, the study concluded that soils within the Dallas Floodway did not appear to contain hazardous levels of contaminants (Terra-Mar, Inc., 1999).

More recent environmental investigations were conducted within the Dallas Floodway from October 2007 to February 2008 as part of the USACE Upper Trinity River Interim Feasibility Study. The investigation activities included the collection of 192 soil samples from 96 boring locations for analysis of VOCs, SVOCs, pesticides, PCBs, RCRA metals, and herbicides. The investigation identified detectable concentrations of constituents of concern at various locations throughout the floodway (USACE, 2008).

[END OF CHAPTER 3 EXCEPT FOR PLATES]

PLATE 3 - 1

AERIAL PHOTOGRAPH

NTTA
NORTH TEXAS TOLLWAY AUTHORITY

STUDY BOUNDARY

Legend

- Alternatives 2A & 2B - Industrial Boulevard (Elevated and At-Grade)
- Alternative 3A and 3B - Combined Parkway - Riverside (Original and Modified)
- Alternative 3C - Combined Parkway - Riverside (Further Modified)
- Alternative 4A - Split Parkway - Riverside (Original)
- Alternative 4B - Split Parkway - Riverside (Modified)
- Alternative 5 - Split Parkway Landside

N

0 3,000 6,000 9,000
SCALE IN FEET

0 900 1,800 2,700
SCALE IN METERS

Note: Locations are approximate. Alignments are shown adjacent to one another for graphic clarity. Detailed alignments for each alternative have been presented earlier as part of Chapter 2. Aerial Photograph Date: April, 2006.

Reference Section 3.1

PLATE 3 - 2

GENERAL LAND USE

NTTA
NORTH TEXAS TOLLWAY AUTHORITY

STUDY BOUNDARY

Legend

- Single Family
- Multi-Family
- Mobile Homes
- Group Quarters
- Institutional
- Office
- Retail
- Hotel/Motel
- Stadium
- Industrial
- Transportation
- Roadway
- Utilities
- Parks
- Landfill
- Flood Control
- Airports
- Runway
- Parking Garage
- Parking (CBD)
- Expanded Parking
- Under Construction
- Vacant
- Water

N

0 3,000 6,000 9,000
SCALE IN FEET

0 900 1,800 2,700
SCALE IN METERS

Source: NCTCOG - 2000 Land Use
Reference Section 3.1.1.1

Disclaimer:
This land use map prepared by NCTCOG represents general land uses derived from aerial photography.

PLATE 3 - 3

GENERAL ZONING

NTTA
NORTH TEXAS TOLLWAY AUTHORITY

STUDY BOUNDARY

Legend

- Agricultural
- Central Area
- Retail Commercial
- Industrial
- Multifamily
- Mixed Use
- Single Family Residential
- Special Use Areas

Source: City of Dallas.

Reference Section 3.1.1.1

Aerial Photograph Date: April, 2006.

N

0 3,000 6,000 9,000
SCALE IN FEET

0 900 1,800 2,700
SCALE IN METERS

PLATE 3 - 4

PLANNED LAND USE

NTTA
NORTH TEXAS TOLLWAY AUTHORITY

STUDY BOUNDARY

Legend

- CBD
- Community Corridor
- Community Village
- Heavy Industrial
- Lakes
- Light Industrial
- Mixed Use / Adaptive Reuse
- Mixed Use High Density
- Neighborhood Corridor
- Office
- Regional Corridor
- Regional Employment
- Residential Riverside
- Residential Traditional
- Residential Urban
- Transit Center
- Trinity River Flood

N

0 3,000 6,000 9,000
SCALE IN FEET

0 900 1,800 2,700
SCALE IN METERS

Source: City of Dallas, 2005

Reference Section 3.1.1.1

PLATE 3 - 5

MAJOR EMPLOYERS

NTTA
NORTH TEXAS TOLLWAY AUTHORITY

STUDY BOUNDARY

INSET

N

0 3,000 6,000 9,000
SCALE IN FEET

0 900 1,800 2,700
SCALE IN METERS

Legend

10 **Major Employer**

Notes:
Major employers with a total of 250 or more employees are shown. (Source: NCTCOG, 2007b)

Locations are Approximate.

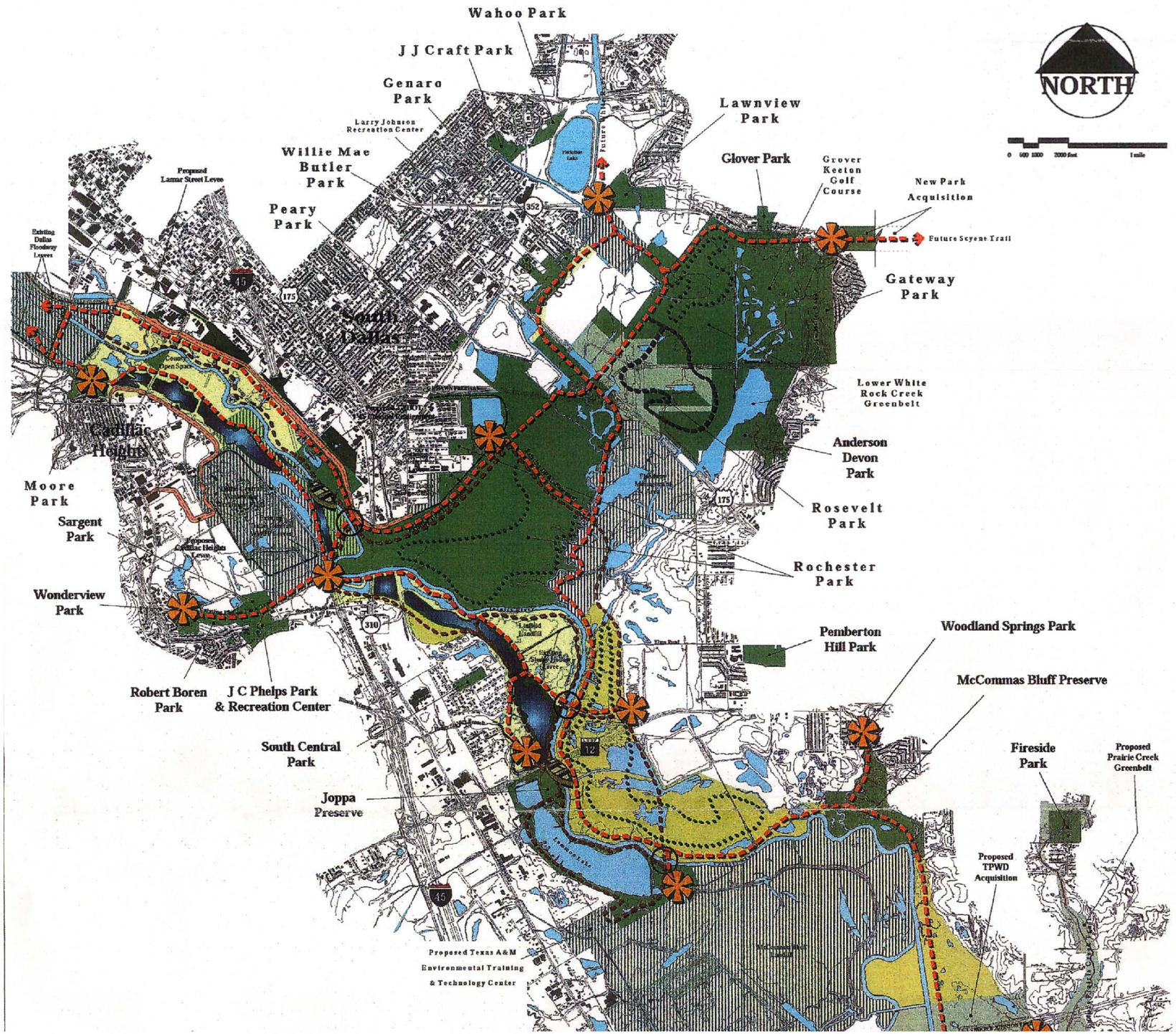
Reference Section 3.1.1.2 and Table 3-1

Aerial Photograph Date: April, 2006.

PLATE 3 - 6

DALLAS FLOODWAY EXTENSION RECOMMENDATION PLAN

NTTA
NORTH TEXAS TOLLWAY AUTHORITY



Legend

- Public Park Lands
- Future Park Lands
- Other Public Lands
- Proposed Project Lands
- Proposed Mitigation Lands
- Proposed Sumps
- Proposed Swale
- Proposed Wetlands
- Existing Levees
- Proposed Levees
- Proposed Paved Trail
- Proposed Nature Trail
- Proposed Equestrian Trail
- Proposed Off-Road Bike Trail
- Proposed Canoe Launch
- Proposed Footbridge
- Proposed Access Point

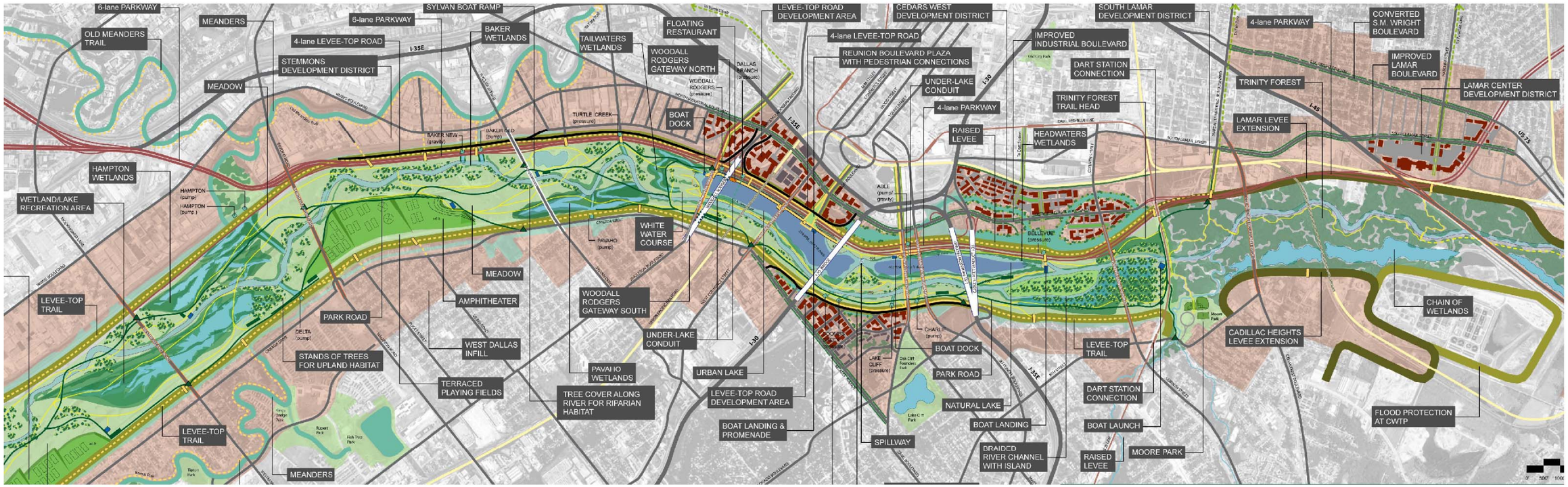
Source: USACE Fort Worth District,
Final Supplement No.1 to the EIS
for the DFE, Trinity River, Texas, 2003

REFERENCE SECTION 3.1.14 AND 3.5.6.4

PLATE 3 - 7

TRINITY RIVER CORRIDOR MASTER IMPLEMENTATION PLAN/ BALANCED VISION PLAN

NTTA
NORTH TEXAS TOLLWAY AUTHORITY



Key

river corridor	meanders	major trails	terrace boulevard	highway	railroad
lakes / river	trinity forest	pedestrian access	parkway	DART line	railroad bridge
wetlands	sumps/storm water	paths	park road	DART station	new bridge
playing fields	sump pumps	equestrian trail	vehicular access	new calatrava bridge	existing bridge
levee	sump conduit	boat access	parking areas	primary development areas	historic bridge
levee extension	stands of trees	recreational facility	existing road	possible development	

N

As of March 2004

Source: City of Dallas 2004.

Note: The Project limits of the Trinity River Corridor MIP/Balanced Vision Plan extend beyond the Trinity Parkway study area. Only features located within and/or adjacent to the Study area are shown.
Locations are approximate
Reference Section 3.1.14 and 3.2.7

PLATE 3 - 8

CENSUS TRACTS AND BLOCK GROUPS

NTTA
NORTH TEXAS TOLLWAY AUTHORITY

STUDY BOUNDARY

Legend

106.01 2000 Census Tract

4 2000 Census Block Group

N

0 3,000 6,000 9,000
SCALE IN FEET

0 900 1,800 2,700
SCALE IN METERS

Notes:
Boundaries showing census tracts and block groups are approximate. Colored shading indicates census tracts within or adjacent to the project study area (excluding the CBD).

Source: NCTCOG, 2007

Reference Section 3.1.2

Aerial Photograph Date: April, 2006

PLATE 3 - 9

NEIGHBORHOOD DISTRICTS AND NEIGHBORHOODS

NTTA
NORTH TEXAS TOLLWAY AUTHORITY

STUDY BOUNDARY

Legend

- Neighborhood District
- Neighborhood Boundary

Neighborhoods

1. West Dallas HOA
2. La Bajada
3. Kessler Park
4. Lake Cliff HOA
5. Cadillac Heights
6. Rochester Park
7. South Dallas HOA
8. Queen City HOA
9. The Cedars
10. Dallas CBD
11. West End Historic District
12. Design District
13. Market/Technology Center
14. Medical Center
15. Trinity Industrial District
16. Brookhollow Industrial Park
17. Ideal

N

0 3,000 6,000 9,000
SCALE IN FEET

0 900 1,800 2,700
SCALE IN METERS

Notes: HOA - Home Owners Association

Reference Section 3.1.3 and Table 3-7

Boundaries are Approximate.

Aerial Photograph Date: April, 2006.

PLATE 3 - 10

COMMUNITY SERVICES AND FACILITIES

NTTA
NORTH TEXAS TOLLWAY AUTHORITY

STUDY BOUNDARY

Legend

- Police and Fire Facilities
- Community and Recreation Centers
- Schools / DISD Facilities
- Places of Worship

N

0 3,000 6,000 9,000
SCALE IN FEET

0 900 1,800 2,700
SCALE IN METERS

Notes: Locations are Approximate.

Reference Section 3.1.4 and Table 3-8

Aerial Photograph Date: April, 2006

PLATE 3 - 11

MAJOR WATER LINES

NTTA
NORTH TEXAS TOLLWAY AUTHORITY

STUDY BOUNDARY

Legend

1. 48" Concrete Water Line
2. 36" Water Line
3. 24" Water Line
4. 24" Water Line
5. 24" Water Line
6. 24" Water Line
7. 20" Cast Iron Water Line
8. 24" Concrete Water Line
9. 66" Concrete Water Line
10. 30" Concrete Water Line
11. 2050 Master Plan - 96" Central Lowline

N

0 3,000 6,000 9,000
SCALE IN FEET

0 900 1,800 2,700
SCALE IN METERS

Source: City of Dallas, 2006b

Reference Section 3.1.5

Notes: Locations are Approximate.

Aerial Photograph Date: April, 2006.

PLATE 3 - 12

SANITARY SEWER FACILITIES

NTTA
NORTH TEXAS TOLLWAY AUTHORITY

STUDY BOUNDARY

Legend

1. West Bank Interceptor (120" Force Main)
2. East Bank Interceptor (60" Force Main)
3. 60" Force Main
4. 12" Concrete Sanitary Sewer
5. 10" Concrete Sanitary Sewer
6. 12" Sanitary Sewer
7. Future Funded - Cadiz Street Siphon (78" & 96" Concrete)

N

0 3,000 6,000 9,000
SCALE IN FEET

0 900 1,800 2,700
SCALE IN METERS

Notes: Locations are Approximate.

Reference Section 3.1.5

Aerial Photograph Date: April, 2006.

PLATE 3 - 13

ELECTRIC & GAS LINES

NTTA
NORTH TEXAS TOLLWAY AUTHORITY

STUDY BOUNDARY

Legend

- Electric Switching Station / Substation
- Oncor 138 kV Transmission Line
- Oncor 345 kV Transmission Line
- Approved Route for Oncor 345 kV West Levee - Norwood Transmission Line
- 1 — Oncor Electric Line Location
- Atmos 24" Gas Line
- Atmos 16" Gas Line
- Atmos United Gas Line
- 1 — Atmos Gas Line Location

N

0 3,000 6,000 9,000
SCALE IN FEET

0 900 1,800 2,700
SCALE IN METERS

Source: City of Dallas, 2006c

Notes: SW - Switching Station

Reference Section 3.1.5

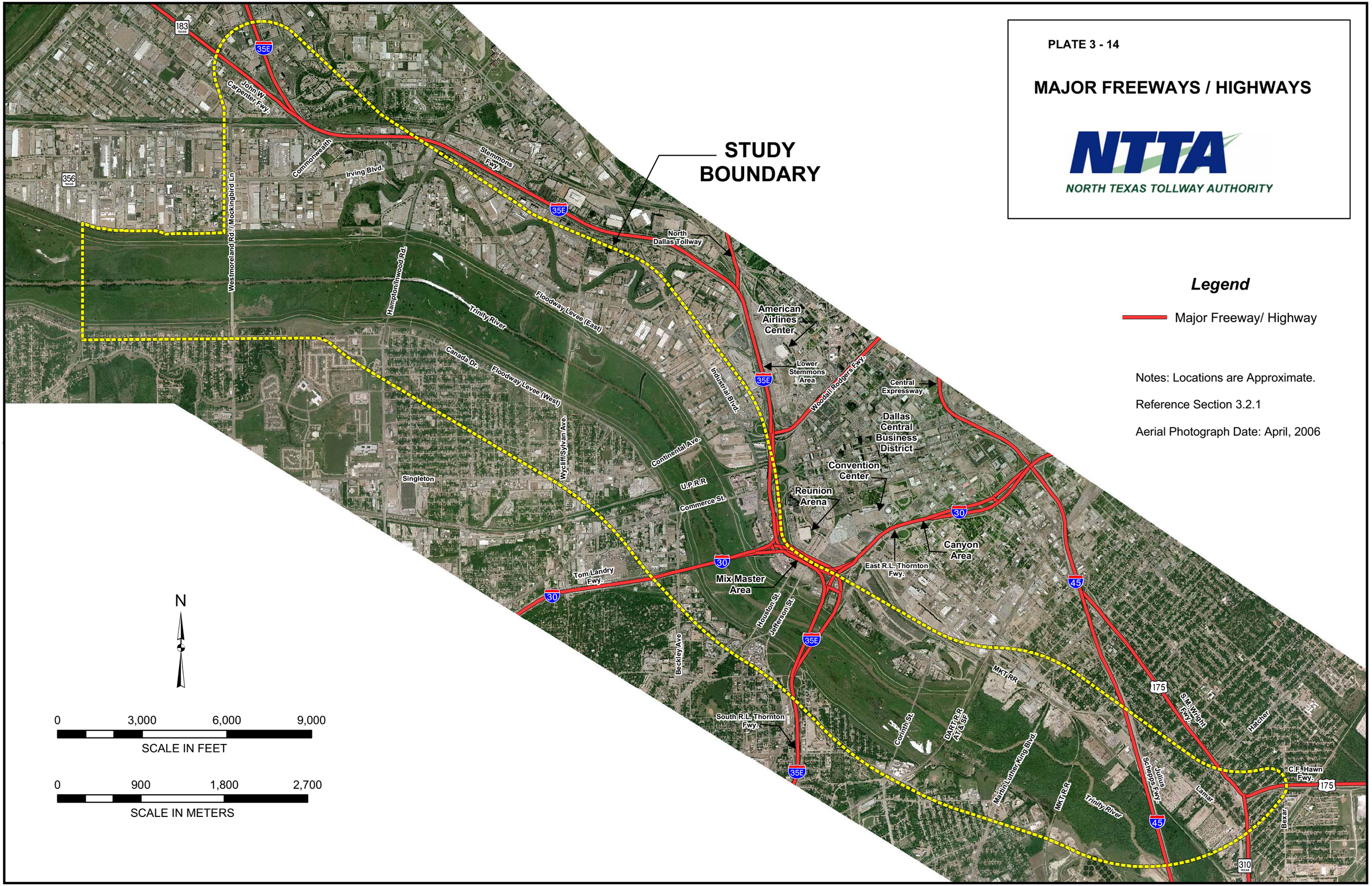
Locations are Approximate.

Aerial Photograph Date: April, 2006.

PLATE 3 - 14

MAJOR FREEWAYS / HIGHWAYS

NTTA
NORTH TEXAS TOLLWAY AUTHORITY



Legend

Major Freeway/ Highway

Notes: Locations are Approximate.

Reference Section 3.2.1

Aerial Photograph Date: April, 2006

PLATE 3 - 15

MAJOR TRANSIT ROUTES (BUS AND RAIL)

NTTA
NORTH TEXAS TOLLWAY AUTHORITY

STUDY BOUNDARY

Legend

- Amtrak
- Commuter Rail (TRE)
- Light Rail Transit
- Major Bus Routes
- Bus / Rail Station

Stations

1. Medical / Market Center Station
2. Victory Station
3. West End Station
4. Akard Station
5. St. Paul Station
6. Pearl Station
7. Union Station
8. Convention Center Station
9. Cedars Station
10. 8th & Corinth Station
11. Dallas Zoo Station
12. Morrell Station

N

0 3,000 6,000 9,000
SCALE IN FEET

0 900 1,800 2,700
SCALE IN METERS

Source: DART and Amtrak 2006

Reference Section 3.2.2

Notes: Locations are Approximate. The Major Transit Routes shown are effective as of November, 2006.

Aerial Photograph Date: April, 2006.

PLATE 3 - 16

ARCHEOLOGICAL RESOURCES

NTTA
NORTH TEXAS TOLLWAY AUTHORITY

STUDY BOUNDARY

Old Elm Fork River Channel

Old Trinity River Channel

Old West Fork River Channel

Cedar Creek

Legend

- Area of Low Potential for Preserved Archeological Deposits
- Area of High Archeological Potential
- Combined (all build alternatives) APE for Prehistoric and Historic Archeological Resources
- Area of 2006 Archeological Investigation (backhoe trenching)

N

0 3,000 6,000 9,000
SCALE IN FEET

0 900 1,800 2,700
SCALE IN METERS

Notes:
Locations are Approximate.
Archeological sites will only be shown on Agency Review Copies.

Reference Section 3.3.1.2 and 3.3.1.3

Aerial Photograph Date: April, 2006.

PLATE 3 - 17

HISTORIC AND NEIGHBORHOOD RESOURCES

NTTA
NORTH TEXAS TOLLWAY AUTHORITY

Legend

- 1 — NRHP - Listed Districts
- 2 — NRHP - Listed Resources
- 8 — NRHP - Eligible Resources
- Combined Area of Direct Impact (all build alternatives) for Historic and Neighborhood Resources

Plate ID Numbers Correspond to Table 3-10

STUDY BOUNDARY

Old Elm Fork River Channel

Old Trinity River Channel

Old West Fork River Channel

Cedar Creek

Commonwealth

Irving Blvd.

Westmoreland Rd./ Mockingbird Ln

Hampton/Inwood Rd.

Trinity River

Floodway Levee (East)

Floodway Levee (West)

Canada Dr.

Wycliff/Sylvan Ave.

Singleton

Continental Ave.

U.P.R.R

Commerce St.

Houston St.

Jefferson St.

Beckley Ave

Industrial Blvd.

American Airlines Center

Woodall Rodgers Fwy.

Dallas Central Business District

Convention Center

Reunion Arena

MKT R/R

Corinth St.

DART R/R A-T & SF

Martin Luther King Blvd.

Colonial Hill Historic District (On NRHP)

Hatcher

Lamar

Trinity River

Bexar

N

0 3,000 6,000 9,000
SCALE IN FEET

0 900 1,800 2,700
SCALE IN METERS

Notes: Locations are Approximate.

Reference Section 3.3.1.2, 3.3.1.4 and Table 3-10

Aerial Photograph Date: April, 2006.

PLATE 3 - 18

PARKS AND RECREATION AREAS

NTTA
NORTH TEXAS TOLLWAY AUTHORITY

STUDY BOUNDARY

Legend

- Existing Park
- Planned Park / Trail

1. Sleepy Hollow Park
2. Pegasus Park
3. Trinity River Greenbelt Park (Trinity Park)
4. Nash / Davis Park
5. Bickers Park
6. Shaw Park
7. Benito Juarez Park
8. Hatte R. Moore Park
9. Pueblo Park
10. Oak Cliff Founders Park
11. Eloise Lundy Park
12. Moore Park
13. Rochester Park
14. Forest Park
15. West Dallas River Meanders Conservation Area / Bernal Greenbelt, Pointer, Emma Carter, Tipton, and Kingsbridge
16. Cedar Creek Green Belt
17. Great Trinity Forest Park (Planned)
18. Old Trinity River Meanders
19. Martin Luther King Jr. Median
20. Trinity Strand Trail
21. Kessler Parkway

N

0 3,000 6,000 9,000
SCALE IN FEET

0 900 1,800 2,700
SCALE IN METERS

Source: Dallas Park and Recreation Dept.: 2007
Dallas County Open Space Plan, 1991.

Reference Section 3.3.2.2, 3.3.2.3
and Table 3-11

Notes: Locations are Approximate.

Aerial Photograph Date: April, 2006.

PLATE 3 - 19

WATERS OF THE U.S., INCLUDING WETLANDS, & WOODLANDS

NTTA
NORTH TEXAS TOLLWAY AUTHORITY

STUDY BOUNDARY

Crow Lake

Legend

Waters of the United States, Including Wetlands

- River Channel / Open Water
- Wetland

Non-Waters of the United States, Including Wetlands

- Open Water (Man-made Sumps)
- Woodland

N

0 3,000 6,000 9,000
SCALE IN FEET

0 900 1,800 2,700
SCALE IN METERS

Notes: Locations are Approximate.

Reference Section 3.4.3 and 3.4.6

Aerial Photograph Date: April, 2006.

PLATE 3 - 20

GENERAL SOILS MAP

NTTA
NORTH TEXAS TOLLWAY AUTHORITY

STUDY BOUNDARY

Legend

- Soil Type Boundary
- 1 Soil Type

1. Houston Black-Heiden
Deep, nearly level to strongly sloping, clayey soils; on uplands.

2. Eddy-Stephen-Austin
Very shallow, shallow, and moderately deep, gently sloping to moderately steep, loamy and clayey soils; on uplands.

3. Trinity-Frio
Deep, nearly level, clayey soils; on floodplains.

4. Ferris-Heiden
Deep, gently sloping to strongly sloping, clayey soils; on uplands.

5. Silawa-Silstid-Bastsil
Deep, nearly level to sloping, loamy and sandy soils; on stream terraces.

N

0 3,000 6,000 9,000
SCALE IN FEET

0 900 1,800 2,700
SCALE IN METERS

Source: A Natural History of North Central Texas (NHNCT), 2007

Reference Section 3.5.3.3

Notes: This map consists of more than one soil type. The map is thus meant for general planning rather than the basis for decisions on the use of a specific tract.

Aerial Photograph Date: April, 2006.

PLATE 3 - 21

MAJOR SURFACE WATER FEATURES

NTTA
NORTH TEXAS TOLLWAY AUTHORITY

Legend

Major Surface Water Features

Notes: Locations are Approximate.

Reference Section 3.5.4.1

Aerial Photograph Date: April, 2006.

Old Elm Fork River Channel

Old Trinity River Channel

STUDY BOUNDARY

Old West Fork River Channel

Fish Trap Lake

Coombs Creek

Cedar Creek

Commonwealth

Irving Blvd.

Westmoreland Rd./ Mockingbird Ln

Hampton/Inwood Rd.

Trinity River

Floodway Levee (East)

Canada Dr.

Floodway Levee (West)

Grow Lake

Wycliff/Sylvan Ave.

Singleton

Continental Ave.

U.P.R.R

Commerce St.

Industrial Blvd.

American Airlines Center

Woodall Rodgers Fwy.

Dallas Central Business District

Convention Center

Reunion Arena

Houston St.

Jefferson St.

Beckley Ave

Corinth St.

DART/T&P

MKT R.R

Martin Luther King Blvd.

Lamar

Hatcher

Bexar

N

0 3,000 6,000 9,000

SCALE IN FEET

0 900 1,800 2,700

SCALE IN METERS

PLATE 3 - 22

FLOODPLAINS

NTTA
NORTH TEXAS TOLLWAY AUTHORITY

Legend

- FEMA FLOODWAY AND 100 YR FLOODPLAIN
- FEMA 100 YEAR FLOODPLAIN
- AREAS PROTECTED BY LEVEES FROM 100 YR FLOOD

Source: FEMA Dallas County
Preliminary DFIRM Panels
Dated 6/22/2007
Panels:

48113C0160L	48113C0195L
48113C0170L	48113C0310L
48113C0180L	48113C0215L
48113C0190L	48113C0330L
48113C0305L	

Notes: Locations are Approximate.
Reference Section 3.5.6.1
Aerial Photograph Date: April, 2006.

STUDY BOUNDARY

Old Elm Fork River Channel
Old Trinity River Channel
Old West Fork River Channel
Commonwealth
Irving Blvd.
Westmoreland Rd./Mockingbird Ln
Hampton/Inwood Rd.
Floodway Levee (East)
Dallas Floodway (Trinity River)
Canada Dr.
Floodway Levee (West)
Wycliff/Sylvan Ave.
Continental Ave.
U.P.R.R
Commerce St.
Singleton
Houston St.
Jefferson St.
Beckley Ave
Industrial Blvd.
American Airlines Center
Woodall Rodgers Fwy.
Dallas Central Business District
Convention Center
Reunion Arena
MKT RR
Corinth St.
DART RR AT&SF
Martin Luther King Blvd.
MKT R.R
Trinity River
Lamar
Hatcher
Bexar

N

0 3,000 6,000 9,000
SCALE IN FEET

0 900 1,800 2,700
SCALE IN METERS

PLATE 3 - 23

MAJOR FLOOD CONTROL FEATURES

NTTA
NORTH TEXAS TOLLWAY AUTHORITY

Old Elm Fork River Channel

Record Crossing Sump

Hampton-Oak Lawn Sump

Old Trinity River Channel

STUDY BOUNDARY

Old West Fork River Channel

Westmoreland-Hampton Sump

Legend

- Sump Areas
- Pressure Sewer
- Floodway Levee
- Proposed DFE Levee
- Sump Location
- Pump Station

N

0 3,000 6,000 9,000
SCALE IN FEET

0 900 1,800 2,700
SCALE IN METERS

Notes: Locations are Approximate.

Reference Section 3.5.6.2 and Table 3-29

Aerial Photograph Date: April, 2006.

Note: Sump Areas reflected on this map represent sump floodway mapping from the 2007 Dallas County Preliminary DFIRMs.

PLATE 3 - 24

LANDSCAPE UNITS FOR VISUAL ASSESSMENT

NTTA
NORTH TEXAS TOLLWAY AUTHORITY

Old Trinity River Meanders

STUDY BOUNDARY

Old Trinity River Meanders

Brookhollow Industrial Park
Arlington Park
Trinity Industrial District
Market / Technology Center
North Trinity River Greenbelt
Westmoreland Heights / Dallas Housing Authority
Crow Lake Area
Design District
American Airlines Center
CBD (Downtown Dallas)
Convention Center
Reunion Arena
West Dallas
La Bajada
West Commerce Riverside
Central Trinity River Greenbelt
Mixmaster / Riverside
Kessler Park
Oak Cliff
South Trinity River Greenbelt
Cedars West
The Bottoms
Secondary Succession
Great Trinity Forest
Skyline Heights
Cadillac Heights
Forest Heights
South Dallas
Colonial Hill
Southern Lamar
Ideal
Rochester Park

Commonwealth
Irving Blvd.
Westmoreland Rd./Mockingbird Ln
Hampton/Inwood Rd.
Trinity River
Floodway Levee (East)
Floodway Levee (West)
Canada Dr.
Industrial Blvd.
Woodall Rodgers Fwy.
Continental Ave.
Wycliff/Sylvan Ave.
U.P.R.R
Commerce St.
Houston St.
Jefferson St.
Beckley Ave.
Corinth St.
DART R.R. / T.P.S.F.
MKT RR
Martin Luther King Blvd.
Lamar
Hatcher
Bexar

183 TEXAS
356 TEXAS
310 TEXAS
35E
30
45
175

Legend

- 13 — Park Label
- Landscape Unit
- Lake

Parks:

1. Sleepy Hollow Park
2. Pegasus Park
4. Nash / Davis Park
5. Bickers Park
6. Shaw Park
7. Benito Juarez Park
8. Hatte R. Moore Park
9. Pueblo Park
10. Oak Cliff Founders Park
11. Eloise Lundy Park
12. Moore Park
13. Rochester Park
14. Forest Park
20. Trinity Strand Trail

N

0 3,000 6,000 9,000
SCALE IN FEET

0 900 1,800 2,700
SCALE IN METERS

Note:

Boundaries are Approximate.

Reference Section 3.8.3, 3.8.5, and Table 3-35 & 3-36

Aerial Photograph Date: April, 2006.

PLATE 3 - 25

HAZARDOUS / REGULATED MATERIAL SITES

NTTA
NORTH TEXAS TOLLWAY AUTHORITY

STUDY BOUNDARY

Legend

- Potential High Risk Hazardous / Regulated Material Sites

Notes: Locations are Approximate.

Reference Section 3.9.1 and Table 3-37

Sites shown are located within 500 feet of the proposed right-of-way.

Source: EPA and TCEQ Regulatory Databases.

Aerial Photograph Date: April, 2006

N

0 3,000 6,000 9,000
SCALE IN FEET

0 900 1,800 2,700
SCALE IN METERS

CHAPTER 4
ENVIRONMENTAL CONSEQUENCES

CHAPTER 4
ENVIRONMENTAL CONSEQUENCES

4.0 INTRODUCTION

This chapter describes the anticipated impacts (beneficial and/or adverse) to existing social, economic, and environmental resources for each of the alternatives considered, including the No-Build Alternative. Resources identified in **Chapter 3 Affected Environment** for which no impacts are anticipated are not included in this chapter (i.e., Wild and Scenic Rivers, Prime and Unique Farmland, etc.). This chapter addresses only those environmental elements which would be affected by the proposed action. Details concerning the recommended mitigation measures for the proposed action are described in **Chapter 7 Mitigation Measures and Commitments**.

As detailed in **Section 2.3.9**, in October 2006, the USACE Fort Worth District raised several concerns about Trinity Parkway Build Alternatives located in the Dallas Floodway. The USACE concerns were directed at Alternatives 3A (Combined Parkway - Original), 3B (Combined Parkway - Modified), and 4A (Split Parkway - Riverside) as published in the February 2005 DEIS. FHWA, TxDOT, and NTTA entered into consultation with the USACE in 2006 and 2007 to resolve these concerns. USACE indicated in its consultation that it intends to reject any riverside alternative with walls on the levee side, effectively making Alternatives 3A, 3B, and 4A "un-approvable" from their perspective. In response to the USACE consultation, two new alternatives were added to the SDEIS, namely Alternative 3C (Combined Parkway - Further Modified) and Alternative 4B (Split Parkway - Riverside Modified). These alternatives avoid the need for levee-side retaining walls by moving the roadway away from the levee in the downtown segment. Additionally, the new alternatives include several other features, such as ramp modifications and diaphragm walls (see **Section 2.3.9**), designed to address specific USACE operational and safety concerns.

For continuity in the evaluation of alternatives, this chapter includes details of all eight Build Alternatives developed in the EIS process to date. However, any information pertaining to Alternatives 3A, 3B, and 4A is shaded or otherwise denoted in tables in this chapter. This is provided as a convenience to readers and is intended to indicate the USACE rejection of these alternatives.

4.1 LAND USE IMPACTS

All of the Build Alternatives would change land use within the right-of-way of the proposed action. Direct land use impacts would be related to the relocation of residential and business structures and the loss of developable land within the right-of-way. The following subsections address several factors that were

used to assess potential land use impacts for each alternative, including compatibility with local land use plans and policies, direct conversion of land use, regional land use impacts, and toll road impacts.

4.1.1 Compatibility with Local Plans and Policies

4.1.1.1 No-Build Alternative

The No-Build Alternative would be incompatible with the plans and policies of the City of Dallas, Dallas County, and NCTCOG. These agencies generally support the construction of the Trinity Parkway and have formally stated their support for the project (see **Section 4.1.1.2**). If the Trinity Parkway is not constructed, these agencies may have to modify their land use and/or transportation plans within the study area, provide other means of mobility, or both.

4.1.1.2 Build Alternatives

Table 4-1 indicates the compatibility of the Trinity Parkway Build Alternatives with local plans and policies. In most cases, compatibility is determined by preferences stated in the jurisdiction's respective adopted resolutions. The table indicates whether or not a Build Alternative is compatible with an adopted resolution or court order.

TABLE 4-1. COMPATIBILITY WITH LOCAL PLANS AND POLICIES

Local Plans and Policies	Trinity Parkway Build Alternatives							
	2A	2B	3A	3B	3C	4A	4B	5
City of Dallas Resolution, *The Dallas Plan*, December 14, 1994.	No	No	Yes	---	---	Yes	---	Yes
City of Dallas Resolution, TRCCC Report *Trinity Parkway Corridor,* May 10, 1995.	No	No	No	---	---	Yes	---	No
City of Dallas Resolution, *Trinity Parkway Corridor MTIS*, September 10, 1997.	No	No	No	---	---	Yes	---	No
Dallas County Commissioners Court (by Court Order), *Trinity Parkway Corridor MTIS*, September 30, 1997.	No	No	No	---	---	Yes	---	No
DART Resolution, *Trinity Parkway Corridor MTIS*, October 28, 1997.	No	No	No	---	---	Yes	---	No
NCTCOG Resolution, *Trinity Parkway Corridor MTIS*, March 12, 1998.	No	No	No	---	---	Yes	---	No
City of Dallas Resolution, *Trinity River Corridor Master Implementation Plan*, August 1999.	No	No	No	---	---	Yes	---	No
City of Dallas Resolution, directed the NTTA to evaluate the proposed "urban design" parkway (Alternative 3B), a major component of the BVP, as part of the Trinity Parkway DEIS, October 8, 2003.	No	No	No	Yes	---	No	---	No

Sources: TxDOT, 1998a and City of Dallas.
Notes: **No** = Not compatible with adopted resolution or court order; **Yes** = Compatible; **---** = These Build Alternatives were developed after the date of the specified resolution or court order.
The information for Alternatives 3A, 3B, and 4A is shaded to denote for the reader that these alternatives are not considered approvable by the USACE due to concerns detailed in **Section 2.3.9**.

Regardless of which alternative is identified as the preferred alternative, the City of Dallas has a variety of ordinances, plans, and regulations at their disposal to manage growth within its jurisdiction. As previously

discussed in **Chapter 3 Affected Environment**, zoning and subdivision ordinances and other requirements can be applied to ensure the orderly growth of its communities. However, the application of such controls occurs within a political process.

4.1.2 Land Use Impacts

4.1.2.1 No-Build Alternative

Under the No-Build Alternative, current land use patterns within the study area would generally remain the same, consistent with prevailing land use and zoning plans. However, several major land use plans are proposed for flood control and recreational development within the Dallas Floodway and Dallas Floodway Extension (DFE) portions of the study area. These plans were described previously in **Chapter 3 Affected Environment** and will be discussed further in this chapter as part of the cumulative impacts analysis.

4.1.2.2 Build Alternatives

All Build Alternatives would result in a change in land use within the right-of-way proposed for the Trinity Parkway. The Build Alternatives would directly result in the conversion of approximately 128 acres (Alternative 2A) to 437 acres (Alternative 4B) of land from current uses to roadway right-of-way, depending on which alternative is identified as the preferred alternative. Land use impacts would be related to the displacement and relocation of residential, business, and publicly owned properties (see **Section 4.5 Relocation and Displacement Impacts**) and the loss of developable land within the right-of-way. **Table 4-2** provides a summary of the estimated amount of new right-of-way required from the various types of land use within the study area.

TABLE 4-2. SUMMARY OF LAND USE IMPACTS

Land Use Type	Trinity Parkway Build Alternatives							
	2A	2B	3A	3B	3C	4A	4B	5
Privately Owned								
Residential/Commercial/Industrial	121.6	200.4	143.5	162.1	145.5	184	154.6	211.8
Private Railroad ROW	5.1	5.2	12	12.6	11.8	12.5	12.6	11.4
Sub Total	**126.7**	**205.6**	**155.5**	**174.7**	**157.3**	**196.5**	**167.2**	**223.2**
Publicly Owned (Non-Taxable Property)								
Dallas Floodway (Park)	1.1*	5.1*	173.9*	153.7*	176.8*	213.5*	269.6*	84*
Existing Roadway ROW, including Sumps	136.1	139.1	41.4	44	45.1	52.3	53.6	65.3
Sub Total	**137.2**	**144.2**	**215.3**	**197.7**	**221.9**	**265.8**	**323.2**	**149.3**
Total Estimated ROW	**263.9**	**349.8**	**370.8**	**372.4**	**379.2**	**462.3**	**490.4**	**372.5**

Notes: All quantities shown in acres. Calculated areas are estimates only.
ROW = right-of-way
* - In the Dallas Floodway (Trinity River Greenbelt Park), the Tollway operations area is proposed to be established by an agreement with the City of Dallas. The deed records for the park land indicate that it can be used for transportation. Therefore, even though a change in use would occur, the estimated acreage needed for right-of-way would not constitute a direct use (take) of park land under Section 4(f).
The information for Alternatives 3A, 3B, and 4A is shaded to denote for the reader that these alternatives are not considered approvable by the USACE due to concerns detailed in Section 2.3.9.

All of the proposed Build Alternatives would result in long-term changes in land use where existing land use would be converted to transportation right-of-way. During construction, short-term impacts to land uses adjacent to an alternative, especially in developed areas, would occur due to the movement of workers and materials through the area and construction activities. Construction noise and dust, as well as temporary disruption of traffic flow on local roads, may also temporarily affect residents and businesses in the vicinity of the project. Measures to minimize potential impacts are presented in **Section 4.20 Temporary Impacts During Construction**.

4.1.3 Toll Road Impacts

As a proposed toll facility, the Trinity Parkway could require additional right-of-way to accommodate ancillary toll facilities. The amount of additional right-of-way, if any, is subject to further detailed design. As a result, additional amounts of developed or undeveloped land uses may be converted to Trinity Parkway right-of-way. The FEIS will provide more specific details regarding how much additional right-of-way (if any) is required at such locations.

4.2 COORDINATED PLANNING AND DESIGN

This section describes the anticipated beneficial and adverse impacts associated with construction of the Trinity Parkway along with other independent proposed agency actions identified in **Section 3.1.1.4**.

4.2.1 Introduction

Section 3.1.1.4 provided a description of other planned projects that although independent, may be subject to coordinated planning and design along with the proposed action. The coordinated planning and design with these projects involves integrating transportation infrastructure and non-highway uses into coordinated multi-use actions that complement one another. Highway projects can be coordinated with the development of bikeways, parks, and other public or private undertakings and may fit better into the overall fabric of the community than if they were not coordinated. Coordination of these projects provides cost efficiencies, important flood control benefits, and promotes the corridor as more than just a transportation link, but a vital part of regional tourism and local recreational resources.

Potential elements of these coordinated actions include:

- Development of an agency consortium to devise and carry out the plan;

- Flood protection benefits provided by new levee construction, structural reinforcement of existing levees, and the excavation of borrow areas for increased floodwater storage and hydraulic conveyance capacity;
- Accelerated lake construction coordinated with levee and roadway embankment requirements;
- Landscaping and beautification including the consideration of native and contextual habitat enhancements at key areas, such as the major floodplain crossings;
- Wildlife and wetland preservation and mitigation plans, including special considerations for ecosystem restoration and wildlife passage across the corridor such as at major floodplain areas or other highly traveled areas; and
- A coordinated plan to maintain consistency with the City of Dallas' vision to showcase its history and natural resources, including tourist/visitor centers, public gathering areas, and other recreational amenities associated with lakes, trails, and parks.

Specific projects that, although independent, may be subject to coordinated planning and design along with the proposed action include:

City of Dallas MIP/BVP - Potential coordinated project elements consist of the following:

- Floodway levee raise (2 feet above the SPF) and levee strengthening (flatten riverside of levees to a 4:1 slope).
- Floodway lake development - this item involves the creation of lakes to improve flood conveyance and recreational benefits.
- Removal of abandoned AT&SF Railroad Bridge - this item includes total or partial removal of the wooden support piers and earthen embankment. Partial removal would involve preservation of the existing steel truss bridge span over the Trinity River. Benefits include improved flood conveyance and potential re-use of the bridge span for a hike/bike trail.
- Ecosystem restoration - this item involves the creation of a meandering river channel upstream and between the two proposed lakes. Included would be supplemental tree plantings along the channel banks and wetland construction.
- Recreational amenities - this item consists primarily of hike/bike trail improvements.

USACE DFE Project - Potential coordinated project elements consist of the following:

- Lamar Levee - this item involves the construction of a new levee to the SPF plus 2 feet, which would provide flood protection benefits to the south Lamar Street area near the US-175/SH-310 interchange. A portion of the levee could be used for a roadway embankment from the downstream end of the Dallas Floodway to the MLK Bridge.

- Lamar Levee sump storage - this item includes the excavation of designated areas to produce borrow material for levee construction. The excavated areas would serve to enhance flood protection in the south Lamar Street area by providing interior floodwater storage. Coordination with the USACE would be required to ensure the proposed Trinity Parkway avoids impacting the storage sump locations.
- Recreational amenities - this item consists primarily of constructing hike/bike trails to adjacent neighborhoods and/or paralleling the Trinity River.

More detailed descriptions of the MIP/BVP and DFE projects are provided throughout **Chapter 3 Affected Environment.**

4.2.2 No-Build Alternative

The No-Build Alternative would offer very limited, if any, coordinated planning and design opportunities within the Trinity Parkway study area. Under this alternative, the FHWA/TxDOT/NTTA would not continue to participate in cooperative planning for the Dallas Floodway, DFE, and adjacent areas (i.e., future Great Trinity Forest Park). As a result, the opportunity for construction cost efficiencies would be lost. However, the No-Build Alternative would not prohibit the City of Dallas' planned development of parkland within the Dallas Floodway or other areas.

Under the No-Build Alternative, traffic volume and congestion would continue to increase on the existing roadway network, possibly contributing to air quality impacts, traffic congestion to and from parks and recreational areas, as well as potentially unsafe bicycle and pedestrian use of trail systems.

4.2.3 Build Alternatives

Transportation impacts associated with the Trinity Parkway Build Alternatives are described in **Section 4.4 Transportation Impacts**. As previously described in **Chapter 1 Need and Purpose for Proposed Action**, if a Build Alternative is identified that is located outside of the Dallas Floodway (Alternatives 2A and 2B), it is likely there would be no participation by FHWA/TxDOT/NTTA in the potential coordinated actions proposed by the USACE and City of Dallas since there would be no direct association with features in the floodway. There would be no primary USACE involvement with the Trinity Parkway other than the processing of regulatory permits.

In addition, the City of Dallas may not finalize its Dallas Floodway BVP until the Trinity Parkway preferred alternative has been identified. As a result, the USACE has indicated that none of the aforementioned plans has been sufficiently developed to know whether or not there would be a flood damage reduction or ecosystem restoration purpose in which the USACE could participate. Assuming there would be a federal

(USACE) interest (monetary or otherwise) in either of those projects, the USACE could then be a potential project participant (see **Section 1.12.5 Update on the Planning Process**).

Based on the above information, Trinity Parkway Alternatives 3A, 3B, 3C 4A, 4B, and 5 are considered the likely candidate alternatives for potential coordinated planning with the DFE and BVP. The highway construction activities (earthen borrow areas) associated with these Build Alternatives could be coordinated with levee and lake construction and wetland creation or re-creation. The City of Dallas has expressed its desire to enhance the visual character of the Dallas Floodway and DFE areas and provide more public recreational facilities. As such, these areas would be prime candidates for aesthetic and recreational enhancement projects possibly funded by transportation enhancement (TE) funds administered by the FHWA [23 USC §101(a)(35)]. Appropriate NEPA documentation and approval would be required for these projects. More details concerning eligible TE activities that could be implemented as part of coordinated planning are presented in **Chapter 7 Mitigation Measures and Commitments**.

4.2.4 USACE DFE Project

Details of the DFE project and its areas of impacts and benefits are contained in the FEIS dated February 1, 1999 (USACE, 1999), and Final Supplement No. 1 to the FEIS, dated April 2003 (USACE, 2003). The anticipated environmental impacts of the DFE project are also included as part of the cumulative impacts analysis for the Trinity Parkway (see **Section 4.24.2**). The Record of Decision (ROD) for the project was signed on December 1, 1999. According to the ROD, compliance with all applicable environmental review and consultation requirements was accomplished through coordination of the *Final General Reevaluation Report and Integrated EIS* (USACE, 1999). In addition to satisfying the Fish and Wildlife Coordination Act, compliance with the Clean Water Act (CWA), including preparation of a Section 404(b)(1) analysis, Clean Air Act (CAA), Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Resource Conservation and Recovery Act (RCRA), Endangered Species Act (ESA), National Historic Preservation Act (NHPA) (THC, 2002a), Section 9 [33 USC 401] and Section 10 (33 USC 403) of the Rivers and Harbors Act of 1899, EO 11988 (*Floodplain Management*, 1977), and EO 12898 (*Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations*, 1994) was completed. An exception to obtaining the Texas Commission on Environmental Quality (TCEQ) State Water Quality Certificate is being pursued under Section 404(r) of the CWA. In addition, a signed Programmatic Agreement with the Advisory Council on Historic Preservation (ACHP), State Historic Preservation Office (SHPO), and other parties was developed to address cultural resources (FHWA, 2005).

The ROD specifies that all practicable measures to avoid or minimize environmental impacts were adopted and incorporated in the development of the project. Included would be a program to monitor the

success of environmental mitigation and restoration features of the project, which may be adopted and jointly implemented by the City of Dallas and the USACE. The USACE's FEIS indicates that planned recreation amenities of the DFE would be compatible with the regional recreation master plan, which includes hike/bike trails, equestrian tails, nature trails, and pavilions.

4.2.5 City of Dallas MIP/BVP

As previously noted, the City of Dallas has not finalized its decision on the LPP for the Dallas Floodway, which is formulated from the list of measures and alternatives being considered as part of the *Trinity River Corridor MIP/BVP* (City of Dallas, 1999a and 2003). As previously described in **Chapter 3 Affected Environment**, the current version of the LPP includes common features adopted from the BVP, which includes the construction of off-channel lakes and wetlands, channel realignment, recreational features, and the Trinity Parkway (proposed action).

The primary differences between versions of the Locally Preferred Plan (LPP) involve which Trinity Parkway alternative (Build or No-Build) is identified as the preferred alternative. The draft MIP recommended Alternative 4A as the preferred option for the Trinity Parkway. However, the City of Dallas Council (on April 13, 2005) and the NTTA (on April 20, 2005) both issued resolutions in support of Alternative 3B as the locally-preferred and interim locally-preferred alternative, respectively (see **Section 1.3 Project History**).

The *Trinity River Corridor MIP/BVP* is closely related to the Trinity Parkway plan because lake excavation presents an optimum source of earth fill material for roadway embankments, which would be needed to construct Alternatives 3A, 3B, 3C, 4A, and 4B and to a lesser extent Alternative 5. Furthermore, the lakes would serve to mitigate the impacts of the roadway embankments on floodway conveyance. Thus, construction of either of these alternatives within the floodway would create efficiencies for the Trinity Parkway, floodway levee improvements, and the ultimate development of floodway lakes. Having such an available and close source of embankment material would benefit the Trinity Parkway and levee raise projects, while the two lakes could be excavated as part of the coordinated planning effort. Previous environmental investigations performed by others have identified the presence of constituents of concern in a limited number of samples of soils and sediment at locations within the Dallas Floodway. Additional details are presented in **Section 3.9.1**. Coordinating the lakes plan with the proposed Trinity Parkway project for use as a source of fill material for roadway embankment may require additional investigations to characterize soils in excavation areas.

4.2.6 Potential Environmental Impacts of Coordinated Planning and Design

Coordinated planning of all, or portions, of these projects (i.e., Trinity Parkway, DFE Lamar Levee, and MIP/BVP) would have the potential to affect (beneficial and/or adverse) the social, economic, and environmental conditions within the Trinity Parkway study area. However, their impacts - individually or combined - would be mitigated through various public/agency review and mitigation processes. As previously described, the City of Dallas has not finalized their plans for the Dallas Floodway and surrounding areas. Additionally, the Trinity Parkway SDEIS includes Build Alternatives located within and outside the Dallas Floodway with no preferred alternative identified. Therefore, it is not possible to fully determine the potential environmental impacts from coordinated planning with other proposed floodway improvements at this time (see **Section 1.12.5 Update on the Planning Process**).

4.2.7 Next Step in the Process

SDEIS Section 1.12.5 Update on the Planning Process provides a description of the intended strategy for environmental processing of the Trinity Parkway project and other projects in the Dallas Floodway. A description of the primary projects affecting the Dallas Floodway is in **SDEIS Section 3.1.1.4 Coordinated Planning and Design**.

4.3 SOCIAL IMPACTS

4.3.1 Impacts to Neighborhoods and Neighborhood Districts

4.3.1.1 No-Build Alternative

The Trinity Parkway would not be constructed under this alternative. Therefore, no project-related impacts to neighborhood districts/neighborhoods would occur within the study area. However, the No-Build Alternative may have an impact to neighborhood districts/neighborhoods by the increase in traffic congestion that is expected to occur over the next 20 years on local area roadways. As a result, this may result in a detriment to air quality, an increase in noise levels, a decrease in public safety, and a deterrent to redevelopment of lands within the corridor.

4.3.1.2 Build Alternatives

Several different types of adverse impacts to existing neighborhoods and neighborhood districts are anticipated as a result of the proposed action (see **Table 4-3**). These impacts include relocations/displacements (see **Section 4.5**), community cohesion (see **Section 4.3.2**), proximity impacts,

such as noise impacts (see **Section 4.15**), visual intrusion (see **Section 4.16**), and increased traffic on local arterials and residential collector streets (see **Section 4.4**). Additional impacts are also described in **Section 4.3.3 Environmental Justice Considerations**. Impacts identified here are generalized and may not be uniform for all residences within the neighborhood or residential area. Impacts may be more pronounced or less pronounced depending on the proximity of each residence to a proposed alternative. In addition, noise levels are expected to rise in all neighborhoods that are adjacent, or in proximity, to one of the Build Alternatives, but only those sites where a noise impact has been identified are reported. For detailed information on what constitutes a noise impact, refer to **Section 4.15 Noise Impacts**.

TABLE 4-3. IMPACTS ON NEIGHBORHOODS AND NEIGHBORHOOD DISTRICTS

Neighborhood or Neighborhood District	Trinity Parkway Build Alternatives							
	2A	2B	3A	3B	3C	4A	4B	5
Middle Stemmons/Brookhollow ND								
Residential area (Arlington Park) east of IH-35E/south of Record Crossing	P, N, V, T	P, N, V, T	P, N, V, T	P, N, V, T	P, N, V, T	P, N, V, T	P, N, V, T	P, N, V, T
Trinity Industrial District	R (25), P, V, T	R (31), P, V, T	R (2), P, V, T	R (5), P, V, T	R (2), P, V, T	R (4), P, V, T	R (3), P, V, T	R (4), P, V, T
Brookhollow Industrial Park	R (18), P, V, T	R (14), P, V, T	R (12), P, V, T	R (12), P, V, T	R (12), P, V, T	R (12), P, V, T	R (11), P, V, T	R (12), P, V, T
Lower Stemmons ND								
Design District	R (60), P, V, T	R (43), P, V, T	R (1), P, V, T	R (2), P, V, T	R (2), P, V, T	R (1), P, V, T	P, V, T	R (1), P, V, T
Market/Technology Center	R (41), P, V, T	R (17), P, V, T	P, V, T	P, V, T	P, V, T	P, V, T	P, V, T	P, V, T
Lower Stemmons ND	R (68), P, V, T	R (50), P, V, T	P, V, T	P, V, T	P, V, T	P, V, T	P, V, T	R (2), P, V, T
Cedars/Fair Park/East Dallas ND								
The Cedars	R (25), P, V, T	R (49), P, V, T	P, V, T	R (4), P, V, T	R (4), P, V, T	P, V, T	P, V, T	P, V, T
South Dallas ND								
South Dallas HOA	R (40), P, N, V, T	R (35), P, N, V, T	R (14), P, N, V, T	R (14), P, N, V, T	R (14), P, N, V, T	R (14), P, N, V, T	R (14), P, N, V, T	R (14), P, N, V, T
Ideal	P, N, V, T	P, N, V, T	P, N, V, T	P, N, V, T	P, N, V, T	P, N, V, T	P, N, V, T	P, N, V, T
Rochester Park	P, N, V, T	P, N, V, T	P, N, V, T	P, N, V, T	P, N, V, T	P, N, V, T	P, N, V, T	P, N, V, T
South Dallas ND	R (8), P, V, T	R (6), P, V, T	R (4), P, V, T	R (3), P, V, T	R (1), P, V, T	R (4), P, V, T	R (1), P, V, T	R (3), P, V, T
West Dallas - West of Hampton ND								
West Dallas HOA	---	---	---	---	---	P, N, V, T	P, N, V, T	P, N, V, T
West Dallas - East of Hampton ND								
West Dallas HOA	---	---	---	---	---	P, N, V, T	P, N, V, T	P, N, V, T
La Bajada	---	---	---	---	---	R (6), P, N, V, T	R (6), P, N, V, T	R (24), P, N, V, T
North Oak Cliff ND								
Kessler Park	---	---	---	---	---	P, T	P, T	P, V, T
Lake Cliff HOA	---	---	---	---	---	P, V, T	P, V, T	P, V, T
North Oak Cliff ND	---	---	---	---	---	P, V, T	P, V, T	R (1), P, V, T
East Oak Cliff ND	---	---	---	---	---	P, N, V, T	P, N, V, T	R (1), P, N, V, T

Key to Terms:
R = relocation(s) anticipated at this location
P = proximity impacts
N = noise impact to one or more residences in neighborhood
V = visual intrusion expected to one or more residents of neighborhood
T = increased traffic expected on local streets
--- = no impacts anticipated for alternative

Notes:
Visual intrusion is generally considered to be either the introduction of the highway facility into an area where none existed previously, or the loss of privacy of residents now exposed to motorists traveling on the highway.
Numbers in parentheses next to the letter **R**, indicating relocations, are the number of combined residential, commercial/industrial, and community/public facility displacements associated with each alternative. See **Table 4-16** for the estimated number and description of the displacement type for each of the Build Alternatives.
The information for Alternatives 3A, 3B, and 4A is shaded to denote for the reader that these alternatives are not considered approvable by the USACE due to concerns detailed in **Section 2.3.9**.
ND = Neighborhood District
HOA = Home Owners Association

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As shown in **Table 4-3**, each of the Build Alternatives would have some degree of adverse impact on a number of existing neighborhoods or neighborhood districts. In some cases, impacts include the displacement and required relocation of one or more residence, business, or community facility in a neighborhood, and in others proximity is the only impact. In most cases, however, proximity results in multiple impacts including increased noise, visual intrusion, and increased traffic on local streets. Alternatives 2A and 2B would result in the greatest number of relocations, with a total of 285 and 245, respectively; and Alternatives 4A, 4B, and 5 would impact the greatest number of communities/neighborhoods within the project area. Alternatives 3A, 3B, and 3C would impact fewer communities/neighborhoods than Alternatives 4A, 4B, and 5; and would require fewer relocations than Alternatives 2A, 2B, 4A, and 5. The degree of adverse impacts associated with each of the Build Alternatives is discussed further in the sections to follow.

4.3.2 Impacts to Community Cohesion

As previously described in **Section 3.1.2.3**, communities within the Trinity Parkway study area are characterized by varying degrees of cohesion based on socio-economic factors. Strong community cohesion is characterized by extensive interaction among neighbors and friends, participation in community activities and organizations, and involvement in local government and politics. Transportation and land use planning decisions can affect community cohesion by influencing the location of activities and the quality of the "public realm" (i.e., places where people naturally interact, such as sidewalks, local parks, and public transportation), and therefore, the ease with which neighbors meet and build positive relationships (Litman, 2007). Typically, cohesive communities have several generations of families, extended families, and strong informal (non-governmental) social support networks which can provide for child care, emergency assistance, and spiritual guidance, among many other possibilities.

4.3.2.1 No-Build Alternative

If the Trinity Parkway were not built, the potential displacement of residences, businesses and their employees, and public facilities would not occur. If alternative solutions are not developed and traffic continues to grow as projected, the Canyon/Mixmaster area would continue to experience an overall increase in congestion. The long-term cohesion of the community at large, as well as the specific neighborhoods through which the congested roadways pass, may be affected by not building the proposed project. Future neighborhoods or neighborhood expansions would develop in accordance with local land use planning policies and zoning requirements.

4.3.2.2 Build Alternatives

The overall impact of the Trinity Parkway project can be expected to have some negative and positive impacts. The construction of a limited access toll facility may make it more difficult for some community members to interact because they would have to walk or drive longer distances to see one another. Displacements may cause some community members to move some distance from their present community (see **Section 4.5**). All of the Build Alternatives would cause residential displacements within the South Dallas neighborhood district (South Dallas HOA), and Alternatives 4A, 4B, and 5 would cause additional displacements in the West Dallas-East of Hampton district (La Bajada neighborhood). Alternative 5 would also displace one residence in the East Oak Cliff neighborhood district (see **Tables 4-17** through **4-24** and **Plates 4-5** through **4-12**). While some members of these communities would be displaced, data regarding affordable housing suggests sufficient vacancies exist to accommodate relocations within the same communities (see **Section 4.5.3**). Overall, no communities would be divided to an extent that would prohibit access or make it extremely inconvenient for community members to continue present relationships. To ensure community cohesion is not substantially affected, possible mitigation includes sidewalks and other pedestrian features to be considered on a case by case basis. These potential mitigation measures are discussed further in **Section 4.3.3**.

Residents within the Trinity Parkway study area generally identify with communities (e.g., South Dallas and West Dallas) and neighborhoods, such as Rochester Park, Ideal, Oak Cliff, and La Bajada (see **Section 3.1.3**). The core of each of these communities and neighborhoods would remain intact with only minor physical disruption, if any at all, depending on which alternative is identified as the preferred alternative. While some members of the project area communities and neighborhoods may have to travel slightly longer distances to their destinations, the long-term impact of such inconveniences on community cohesion would be minor.

Neighborhoods and communities located on both sides of the Dallas Floodway were developed independently of each other. Historically, these communities have been divided by the presence of the Trinity River (see **Plate 3-9**). Neither of these communities depends on their counterpart for social interaction or access to a localized community facility, and although one or more of the proposed Build Alternatives is aligned between them, travel from one community to its counterpart would not be restricted. The Trinity Parkway Build Alternatives would not create a new physical barrier between these communities. In addition, construction of a Build Alternative would not result in the removal or interruption of the existing arterial roadways crossing the Floodway and providing access between communities on both sides.

4.3.3 Environmental Justice Considerations

Overview of EO 12898 and FHWA Order 6640.23

Presidential EO 12898 (1994) requires that each federal agency "shall make achieving environmental justice (EJ) part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental impacts of its programs, policies, and activities on minority populations and low-income populations…" In a memorandum concerning EO 12898, the President states that federal agencies should collect and analyze information concerning a project's impacts on minorities or low-income groups when required by the National Environmental Policy Act (NEPA) of 1969. If such investigations identify that minority or low-income groups experience disproportionate adverse impacts, then avoidance or mitigation measures are to be taken.

The FHWA implements the requirements of EO 12898 through FHWA Order 6640.23 *FHWA Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (1998). Guidance on how to implement EO 12898 and conduct an EJ analysis has also been issued by the President's Council on Environmental Quality (CEQ 1997a). EO 12898 and FHWA Order 6640.23 are primarily a reaffirmation of the principles of Title VI of the Civil Rights Act of 1964, as amended ("Title VI") and related statutes, the NEPA of 1969, 23 USC Section 109(h), and other federal environmental laws emphasizing the incorporation of those provisions with the environmental and transportation decision making process.

FHWA Order 6640.23 applies the following definitions for minority and low-income populations, which are consistent with the definitions for EO 12898 that have been issued by the federal CEQ and EPA.

Minority means a person who is:

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

Minority Population means any readily identifiable group of minority persons who live in geographic proximity, and, if circumstances warrant, geographically dispersed/transient persons (such as migrant

workers or Native Americans) who will be similarly affected by a proposed FHWA program, policy, or activity.

Minority populations were identified based on the federal CEQ's guidance document *Environmental Justice: Guidance Under the National Environmental Policy Act* (CEQ, 1997a). Based on this guidance

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

Low-Income means a household income at or below the U.S. Department of Health and Human Services (HHS, 2008) poverty guidelines.

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

Unlike the CEQ guidance (1997a) on minority population, no EJ order or guidance document contains a quantitative definition of how many low-income individuals constitute a low-income population. In the absence of guidance for this analysis, one of the measures used to identify low-income populations was the average median household income for the inclusive census tracts and/or block groups. As described above, the FHWA defines low-income as "a person whose household income level is at or below the Department of HHS poverty guidelines." In 2008 (most recent available), the HHS poverty guidelines for a family of four persons is $21,200. In addition, census tracts and block groups were identified where the percentage of the population below the poverty level according to the U.S. Census poverty threshold was greater than 50 percent.

4.3.3.1 No-Build Alternative

The No-Build Alternative does not present any issues regarding EO 12898.

4.3.3.2 Build Alternatives

The following sections comprise the elements of the EJ analysis:

1. Methodology and Approach: how the Build Alternatives were evaluated for compliance with EO 12898 and FHWA Order 6640.23;
2. Distribution of minority and low-income populations in the project area: the geographic distribution of minority and low-income populations in proximity to the Build Alternatives. This was accomplished using 2000 U.S. Census data for the block groups and census tracts in the project area;
3. Extent of adverse impacts: for those alternatives affecting populations at issue, a comparison of extent and degree of adversity of potential impacts;
4. Public involvement: a description of past and planned public involvement and community outreach activities for the proposed action;
5. Limited English proficiency considerations: the identification of residents in the project area with potential limited English proficiency (LEP);
6. Title VI of the Civil Rights Act of 1964, as amended: guidance for evaluating compliance with the EJ order derived by analogy from federal court decisions under Title VI;
7. Toll road considerations: an analysis to determine minority and low-income population travel patterns in the study area. This form of analysis is useful in assessing "user impacts" of the proposed Trinity Parkway;
8. Mitigation and compensation options: description of available mitigation measures to be considered in response to the possible identification of disproportionately high and adverse impacts on a specific population; and
9. Summary of environmental justice considerations: review of environmental justice concepts and how they apply to the Trinity Parkway.

1. Methodology and Approach

The proposed Trinity Parkway Build Alternatives were evaluated for compliance with EO 12898 and FHWA 6640.23. For this analysis, three evaluation measures were used:

- Identify whether minority or low-income populations exist in the project area. The terms "minority populations" and "low-income populations" were defined. Sources of data used included census data; anecdotal information from coordination with local officials; field trips, and public involvement;
- Identify impacts that would potentially affect any minority and low-income communities of concern; and
- Identify mitigation strategies for any identified adverse impacts.

2. Distribution of the Minority and Low-Income Populations within the Project Area

The primary source of demographic data was the 2000 U.S. Census because it is the most comprehensive, complete, and detailed data source currently available. Minority and low-income demographics within the project area census tracts (see **Plate 4-1**) are shown in **Table 4-4**. It should be noted that some persons fall into more than one of these categories. As such, these percentages should not be combined to represent the area population, since doing so would result in duplication. For example, the columns for racial minority populations include all income levels; and low-income populations may be a racial minority, ethnic minority, or any mix of demographic characteristics.

TABLE 4-4. MINORITY AND LOW-INCOME CHARACTERISTICS

Census Geography[1]	Total Area Population	Racial Distribution				Percent Hispanic or Latino[3]	Percent Below Poverty Level[4]	Median Household Income[5] ($)
		Percent Black or African American	Percent American Indian/ Alaskan Native	Percent Asian-American	Total Racial Minority Percentage[2]			
Reference Areas								
City of Dallas	1,188,580	25.9	0.5	2.8	29.2	35.6	17.8	37,628
Project Area	63,005	41.9	0.5	0.5	42.9	46.2	38.3	23,855
Project Area Census Tract Demographics								
20	7,271	11.2	1.1	0.2	12.5	**83.1**	40.8	**19,914**
33	2,066	13.6	1.6	1.1	16.3	**59.5**	43.6	35,375
34	1,460	73.3	0.2	0.4	**73.9**	12.9	44.4	22,308
38	2,754	97.4	0.0	0.3	**97.8**	2.1	36.2	**18,176**
39.02	2,099	86.4	0.6	0.0	**86.9**	12.8	43.8	**16,061**
40	1,496	85.6	0.1	0.0	**85.7**	12.2	39.6	**15,817**
41	1,440	74.5	0.8	0.4	**75.7**	24.0	**53.6**	**14,341**
42.01	5,449	5.1	0.6	0.6	6.3	**66.7**	19.6	37,667
43	2,860	12.8	0.3	2.7	15.8	**74.7**	36.0	27,262
86.03	1,687	51.0	0.4	0.6	**52.0**	47.1	33.9	**20,104**
89	2,730	84.1	0.3	0.4	**84.8**	14.2	29.0	23,594
100	9,614	42.2	0.9	0.3	43.4	17.7	43.0	29,063
101.01	3,766	60.5	0.1	0.3	**60.8**	38.9	34.9	**19,500**
101.02	3,460	4.1	0.9	0.1	5.1	**92.2**	21.7	30,341
102	2,356	76.4	0.4	0.5	**77.2**	21.5	**78.6**	**7,094**
105	2,378	68.0	0.0	0.0	**68.0**	31.8	32.4	28,058
106.01	5,163	4.7	0.7	0.2	5.6	**91.6**	26.3	30,144
115	4,956	70.9	0.1	0.2	**71.2**	29.6	**62.2**	**10,800**

Source: U.S. Census Bureau, 2000.

Notes: Bolded areas show project area census tracts with a racial or ethnic minority population greater than 50 percent, where the percentage of the total number of people below the U.S. Census Poverty Threshold exceeds 50 percent, or with a median household income at or below the U.S. Department of HHS 2008 poverty guidelines. The HHS 2008 poverty guideline for a family of four persons is $21,200.

1. Census tracts within and/or adjacent to the project area, excluding the CBD (see **Plate 4-1**).
2. Combined total of persons reporting as Black or African American, American Indian/Alaskan Native, or Asian-American.
3. Total of persons reporting as Hispanic or Latino ethnic origin. As race and ethnic origin are two separate and distinct concepts, these persons may be of any race.
4. Total number of persons below the 2000 U.S. Census poverty threshold.
5. 1999 median household income as reported in the 2000 Census (most recent available).

The bolded areas in **Table 4-4** show project area census tracts with minority population densities high enough to be considered minority populations based on the CEQ's guidance. Seventeen of eighteen census tracts have a racial or ethnic minority percentage greater than 50 percent. **Table 4-4** also shows

nine tracts (20, 38, 39.02, 40, 41, 86.03, 101.01, 102, and 115) with a median household income below the U.S. Department of HHS 2008 poverty guidelines ($21,200).

The findings presented in **Table 4-4** and described above provide a broad look at the project area demographics. With respect to the census tract data, the size and configuration of many of these tracts may produce misleading results. The proposed highway corridor covers approximately 9 miles in length (IH-35E/SH-183 to US-175/SH-310) through a variety of socioeconomic environments. In addition, many of the project area's census tracts have boundaries which extend, in some cases, several miles from the alignment location of one or more of the Build Alternatives. The total area encompassing the project area census tracts covers more than 26 square miles (compared to approximately 11 square miles for the study area). An analysis of the demographic conditions of the project area at the census tract level may tend to dilute or exaggerate EJ population locations as well as mask more localized EJ populations.

EPA's guidance document on incorporating environmental justice into NEPA states:

> "…the analysis should focus both on the overall affected area and population and on smaller areas and/or communities within the affected area… Environmental justice concerns may lead to more focused analyses, identifying significant effects that may otherwise have been diluted by examination of a larger population or area" (EPA, 1998a).

For these reasons, the analysis focused on block groups and sub-areas, or neighborhoods/communities within the affected corridor wherein potential project impacts may occur. 2000 Census block groups (see **Plate 4-1**), located within or adjacent to the proposed right-of-way, were used as the EJ analysis unit to establish the area of potential effect for each Build Alternative. The results of the analysis of minority and low income data for each alternative at the block group level are shown in **Tables 4-5** through **4-7**. This information identifies where these populations are located in proximity to each individual Build Alternative. The bolded areas of the tables indicate those areas where the block group percentages for racial and ethnic minorities and persons below the U.S. Census poverty threshold exceed 50 percent, or where the median household income is below the 2008 HHS poverty guideline ($21,200).

TABLE 4-5. CENSUS BLOCK GROUPS AFFECTED BY ALTERNATIVES 2A, 2B - MINORITY AND LOW-INCOME CHARACTERISTICS

Census Tract/ Block Group	Total Block Group Population	Percent Black or African American	Percent American Indian/ Alaskan Native	Percent Asian-American	Total Racial Minority Percentage	Percent Hispanic or Latino	Percent Below Poverty Level	Median Household Income
33/2	516	15.9	2.9	0.8	19.6	**62.6**	36.6	$27,589
34/2	693	80.8	0.1	0.0	**81.0**	16.7	**53.3**	**$19,444**
39.02/2	921	92.6	0.9	0.0	**93.5**	7.3	41.5	**$12,232**
39.02/3	693	70.4	0.4	0.0	**70.9**	28.0	40.9	**$18,824**
40/1	547	82.1	0.2	0.0	**82.3**	15.9	34.8	**$15,938**
40/2	949	87.7	0.0	0.0	**87.7**	10.0	42.4	**$15,781**
100/1	338	55.0	0.9	2.4	**58.3**	15.7	26.4	**$15,208**
100/2	1,021	77.0	0.1	0.6	**77.7**	13.9	19.3	$29,132
100/3	8,255	37.4	1.0	2.2	38.6	18.2	**76.9**	$48,750

Source: U.S. Census Bureau, 2000.
Note: Bolded areas indicate that either the percentage of minority population or persons below the poverty level affected by an alternative exceeds 50 percent or the median household income is below the 2008 HHS poverty threshold ($21,200).

TABLE 4-6. CENSUS BLOCK GROUPS AFFECTED BY ALTERNATIVES 3A, 3B, 3C - MINORITY AND LOW-INCOME CHARACTERISTICS

Census Tract/ Block Group	Total Block Group Population	Percent Black or African American	Percent American Indian/ Alaskan Native	Percent Asian-American	Total Racial Minority Percentage	Percent Hispanic or Latino	Percent Below Poverty Level	Median Household Income
33/2	516	15.9	2.9	0.8	19.6	**62.6**	36.6	$27,589
34/2	693	80.8	0.1	0.0	**81.0**	16.7	**53.3**	**$19,444**
39.02/2	921	92.6	0.9	0.0	**93.5**	7.3	41.5	**$12,232**
39.02/3	693	70.4	0.4	0.0	**70.9**	28.0	40.9	**$18,824**
40/1	547	82.1	0.2	0.0	**82.3**	15.9	34.8	**$15,938**
40/2	949	87.7	0.0	0.0	**87.7**	10.0	42.4	**$15,781**
100/1	338	55.0	0.9	2.4	**58.3**	15.7	26.4	**$15,208**
100/2	1,021	77.0	0.1	0.6	**77.7**	13.9	19.3	$29,132
100/3	8,255	37.4	1.0	2.2	38.6	18.2	**76.9**	$48,750

Source: U.S. Census Bureau, 2000.
Note: Bolded areas indicate that either the percentage of the minority population or persons below the poverty level affected by an alternative exceeds 50 percent or the median household income is below the 2008 HHS poverty threshold ($21,200).

TABLE 4-7. CENSUS BLOCK GROUPS AFFECTED BY ALTERNATIVES 4A, 4B, 5 - MINORITY AND LOW-INCOME CHARACTERISTICS

Census Tract/ Block Group	Total Block Group Population	Percent Black or African American	Percent American Indian/ Alaskan Native	Percent Asian-American	Total Racial Minority Percentage	Percent Hispanic or Latino	Percent Below Poverty Level	Median Household Income
20/1	305	12.8	0.3	1.0	14.1	**83.9**	**53.5**	**$20,500**
20/2	1,659	25.1	1.3	0.2	26.6	**64.4**	39.6	**$15,877**
33/2	516	15.9	2.9	0.8	19.6	**62.6**	36.6	$27,589
34/2	693	80.8	0.1	0.0	**81.0**	16.7	**53.3**	**$19,444**
39.02/2	921	92.6	0.9	0.0	**93.5**	7.3	41.5	**$12,232**
39.02/3	693	70.4	0.4	0.0	**70.9**	28.0	40.9	**$18,824**
40/1	547	82.1	0.2	0.0	**82.3**	15.9	34.8	**$15,938**
40/2	949	87.7	0.0	0.0	**87.7**	10.0	42.4	**$15,781**
41/1	396	76.5	1.3	0.0	**77.8**	21.0	30.8	**$14,205**
43/1	776	13.8	0.3	4.5	18.6	**66.5**	34.8	$23,950
100/1	338	55.0	0.9	2.4	**58.3**	15.7	26.4	**$15,208**
100/2	1,021	77.0	0.1	0.6	**77.7**	13.9	19.3	$29,132
100/3	8,255	37.4	1.0	2.2	38.6	18.2	**76.9**	$48,750
101.01/1	698	69.5	0.1	0.3	**69.9**	29.4	37.6	**$20,865**
101.01/2	980	75.1	0.1	0.8	**76.0**	23.8	31.8	$21,818
101.02/1	1,133	2.2	0.8	0.0	3.0	**93.5**	18.7	$27,159
101.02/2	1,636	6.6	0.6	0.0	7.2	**89.9**	29.1	$28,594
102/1	2,033	73.8	0.4	0.4	**74.7**	24.0	**81.7**	**$6,925**

Source: U.S. Census Bureau, 2000.
Note: Bolded areas indicate that either the percentage of minority population or persons below the poverty level affected by an alternative exceeds 50 percent or the median household income is below the 2008 HHS poverty guideline ($21,200).

Tables 4-5 through **4-7** show the results of the analysis of the demographic conditions at the block group level are consistent with the results at the census tract level. The tables indicate that every block group that is affected by a Build Alternative meets one of the following criteria:

- The minority population percentage is higher than 50 percent;
- The percentage of the population below poverty is higher than 50 percent; or
- The median household income is below the 2008 HHS poverty guideline.

Since neighborhoods represent a geographic unit that can be readily identified by community members, a correlation of the affected block groups to the project area neighborhoods (see **Section 3.1.3 Neighborhoods** and **Plate 3-9** for the location of neighborhood districts/neighborhoods) is shown in **Table 4-8**. The table provides the block group-level statistics on minority composition, income level, and related information for the neighborhoods with a potential for disproportionate impacts by the Build Alternatives. These neighborhoods are the communities for which an impact analysis was conducted.

TABLE 4-8. DEMOGRAPHIC CHARACTERISTICS OF AFFECTED NEIGHBORHOODS/CENSUS BLOCK GROUPS OF CONCERN

Neighborhood District/ Neighborhood	Census Tract/ Block Group	Total Block Group Pop.	Percent Black or African American	Percent American Indian/ Alaskan Native	Percent Asian American	Percent Racial Minority[1]	Percent Hispanic or Latino	Percent Below Poverty Level	Median Household Income	Median Value of Owner-Occupied Housing Units	Median Contract Rent[2]
Middle Stemmons/Brookhollow ND											
Residential area along Record Crossing	100/2	1,021	77.0	0.1	0.6	**77.7**	13.9	19.3	$29,132	$38,600	$426
Trinity Industrial District Brookhollow Industrial Park	100/1	338	55.5	0.9	2.4	**58.3**	15.7	26.4	**$15,208**	$36,300	NA
Lower Stemmons ND											
Design District-Market/ Technology Center	100/3	8,255	37.4	1.0	2.2	38.6	18.2	**76.9**	$48,750	$85,000	NA
Cedars/Fair Park/East Dallas ND											
South Dallas HOA	34/2	693	80.8	0.1	0.0	**81.0**	16.7	**53.3**	**$19,444**	$46,700	$367
The Cedars	33/2	516	15.9	2.9	0.8	19.6	**62.6**	36.6	$27,589	$37,500	$435
South Dallas ND											
South Dallas HOA	40/1	547	82.1	0.2	0.0	**82.3**	15.9	34.8	**$15,938**	$35,600	$423
	40/2	949	87.7	0.0	0.0	**87.7**	10.0	42.4	**$15,781**	$26,300	$298
Ideal	39.02/2	921	92.6	0.9	0.0	**93.5**	7.3	41.5	**$12,232**	$30,400	$272
Rochester Park	39.02/3	693	70.4	0.4	0.0	**70.9**	28.0	40.9	**$18,824**	$22,100	$257
West Dallas - West of Hampton ND											
West Dallas HOA	102/1	2,033	73.8	0.4	0.4	**74.7**	24.0	**81.7**	**$6,925**	$37,500	$121
West Dallas - East of Hampton ND											
West Dallas HOA	101.01/1	698	69.5	0.1	0.3	**69.9**	29.4	37.6	**$20,865**	$26,400	$330
	101.01/2	980	75.1	0.1	0.8	**76.0**	23.8	31.8	$21,818	$41,400	$329
	101.02/2	1,636	6.6	0.6	0.0	7.2	**89.9**	29.1	$28,594	$41,600	$287
La Bajada	43/1	776	13.8	0.3	4.5	18.6	**66.5**	34.8	$23,950	$12,000	$436
	101.02/1	1,133	2.2	0.8	0.0	3.0	**93.5**	18.7	$27,159	$35,100	$324
North Oak Cliff ND	20/1	305	12.8	0.3	1.0	14.1	**83.9**	**53.5**	**$20,500**	NA	$528
Lake Cliff HOA	20/2	1,659	25.1	1.3	0.2	26.6	**64.4**	39.6	**$15,877**	$167,500	$421
East Oak Cliff ND	41/1	396	76.5	1.3	0.0	**77.8**	21.0	30.8	**$14,205**	$24,400	$355

Source: U.S. Census Bureau, 2000.

Notes: Census tracts/block groups are shown on **Plate 4-1**.
Neighborhoods are shown on **Plate 3-9**.
Neighborhood and district boundaries do not correspond exactly with census tracts or block groups. A rough correlation has been established so that census data can be used to provide a general description of population, income, and housing characteristics. All Census figures shown are at the block group level.
Bolded areas show project area census tracts with a racial or ethnic minority population greater than 50 percent, where the percentage of the total number of people below the U.S. Census Poverty Threshold exceeds 50 percent, or with a median household income at or below the U.S. Department of HHS 2008 poverty guidelines.

1. Combined total of persons reporting as Black or African American, American Indian/Alaskan Native, or Asian-American.
2. Median contract rent is the monthly rent agreed to or contracted for, regardless of any furnishings, utilities, fees, meals, or services that may be included.

ND = Neighborhood District