

ENVIRONMENTAL ASSESSMENT

INTERSTATE HIGHWAY 35W

FROM INTERSTATE HIGHWAY 820 TO INTERSTATE HIGHWAY 30

**CITY OF FORT WORTH
TARRANT COUNTY, TEXAS**

**CSJ Nos.
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PREPARED BY:

**UNITED STATES DEPARTMENT OF TRANSPORTATION
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COOPERATING AGENCY:

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I. INTRODUCTION

This Environmental Assessment (EA) evaluates the social, economic, and environmental impacts resulting from the proposed improvements to Interstate Highway (IH) 35W, State Highway (SH) 121, and U.S. Highway (US) 287 in Fort Worth, Tarrant County, Texas (**Figure 1**).

The proposed improvements are part of a larger highway improvement project, the North Tarrant Express (NTE). The NTE includes improvements to IH 35W, IH 820 and SH 121/183 for a total of 36 miles. The project is divided into seven segments: Segment 1 and Segment 2W have been approved and are under construction; Segments 2E and 4 are awaiting funding; Segments 3B and 3C were approved on March 21, 2012; and, Segment 3A is the focus of this EA. Each segment has independent utility and logical termini.

The Texas Department of Transportation (TxDOT) is proposing to improve a 5.4-mile long section of IH 35W, approximately one mile of SH 121, and approximately one mile of US 287. The proposed project would also include an IH 35W Managed Lane Downtown Connector. The study limits for this EA extend along IH 35W from IH 820 to IH 30, along US 287 from IH 35W to IH 30, and along SH 121 from Riverside Drive to Belknap Street/Weatherford Street in downtown Fort Worth. The proposed project construction limits extend along IH 35W from just north of Meacham Boulevard to just north of IH 30, along SH 121 from Riverside Drive west to IH 35W, along US 287 from IH 35W to IH 30, and from IH 35W west along Belknap Street and Weatherford Street to their crossing with the Burlington Northern Santa Fe Railroad (BNSF) in downtown Fort Worth. Improvements to the interchanges at IH 820 and IH 30 are not included in the proposed project, but improvements to the SH 121 and US 287 interchanges are included.

The Federal Highway Administration (FHWA) has developed federal regulations for highway projects. These regulations, Title 23 of the Code of Federal Regulations (CFR) Part 771, provide instructions for assessing environmental impacts specific to federally funded transportation projects. This EA complies with the National Environmental Policy Act (NEPA) and allows the FHWA to determine whether an Environmental Impact Statement (EIS) is necessary. An EIS is required for projects or actions that may significantly affect the quality of the human environment. Examples of projects or actions typically requiring an EIS include (1) any new controlled access freeway; (2) any highway project of four or more lanes on a new location; (3) new construction or extension of fixed guideway systems; or (4) new construction or extension of a separate roadway for buses or high occupancy vehicles (HOVs) not located within an existing highway facility. The proposed project does not require an EIS-level analysis based on items one through four; therefore, an EA has been prepared.

Figure 1 shows the location of the proposed project. A U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle map which shows the proposed project is provided in **Figure 2**. An aerial map of the proposed project is provided in **Figure 3**. A plan view of the proposed project is provided in **Figure 4**. Typical sections are provided in **Figure 5**.

A. Need and Purpose for the Proposed Project

1. Project Need

The proposed project is needed to meet future travel demands stemming from projected population growth and traffic volumes, address operational and capacity deficiencies on IH 35W and SH 121, and update the facility to current design standards.

Table 1 summarizes the population trends and forecasts for the City of Fort Worth, Tarrant County, and the 12-county North Central Texas Council of Governments (NCTCOG) Metropolitan Planning Area (MPA).

Location	1970 Census ¹	1980 Census ¹	1990 Census ¹	2000 Census ¹	2010 Census ¹	2030 ² /2035 ³ Forecast	2040 Forecast	Growth Rate 2010-2040
City of Fort Worth	393,476	385,164	447,619	534,694	741,206	1,009,371 ²	1,236,870 ²	67%
Tarrant County	716,317	860,880	1,170,103	1,446,219	1,809,034	2,823,535 ³	3,046,531 ³	68%
12-County NCTCOG MPA	2,425,927	3,030,053	4,013,418	5,197,317	6,417,724	9,833,378 ³	10,543,336 ³	64%

Source:
¹ U.S. Census 2010 PL94-171, NCTCOG (February 2011).
² Texas Water Development Board, 2011 Regional Water Plan Population Projections for 2000-2060 For Cities, Utilities, and County-Other by Region by County, Region C (July 2010).
³ NCTCOG 2040 Demographic Forecast, <http://www.nctcog.org/ris/demographics/forecast.asp> (February 2011), available at county level only.

The proposed project is needed to maintain pace with the City's transportation needs as well as the transportation needs of Tarrant County. Development in this region would occur whether or not the proposed project is undertaken. As shown in **Table 1**, the City of Fort Worth, Tarrant County, and the 12-county NCTCOG MPA have experienced continuous growth since 1980, and are forecasted to grow through 2040.

Projected average daily traffic (ADT) volumes area presented in **Table 2** for two segments of IH 35W, SH 121 and US 287. Each roadway would experience an increase in ADT between 2010 and 2035.

Roadway	2010	2035	Percent Increase
IH 35W From IH 820 to SH 121	174,900	284,500	62.7
IH 35W from SH 121 to IH 30	245,500	398,200	62.2
SH 121	94,616	124,705	31.8
US 287	40,100	70,225	75.1

Source: TxDOT Transportation Planning and Programming Division data

Level of Service (LOS) is a qualitative measure describing operational conditions within a traffic stream and is generally described in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety. There are six LOS, designated A (best) through F (worst), that describe traffic operating conditions. General descriptions of the LOS are shown in **Table 3**.

Table 3: Level of Service Descriptions	
LOS	Description
A	Free flow traffic operations. Vehicles are almost completely unimpeded in their ability to maneuver within the traffic stream. The average spacing between vehicles is about 22 car lengths, which affords the motorist a high level of physical and psychological comfort. The effects of minor traffic incidents or vehicular breakdowns are easily absorbed. Although there might be deterioration in LOS within the vicinity of a traffic incident, standing traffic queues will not form and traffic quickly returns to LOS A on passing the disruption.
B	Reasonably free flow traffic operations. Vehicles are only slightly restricted in their ability to maneuver within the traffic stream. The average spacing between vehicles is about 13 car lengths, which still affords the motorist a high level of physical and psychological comfort. The effects of minor traffic incidents or vehicular breakdowns are still easily absorbed; however, deterioration in LOS within the vicinity of a traffic incident would be more severe than for LOS A.
C	Stable traffic operations, but traffic flows approach the range in which small increases in flow will cause substantial deterioration in service. The average spacing between vehicles is about nine car lengths. Freedom to maneuver within the traffic stream is noticeably restricted and lane changes require additional care and vigilance. The driver experiences a noticeable increase in tension due to the additional vigilance required for safe operation. The effects of minor traffic incidents or vehicular breakdowns might still be absorbed, but the local deterioration in LOS will be substantial. Queues might be expected to form behind any substantial blockage.
D	Unstable flow of traffic operations. Small increases in flow cause substantial deterioration of service. The average spacing between vehicles is about six car lengths. Freedom to maneuver within the traffic stream is severely limited, and the driver experiences drastically reduced physical and psychological comfort levels. Even minor traffic incidents can be expected to create substantial traffic queuing because the traffic stream has little space to absorb disruptions.
E	Extremely unstable traffic operations due to the absence of gaps in the traffic stream. The average spacing between vehicles is about four car lengths. Maneuverability within the traffic stream is extremely limited, and the level of physical and psychological comfort afforded to the driver is extremely poor. At capacity, the traffic stream has no ability to dissipate even the most minor disruptions and any incident can be expected to produce a serious breakdown with extensive queuing.
F	Forced or breakdown flow. This results in long queues behind breakdown points such as traffic incidents, merge or weaving areas, lane drops, or any location where traffic capacity exceeds the capacity of the location.
<i>Source: Highway Capacity Manual, Special Report 209, 3rd Edition, Transportation Research Board, 1994.</i>	

The proposed project is needed to address capacity deficiencies on IH 35W, SH 121, and US 287. An LOS analysis was conducted for the existing general purpose lanes along IH 35W from IH 820 to IH 30. Results of the analysis indicate that in 2035, all sections of IH 35W, including the IH 35W/IH 30 interchange, would have LOS F.

The proposed project is needed to address operational deficiencies on IH 35W, SH 121, and US 287, and update the freeway to current design standards. Examples include the following:

- The IH 35W northbound left-hand off-ramp to Pharr Street and the left-hand on-ramp from Pharr Street to southbound IH 35W are counter to driver expectancy. Typically, drivers anticipate right-hand exits.
- Due to the increased demand on the existing facility, the distance from the exit ramps to the cross street intersections on IH 35W is too short, causing traffic to back up into the general purpose lanes and create congestion.

- There is inadequate capacity for the existing and projected 2035 traffic volumes. Inadequate capacity results in frequent starts and stops along the roadway decreasing air quality and increasing the likelihood of accidents.
- The inside shoulders of IH 35W from 28th Street/SH 183 to Spur 280/US 287 are substandard in some locations. The standard minimum width of the inside shoulders is 4-foot for four-lane freeways and 10-foot for six lanes or more.
- The vertical bridge clearances under IH 35W at the Meacham Boulevard u-turns, 28th Street/SH 183, 4th Street and Papurt Street, and over SH 121 at Sylvania Avenue and Riverside Drive are less than the standard 16.5 feet.
- The interchange between IH 35W, US 377/SH 121, Spur 280/US 287, and IH 30 contains merging and weaving conditions that occur within general purpose lanes. The distances provided for these maneuvers are insufficient to provide an acceptable LOS and result in bottleneck situations.

These substandard roadway conditions create safety hazards for motorists using the IH 35W facility.

2. Project Purpose

The purpose of the proposed project is to improve mobility within the IH 35W corridor. The addition of general purpose lanes (non-toll) and managed lanes (toll) would add capacity and improve mobility. The improved design of the proposed project and addition of direct connectors would help to eliminate the operational deficiencies on IH 35W, SH 121, and US 287. The installation of new frontage roads along IH 35W would provide access to adjacent land uses and encourage development in these areas along the roadway.

The purpose of implementing concurrent managed lanes as part of the IH 35W project would be to provide congestion relief primarily within the peak hour travel times, as well as provide a revenue source to pay for the operational and maintenance costs of the facility and future rehabilitation or reconstruction of the facility. Historically, TxDOT has financed highway projects on a “pay-as-you-go” basis, using motor fuel taxes and other revenue deposited in the SH Fund. However, population increases and traffic demand have outpaced the efficiency of this traditional finance mechanism. The combination of traditional and toll funding would allow the proposed project to be completed earlier than previously programmed using traditional highway funds, thus adding general purpose lanes and frontage road capacity to IH 35W earlier than originally programmed using traditional funding alone.

B. Accident Rates

As shown in **Table 4**, the traffic accident data for IH 35W shows the number of reported accidents that occurred between IH 820 and IH 30 during the period of 2006 to 2008. Of these, 548 (40 percent) resulted in injuries. The traffic accident data reports indicated five fatal accidents occurred during this time frame. The number of accidents and injuries between 2006 and 2008 do not show a trend over the time frame. As traffic volumes increase in the study area roadways, the number of accidents is likely to increase. This is because increased congestion interrupts normal traffic flow, leading to a greater number of vehicle conflicts and accidents. Without improvements, study area roadways and intersections are likely to have higher accident rates in the future. In addition, as traffic continues to spread to other secondary roads to avoid highway congestion, the secondary roads are likely to experience deterioration in operation and safety.

Category	2006	2007	2008
Annual ADT	130,659	130,659	130,659
Injury Accidents	181	200	167
Fatal Accidents	1	2	2
Non-injury Accidents/Unknown	238	299	283
Total Accidents	420	501	452

Source: TxDOT, 2010.

C. Vehicle Hours of Congestion Delay Data

Table 5 summarizes the vehicle hours of congestion delay for different roadway types along the IH 35W South corridor for 2012, the 2035 No Build Alternative, and the 2035 Build Alternative. As shown in **Table 5**, all roadway types would see an increase in vehicle hours of congestion delay which corresponds to the projected population growth identified in **Table 1**. The increase is less in the 2035 Build Alternative versus the 2035 No Build Alternative, except for freeway ramps and frontage roads, which would see a greater number of congestion delay hours in the 2035 Build Alternative.

Functional Class Description	Daily Total			Daily % Difference	
	2012	2035 No Build	2035 Build	2012-2035 Build	2035 No Build-Build
Freeways	6,858	20,630	13,929	103%	-32%
Principal Arterials	767	2,302	1,889	146%	-18%
Minor Arterials	307	1,109	929	203%	-16%
Collectors	549	1,551	1,401	155%	-10%
Freeway Ramps	2,841	3,070	5,346	88%	74%
Frontage Roads	55	387	630	1041%	63%
Total Roadway Network	11,378	29,050	24,123	112%	-17%

Source: NCTCOG Complete Performance Report. Performance Report – Perf Report Year 2012, 2035 Build and No Build_NTE_IH35W_(IH820_to_IH30).
Note: Comparison made between Existing, No Build and Build Study Areas. HOV lanes are excluded from comparison because there are no existing HOV lanes to use in the comparison.

Table 6 compares the vehicle hours of congestion delay for the IH 35W South corridor (IH 820 to IH 30) for different roadway types during AM, PM, Off-Peak, and Daily traffic between 2012 conditions and the 2035 Build Alternative. As shown in **Table 6**, the vehicle hours of congestion delay for the total roadway network during AM, PM, Off-Peak, and Daily traffic would increase at least 80 percent between existing 2012 conditions and the 2035 Build Alternative due to projected population growth shown in **Table 1**.

Functional Class Description	AM		PM		Off-Peak		Daily Total		Daily % Difference
	2012	2035	2012	2035	2012	2035	2012	2035	2012-2035
Freeways	1,709	3,934	2,293	5,407	2,857	4,588	6,858	13,929	103%
Principal Arterials	185	499	347	814	236	575	767	1,889	146%
Minor Arterials	75	225	132	376	100	328	307	929	203%
Collectors	86	475	184	537	279	388	549	1,401	155%
Freeway Ramps	609	1,347	887	1,678	1,345	2,321	2,841	5,346	88%
Frontage Roads	18	334	17	191	21	104	55	630	1041%
Total Roadway Network	1,770	6,815	2,554	9,003	2,570	8,305	6,893	24,123	250%

Source: NCTCOG Complete Performance Report. Performance Report – Perf Report Year 2012 and 2035_NTE_IH35W_(IH820_to_IH30)
Note: Comparison made between 2012 Existing and 2035 Build Study Area. HOV lanes are excluded from comparison because there are no existing HOV lanes to use in the comparison.

Table 7 compares the vehicles hours of congestion delay between 2012 conditions versus the 2035 Build Alternative for different roadway types along the IH 35W South corridor for AM, PM, Off-Peak, and Daily traffic. As shown in **Table 7**, the total roadway network would experience a marked increase in vehicle hours of congestion delay during AM, PM, Off-Peak, and Daily traffic in the 2035 Build Alternative due to projected population growth shown in **Table 1**.

Functional Class Description	2012 and 2035 Build % Difference			
	AM	PM	Off-Peak	Daily
Freeways	130%	136%	61%	103%
Principal Arterials	170%	135%	144%	146%
Minor Arterials	199%	185%	229%	203%
Collectors	452%	193%	39%	155%
Freeway Ramps	121%	89%	73%	88%
Frontage Roads	1801%	1027%	405%	1041%
Total Roadway Network	285%	253%	223%	250%

Source: NCTCOG Complete Performance Report. Performance Report: Perf Report Year 2012 and 2035_NTE_IH35W_(IH820_to_IH30)
Note: Comparison made between 2012 Existing and 2035 Build Study Area. HOV lanes are excluded from comparison because there are no existing HOV lanes to use in the comparison.

Table 8 compares the vehicles hours of congestion delay between the 2035 No Build versus the 2035 Build Alternative for different roadway types along the IH 35W South corridor for AM, PM, Off-Peak, and Daily traffic. As shown in **Table 8**, the total roadway network would experience a decrease in vehicle hours of congestion delay during AM, PM, and Off-Peak times as well as Daily traffic in the 2035 Build Alternative despite projected population growth shown in **Table 1**.

Table 8: Vehicle Hours of Congestion Delay for IH 35W (IH 820 to IH 30) Comparison of 2035 No Build and 2035 Build Alternatives

Functional Class Description	2035 No Build and Build % Difference			
	AM	PM	Off-Peak	Daily
Freeways	-20%	-21%	-48%	-32%
Principal Arterials	-18%	-21%	-13%	-18%
Minor Arterials	-31%	-23%	12%	-16%
Collectors	-15%	-5%	-9%	-10%
Freeway Ramps	71%	72%	78%	74%
Frontage Roads	54%	71%	77%	63%
Total Roadway Network	-8%	-10%	-28%	-17%

Source: NCTCOG Complete Performance Report. Performance Report: Perf Report Year 2035 Build and No Build_NTE_IH35W_(IH820_to_IH30)

Note: Comparison made between No Build and Build Study Areas. HOV lanes are excluded from comparison because there are no existing HOV lanes to use in the comparison.

II. DESCRIPTION OF THE EXISTING FACILITY

A. Existing Facility Design/Conditions

IH 35W from IH 820 to IH 30 is a four to eight-lane divided highway with limited access entrances and exits and discontinuous frontage roads. The existing right-of-way (ROW) width ranges between 300 to 320 feet.

IH 35W has been a major transportation corridor for over 40 years and is one of the busiest north-south highways in the Dallas-Fort Worth (DFW) metropolitan area. Currently, IH 35W serves both local access (limited) traffic to businesses along the highway and pass-through traffic, particularly during commuter hours.

From 1963 to 1967, the transportation facility was constructed as a four to six-lane freeway. The freeway has limited interchange access with Spur 280/US 287, Belknap-Weatherford Streets (US 377/ SH 121), Northside Drive, SH 183 (Northeast 28th Street), Papurt Drive and Meacham Boulevard. Frontage roads exist in the north bound direction from US 287 to just north of SH 121 (south of the West Fork Trinity River), from SH 183 to Long Avenue and from south of Meacham Boulevard to IH 820. In the southbound direction, frontage roads exist from IH 820 to Meacham Boulevard, from Long Avenue to SH 183 and from south of the West Fork Trinity River to Belknap Street.

Much of the original IH 35W facility remains in operation today, including many of the cross street bridges and original ramping, and predates many of the requirements of current design standards.

The existing SH 121 roadway, which is included in the improvements on IH 35W, is an eight-lane freeway with direct connections to IH 35W. Within the areas to be improved on SH 121 are existing frontage roads and cross streets at Riverside Drive and Sylvania Avenue.

The existing US 287 roadway, also included in the proposed improvements, is a six-lane freeway with direct connections to IH 35W and IH 30. Within the areas to be improved along US 287 is an existing two-way frontage road from Cypress Street to Fourth Street and Cypress Street.

B. Land Use

The land use along IH 35W from IH 820 to IH 30 consists of commercial, residential, industrial, entertainment, recreational, agricultural and floodplain with some undeveloped areas. Zoning along the proposed project corridor is consistent with the described land uses. Impacts to future land use are discussed in **Section V.I. - Indirect Impacts**. The following describes the various land uses along the proposed project corridor from north to south.

- From IH 820 to SH 183, the land use is primarily scattered retail/commercial/industrial with agricultural and vacant tracts of land to the north. Land use transitions from light industrial to heavy industrial toward SH 183. A trailer park is located on the east side of IH 35W, north of Meacham Boulevard.
- Between SH 183 and Northside Drive, the land use is heavy industrial including railroad activities. It then transitions to residential and institutional use toward Northside Drive.

- From Northside Drive to US 377/SH 121 overpass, land use is floodplain and residential; transitioning to industrial toward the SH 121/US 377 overpass.
- Between the US 377/SH 121 overpass and IH 30, the land use is floodplain, recreational, multi-family residential, and industrial.
- Along SH 121 the land use is primarily commercial adjacent to the highway with residential areas beyond.
- At the IH 35W/US 287 interchange and along US 287 the land use is residential and park land east of IH 35W and industrial west of IH 35W.

According to the Haltom City and Fort Worth USGS topographic quadrangle maps, the elevations in the proposed project study area range from 500 to 620 feet above mean sea level. As listed in the Natural Resource Conservation Service's (NRCS) *Soil Survey of Tarrant County, Texas*, there are 10 general soil types within the proposed project study area. They are Aledo-Bolar-Urban land complex; Arents, frequently flooded; Chatt silty clay; Frio silty clay, occasionally flooded; Frio-Urban land complex, occasionally flooded; Purves clay; Purves-Urban land complex; Sanger clay; and Sanger-Urban land complex. The urban land consists of areas that are 85 to 100 percent works and structures. The soils that make up urban land have been altered to the extent that they cannot be classified.

III. PLANNING PROCESS

A. Initial Planning

TxDOT initiated a study in 1992 to develop feasible plans for roadway improvements in the IH 35W corridor from IH 30 to IH 820. TxDOT coordinated with the NCTCOG, Texas Transportation Institute (TTI), Tarrant County, and the City of Fort Worth to gather and assess their input concerning potential transportation improvements along IH 35W within Tarrant County. TTI provided input on proposed alternative improvements to the corridor. The City of Fort Worth provided local thoroughfare plans, utility information, and development plans/plats for existing and proposed development within the corridor. NCTCOG provided traffic projections and input related to *Mobility 2035: The Metropolitan Transportation Plan for North Central Texas* (MTP).

Upon completion of data collection and development of initial alternative alignments, TxDOT presented initial findings in a public meeting on June 3, 1993, as discussed in **Section VI - Public Involvement and Local Government Coordination**. Following the meeting, additional studies were performed by TxDOT to identify potential construction costs, ROW requirements, and environmental concerns for the alternatives being considered. TTI, with the assistance of TxDOT and NCTCOG, developed a matrix of cross section alternatives and managed lane configurations, as documented in their technical report dated July 11, 2006. The TTI report recommended widening IH 35W as warranted by future traffic growth. Since 2006 the planning process has included numerous stakeholder meetings and three public meetings to gather input on the proposed widening of IH 35W.

B. Regional Transportation Planning Documents

1. Transportation Improvement Program (TIP)

The TxDOT Fort Worth District proposes to improve a 5.4-mile section of IH 35W in Tarrant County, Texas. The proposed improvements include the reconstruction and widening of the existing highway to include general purpose lanes, barrier-separated managed lanes, frontage roads, and reconstruction of cross street bridges and ramps. The proposed project has been assigned two separate Control-Section-Job (CSJ) numbers and a description of the proposed improvements within each CSJ according to the 2011-2014 TIP is provided below.

- CSJ 0014-16-179 (Interim Project): Reconstruct to four/six lanes with four concurrent managed lanes from IH 820 to SH 121 and discontinuous four-lane frontage roads; and reconstruct to eight lanes with two concurrent managed lanes from SH 121 to IH 30 with four discontinuous frontage road lanes with auxiliary/turn lanes, and US 287 managed lane connections.
- CSJ 0014-16-268 (Ultimate Project): Widen four/six/eight lanes to eight lanes with collector distributor intermittent auxiliary lanes and 2 to 2/3 discontinuous frontage road connections from IH 820 to SH 183, two to two/three/four frontage roads from SH 183 to SH 121 and two to two/three discontinuous frontage roads from SH 121 to IH 30, and reconstruct SH 121 interchange.

Proposed improvements to US 287 would also be required. In addition to improving the connections between the two highways, the proposed project includes reconstructing the general purpose lanes, the replacement of the existing US 287 pedestrian bridge, widening of the existing Cypress Street bridge, extension of an existing hike and bike trail, and realignment of the existing Cypress Street ramp and the US 287 two-way frontage road.

The managed lane facility begins just north of IH 30 and extends north to IH 820, connecting to managed lanes on IH 35W north and IH 820 east. The managed lanes at SH 121 have direct connections to downtown Fort Worth via Belknap-Weatherford Streets (US 377/SH 121).

2. Metropolitan Transportation Plan (MTP)

Transportation conformity is a federal requirement in non-attainment areas to conduct air quality analyses on projects, programs and policies identified in transportation plans or the TIP and federally funded projects or projects requiring federal funds.

Table 9 shows the proposed improvements as listed in the MTP, along with the cost estimate.

Table 9: Proposed Improvements in the Metropolitan Transportation Plan				
Location	MTP Segment ID #	MTP	Cost	CSJ
IH 35W from IH 820 to SH 183	FT1-5.50.1	8 general purpose lanes + auxiliary lanes 4 concurrent HOV/managed lanes + auxiliary lanes 4/6 discontinuous frontage road lanes (that includes auxiliary lanes near ramp locations and cross streets)	\$668 million	0014-16-268
IH 35W from SH 183 to SH 121	FT1-5.50.2	8 general purpose lanes + auxiliary lanes 4 concurrent HOV/managed lanes 4/8 continuous frontage road lanes (that includes auxiliary lanes near ramps and cross streets)		
IH 35W from SH 121 to IH 30	FT1-5.60.1	8 general purpose lanes + auxiliary lanes 4/8 collector-distributor road lanes 2 concurrent HOV/managed lanes 4/6 discontinuous frontage road lanes (that includes auxiliary lanes near ramps and cross streets)		
US 287 from IH 35W to IH 30	FT1-52.10.1	6 general purpose lanes 2 concurrent HOV/managed lanes 4 discontinuous frontage road lanes*		
Source: <i>Mobility 2035: The Metropolitan Transportation Plan for North Central Texas</i> * Includes two-way northbound frontage road from Cypress Street to 4 th Street				

Appendix F provides a map detailing the extent of the proposed improvements identified by CSJ number and MTP Segment ID number.

C. Associated Projects

As the planning process for the IH 35W from IH 820 to IH 30 project moved forward, two nearby projects were also undergoing planning and preliminary design. Improvements to IH 820, including the interchange with IH 35W (from Meacham Road to Fossil Creek Boulevard, approximately) received a Finding of No Significant Impact (FONSI) on December 5, 2008. The

project will improve approximately six miles of IH 820 to six general purpose lanes, four managed lanes, and four frontage road lanes. The interchange of IH 820 and IH 35W will be reconstructed as part of the project. Ramps will be constructed between the managed lane systems on IH 820 and IH 35W, the general purpose lanes at the interchange will be improved, and managed lanes will be added on IH 35W at the interchange.

Improvements to IH 35W from SH 114 to IH 820 (from Fossil Creek Boulevard to Eagle Parkway, approximately) will also occur north of the proposed project. These improvements received a FONSI on March 21, 2012 and include similar improvements to those proposed in this EA.

D. Interstate Access Justification and Level of Service

As part of the planning process, an Interstate Access Justification (IAJ) report was prepared to provide background information to FHWA in order to ensure that the proposed project would not have a significant impact on Interstate Highway safety or mobility. The report followed the Federal Register August 27, 2009 policy guidance titled *Notice of Revised Policy Statement*. The IAJ report analyzed LOS for the freeway segments, weaving segments, ramp junctions (merging and diverging), and direct connectors. An overall LOS was not determined for the proposed roadway; however, the results of the IAJ analysis indicate that the proposed project would improve LOS along the entire IH 35W facility. Of the 46 northbound and southbound IH 35W segments identified in the IAJ No Build scenario, 39 segments operated at a LOS F in 2010 which is 85 percent of the segments. In 2035, all 46 segments would operate at LOS F (100 percent) in the No Build Scenario. In 2035, under the Build Alternative, of the 38 northbound and southbound segments identified in the analysis, 27 segments would operate at LOS F which is 71 percent of the segments (a 29 percent decrease from the 2035 No Build). The 10 managed lane segments would operate primarily at LOS A or B with one segment operating at LOS C.

E. Historical Control-Section-Job Numbers

In order to consistently track projects during the planning and design stage and identify funding for projects, TxDOT assigns Control-Section-Job (CSJ) numbers to each proposed project. The proposed project was originally assigned two CSJs that have since been canceled, 0014-16-192 and 0014-16-193. To replace these canceled numbers and better track the funding associated with the two construction phases of the proposed project, two new CSJs were assigned. 0014-16-179 is the CSJ number for the interim phase which would construct the managed lanes and reconstruct the general purpose lanes. The CSJ assigned for the ultimate phase of construction is 0014-16-268 which would fund the widening of the general purpose lanes; the placeholder for this CSJ had been 0014-16-931.

F. Cooperating Agency Status

A federal, state, tribal or local agency having special expertise with respect to an environmental issue or jurisdiction by law may be a cooperating agency in the NEPA process. In September 2011 the FHWA, in cooperation with TxDOT, requested that the U.S. Army Corps of Engineers (USACE) participate as a cooperating agency on this project due to their legal jurisdiction and special expertise because the proposed reconstruction of IH 35W crosses the West Fork of the Trinity River, includes modification to the levee system, and Section 404 permits and mitigation are required. FHWA requested the following activities to maximize interagency coordination:

- Invitations to coordination meetings;
- Consulting with USACE on any relevant technical studies required for the project;
- Organizing joint field reviews;
- Providing project information, including study results;
- Encouraging USACE to express their views on subjects within their jurisdiction or expertise; and,
- Include information in the project development documents that cooperating agencies need in order to discharge their NEPA responsibilities and any other requirements regarding jurisdictional approvals, permits, licenses and/or clearances.

In October 2011, the USACE responded and formalized their status as a cooperating agency and stated that their jurisdiction would focus on activities affecting USACE Public Works (Section 408) and the Section 404 process.

The coordination letters regarding the cooperating agency status can be reviewed in **Appendix B. Section V.B.6 - Section 408** contains documentation regarding USACE coordination.

IV. ALTERNATIVES INCLUDING THE PROPOSED ACTION

A. No Build Alternative

The No Build Alternative represents the case in which the proposed project is not constructed. No improvements other than normal pavement and structure maintenance and repair would occur. The No Build Alternative is carried forward through this EA as a baseline of comparison against the Build Alternative.

Costs associated with the No Build Alternative include:

- Maintenance cost of the existing system;
- Postponement of improvements with likely reconstruction cost increase;
- Increased vehicle operating costs on under-designed, inadequate facilities;
- The monetary value of time lost by motorists due to lower operating speeds and congested roadway conditions; and,
- The intangible costs associated with delayed response time of emergency service vehicles, loss of life, property damage, and injuries.

Although the No Build avoids construction impacts, the problems associated with a deficient roadway would remain. The projected growth in traffic demand would exceed the capacity of IH 35W, thereby increasing the length of peak traffic periods, leading to longer periods of congestion. The costs associated with the No Build Alternative combined with the adverse impacts related to traffic congestion, such as air pollution, noise, and decreased vehicular safety, would create an undesirable urban environment that would have more long-term adverse impacts than the construction impacts. Additionally, the No Build Alternative would not improve regional mobility and would not meet the proposed project's need and purpose.

B. Build Alternative

The proposed improvements include the reconstruction and widening of IH 35W to an eight-lane facility and the addition of a four-lane barrier separated managed lane facility from south of IH 820 to IH 30. The proposed project follows the existing highway alignment, with no sections proposed on a new location. The proposed improvements include:

- IH 35W from Meacham Boulevard to SH 183 – The proposed improvements include reconstructing the existing facility from a four-lane highway to a 12-lane highway. The proposed roadway would have 10-foot wide inside and outside shoulders, 12-foot wide general purpose lanes and a barrier separating the general purpose lanes and the managed lanes. The existing bridges over Meacham Boulevard, the Fort Worth Western Railroad (FWWR)/Long Avenue and the BNSF would be reconstructed as would SH 183 over IH 35W. Frontage roads would be reconstructed or added from Meacham Boulevard to the FWWR with a u-turn connection between the southbound and northbound frontage roads north of the FWWR. Frontage roads would be reconstructed from 33rd Street to SH 183. The managed lanes would be two 12-foot wide lanes in each direction with 10-foot wide outside and 4-foot wide inside shoulders with a barrier median. North of the FWWR overpass, a wishbone ramp would provide a northbound exit from the managed lanes to the general purpose lanes and a southbound entrance from the general purpose lanes to the managed lanes. South of the BNSF overpass, a wishbone ramp would provide access to/from the managed lanes and SH 183/NE 28th Street. Additional ROW

would be required along the west side of IH 35W and on the east side in the Meacham Boulevard area and north of SH 183.

- IH 35W from SH 183 to IH 30 – The proposed improvements include reconstructing the existing facility from a six/eight-lane highway to a 12-lane highway. The proposed roadway would have 10-foot wide inside and outside shoulders, 12-foot wide general purpose lanes, and a barrier separating the general purpose lanes and managed lanes. The existing bridges over the Union Pacific Railroad (UPRR), Northside Drive, the West Fork Trinity River, Pharr Street, Belknap-Weatherford (SH 121), 4th Street, Spur 280, and the Trinity Rail Express (TRE) would all be reconstructed. Frontage roads would be constructed and be continuous from SH 183 to 4th Street on the west and to the TRE on the east. The managed lanes would be one or two 12-foot wide lanes in each direction with 10-foot wide outside and 4-foot wide inside shoulders with a barrier median. North of Northside Drive, a slip-ramp is provided from the northbound general purpose lanes to the northbound managed lanes. South of Northside Drive, a slip-ramp is provided from the southbound managed lanes to the southbound general purpose lanes. Direct connectors would be provided between the IH 35W managed lanes and Belknap-Weatherford for access to downtown Fort Worth. Just south of SH 121, the southbound managed lanes would split with one lane becoming a direct connector to US 287/Spur 280 and the other joining the IH 35W southbound general purpose lanes. The northbound managed lanes at this same location would begin as a slip-ramp from the IH 35W northbound general purpose lanes and a direct connector from the Spur 280/US 287 general purpose lanes. Additionally, the pedestrian bridge over IH 35W would be removed. ROW would be required on the west side and on the east side of IH 35W, south of Northside Drive.
- SH 121 from IH 35W to Riverside Drive – The proposed improvements include reconstruction of the existing eight-lane highway. The proposed roadway would have 10-foot wide inside and outside shoulders, 12-foot wide general purpose lanes and a barrier median. The existing bridges over the West Fork Trinity River and Riverside Drive as well as the existing Sylvania Bridge over SH 121 would be reconstructed. Frontage roads would be continuous for the length of the improvement on SH 121. Direct connectors would be provided to IH 35W north and south with local access to Belknap-Weatherford (SH 121). Westbound traffic on Belknap Street would continue to use the existing historic bridge over the West Fork Trinity River. A second bridge over the Trinity River would be constructed parallel to the existing bridge for eastbound traffic from Weatherford Street. Additional ROW would be required on both sides of SH 121.
- US 287 – The proposed improvements include managed lane direct connectors between IH 35W and US 287. As part of these improvements the existing US 287 pedestrian bridge would be replaced. The existing Cypress Street bridge would also be reconstructed and widened to include a 14-foot wide hike and bike trail along with a 6-foot wide sidewalk. The trail would be extended to the adjacent Harmon Field Park and Butler Place Apartments. Realignment of the existing Cypress Street ramp at US 287 northbound frontage road is proposed to create a T-intersection at Cypress Street. The existing US 287 northbound two-way frontage road would also require realignment in order to avoid an overlap to the proposed US 287 northbound general purpose lanes.

Bridges

The proposed project would construct 75 roadway bridges throughout the project corridor. All of the bridges would be constructed in compliance with the *Standard Specifications for the Construction and Maintenance of Highways, Streets, and Bridges*.

Bicycle and Pedestrian Accommodations

In accordance with a federal policy statement on Bicycle and Pedestrian Accommodations Regulations and Recommendations by the U.S. Department of Transportation signed on March 11, 2010, the inclusion of bicycle and pedestrian facilities were considered as part of the proposed project. Bicycle and pedestrian accommodation cannot be provided on the proposed general purpose or managed lanes; however, the frontage roads would be constructed with a 14-foot wide outside shared use lane for cyclists and six-foot wide sidewalks for pedestrians. On-street bike lanes were designed as part of cross-street bridges based on recommendations made in *Bike Fort Worth: A Comprehensive Bicycle Transportation Plan* (2009). Northside Drive/Yucca Avenue was modified to include the on-street bike lane.

Concurrent Managed Lanes

The proposed project would include four-lane concurrent managed lanes (two lanes in each direction) that extend from the proposed construction limits approximately 150 feet north of Meacham Boulevard to SH 121 where the lanes would reduce to two lanes and eventually tie into the general purpose lanes with connections to US 287. The managed lanes would connect to the downtown area via direct connectors to Belknap and Weatherford Streets. The concurrent managed lanes would occupy the median between the IH 35W general purpose lanes. The concurrent managed lanes would be 12 feet wide with 4-foot wide inside shoulders and 10-foot wide outside shoulders. All of the concurrent managed lanes would be separated from the general purpose lanes by concrete traffic barriers.

Connections to/from the IH 35W southbound managed lanes would occur as follows:

- South of Meacham Boulevard a wishbone ramp would connect the general purpose lanes with the managed lanes and continue as an auxiliary lane until just south of the BNSF overpass when another wishbone ramp would allow access to the frontage road. This would allow movement from the southbound managed lanes to NE 28th Street/SH 183.
- South of Northside Drive, a slip ramp from the managed lanes would provide access to the general purpose lanes.
- At Belknap-Weatherford, a direct connector from the managed lanes would provide access to downtown Fort Worth via westbound Belknap.
- At the Spur 280/US 287 interchange, the southbound managed lanes would split with one lane becoming a direct connector to US 287 and the other joining the IH 35W southbound general purpose lanes as a slip ramp.

Connections to/from the IH 35W northbound managed lanes would occur as follows:

- North of IH 30, the managed lanes would begin as a slip ramp from the IH 35W general purpose lanes and a direct connector from the US 287 general purpose lanes.
- At Belknap-Weatherford, a direct connector from downtown Fort Worth via eastbound Weatherford would join the managed lanes.
- Just south of NE 28th Street/SH 183, a slip ramp would connect the managed lanes to the general purpose lanes.
- South of the BNSF overpass, a wishbone ramp would provide access from the frontage road to the managed lanes. This connection would continue as an auxiliary lane until another wishbone ramp north of the FWWR overpass would provide an exit to the general purpose lanes. This would allow movement to the northbound managed lanes from NE 28th Street/SH 183.
- All IH 35W managed lanes would connect to the managed lanes associated with the IH 820/IH 35W improvements at the northern limit of the proposed project.

All managed lane ramps would be 12 to 14 feet wide with 4-foot wide inside shoulders and 8-foot wide outside shoulders (**Figure 5**).

Managed High Occupancy Vehicle Lane Considerations

TxDOT and the Regional Transportation Council (RTC) currently define a managed lane facility as a facility that increases highway efficiency by packaging various operation and design actions. The lane management options may be adjusted to maximize person moving capacity, optimize vehicle carrying capacity, provide travel options and increase flexibility, and achieve community and corridor goals. Managed lanes add lane capacity by combining HOV and new express lanes to improve highway efficiency.

Toll Pricing

For the IH 35W concurrent managed lanes, both HOVs and single occupancy vehicles (SOVs) would be charged a toll in accordance with the regional managed lanes policy. The amount of the toll has not been determined, but would be in accordance with the NCTCOG Managed Lane Policy (**Appendix A**). Toll pricing would use value pricing (toll rates that vary by time of day, vehicle type and level of congestion) to regulate the number of vehicles on the tolled lanes. Transit vehicles and certain other exempt vehicles would not be charged a toll, which would allow riders and users to take advantage of the managed lane's reliability and predictability.

Electronic Toll Collection Systems

The toll collection system for the IH 35W concurrent managed lanes would operate under a fully electronic format. Vehicles would not have to stop to pay a toll, rather vehicles would pass through electronic readers and be assessed a toll charge. This is known as an electronic toll collection (ETC) system.

Recent advances in technology have allowed another possible ETC method that would accommodate vehicles without a toll transponder. In this method, license plates are photographed and scanned by computers. The registered vehicle owners are then sent a periodic billing statement based on activity, with an additional fee included for billing and handling. This video tolling program allows motorists to travel the tolled lanes without needing a toll transponder and without needing to stop and pay. However, it should be noted the video tolling method would be more expensive for users of the facility because of the additional fee associated with billing and handling of the periodic billing statements.

Some users may be confused by the ETC-only technology; however, other local toll facilities in the area utilize full ETC technology, which will allow a portion of roadway users an opportunity to become familiar with using this technology prior to implementation on the proposed tolled lanes.

Method of Toll Charge Collections

TxDOT has established interoperable toll accounts. Any ETC account set up with a toll facility operator in Austin, Dallas, Houston, or other cities in Texas is able to access toll roads or managed lanes in any of the toll authority areas while having the tolls charged to the user's home account. Toll tags or stickers issued by a toll authority in one area of the state are capable of being read by the toll system in another area of the state. Each toll authority is capable of registering toll transactions to the user's home toll account. Users from other states or international drivers are billed similarly to users without toll tags. The Texas Turnpike Authority (TTA) TxTag®, the North Texas Tollway Authority (NTTA) TollTag®, and the Houston area EZ TAG are accepted. Toll charge collections are automatically deducted from the user's prepaid

credit or cash account. The user is required to maintain sufficient funds in the account to cover incurred toll charges.

With the NTTA TollTag®, for example, a prepaid credit card toll account user pays a minimum amount of \$40 dollars as an initial deposit and receives a TollTag®. The account is reduced each time the user opts to pass through an operating TollTag® lane. Currently, when the user's account reaches \$10 or less, the user's credit card or debit card is charged \$40 to automatically increase the available balance. With a cash toll account, in addition to the initial \$40 minimum payment and replenishing the account when the balance reaches \$10 or less, cash users must pay a deposit of \$25 per TollTag®. The cash user deposit is refunded without interest if the user returns the TollTag® to a TollTag® Store or Customer Service Center (by mail or in person) in good condition, or if the user converts the cash account to a credit card account.

Transit Service

Transit service in the proposed project area is provided by the Fort Worth Transit Authority (The T), which serves the elderly, school districts, and public transportation needs within the area. The T's service is open to the public and all persons desiring transit have an equal opportunity to schedule rides. Transit vehicles would not be charged a toll to utilize the IH 35W concurrent managed lanes, which allows riders and users to take advantage of the managed lanes' reliability and predictability. Currently, two express bus routes with twice a day service operate along IH 35W between IH 820 and IH 30.

Public Works Projects

In accordance with 33 United States Code (USC) Section 408, any alteration of a USACE Fort Worth Floodway Public Works project requires USACE review and approval to ensure that the alteration does not adversely impact the levee system. There are two Fort Worth Floodway Public Works project within the limits of the proposed project: the West Fork Trinity River levee system and the Central City valley storage at Ham Branch.

West Fork Trinity River Levee System

The existing IH 35W and SH 121 bridges cross the West Fork Trinity River levees. Portions of the levees within this floodway were constructed in 1910 by local interests as a result of flooding in 1908. Federal involvement began in the 1940s when Congress authorized flood damage reduction improvements. The existing levees were modified and lengthened and the river channel was straightened and widened to increase the floodway's capacity to convey flood waters by the USACE in response to a 1949 flood event. Upon completion of the system, the USACE turned over all maintenance and operation of the Fort Worth Floodway system to the Tarrant Regional Water District (TRWD). During preliminary studies, secant walls were proposed; however, other options are being studied to protect the floodway and lessen potential environmental impacts to the IH 35W West Fork Trinity River levees. **Appendix B** includes a copy of the NEPA Compliance Considerations document prepared for the USACE to identify impacts to the Fort Worth Floodway from the proposed project.

The lowest point of the IH 35W and SH 121 proposed bridge structures over the West Fork Trinity River would be designed to be at least 3 feet above the Special Project Flood (SPF+3).

Secant walls are being considered within the existing West Fork Trinity River levees at IH 35W and SH 121. The secant walls would be installed to add protection should the integrity of the existing levee system be compromised. The walls would be constructed along the highest point

along the levees and span the length of the IH 35W and SH 121 ROW. The final location of the secant walls would be determined during the construction phase.

The final design and details (i.e. materials and reinforcing steel) of the secant walls would also be determined during the construction phase. During construction, the contractor would take whatever means necessary to safeguard the integrity of the existing levee. The contractor would prepare and submit the wall design plans and sequence of work to TxDOT, the USACE, and the TRWD for approval. A flood emergency action plan would be prepared and implemented by the contractor in the event of imminent flooding during construction. For construction within the footprint of the levee, each secant pier would be complete before another pier is started. A pier would be considered complete only after it has been drilled to the required depth, with reinforcing steel installed and concrete placed over the full depth of excavation.

Central City Valley Storage at Ham Branch

Ham Branch provides hydraulic mitigation (valley storage) and aquatic mitigation for the Modified Central City Project. The Modified Central City Project is documented in the *Final Supplement No.1 to the Final EIS* dated March 2008 and the *Final Modified Project Report* dated April 2008. The documents are posted on the USACE website (<http://www.swf.usace.army.mil/pubdata/notices/CentralCity/fseis.asp>).

In order to avoid impacts to the Central City Project's valley storage area, the proposed IH 35W northbound frontage road between East 4th Street and the existing levee at Ham Branch has been modified from the original proposed design. It would tie back to the existing frontage prior to impacting the existing levee clear zone. The frontage road design speed within this area has been reduced to 30 miles per hour to minimize the impacts to the valley storage and aquatic mitigation area. The proposed ROW has been modified to match the updated construction limits in this area. Two proposed bridge bent locations have been modified to fall outside of the levee clear zone. Additionally, the vertical clearance for this bridge is greater than 16.5 feet; therefore, no secant wall is required.

This proposed frontage road and bridge bent locations at Ham Branch would not impact the levee system nor affect the Central City project's valley storage area.

TxDOT and USACE coordination is on-going for the proposed project crossing over the Public Works projects. Refer to **Section V.B.6** of this document for further discussion of the proposed project in relation to the Public Works projects.

V. ENVIRONMENTAL ISSUES

A. Community Impacts Assessment

1. Regional and Community Growth

No Build Alternative

Implementation of the No Build Alternative would increase traffic congestion causing travel delay costs, which would be borne by roadway users and businesses that are dependent on corridor roadways for employment and commerce activities. This, in turn, may affect regional and community growth.

Build Alternative

NCTCOG, the Metropolitan Planning Organization (MPO), collects demographic data for the North Central Texas region. According to the 2010 Census, this region added nearly 1.2 million residents since the 2000 Census, accounting for nearly one-third of the total population growth in Texas. Regional and community growth in the vicinity of this project is expected to continue along present trends. **Table 10** summarizes the NCTCOG population forecasts for the City of Fort Worth and the population and employment forecasts for Tarrant County. Employment forecast data is not available at the city level.

Table 10: NCTCOG Population and Employment Forecasts			
	2005³/2010¹	2030²/2035³	2040
City of Fort Worth			
Population	741,206 ¹	1,009,371 ²	1,236,870 ²
Tarrant County			
Population	1,809,034 ¹	2,823,535 ³	3,046,531 ³
Employment	944,583 ³	1,644,463 ³	1,766,177 ³
Source:			
¹ U.S. Census 2010 PL94-171, NCTCOG (February 2011).			
² Texas Water Development Board, 2011 Regional Water Plan Population Projections for 2000-2060 For Cities, Utilities, and County-Other by Region by County, Region C (July 2010).			
³ NCTCOG 2040 Demographic Forecast, http://www.nctcog.org/ris/demographics/forecast.asp (February 2011), available at county level only.			

As shown in **Table 10**, the population of Fort Worth is expected to grow by approximately 66.9 percent between 2010 and 2040. The population of Tarrant County is expected to grow by 68.4 percent between 2010 and 2040 and employment is expected to grow by 87 percent between 2005 and 2040. According to NCTCOG data, within the four zip codes encompassing the proposed project, there are 87 major employers that each employs over 250 people and combined employ 45,000 to 93,913 people (NCTCOG Employers Report, generated November 2, 2011).

The IH 35W corridor is one of the most intensely developed urban arteries in the Fort Worth area (**Figure 3**). Implementing the Build Alternative would improve traffic mobility and access through the study area and would likely increase commercial business opportunities along and near the proposed roadway.

2. Right-of-Way Requirements, Relocations, and Displacements

No Build Alternative

Implementation of the No Build Alternative would not require ROW acquisition, relocations, or displacements.

Build Alternative

Implementing the Build Alternative would require ROW acquisition. The existing ROW is approximately 320 feet wide. The proposed improvements to the roadway would require approximately 130 feet of new ROW for a usual width of 450 feet. However, the ROW would widen where intersections, ramps, managed lanes and auxiliary lanes are present, and where cuts or fills result in increased widths of side slopes. **Figure 4** presents the plan view and **Figure 5** presents the typical sections which show the existing and proposed ROW.

Approximately 85.4 acres of additional ROW would be required to accommodate the proposed facility. Two temporary construction easements are required in order to reconstruct existing driveways. Approximately 0.02 acre would be required from the Dr. Pepper plant on the east side of IH 35W and the same amount would also be needed from Tindall Record Storage (**Figure 4, Sheets 7 and 11**).

One hundred and twenty six parcels would be impacted by ROW acquisition and potentially 63 establishments, including 50 business establishments and 13 residential establishments, would be displaced by the proposed project. Information associated with these displacements is provided in **Table 12**.

Roadway Segment	ROW Acquisition (Approximately)	Residential Displacements	Business Displacements
IH 35W	85.4 acres	13	50*

*In addition to five vacant properties and one utility lift station.

Six single-family residential structures and seven multi-family establishments would potentially be displaced. The single-family dwellings range in value from \$20,700 to \$54,300. A search of local residential real estate websites and real estate companies revealed that there are approximately 3,338 single-family properties available for sale in the City of Fort Worth. Of these homes, approximately 206 are within the same price range of those structures which would be displaced and approximately 25 are within the same zip codes as the displaced structures. Available homes range in size from one to four bedrooms with one or two bathrooms (www.homes.com; www.realtor.com; www.realestate.yahoo.com; and www.viprealtyinfo.com, April 2012). Home size of those residences potentially displaced is unknown.

The multi-family dwellings include three duplexes, two triplexes, and two small apartment buildings. The total market value of the structures ranges from \$23,200 to \$80,900, respectively. The number of tenants for each of these dwellings is unknown, but a windshield survey of the structures indicated that 21 households could be affected. The unit size ranges from approximately 500 square feet to 650 square feet. Rental fees for the duplex, triplex, and the apartment units are unknown; however, one of the triplexes is located in Greenway Place which has an average rent of \$350 a month (city-data.com, 2012). According to internet research, there are six apartment complexes within the same zip code as the displaced structures and rental prices average around \$1,000 per month for a one bedroom apartment of comparable size to the units displaced. Butler Place Apartments, a public housing facility operated by the

Fort Worth Housing Authority (FWHA), is located southeast of the displaced multi-family structures on the east side of IH 35W. There is a wait list for public housing.

Both the U.S. and Texas Constitutions provide that no private land may be taken for public purposes without just compensation being paid. The TxDOT *Right-of-Way Acquisition and Relocation Assistance Program* would be conducted in accordance with the *Uniform Relocation Assistance and Real Property Acquisition Policy Act of 1970*, as amended. As mandated by the *Uniform Relocation Assistance and Real Properties Acquisitions Act of 1970*, as amended in 1987, additional assistance for Housing of Last Resort would be provided should the local existing housing market be outside the financial means of a displaced owner or tenant. Based on April 2011 real estate listings, comparable housing is available for the single-family structures. Comparable housing may not be available for the multi-family dwellings because the available apartments could be priced higher than the units to be displaced and public housing is not readily available.

Table 12 provides a list of the business establishments that would be potentially displaced by the proposed project and the locations of the displacements are provided on **Figure 4**. Of these, five are vacant commercial properties and one is a utility lift station owned by the TRWD.

Table 12: Business Displacements/Relocations							
Bldg No.	Owner	Business	Address	Business Type	Estimated Total Market Value	Structure Square Footage	No. of Employees
1	Wesco One Limited	Thermo King Sales – Fort Worth	2490 E. Long Ave. Fort Worth, TX	Commercial – Refrigeration Equipment & Supplies	\$546,516	11,605	5 - 9
2	Voldar LLC	XTC Cabaret	3315 North Fwy. Fort Worth, TX	Commercial – Entertainment	N/A	8,696	50*
3	Stepp/WCI Investments LLC	ABC Wrecker Service Inc.	3275 North Fwy. Fort Worth, TX	Commercial – Automotive Repair Shop	\$456,916	8,600	10-19
		Williams Welding		Commercial – Welding Repair			2*
4	Hunt, Tamson Etal	Motel 6 #153	3271 North Fwy. Fort Worth, TX	Commercial – Motels	\$1,981,426	27,710	10 - 19
5	Kent, Edward A	EZ ED.BIZ	3269 North Fwy. Fort Worth, TX	Commercial – Used Car Dealer	\$11,596	800	4*
		My Lease.Com					
6	AVI Investments LLC	A 1 Convenience Conoco	3251 North Fwy. Fort Worth, TX	Commercial – Convenience Store and Gas Station	\$188,351	5,248	12*
		Chester Fried					6*
7	Hertz Rental Equipment Corp.	Hertz Equipment Rental Corp. #9463	3299 North Fwy. Fort Worth, TX	Commercial – Equipment Rental and Leasing	\$447,636	8,000	15

Table 12: Business Displacements/Relocations							
Bldg No.	Owner	Business	Address	Business Type	Estimated Total Market Value	Structure Square Footage	No. of Employees
8	Ettore Properties LLC	Cat Scale Co of Texas 2878	3201 North Fwy. Fort Worth, TX	Commercial – Business Services	\$1,272,892	3,749	5 - 9
		Valero Driver's Travel Mart		Commercial – Convenience Store			5 - 9
9	Education Service Center Reg. XI	Region XI Education Service Center	3001 North Fwy. Fort Worth, TX	Commercial – School and Educational Services	\$199,100	14,581	100 - 499
10	Barney Holland Oil Co.	Truck Center of Fort Worth	2901 North Fwy. Fort Worth, TX	Commercial – New and Used Car Dealer	\$286,663	11,600	10 - 19
11	KW Vending LLC	KW Vending Management Service	2701 Cold Springs Rd, Fort Worth, TX	Commercial – Merchandising Machine Operations	\$161,249	14,659	5*
12	McSwain, Donny B Etux Bridget	Lonestar Forklift Inc.	2700 Cold Springs Rd. Fort Worth, TX	Commercial – Industrial Machinery & Equipment	\$646,784	86,946	20 - 49
13	CMC Trailer Distributors Inc.	CMC Trailers Distributors Inc.	2500 Cold Springs Rd. Fort Worth, TX	Commercial – Industrial Machinery & Equipment	\$287,621	17,192	10 - 19
14	United Rentals Realty LLC	United Rentals Northwest Inc.	1720 Watauga Rd. Fort Worth, TX	Commercial – Equipment Rental and Leasing	\$5,245,941	12,800	20
15	TRWD	Commercial – Lift Station	Nixon St., Fort Worth, TX	Commercial – Lift Station	\$135,106	N/A	N/A
16	City of Fort Worth	Commercial – Vacant	Nixon St. Fort Worth, TX	Commercial – Vacant	\$381,610	5,460	N/A
17	Engelhardt, Fredrick E Rev T	Commercial – Vacant	913 North Fwy. Fort Worth, TX	Commercial – Vacant	\$318,557	9,044	N/A
18	Spillar, Max Est. and Greta D	Spillar, Mitcham, Eaton, Bicknell CPA's	750 North Fwy. Fort Worth, TX	Commercial – Accounting, Auditing and Bookkeeping	\$148,676	10,000	6*
		Magnum Staffing Services	750 North Fwy. Fort Worth, TX	Commercial – Help Supply Services			4*

Table 12: Business Displacements/Relocations							
Bldg No.	Owner	Business	Address	Business Type	Estimated Total Market Value	Structure Square Footage	No. of Employees
		Lee, Samuel MD Rhodes, Kevin MD	750 North Fwy. Fort Worth, TX	Commercial – Physician			5*
19	CSB 700 N Freeway DPC Holding LLC	Commercial – Vacant	700 North Fwy. Fort Worth, TX	Commercial – Vacant	\$830,750	22,038	N/A
20	CSL Equities Inc.	C&B Medical Inc.	707 North Fwy. Ste. 114 Fort Worth, TX	Commercial – Business Services	\$629,600	33,880	10 - 19
		Rabo Business Forms Inc.	707 North Fwy. Ste. 114 Fort Worth, TX	Commercial – Management Consulting Services			5*
		Mobile Tarping Service	707 North Fwy. Ste. 120 Fort Worth, TX	Commercial – Repair Shops			5*
		Elegant Design	707 North Fwy. Ste. 109 Fort Worth, TX	Commercial – Business Services			4*
		Diamond B Limousine	707 North Fwy. Ste. 107 Fort Worth, TX	Commercial – Local Passenger Transportation			4*
21	Hulen Park Association	Malin/Fastenal Company	633 North Fwy. Ste. A Fort Worth, TX	Commercial – Industrial Supplies	\$580,000	21,168	5 - 9
22	Storage Portfolio TX LP	Can N Ho Chiropractor	613 North Fwy. Ste. 116 Fort Worth, TX	Commercial – Office of Chiropractics	\$251,456	21,346	4*
		SWC Tactical Training Academy	613 North Fwy. Ste. 111 Fort Worth, TX	Commercial – Detective and Armored Car Services			8*

Table 12: Business Displacements/Relocations

Bldg No.	Owner	Business	Address	Business Type	Estimated Total Market Value	Structure Square Footage	No. of Employees
		Just Clean Grout	613 North Fwy. Ste. 112 Fort Worth, TX	Commercial – Special Trade Contractors			6*
		Larry Pirkle Bail Bonds	613 North Fwy. Ste. 103 Fort Worth, TX	Commercial – Business Services			2*
		Zomac Electrical Systems Inc.	613 North Fwy. Ste. 106 Fort Worth, TX	Commercial – Electrical Work			10 - 19
23	Storage Portfolio I TX LP	Extra Space Storage	613 North Fwy. Fort Worth, TX	Commercial – Mini Storage Warehouse	\$1,525,804	79,489	5*
				Commercial – Business Services			4*
24	1901 Pharr Ltd.	Southwest Idealease	1901 Pharr St. Fort Worth, TX	Commercial – Auto and Other Motor Vehicles	\$240,423	17,676	10 - 19
25	Child Care Associates	Commercial – Vacant	121 N. Rayner St. Fort Worth, TX	Commercial – Vacant	\$248,794	6,159	N/A
26	Barsch Investments Inc	MGM Printing Inc.	2500 Airport Fwy Fort Worth, TX	Commercial – Stationary & Office Supplies	\$337,493	5,960	10 - 19
27	Stoll, Phil	Livestock Reporter	120 N Rayner St Fort Worth, TX	Industrial – Newspapers	\$330,300	9,984	4*
		TII Logistics	120 N Rayner St Ste. B Fort Worth, TX	Commercial – Freight Transportation Arrangement			5 - 9
28	Tarrant County 9-1-1	Tarrant County 9-1-1 District Administrative Office	2600 Airport Fwy. Fort Worth, TX	Commercial – Government	\$1,449,945	13,513	20*

Table 12: Business Displacements/Relocations							
Bldg No.	Owner	Business	Address	Business Type	Estimated Total Market Value	Structure Square Footage	No. of Employees
29	CDC Partnership 2700 Airport Freeway	Recovery Resource Council	2700 Airport Fwy. Fort Worth, TX	Commercial – Individual and Family Services	\$191,972	10,251	50 - 99
30	121 Retta Gen Texas Partnership	Loveless, Jim – Attorney	2900 Airport Fwy. Fort Worth, TX	Commercial – Legal Services	\$320,194	6,757	10 - 19
		The King Law Firm	2900 Airport Fwy. Fort Worth, TX	Commercial – Legal Services			5 - 9
31	Current Owner ¹	Commercial – Vacant	233 N Judkins St Fort Worth, TX	Commercial – Vacant	\$65,943	996	N/A
32	GNS Properties Inc.	PC Components	2721 Airport Fwy. Fort Worth, TX	Comm. – Computer Related	\$625,000	11,650	3*
		City Wide Computers	2727 Airport Fwy. Fort Worth, TX	Commercial – Computer Related			15-20
		All About Homes	2737 Airport Fwy. Fort Worth, TX	Commercial – Architectural			3*
		Falcon Office Supply	2747 Airport Fwy. Fort Worth, TX	Commercial – Business Services			4*
		Law Office of Steven G. King	2757 Airport Fwy. Fort Worth, TX	Commercial – Legal Services			3*
33	Cowtown Mobil Limited	Sonic Drive In	100 N Nichols St. Fort Worth, TX	Commercial – Restaurant	\$1,238,890	5,202	20 - 49
		Cowtown Plaza		Commercial – Convenience Store			5 - 9
34	1300 Belknap LLC	Image Net of Fort Worth	1301 E Weatherford St # 125 Fort Worth, TX	Industrial - Commercial Printing, Lithographic	\$480,000	9,834	5*

Table 12: Business Displacements/Relocations							
Bldg No.	Owner	Business	Address	Business Type	Estimated Total Market Value	Structure Square Footage	No. of Employees
		MCMC Custom Services	1301 E Weatherford St # 151 Fort Worth, TX	Commercial – Business Services			5 - 9
Source: Tarrant County Appraisal District; www.socrates.cdr.state.tx.us N/A – not available *** – Estimated number of employees based on March 3, 2011 site reconnaissance. ¹ – Shown as listed in Tarrant County Appraisal District records							

As shown in **Table 12**, the approximate number of employees was obtained for the majority of the businesses. SOCRATES, a research and analysis tool provided by the Texas Workforce Commission (TWC) and a windshield survey of the proposed displacements were utilized to approximate the number of employees affected at potentially displaced businesses. Based on the available data, an estimated 875 plus employees could potentially be affected by the proposed project, either by job relocation or by job loss. A search of the Fort Worth Chamber's Economic Development Resource Center (EDRC) indicates that within the four zip codes encompassing the proposed project there are 16 office properties for sale, 95 office properties for lease, 43 industrial properties for lease, 55 industrial properties for sale, and 8 vacant properties for sale or lease. The EDRC indicates that the Fort Worth Central Business District had 1,045,466 square feet of vacant office space available in the fourth quarter of 2011. This is not an exhaustive list of available commercial real estate, but does indicate that there are adequate facilities available for the relocation of the businesses which could be displaced.

Even in the current economic climate, the City of Fort Worth is still maintaining a level of commercial growth. This is illustrated by the increase in building permits approved by the City since 2002. The City of Fort Worth's Development Department indicates that 630 commercial building permits were approved for buildings valued at \$396 million in 2002 and in 2010 it was 718 permits approved for buildings valued at \$784 million.

Owing to the available commercial real estate options, as mentioned above, the majority of the businesses would have options to successfully relocate within their service area. There may be temporary impacts to a small community of businesses that are unlikely to remain open or likely to re-establish outside of their service area. However, the demand for services, driven by growth, could aid in the ability for potentially displaced businesses to relocate within the project area; or the demand could shift to non-displaced businesses that meet the additional demand by creating new employment opportunities. In addition, as indicated in **Section I.A. – Need and Purpose**, the proposed improvements are anticipated to influence some development along the project alignment, which in turn would likely create future opportunities for employment. An Employment Opportunities Impact Assessment is included in **Appendix C**. TxDOT will commit to including TWC staff at the Public Hearing for the proposed IH 35W project to answer questions or present services information on behalf of the Workforce Solutions for Tarrant County.

3. Community Cohesion

No Build Alternative

Implementation of the No Build Alternative would not separate or isolate any distinct neighborhoods, ethnic groups, or other specific groups.

Build Alternative

IH 35W is an interstate corridor that has been present in the City of Fort Worth since 1967 and is a boundary for much of the existing development within the proposed project limits. Implementation of the Build Alternative (adding capacity to the existing roadway) would not change these conditions.

Table 13 provides a listing of all neighborhoods/subdivisions adjacent to IH 35W and SH 121 within the proposed project area.

Table 13: Adjacent Neighborhoods and Subdivisions			
Name	Size	Number of Displacements	
		Residential Structures	Business Structures
Diamond Hill-Jarvis	3,060 acres	0	8
Oakhurst Addition	60 acres	0	0
Greenway Place Addition	47 acres	6*	0
Butler	77 acres	0	0
Scenic Bluff	660 acres	2*	2
United Riverside	487 acres	1	6
Subdivisions Not Associated with a Neighborhood			
<i>Melody Hills Addition</i>	38 acres	0	0
<i>Mason #1 Addition</i>	1.3 acres	4*	0
Unidentified Areas		0	16
Total		13	32
Source: City of Fort Worth Neighborhood Education Office's Registered Neighborhood Associations Map (October 2011), http://fortworthtexas.gov/neighborhoods/ ; City of Fort Worth, 2008, 2009; City-data.com, 2012. *Includes multi-family dwellings.			

According to City of Fort Worth data, six neighborhood associations are found adjacent to the IH 35W corridor within the project limits. Neighborhood associations hold meetings and provide guidance on issues affecting the residents of the neighborhood. Associations are one type of a community and provide a known boundary of populations in similar living arrangements. The extent that an individual identifies a neighborhood as their community is unknown; however, the data is presented in order to determine the potential communities adjacent to the IH 35W corridor. Information from city-data.com, the City of Fort Worth, the 2010 Census, and neighborhood association websites is summarized below. Data for the Melody Hills Addition and Mason #1 Addition subdivisions are not available.

Diamond Hill-Jarvis

- Total Population: 13,811 people
- 91.7 percent minority
- 25 percent speak English “not well” or “not at all”
- 17.3 percent below poverty level
- Average single-family home value: \$67,553

The Diamond Hill-Jarvis neighborhood is west of IH35W between Meacham Boulevard and SH 183. The area closest to IH 35W is industrial with some commercial and agricultural lands. According to the City of Fort Worth's 2012 Comprehensive Plan, the existing agricultural lands are identified to be part of the Meacham Industrial Growth Center in the future. Community cohesion is not easily definable in an industrial area. The extent that businesses interact with one another is unknown. However, the loss of eight businesses along IH 35W could affect cohesion within this industrial area. The businesses include a gentlemen's club, service station, fast food establishment, motel, equipment rental, appliance sales, and two car dealerships. The motel, service station and fast food establishment are unlikely to be part of a local industrial community because they provide services to drive-by traffic. The remaining businesses could cater to the surrounding area; however, it is likely their customers come from the larger metropolitan area and not just the nearby residences. The total number of employees affected by these displacements is unknown, but it is estimated to be approximately 150 people (**Table 12**). There are commercial properties for sale and for lease throughout the four zip codes encompassing the project area. Because of the industrial nature of Diamond Hill-Jarvis, it is unlikely a sense of community would be negatively impacted by the proposed project.

Oakhurst Neighborhood Association

- Total Population: 2,412 people
- 31 percent minority
- 11 percent speak English "not well" or "not at all"
- 6.6 percent below poverty level
- Average single-family home value: \$141,315

The Oakhurst Neighborhood Association (ONA) is an award-winning historic neighborhood with a strong sense of community that sits on a hill to the east of IH 35W north of Yucca Ave. In 2009, ONA was nominated for listing as the Oakhurst Historic District on the National Register of Historic Places (NRHP). The neighborhood encompasses approximately 28 blocks and the homes were built between 1924 and 1959.

In 2007 and 2011, ONA received national awards from Neighborhoods USA in the Multi-Neighborhood Partnerships Category and the Social-Revitalization-Neighborliness Category. In 2010, ONA was recognized as the City of Fort Worth's Neighborhood of the Year. The association holds regular meetings and provides a newsletter and multiple events a year to paying members.

During discussions with the City of Fort Worth, the community associated with the ONA was noted to be a vocal community that has been included in the development of the proposed project. Early on in the planning process, two specific issues raised by this group during the preliminary stakeholder meetings were concern over increased traffic in their neighborhood and potential loss of dense trees which they consider a buffer between the neighborhood and IH 35W. After the Public Meeting in October 2010 and the subsequent shift in the roadway alignment, the group expressed concern about noise, air and light pollution and the effect of these issues on their listing on the NRHP.

Based on roadway performance reports provided by NCTCOG, the LOS on arterial roadways within the IH 35W project area would improve after the proposed widening is completed (**Table 37** in **Section V.I. – Indirect Impacts**). Some traffic dispersion to neighborhood roadways during construction could be expected. However, the completed facility would offer better travel time for motorists and make it less likely that motorists would leave the highway to

find alternate routes on neighborhood streets. Additionally, the Oakhurst neighborhood is not situated in an area that lends itself to cut-through traffic. IH 35W is a north-south roadway but no streets through Oakhurst allow north-south movement between arterials because of the presence of a large cemetery directly north of Oakhurst. If motorists choose to use side streets instead of IH 35W, they are more likely to use the arterial streets (Yucca Avenue, Sylvania Avenue or NE 28th Street) to move north or south rather than neighborhood streets.

The trees adjacent to the Oakhurst community would not be affected by the proposed project. Some trees in front of Calvary Christian Cathedral and its associated school would be impacted, but these are not part of the wooded area in front of Oakhurst. Rather, they are individual trees between the church/school and IH 35W.

TxDOT has met with the ONA on more than one occasion to discuss potential impacts from the proposed project on their neighborhood. Because Oakhurst is a NRHP-listed neighborhood and the proposed IH 35W alignment would cause noise impacts to some houses, the Section 106 coordination with the Texas Historical Commission (THC) has been reopened to allow the ONA to act as a consulting partner in process. Coordination among ONA, TxDOT and THC was completed on April 27, 2012 when THC determined the noise impacts to the Oakhurst Historic District would be an adverse effect to the District.

During meetings with ONA residents in 2011, comments were received from two separate groups within the Oakhurst neighborhood. Some residents expressed concern over impacts to the neighborhood from the proposed project; however, others supported the project and felt it would be beneficial for local residents.

It is unlikely that community cohesion in ONA would be affected by the proposed project. No physical impacts like ROW acquisition or displacements/relocations would occur. The noise analysis conducted for the proposed project shows noise impacts would occur in ONA, but this is unlikely to affect community cohesion. This community is very active and works hard to maintain neighborliness among its residents. The proposed project would not affect the ability of ONA to maintain their community cohesion.

Greenway Place

- Total Population: 194 people
- 95 percent minority
- 75 households
- 9.6 percent speak English “not well” or “not at all”
- 19.3 percent below poverty level
- Average single-family home value: \$43,980

Greenway Place is a post-World War II community with the majority of homes built between 1945 and 1954. A small number of homes within the community have been reconstructed since 2000 by Habitat for Humanity. Greenway Place is a City of Fort Worth Model Block. The City Council has identified 18 Model Blocks and each will receive \$1.2 million in grant money for neighborhood improvements. The Model Block program is based on comprehensive planning and implementation, resident empowerment, public-private partnership, and leveraging of resources. Resident participation is required in order to be considered for the designation as a Model Block. In addition to these city improvements, some residents of Greenway Place have also benefited from recent mineral rights contracts.

ROW requirements from Greenway Place would displace five single-family homes, a multi-family structure, two vacant commercial structures, and affect seven vacant lots: two residential and five commercial. Approximately 20 additional residential vacant lots are present in Greenway Place. If displaced residents are eligible for a housing supplement, they could use the money to build a home on one of these lots and remain in the neighborhood. ROW requirements were reduced to keep the intersection of Nixon Street and Portland Avenue, but no other minimization techniques could be used in the area. ROW acquisition is occurring on both sides of IH 35W and would impact two commercial properties on the east side in addition to the impacts to Greenway Place on the west side. Because the IH 35W/SH 121 interchange is less than 0.5-mile south of Greenway Place, the proposed roadway could not be shifted away from Greenway Place. Additionally, the presence of the West Fork Trinity River, its levees and associated parks to the east of IH 35W restricts the amount of ROW that can be required from the east side.

The proposed design of IH 35W would remove an existing entrance ramp that extends from Greenway Place to southbound IH 35W. Residents would instead access the proposed frontage road and travel approximately 0.7 mile before entering IH 35W southbound. This entrance ramp was moved in order to provide a southbound exit ramp for the neighborhood. Currently, Greenway Place residents heading south on IH 35W have to exit south of their neighborhood and detour one mile in order to arrive home. The proposed highway would provide a southbound exit north of Greenway Place so that residents can easily access their neighborhood.

Noise impacts to this community are expected because of the proposed project; however, noise barriers are proposed to mitigate for these impacts. The construction of these noise barriers would require input from those affected which could improve community cohesion as neighbors make decisions together regarding the presence of and appearance of the noise barriers.

Community cohesion may decrease with the displacement of five single-family homes and a multi-family structure within the neighborhood. Greenway Place is the smallest neighborhood within the proposed project limits and would have the most number of displacements. This could affect how residents feel about their neighborhood; however, if the displaced residents are able to move within Greenway Place, this would maintain the existing sense of community. Also, the Model Block program could enhance the existing cohesion or provide support to the community if the residents cannot relocate within Greenway Place.

Butler Place

- Total Population: 1,179 people
- 96.1 percent minority
- 394 households
- 9.0 percent LEP
- 82.3 percent below poverty level

Butler Place is a public housing development operated by the FWHA that provides one to four-bedroom apartments to low-income families. The development was constructed in 1940 with an additional section constructed in 1964. Butler Place is bordered by IH 35W, US 287 and IH 30. Pedestrian bridges are present across IH 35W and US 287 which provide access to downtown and Harmon Field Park. Additionally, the Luella Street and Cypress Street vehicular bridges provide access to/from Butler Place, and Route 6 of the Fort Worth bus system provides access to the Intermodal Transportation Center downtown. The I.M. Terrell Elementary School is

adjacent to Butler Place and there is a YMCA, Boys and Girls Club, community room, daycare center, family reinvestment center, library, police storefront and Agape clinic within the development. Because the facility provides public housing, the residents' stay can be brief or extend for years. The FWHA provides numerous amenities to help the residents feel a sense of community within Butler Place specifically and the City of Fort Worth generally.

The FWHA was included in stakeholder meetings during the planning process and once it was determined that the existing pedestrian bridges could be affected by the proposed project, TxDOT planned meetings specifically with the residents of Butler Place. Two meetings were held to gather information from the residents pertaining to their use of the existing pedestrian bridges and their comments on the proposed pedestrian bridges and improved vehicular bridges. Based on resident feedback and FWHA and police/fire recommendations, it was determined that the IH 35W pedestrian bridge would be removed and the US 287 pedestrian bridge would be replaced. The removal of the IH 35W pedestrian bridge would not affect community cohesion because most residents cross IH 35W via the Luella Street bridge because it is closer to their community and closer to their destination. The improvements to the Luella Street bridge would provide an improved bicycle and pedestrian facility for residents crossing IH 35W.

It is unlikely that community cohesion in Butler Place would be affected by the proposed project. No physical impacts like ROW acquisition or displacements/relocations would occur. The noise impacts identified in **Section V.E.** would be mitigated and are unlikely to affect the sense of community shared by Butler residents.

Scenic Bluff

- Total Population: 3,957 people
- 77 percent minority
- 27.7 percent speak English "not well" or "not at all"
- 17.6 percent below poverty level
- Average single-family home value: \$91,212

Scenic Bluff is located on the north side of SH 121 and consists primarily of residential, institutional and commercial uses and vacant land. Its designated land uses in the *2010 Comprehensive Plan* (City of Fort Worth) include low-density residential, institutional, neighborhood commercial and general commercial. The original construction dates for properties in the Scenic Bluff Neighborhood extend as far back as 1906.

Two residential structures and two commercial business structures would be displaced in Scenic Bluff because of the proposed project. Based on data from the Tarrant County Appraisal District, one of the homes is owner-occupied. One of the commercial business structures to be displaced is a multi-suite commercial building with five existing tenants which include two computer-based businesses, an office supply business, an architect firm, and a law firm. The second is a small renovated house that now functions as a commercial property; however, it currently appears to be vacant. The total number of employees affected by these displacements is unknown, but it is estimated to be approximately 30 people (**Table 12**). As stated previously, there are commercial properties for sale and for lease throughout the four zip codes encompassing the project area. Noise impacts to this community are expected because of the proposed project; however, noise barriers are proposed to mitigate for these impacts. The construction of these noise barriers would require input from those affected which could improve

community cohesion as neighbors make decisions together regarding the presence of and appearance of the noise barriers.

Members of the Scenic Bluff community attended the October 5, 2007 public meeting held by TxDOT to discuss the proposed project. Comments raised at that meeting pertained to the potential loss of Belknap Street as a direct connection to downtown Fort Worth. Based on these comments, the preliminary design maintains the connection between the Scenic Bluff community and downtown Fort Worth via Belknap Street.

Community cohesion in the Scenic Bluff neighborhood could be affected by the displacement of five businesses; however, it is likely that the customer base for these businesses extends beyond Scenic Bluff. If the businesses are able to relocate nearby, they could retain their connection to the Scenic Bluff residents and continue to provide their services to this community. The main issue identified by local residents was maintaining their connection to downtown Fort Worth. Scenic Bluff and the NRHP-eligible East Belknap Bridge have been connected to downtown Fort Worth for 80 years. The loss of this connection would have negatively affected community cohesion; however, TxDOT has maintained and improved this connection with the proposed design.

United Riverside

- Total Population: 1,082 people
- 90 percent minority
- 8.6 percent speak English “not well” or “not at all”
- 21.9 percent below poverty level
- Average single-family home value: \$60,007

United Riverside is located across from Scenic Bluff on the south side of SH 121. Like Greenway Place, a portion of United Riverside has been designated as a City of Fort Worth Model Block. United Riverside is also in the Neighborhood Empowerment Zone Program. This is a City Council initiative encouraging central city revitalization through development incentives such as tax abatements and fee waivers. Properties in United Riverside date as far back as 1920.

One home and six business structures would be displaced from this area. The businesses include a multi-suite office building, the Recovery Resource Council office, the Tarrant County 9-1-1 Administration Office, a law firm, a printing service and a vacant building. As stated previously, there are commercial properties for sale and for lease throughout the four zip codes encompassing the project area. The one residential displacement is an owner-occupied house that faces the existing frontage road and is situated between a commercial building and vacant lot with a billboard. Of the businesses to be displaced, the printing service and the law firm have the potential to provide services directly to nearby residents but their services are unlikely to be required on a constant or continual basis. Due to the nature of their businesses, it is more likely they serve a large area that extends beyond United Riverside.

At the November 2010 Public Meeting, the United Riverside Neighborhood Association requested an exit ramp for 4th Street. Because of current design standards and the intricacies of the two nearby interchanges, neither a northbound exit to 4th Street nor a direct southbound exit to 4th Street are possible. However, a southbound exit is proposed at Northside Drive that allows motorists to continue on the frontage road to 4th Street. An additional request was made to add an exit from SH 121 to Sylvania Avenue. A Sylvania Avenue exit currently exists but it cannot be

maintained with the proposed widening and improved interchanges. The loss of this exit would increase the time spent exiting the highway and arriving home for area residents, but it would not decrease the sense of community already established in the United Riverside neighborhood. Noise impacts to this community are expected because of the proposed project; however, noise barriers are proposed to mitigate for these impacts. The construction of these noise barriers would require input from those affected which could improve community cohesion as neighbors make decisions together regarding the presence of and appearance of the noise barriers.

Based on the information provided, community cohesion should not be affected by the proposed project except possibly within the Greenway Place community. The proposed project would not separate or isolate any distinct neighborhoods, ethnic groups, or other specific groups. A limited number of residences would be displaced from each neighborhood/subdivision and it is possible for some of the residents to be relocated to the same neighborhood. Residents of multi-family structures may have difficulty finding comparable rental properties, but both public and private apartments are found within the project area. Access to IH 35W would be improved for Greenway Place and TxDOT has taken care to reduce impacts to this neighborhood as much as possible. The connection to downtown was maintained for Scenic Bluff and TxDOT was instrumental in listing Butler Place on the NRHP. Pedestrian movements in Butler Place would be improved with better connection to the Bertha Collins Community Center and Harmon Field Park. Commercial properties affected by the proposed project have adequate facilities in the area where they can relocate, allowing employees to remain employed in the immediate area. Transit service (discussed in **Section IV.B. – Build Alternative**) would not be affected by the proposed project.

4. Bicycle and Pedestrian Accommodation

The existing IH 35W facility does not have consistent bicycle/pedestrian facilities within the corridor. No bicycle/pedestrian accommodation can be provided on a highway and the limited frontage roads do not have bicycle/pedestrian facilities. At Butler Place there are two vehicular bridges with sidewalks and two pedestrian bridges. There are sidewalks present on the Sylvania Avenue Bridge, crossing SH 121. No other bicycle/pedestrian facilities are part of the existing IH 35W facility.

In accordance with a federal policy statement on Bicycle and Pedestrian Accommodations Regulations and Recommendations by the U.S. Department of Transportation signed on March 11, 2010, the inclusion of bicycle and pedestrian facilities were considered as part of the proposed project. The frontage roads would be reconstructed to provide a 14-foot wide shared use outside lane and six-foot wide sidewalks. Additionally, the cross-street bridges would include a 14-foot wide shared use lane and sidewalk.

There are two existing pedestrian bridges within the proposed project limits: one crosses IH 35W and one crosses US 287. Both bridges service Butler Place, a low-income housing facility. **Figure 4, Sheets 17 and 19**, shows the location of each pedestrian bridge. TxDOT has coordinated with Butler Place, FWHA, TRWD, and the City of Fort Worth to determine whether the bridges should be replaced. Based on resident comments, police/fire official input, and current traffic counts across the pedestrian bridges, it was determined that the pedestrian bridge crossing IH 35W would be removed and not replaced. The pedestrian bridge crossing US 287 would be removed and replaced with an ADA-compliant bridge. In addition to replacing the US 287 pedestrian bridge, TxDOT would provide improved bicycle and pedestrian facilities on the Luella Street and Cypress Street bridges. These streets cross IH 35W and US 287, respectively, near the existing pedestrian bridges. Both vehicular bridges would include a

14-foot wide trail that is barrier-separated from vehicular traffic and a six-foot wide sidewalk. The 14-foot wide trail on these bridges would extend into Butler Place the length of the TxDOT ROW. The trail on these bridges would allow pedestrians and cyclists to access downtown Fort Worth and the Trinity Trail. Construction would be phased so that the Cypress Street bridge would be reconstructed prior to the removal of the existing pedestrian bridge. Pedestrians would be temporarily detoured across the Cypress Street bridge during construction of the new pedestrian bridge, an additional 0.5 mile each way.

5. Limited English Proficiency

Executive Order (EO) 13166, *Improving Access to Services for Persons with Limited English Proficiency (LEP)*, requires federal agencies to examine the services they provide and identify any need for services to LEP populations. The EO requires federal agencies to work to ensure that recipients of federal financial assistance provide meaningful access to their LEP applicants and beneficiaries. Failure to ensure that LEP persons can effectively participate in or benefit from federally assisted programs and activities may violate the prohibition under Title VI of the *Civil Rights Restoration Act of 1987* and Title VI regulations against national origin discrimination. The populations (age five years and older) who speak English “less than very well” according to the 2006-2010 American Community Survey 5-Year Estimates are presented in **Table 14**.

Census Geography	LEP %	Languages Spoken by LEP Populations			
		Spanish %	Other Indo-European %	Asian and Pacific Island %	Other Languages %
CT 1001.02	33.3	31.4	0.2	1.7	0.0
BG 2	43.6	42.5	0.0	1.1	0.0
CT 1002.02	47.0	47.0	0.0	0.0	0.0
BG 2	31.2	31.2	0.0	0.0	0.0
CT 1012.02	37.1	35.5	0.0	1.6	0.0
BG 2	35.2	31.1	0.0	4.1	0.0
BG 3	31.5	31.5	0.0	0.0	0.0
CT 1017	9.3	4.0	0.0	0.4	4.9
BG 1	9.0	2.2	0.0	0.6	6.2
BG 2	10.7	10.7	0.0	0.0	0.0
CT 1050.06	7.6	7.6	0.0	0.0	0.0
BG 1	7.6	7.6	0.0	0.0	0.0
CT 1050.07	3.2	1.6	0.9	0.7	0.0
BG 1	7.7	3.9	2.1	1.7	0.0
CT 1232	15.3	15.3	0.0	0.0	0.0
BG 1	17.4	17.4	0.0	0.0	0.0
CT 1233	3.0	2.5	0.0	0.5	0.0
BG 2	3.7	3.0	0.0	0.7	0.0

Source: U.S. Census Bureau; Legacy American FactFinder; 2006-2010 American Community Survey 5-Year Estimates; B16004 data; <http://factfinder.census.gov/servlet/DatasetMainPageServlet?_program=ACS&_submenuid=&_lang=en&_ts=>>; generated March 30, 2012.
 CT – Census Tract; BG – Block Group

A windshield survey indicated that English is the primary language used for signage on buildings and other forms of posted information/advertisements along the proposed project corridor. Signs/advertisements in Spanish are also present. The Iglesia Bautista Getsemani (church) is located on the west side of IH 35W north of Meacham Boulevard.

Public meetings and stakeholder meetings that occurred prior to 2010 did not advertise or provide information in a non-English language. A Public Meeting was held on November 16, 2010 and the meeting was advertised in English in the *Fort Worth Star Telegram*, and in Spanish in *La Estrella* and *La Semana*. Additionally, in order to inform potential LEP populations who attend Iglesia Bautista Getsemani about the proposed project, TxDOT provided the church with the Public Meeting notice in Spanish to place with their church announcements. Those interested were given the opportunity to request an interpreter for language or other special needs to be present at the public meeting.

In order to ensure that LEP populations have access to information regarding the use of managed lanes/toll roads, TxDOT provides a Spanish version of their official website plus a Spanish version of TxTag.com which allows motorists to purchase a TxTag for their vehicle, manage their account, and find out about toll rates, toll road locations and other important information. Additionally, NCTCOG held meetings in 2006 to gather public input on the managed lanes along IH 635/Loop 12 and IH 35W/IH 820/SH 183. These meetings were advertised in *La Estrella* and *Al Día* in Spanish and translation services were offered; however, none were requested.

Reasonable steps would continue to be taken to ensure LEP populations have meaningful access to the programs, services, and information TxDOT provides. Therefore, the requirements of EO 13166 pertaining to LEP are satisfied.

6. Environmental Justice

No Build Alternative

Implementation of the No Build Alternative would not have disproportionately high and adverse human health or environmental effects on minority populations and low-income populations.

Build Alternative

EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires each federal agency to “make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies and activities on minority populations and low-income populations.

The FHWA has identified three fundamental principles of environmental justice:

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

Minority: means a person who is:

- Black (having origins in 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 in any of the original peoples of the Far East, Southeast Asian, the Indian subcontinent, or the Pacific Islands).
- American Indian and Alaskan Native (having origins in any of the original people of North America and who maintains cultural identification through tribal affiliation or community recognition).

Low-Income: means a household income at or below the Department of Health and Human Services (DHHS) poverty guidelines (\$23,050 for a family of four in 2012).

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

1. Are predominately borne by a minority population and/or a low-income population; or,
2. Will be suffered by the minority population and/or low-income population and are appreciably more severe or greater in magnitude than the adverse effects that will be suffered by the non-minority population and/or non-low-income population.

For purposes of this EA, *Census 2010* data, *2006-2010 American Community Survey 5-Year Estimates* data, and windshield surveys have been used to identify areas with high minority and/or low-income concentrations. According to *Census 2010*, eight Census tracts consisting of 10 Census block groups encompass the proposed project area and 121 blocks are adjacent to the proposed project ROW. **Figure 6** provides the locations of the Census block groups and blocks. Data obtained from these blocks and block groups were analyzed to determine racial and ethnic characteristics in the proposed project area. A total of 1,335 persons were recorded within the Census blocks in 2010. The race and ethnicity distribution within these blocks and associated block groups and Census tracts is presented in **Table 15**. Eighty-nine blocks do not contain any population and are not listed in the table. Data for the remaining 32 blocks and all block groups and Census tracts are provided.

Table 15: Demographic Data for Proposed Project Area

Census Data Level	Total Population	Hispanic or Latino	White alone	Black or African American alone	American Indian and Alaska Native alone	Asian alone	Native Hawaiian and Other Pacific Islander alone	Some other race	Two or More Races	Total Percent Minority
CT 1001.02	4,849	65.1%	30.8%	1.8%	0.2%	1.6%	0.0%	0.0%	0.5%	69.2%
BG 2*	1,985	65.8%	30.4%	1.2%	0.3%	1.6%	0.0%	0.0%	0.8%	69.6%
CT 1002.02	5,449	91.7%	7.0%	0.8%	0.2%	0.0%	0.0%	0.0%	0.2%	93.0%
BG 2	1,138	84.0%	12.8%	2.2%	0.3%	0.0%	0.0%	0.0%	0.7%	87.8%
Block 2046	2	100%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
CT 1012.02	4,769	72.1%	19.5%	6.1%	0.1%	1.4%	0.0%	0.2%	0.5%	80.5%
BG 2	2,268	69.4%	24.8%	2.5%	0.1%	2.4%	0.0%	0.1%	0.7%	75.2%
Block 2058	82	80.5%	17.1%	0.0%	0.0%	1.2%	0.0%	0.0%	1.2%	82.9%
Block 2073	14	100%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Block 2074	15	0.0%	100%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Block 2075	1	0.0%	100%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Block 2089	3	0.0%	100%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
BG 3	1,454	68.6%	15.5%	14.5%	0.1%	0.8%	0.1%	0.0%	0.4%	84.5%
Block 3015	7	85.7%	14.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	85.7%
Block 3019	1	0.0%	0.0%	0.0%	0.0%	100%	0.0%	0.0%	0.0%	100%
Block 3022	12	50.0%	0.0%	16.7%	0.0%	33.3%	0.0%	0.0%	0.0%	100%
Block 3028	31	45.2%	3.2%	51.6%	0.0%	0.0%	0.0%	0.0%	0.0%	96.8%
Block 3039	59	74.6%	23.7%	0.0%	0.0%	0.0%	0.0%	0.0%	1.7%	86.3%
CT 1017.00	2,620	24.6%	14.8%	56.3%	0.8%	1.8%	0.3%	0.0%	1.4%	85.2%
BG 1	1,950	16.8%	18.5%	60.0%	0.6%	2.0%	0.4%	0.1%	1.7%	81.5%
Block 1001	62	37.1%	1.6%	54.8%	0.0%	0.0%	0.0%	0.0%	6.5%	98.4%
Block 1014	63	22.2%	7.9%	69.8%	0.0%	0.0%	0.0%	0.0%	0.0%	92.1%
Block 1016	230	18.3%	7.8%	70.4%	0.0%	0.0%	0.0%	0.0%	3.5%	92.2%
Block 1019	100	30.0%	2.0%	68.0%	0.0%	0.0%	0.0%	0.0%	0.0%	98.0%
Block 1022	136	19.1%	5.9%	69.9%	0.0%	1.5%	0.0%	0.0%	3.7%	94.1%
BG 2*	670	47.3%	4.0%	45.4%	1.5%	1.3%	0.0%	0.0%	0.4%	96.0%
CT 1050.06	870	64.7%	25.3%	7.4%	0.3%	0.6%	0.0%	0.1%	1.6%	74.7%
BG 1	870	64.7%	25.3%	7.4%	0.3%	0.6%	0.0%	0.1%	1.6%	74.7%
Block 1165	64	79.7%	0.0%	20.3%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Block 1169	33	93.9%	0.0%	6.1%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Block 1181	4	100%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Block 1182	24	79.2%	0.0%	0.0%	0.0%	20.8%	0.0%	0.0%	0.0%	100%
Block 1187	54	70.4%	29.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	70.4%
Block 1188	21	76.2%	23.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	76.2%
CT 1050.07	4,557	15.1%	65.5%	9.9%	0.5%	6.7%	0.0%	0.1%	2.1%	34.5%
BG 1	1,856	16.2%	65.2%	10.9%	0.6%	4.5%	0.0%	0.1%	2.4%	34.8%
CT 1232.00	1,896	48.0%	31.8%	18.4%	0.5%	0.5%	0.1%	0.1%	0.7%	68.2%
BG 1	1,896	48.0%	31.8%	18.4%	0.5%	0.5%	0.1%	0.1%	0.7%	68.2%
Block 1065	35	57.1%	0.0%	42.9%	0.0%	0.0%	0.0%	0.0%	0.0%	100%
Block 1066	62	43.5%	4.8%	45.2%	0.0%	0.0%	0.0%	0.0%	6.5%	95.2%
Block 1067	71	66.2%	1.4%	32.4%	0.0%	0.0%	0.0%	0.0%	0.0%	98.6%
Block 1083	53	30.2%	3.8%	66.0%	0.0%	0.0%	0.0%	0.0%	0.0%	96.2%
Block 1085	49	73.5%	0.0%	18.4%	0.0%	0.0%	0.0%	0.0%	8.1%	100%
Block 1113	1	0.0%	0.0%	0.0%	0.0%	100%	0.0%	0.0%	0.0%	100%
Block 1136	20	95.0%	5.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	95.0%
Block 1169	1	100%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%

Table 15: Demographic Data for Proposed Project Area

Census Data Level	Total Population	Hispanic or Latino	White alone	Black or African American alone	American Indian and Alaska Native alone	Asian alone	Native Hawaiian and Other Pacific Islander alone	Some other race	Two or More Races	Total Percent Minority
Block 1179	11	54.5%	45.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	55.5%
Block 1192	14	21.4%	71.4%	7.2%	0.0%	0.0%	0.0%	0.0%	0.0%	28.6%
CT 1233.00	4,539	8.7%	70.1%	18.2%	0.2%	1.9%	0.0%	0.0%	0.8%	29.9%
BG 2*	3,210	9.3%	63.8%	24.1%	0.2%	1.5%	0.0%	0.0%	1.0%	36.2%

CT – Census Tract
 BG – Block Group
 * - Block groups that have non-populated blocks only within the proposed project area.
 Shaded cells represent blocks with residential displacements.
 Source: U.S. Census Bureau; 2010 Census; 2010 Census Redistricting Data (Public Law 94-171) Summary File; Table P1; <http://www.census.gov/prod/cen2010/doc/pl94-171.pdf>.

Twenty-eight blocks contain minority populations greater than 50 percent of the block population. Displacements associated with the proposed project would occur in the six of these 28 blocks. Six displacements would occur in the Greenway Place Addition (blocks 1066, 1083, and 1085), one would occur in the United Riverside neighborhood (block 3022), and two would occur in Scenic Bluff (block 2058 and 2073). Lastly, four displacements would occur in the Mason #1 Addition (block 1192). This block has a recorded population of 14 people, of which 21.4 percent are Hispanic or Latino, 7.2 percent are Black or African American, and 71.4 percent are White.

These blocks have a high minority population and their associated neighborhoods/subdivisions contain a high minority population; however, avoidance is not possible. Scenic Bluff and United Riverside are opposite one another across SH 121 and both would be impacted by the proposed project. Greenway Place faces two commercial buildings across IH 35W and both buildings would be displaced. In order to reduce the number of displacements, TxDOT decreased the proposed ROW width in areas where the reduction would still meet safety standards but would allow a structure to remain. In this way, impacts to environmental justice populations were minimized.

As stated in **Section V.A.3. - Community Cohesion**, Greenway Place residents would benefit from the proposed project because of the proposed exit ramp providing direct access from southbound IH 35W. The Scenic Bluff residents requested that TxDOT maintain their Belknap Street access to downtown Fort Worth and this connection is provided in the preliminary design. In order to mitigate for noise impacts to the homes in Greenway Place, Scenic Bluff, and United Riverside, TxDOT is proposing noise barriers at these neighborhoods. These noise barriers would benefit all homes impacted by noise within the three neighborhoods. Through avoidance, minimization and mitigation, the impacts to these three environmental justice neighborhoods would be lessened.

2006-2010 American Community Survey 5-Years Estimates data was used to identify low-income populations within the study area. Income data is not available at the block level and poverty level data is not available at the block or block group level. **Table 16** provides the 2010 median household income (in 2010 inflation-adjusted dollars) for the project area block groups and Census tracts. A population is considered low-income when the median household income of its associated block group is less than the DHHS 2012 Poverty Guideline of \$23,050. Based

on the data presented in the table below and low-income communities identified during the windshield survey, low-income populations are present within the project area.

Comparison Area	Total Population	Median Household Income (in 2010 inflation-adjusted dollars)	Income Below Poverty Level
CT 1001.02	4,605	\$39,509	19.0%
BG 2	1,681	\$46,658	N/A
CT 1002.02	5,174	\$28,594	27.7%
BG 2	919	\$33,095	N/A
CT 1012.02	4,189	\$33,024	16.9%
BG 2	1,452	\$32,368	N/A
BG 3	1,378	\$38,173	N/A
CT 1017	2,865	\$11,824	82.3%
BG 1	1,949	\$9,583	N/A
BG 2	532	\$19,063	N/A
CT 1050.06	532	\$20,403	67.3%
BG 1	1,647	\$20,403	N/A
CT 1050.07	4,244	\$62,490	3.4%
BG 1	1,676	\$61,389	N/A
CT 1232	1,588	\$33,478	24.3%
BG 1	1,637	\$33,478	N/A
CT 1233	2,504	\$51,196	21.0%
BG 2	3,773	\$37,500	N/A

Source: U.S. Census Bureau; Legacy American FactFinder; 2006-2010 American Community Survey 5-Year Estimates; B17001 and B19013 data;
http://factfinder.census.gov/servlet/DatasetMainPageServlet?_program=ACS&_submenuId=&_lang=en&_ts=>; generated March 30, 2012.
 N/A – Not available.

Butler Place is a low-income housing complex run by the FWHA that is encompassed by Census tract 1017, block group 1. As shown in **Table 15**, the blocks reported for this block group average 95 percent minority and the Census tract is 82.3 percent low-income. No negative impacts would occur to Butler Place because of the proposed project. No ROW would be required from the complex and no other encroachments are proposed. One pedestrian bridge over IH 35W would be removed; however, this bridge is rarely used by area residents and provides access to vacant warehouses. Noise impacts are anticipated for some homes; however, proposed noise barriers would mitigate these impacts. Some improvements for the Butler community are planned. In addition to the proposed noise barrier, a 14-foot wide trail separated from traffic by a concrete traffic barrier and a six-foot wide sidewalk would be provided on the Luella Street and Cypress Street vehicular bridges that provide access to the community. Also, the pedestrian bridge over US 287 that connects Butler Place to Harmon Field Park, the Bertha Collins Community Center, and Trinity Trail would be replaced with an ADA-compliant bridge.

a. Origin-Destination Analysis

Overview

Origin-destination (O&D) data secured from the NCTCOG was used for additional analysis of “user impacts” of the proposed IH 35W project on low-income and minority populations. Studying O&D data can determine travel patterns of traffic along a transportation facility during a

typical day. This form of analysis is useful in assessing “user impacts” as the number of trips associated with specific population characteristics can be studied to provide general travel assumptions of those specific populations. Trips are defined as a one-way movement from where a person starts (origin) to where the person is going (destination). Assessing “user impacts” in the form of an O&D analysis is an integral component of the environmental justice analysis for the proposed tolling aspects of the proposed project.

As funding mechanisms for improving area roadways evolve, the trend toward tolling of facilities in this region may, through time, create “user impacts” as access to highway systems becomes an issue to the economically disadvantaged.

Traffic Survey Zones, Study Area, and Data Sources

The information associated with the O&D analysis is organized by traffic survey zones (TSZs) which are small geographic units of area that are developed as a basis for estimate of travel. TSZs may vary in size, are determined by the roadway network and homogeneity of development, and directly reflect demographic data generated by the U.S. Census Bureau. Delineated by state and/or transportation officials for tabulating traffic-related data, TSZs usually consist of one or more census blocks, block groups, or census tracts.

The O&D analysis was modeled under the NCTCOG 2035 MTP 12-county MPA that consists of 9,441 square miles and encompasses all of Collin, Dallas, Denton, Rockwall, Tarrant, Ellis, Johnson, Kaufman, Hunt, Wood, Wise, and Parker Counties. Given the regional operating characteristics of IH 35W, it is reasonable to assume the MPA contains the proposed project’s daily users and therefore is considered the O&D study area. A total of 5,252 TSZs comprise the O&D study area.

TransCAD®, a GIS-based transportation planning software, was utilized by the NCTCOG to generate the traffic data analyzed during the O&D analysis. NCTCOG conducted a “select link analysis” based on 2035 AM peak period traffic to generate O&D data associated with the proposed project. Traffic data exported directly from TransCAD® select-link matrices was correlated with U.S. Census Bureau data to provide a demographic profile of users anticipated to utilize the proposed IH 35W facility. NCTCOG’s O&D data for the IH 35W project provided data for the No Build and Build Alternatives for the year 2035.

Analysis Assumptions and Limitations

To clarify the intent of the O&D analysis, it does not attempt to identify specific users (low-income and minority populations) but instead compares the origins and intensity of trips based on collective socio-economic characteristics at the TSZ level for the project alternatives mentioned above. In other words, the O&D analysis predicts the potential users of the IH 35W corridor in 2035 by correlating the general socio-economic characteristics of the future users based on 2005-2009 American Community Survey (ACS) census data and Census 2010 data to the intensity of use quantified by the number of trips per TSZ generated by TransCAD®. The correlation of 2005-2009 ACS census data, Census 2010 data, and TransCAD® data is the best available method to identify which TSZs would originate trips anticipated to utilize the IH 35W facility and the general demographics of the population associated with those TSZs. The model distinguishes between toll and non-toll alternatives by identifying the “toll links.” These “toll links” are assigned a cost per mile for the toll alternative and no cost per mile for the non-toll alternative. The model then assigns vehicle trips based on user cost, trip distance, time of day, and other factors to achieve system equilibrium in the network. However, the vehicle trip assignment process does not consider relative income differences or the differences in relative costs to potential users in the population when making trip assignments. Because no definitive

data exists on the future users of IH 35W or similar type facilities, the O&D analysis cannot predict the specific race, ethnicity, or economic status associated with the predicted trips on the toll or non-toll facilities. However, the O&D analysis can identify a potential difference in trip intensity by comparing the TSZ trip percentages of the No Build and Build Alternatives.

Analysis of TSZs and Number of Trips Predicted to Utilize the IH 35W facility in 2035

Analysis of the O&D data for the 2035 Build and the 2035 No Build is discussed below and summarized in **Table 17**.

- 2035 Build General Purpose Lanes - Of the total 5,252 TSZs located within the O&D study area, 2,809 TSZs are anticipated to utilize the proposed IH 35W general purpose lanes with at least one trip per day (**Figure 7**). These TSZs are projected to generate 65,282 trips per day on the proposed general purpose lanes. The number of projected trips from these TSZs varied from a high of 776 trips per day to a low of one trip per day in 2035. The TSZs were color-coded and mapped based on the number of trips per day from each TSZ that are predicted to utilize the proposed general purpose lanes in 2035 (**Figure 8**).
- 2035 Build Managed Lanes - Of the total 5,252 TSZs located within the O&D study area, 929 TSZs are anticipated to utilize the proposed IH 35W managed lanes with at least one trip per day (**Figure 7**). These TSZs are projected to generate 3,789 trips per day on the proposed managed lanes. The number of projected trips from these TSZs varied from a high of 107 trips per day to a low of one trip per day in 2035. The TSZs were color-coded and mapped based on the number of trips per day from each TSZ that are predicted to utilize the proposed managed lanes in 2035 (**Figure 9**).
- 2035 No Build - Of the total 5,252 TSZs located within the O&D study area, 2,650 TSZs would utilize the existing IH 35W facility in 2035 with at least one trip per day (**Figure 10**). These TSZs would generate 52,508 trips per day on the existing facility. The number of projected trips from these TSZs varied from a high of 865 trips per day to a low of one trip per day in 2035.

Data analysis indicates 54 percent of TSZs within the study area are expected to have at least one trip per day along the proposed IH 35W facility in 2035. The data also indicates that approximately 16,563 additional trips per day would occur under the Build Alternative versus the No Build Alternative.

Identification of Environmental Justice TSZs

A TSZ is defined as an environmental justice TSZ (EJ TSZ) if one of the following conditions is met:

1. The minority population (any race/ethnicity except non-Hispanic white based on Census 2010 redistricting data) of the TSZ is greater than or equal to 50 percent.
2. The population of a TSZ was defined as having 50 percent or more of the TSZ population residing in a census block group where the 2009 median household income was below the 2009 poverty level of \$22,050 established by the Department of Health and Human Services. Income data was based on 2005-2009 ACS data.
3. If the conditions of both 1 and 2 are met.

The cutoff of 50.0 percent was used to be consistent with federal guidelines. A total of 2,138 EJ TSZs were identified within the O&D study area. **Figures 11** and **12** show the EJ TSZs that would use the proposed general purpose lanes and managed lanes, respectively, of the IH 35W facility (originating at least one trip per day) per environmental justice type.

Analysis of EJ TSZs and Number of Trips Predicted to Utilize the IH 35W facility in 2035

Analysis of the O&D data for the 2035 Build and No Build Alternatives focused on those EJ TSZs that are anticipated to utilize IH 35W with at least one trip per day in 2035. The analysis described below is summarized in **Table 17**.

- 2035 Build General Purpose Lanes - Of the total 2,138 EJ TSZs within the O&D study area, there are 978 EJ TSZs anticipated to utilize the proposed IH 35W general purpose lanes (i.e., general purpose lanes with at least one trip per day (**Figure 7**)). These EJ TSZs are projected to generate 22,027 trips per day on the general purpose lanes (33.7 percent of total trips). The number of projected trips from these EJ TSZs varied from a high of 446 trips per day to a low of one trip per day in 2035. The EJ TSZs predicted to utilize the proposed general purpose lanes in 2035 were color-coded and mapped based on the number of trips per day from each EJ TSZ (**Figure 13**).
- 2035 Build Managed Lanes - Of the total 2,138 EJ TSZs within the O&D study area, there are 263 EJ TSZs anticipated to utilize the proposed IH 35W managed lanes with at least one trip per day (**Figure 7**). These EJ TSZs are projected to generate 596 trips per day on the IH 35W managed lanes (15.7 percent of total trips). The number of projected trips from these EJ TSZs varied from a high of 58 trips per day to a low of one trip per day in 2035. The EJ TSZs predicted to utilize the proposed managed lanes in 2035 were color-coded and mapped based on the number of trips per day from each EJ TSZ (**Figure 14**).
- 2035 No Build - Of the total 2,138 EJ TSZs located within the O&D study area, 905 EJ TSZs would utilize the existing IH 35W facility in 2035 with at least one trip per day. These EJ TSZs are projected to generate 19,102 trips per day on the existing facility (36.4 percent of total trips). The number of projected trips from these EJ TSZs varied from a high of 865 trips per day to a low of one trip per day in 2035. The EJ TSZs predicted to utilize the existing facility in 2035 were color-coded and mapped based on the number of trips per day from each EJ TSZ (**Figure 15**).

Summary Analysis Results

Table 17 compares the 2035 Build and the 2035 No Build Alternatives O&D results and provides further information regarding users of the managed lanes versus the general purpose lanes.

Alternative	Total TSZs Anticipated to Utilize IH 35W	Total TSZ Trips	Total EJ TSZs Anticipated to Utilize IH 35W	Total EJ TSZ Trips	% of EJ TSZ Trips of Total Trips
2035 Build General Purpose Lanes	2,809	65,282	978	22,027	33.7
2035 Build Managed Lanes	929	3,789	263	596	15.7
2035 No Build	2,650	52,508	905	19,102	36.4

Source: NCTCOG TransCAD® data for 2035 Build and No Build Alternatives
The O&D study area (NCTCOG MPA) is comprised of 5,252 total TSZs and 2,138 EJ TSZs.

Data analysis indicates that of 69,071 total trips which originate from TSZs anticipated to utilize the proposed IH 35W facility; approximately 32.8 percent (22,623 trips) of the total trips originate from EJ TSZs. The total number of trips generated by TSZs anticipated to utilize the existing

facility in 2035 is 52,508 trips. Approximately 36.4 percent, or 19,102 trips, originating from EJ TSZs are projected to utilize the existing IH 35W in 2035.

The EJ TSZ trip percentage indicates that a smaller proportion of managed lane users would originate from EJ TSZs compared to the Build main lane and No Build users. The projected EJ TSZ Build main lane and No Build overall trip percentages indicate EJ populations may utilize IH 35W in similar proportions in each scenario. The low EJ TSZ trip percentage for the Build managed scenario suggest that a majority of trips anticipated to utilize the proposed managed lanes would not originate from areas identified with high concentrations of EJ populations within the O&D study area. However, the total EJ TSZ trips would increase by 3,521 trips on the proposed Build facility (main and managed lanes) compared to the No Build (existing) facility in 2035.

Tolling Effects to EJ Populations

As discussed, HOV and SOV users of the IH 35W managed lanes would be tolled based on the regional tolling policy. The toll rate would vary and would likely use value pricing (toll rates that vary by time of day, vehicle type, and level of congestion) to regulate the number of users on the facility.

There would be an economic impact to HOV and SOV motorists who utilize the IH 35W managed lanes. The economic impact would be higher for low-income populations because the cost of paying tolls would represent a higher percentage of household income than for non-low-income populations.

Because of the greater economic burden of paying a toll, low-income populations would likely use the general purpose lanes and frontage roads. Motorists who use the general purpose lanes during peak hours may experience longer travel times than motorists using the managed lanes. Motorists using the frontage roads may experience longer travel times due to lower posted speed limits and traffic signals along the frontage roads.

The difference in travel times between the IH 35W managed lanes compared to the general purpose lanes would likely be highest during peak hours of travel when traffic congestion within the IH 35W corridor would be the greatest. The adjacent general purpose lanes and frontage roads would be available for use; however, these lanes may be flowing at a slower speed than the tolled lanes due to posted speeds, signalization, or congestion.

However, the proposed added capacity from the general purpose lanes, frontage roads, and managed lanes is intended to improve traffic mobility and reduce congestion as compared to the existing conditions. This benefit would be a positive effect to all motorists using the facility.

Access

Access to the general purpose lanes of IH 35W would be available to all users. Access to the managed lanes would be limited to those who elect or can only on occasional basis afford to pay the toll. The IH 35W frontage roads would include a total of four travel lanes (two in each direction) and would provide a non-toll alternative, in addition to the eight general purpose lanes, for motorists who do not elect or can only on occasional basis afford to travel the managed lanes. Under normal operating conditions, motorists using the frontage roads would experience longer travel times than motorists using either the general purpose lanes or the managed lanes due to a lower posted speed limit and traffic signals along the frontage roads.

The RTC Managed Lane Policy, adopted in May 2006, requires a “speed guarantee” of 50 mph; therefore in conditions of congestion, the general purpose lanes would likely operate at speeds lower than 50 mph creating longer travel times for motorists utilizing the general purpose lanes compared to motorists traveling a minimum of 50 mph along the managed lanes. However, the overall added capacity the proposed project provides would relieve traffic congestion for all motorists using IH 35W whether they use the general purpose lanes or frontage roads compared to the existing facility. Furthermore, motorists would have access to a greater number of general purpose lanes within the project limits as currently exist (increase from four/six lanes to eight general purpose lanes).

Non-Toll Alternatives

Although the proposed project would not distribute the benefits of time cost savings associated with the managed lanes among all income groups evenly because lower income groups would pay a higher proportion of their income for tolls as compared to middle and higher income groups, alternative non-toll routes currently exist or would at the time the managed lanes would be open to traffic. The additional general purpose lanes and frontage road lanes would provide non-tolled alternatives for motorists who do not elect or can only on an occasional basis afford to travel the managed lanes. Motorists using the frontage road may experience longer travel times than motorists using the general purpose lanes due to a lower posted speed limit and signalization.

Based on roadway performance reports provided by NCTCOG, the LOS on arterial roadways within the IH 35W project area would improve after the proposed widening is completed (**Table 37** in **Section V.I. – Indirect Impacts**). Some traffic dispersion to neighborhood roadways during construction could be expected. However, the completed facility would offer better travel time for motorists and make it less likely that motorists would leave the highway to find alternate routes on neighborhood streets. Additionally, only one arterial road (Sylvania Avenue) provides a north-south route along the length of the proposed project. Motorists may choose to use this arterial road that passes adjacent to ONA and Scenic Bluff; however, it is likely this route is already being used by motorists because of the existing congestion on IH 35W. The proposed project is not expected to increase traffic on nearby roads.

Transit Usage

The proposed project is not expected to adversely affect transit usage. IH 35W is located within The T’s service area. The T is a regional transportation authority that serves Tarrant County’s public transportation needs. Regularly scheduled trips service the proposed project limits.

Per RTC policy, should The T vehicles utilize the IH 35W managed lanes, no toll charges would be applied to The T vehicles. Transit vehicles would be exempt from toll charges along IH 35W. Managed lane users, including environmental justice populations (consisting of minority and/or low-income individuals), might decide to reduce their personal economic impact of tolls by using transit, where tolls would be waived for the transit provider (**Appendix A**).

b. Economic Impacts of Tolling

Toll Rate

As mentioned previously, utilizing managed lanes would require toll collection for both single occupancy and HOV users. Two policies for managed lane facilities were approved by the RTC in 2006 and are included in **Appendix A**.

The first policy, the Managed Lane Policy, states that a fixed-fee schedule would be applied during the first six months of operation and dynamic-fee pricing would be applied thereafter. Toll rates would be updated monthly during the fixed-fee schedule phase. The toll rate could be set up to \$0.75 per mile during the fixed-fee schedule phase in accordance with current policy; however that toll rate is not likely to be established as further discussed in the alternatives described below that correspond with the anticipated opening year of 2030. The actual established rate would be evaluated and adjusted, if warranted, with RTC approval.

Dynamic-fee pricing allows operators to set market-based toll rates based on corridor demand, and those rates could fluctuate at any time throughout the day, even in real time, in response to changing traffic conditions. The toll rate would be established to maintain a minimum average corridor speed of 50 mph. The policy includes a reduced toll rate (half price) that would be applied toward HOV users (two or more occupants [HOV2+]) and publicly operated vanpools during the AM and PM peak periods (weekday periods from 6:30 a.m. to 9:00 a.m. and from 3:00 p.m. to 6:30 p.m., respectively). This discount would phase out after the region reaches attainment for air quality.

The current regional long-range transportation plan, *Mobility 2035*, identifies and recommends a need to begin the transition to a managed lane system, while at the same time reviewing current policies regarding a possible shift in the occupancy definition from “2+” to “3+”, and also reviewing the need for additional management techniques which includes dynamic pricing. This is currently being studied with the desire that these changes begin as early as mid- to late 2013, to coincide with the phased opening of the region’s first permanent managed lanes as part of the LBJ Express project. The implementation of this change could shift to ensure the completion of appropriate technical analyses, environmental documentation, operational studies, and public notification and involvement.

For managed lanes with dynamic pricing, current policy (found at http://www.nctcog.org/trans/committees/rtc/ManagedLanePolicies_091307.pdf) stipulates that rebates would be paid if the average speed in a managed lane facility drops below 35 mph over a predetermined amount of time. However, rebates would not apply if the speed reduction is out of the control of the operator of the managed lane (i.e., accidents, incidents, weather conditions). Current technical limitations exist which will prevent individual travelers or vehicles from receiving these rebates directly. Instead, the intent of the policy is that the rebate will likely be in the form of a specific corridor or system-level rebate, where monies collected will go back into improving the overall system, benefiting all drivers. Policies are being reviewed and developed by regional transportation agencies and the RTC which will further clarify and determine how the rebate is to be applied. This rebate language is included in the managed lane policies adopted by the RTC in 2006 (and subsequently modified).

Users of the managed lanes would be notified of the toll rate before entering the designated lanes by an electronic message board. Clearly posted overhead signage would designate the lane that drivers should use to enter and exit the facility. General purpose lanes and frontage roads, including the proposed added capacity, would remain as non-tolled options for all users.

The second managed lane policy in effect for the region is the Excess Toll Revenue Sharing Policy: Managed Lane Policy that was developed by NCTCOG to determine how and where excess revenue generated by TxDOT managed lanes would be spent. Excess revenue is considered the annual revenue generated after debt, maintenance, reserve funds, profit, and other expenses related to the managed lanes are covered. Excess funds would remain within

the county where the managed lane is located. For this project, all excess revenue would be distributed in Tarrant County according to the Excess Toll Revenue Sharing Policy.

Express Lanes Demonstration Program Tolling Agreement

The IH 35W corridor (South and North Sections) from IH 30 to SH 114 has been approved as a demonstration project associated with the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) Express Lanes Demonstration Program (ELDP). The ELDP agreement between TxDOT and FHWA allows TxDOT (directly or through a third party public authority or private entity) to establish a toll that varies in price according to time of day or level of traffic, as appropriate, to manage congestion or improve air quality. TxDOT must audit the records of the managed lanes annually for compliance with the provisions of the ELDP and report the results to FHWA. In accordance with SAFETEA-LU, the performance goals and monitoring/reporting program set forth in the ELDP agreement may be amended as deemed desirable. As part of the monitoring and reporting program, TxDOT will prepare a document that describes the information to be collected, the methodology for identifying baseline values and approach for developing the annual reports that will assess facility performance. An annual report will be prepared by TxDOT and submitted to FHWA by March 31st of each year that documents processes and procedures and will include 1) project information; 2) performance highlights; 3) performance summary; and 4) performance details.

Toll rates for the IH 35W managed lanes would be determined prior to opening the facility to traffic. A toll revenue study, *Draft – Level 2 Traffic and Toll Revenue Study: North Tarrant Express Managed Lanes (NTE)*, has been prepared to represent a range of toll revenue outcomes. Within this study, six alternatives were analyzed that represented the construction of various segments of the NTE project. Certain assumptions were identified in the Level 2 study in order to maintain consistency in the analysis and present measurable results. Alternative 4 was presented as the construction of all segments of the NTE, including the proposed project. The results associated with Alternative 4 will be used in the following analysis. Three scenarios will be utilized to illustrate the potential impacts associated with toll rates. Each scenario provides assumptions and an explanation of input variables used to arrive at the total cost impact to users of the proposed managed lanes.

Anticipated toll rates and total cost impacts to users are provided for each scenario for the assumed opening year (2030). For each scenario, the average travel distance per household that would use the proposed managed lanes on IH 35W from IH 30 to IH 820 would be 3.5 miles out of the total 5.4-mile section and would equate to 7 miles for a round trip. The 3.5-mile assumption of average travel distance using the proposed managed lanes along the 5.4-mile length of the proposed project limits is derived from travel patterns identified in the traffic model of the *Draft – Level 2 Traffic and Toll Revenue Study: North Tarrant Express Managed Lanes*. These travel patterns were compared to O&D survey data collected from travelers using license plate matching methods, as needed. Toll rates applied to each scenario on the proposed managed lanes are the optimum per mile toll rates calculated in the *Draft – Level 2 Traffic and Toll Revenue Study: North Tarrant Express Managed Lanes* based on revenue maximization and free-flow conditions in the managed lanes. Toll rates reflect the dynamic pricing concept of the managed lanes associated with the proposed project and are a function of balancing the demand to use them, the value of time cost savings of their use to users, and users' willingness to pay to use the managed lanes versus the cost of congestion experienced on the non-tolled lanes. The optimum toll rates fall within the RTC Managed Lanes Policy guidelines.

An assumed number of round trips are provided for each scenario that reflects the likely frequency of household use during the stated period based on origin-destination survey data collected from travelers using the IH 35W corridor and a similar analysis done for the IH 35E corridor in Dallas and Denton counties. The trip frequency data provided from the Level 2 study indicates that 3.8 trips per week for the afternoon peak scenario and 2.2 trips per week for the off-peak scenarios is the average number of trips made by users of the IH 35W corridor. However, the IH 35E analysis considered 2.5 trips per week for the afternoon peak scenario and 2 trips per week for the off-peak scenarios reasonable and indicative of the patterns shown with regard to existing high occupancy/toll (HOT) lane facilities. This determination was made based on four case study observations of similar operating projects involving HOT lane facilities. HOT lanes are those that give motorists in single occupancy vehicles access to HOV lanes and implement a charge for their use of the lanes that varies based on the level of congestion in those lanes. The greater the level of congestion in HOT lanes, the higher the charge to use them. The goal of HOT lanes is to minimize traffic congestion by pricing the use of the lanes. From case study observations, it was revealed that most travelers only use the toll lanes when the perceived benefits of time cost savings and less congestion are equal to or exceed the toll charges. Because the managed lanes require payment for use, it is likely that the number of trips per week would be lower than what was identified by users of the existing facility through the origin-destination surveys. In order to keep this analysis comparable to the IH 35E analysis and other HOT case studies, 2.5 trips per week for the afternoon peak scenario and 2 trips per week for the morning peak and off-peak scenarios will be used.

Scenario 1 (Afternoon Peak, 4:30pm – 6:30pm)

Scenario 1 assumes that the toll rate at the time IH 35W would open to traffic in 2030 would be 63 cents per mile (pro-rated from the optimum toll rates reported in the *Level 2 Traffic and Toll Revenue Study: North Tarrant Express Managed Lanes*) and reflects the highest priced period for use of the managed lanes among the three scenarios. Scenario 1 also assumes the average household would make 2.5 round trips per week during this peak period or 130 round trips per year. Under this scenario, the annual cost to the user based on the stated assumptions would be approximately \$573.30 per year. A user with a Consumer Price Index (CPI)-adjusted (2.9 percent¹) annual household income in 2030 of \$97,967 based on the 2006-2010 ACS 5-Year Estimates reported median household income (in 2010 inflation-adjusted dollars) for Tarrant County (\$55,306) would spend approximately 0.6 percent of his or her annual household income on IH 35W managed lane tolls. However, households with CPI-adjusted incomes in 2030 of \$38,561 based on the 2012 DHHS-established poverty level of \$23,050 (for a family of four) would spend approximately 1.5 percent of their annual household income on IH 35W managed lane tolls, which would account for approximately 0.9 percent more of total household income than the median for Tarrant County households.

Scenario 2 (Morning Peak, 6:30am – 8:00am)

Scenario 2 assumes that the toll rate at the time IH 35W would open to traffic in 2030 would also be 63 cents per mile. Scenario 2 also assumes the average household would make 2 round trips per week during this period or 104 round trips per year. Under this scenario, the annual cost to the user based on the stated assumptions would be approximately \$458.64 per year. A user with a CPI-adjusted (2.9 percent) annual household income in 2030 of \$97,967 based on the ACS reported median household income for Tarrant County (\$55,306) would spend approximately 0.5 percent of his or her annual household income on IH 35W managed lane tolls. However, households with CPI-adjusted incomes in 2030 of \$38,561 based on the 2012

¹ <http://www.bls.gov/news.release/cpi.nr0.htm>; Consumer Price Index Survey – January 2012, previous 12-month increase for all items, pre-seasonal adjustment

DHHS-established poverty level of \$23,050 (for a family of four) would spend approximately 1.2 percent of their annual household income on IH 35W managed lane tolls, which would account for approximately 0.7 percent more of total household income than the median for Tarrant County households.

Scenario 3 (Off-Peak, 7:30pm – 6:30am)

Scenario 3 assumes that the toll rate at the time IH 35W would open to traffic in 2030 would be 19 cents per mile and reflects the lowest priced period for use of the managed lanes among the three scenarios. Scenario 3 also assumes the average household would make 2 round trips per week during this period or 104 round trips per year. Under this scenario, the annual cost to the user based on the stated assumptions would be approximately \$138.32 per year. A user with a CPI-adjusted (2.9 percent) annual household income in 2030 of \$97,967 based on the ACS reported median household income for Tarrant County (\$55,306) would spend approximately 0.1 percent of his or her annual household income on IH 35W managed lane tolls. However, households with CPI-adjusted incomes in 2030 of \$38,561 based on the 2012 DHHS-established poverty level of \$23,050 (for a family of four) would spend approximately 0.4 percent of their annual household income on IH 35W managed lane tolls, which would account for approximately 0.6 percent more of total household income than the median for Tarrant County households.

Under the three scenarios, all users of the managed lanes at all income levels would realize a travel time savings benefit as opposed to using general purpose lanes along the IH 35W corridor. This travel time savings benefit would be more pronounced under the peak period scenarios in which increased traffic congestion on the general purpose lanes during that time would more pointedly warrant the use of the managed lanes, which would be less congested. Under the off-peak scenario, a travel time savings benefit would still exist, although the benefit would be less profound during these periods when general purpose lanes are less congested. Changes in the toll rate along the facility are designed to balance the toll rate with the value of travel time cost savings. Managed lane users could also decide to reduce their personal financial impact of tolls by carpooling or using transit in which tolls would be divided among many travelers or waived for the transit provider. Although the proposed project would not distribute the benefits of time cost savings associated with the managed lanes among all income groups evenly because lower income groups would pay a higher proportion of their income for tolls as compared to middle and higher income groups, alternative project-specific non-toll options currently exist or would at the time the managed lanes would open. As discussed, project-specific non-toll options available to all groups, including low-income populations, would assist in offsetting the unequal distribution of travel time cost savings benefits based on income.

An ETC system would be implemented along the IH 35W managed lanes. The managed lanes would not offer “on-site” or automated cash payment options through toll booths, toll plazas, toll stations, or toll gates. Instead, other methods of toll collection would be implemented as described below.

Methods of Toll Charge Collection

TxDOT TxTag® stickers, the NTTA TollTag® (Dallas area), and the Harris County Toll Road Authority (HCTRA) EZ TAG® (Houston area) would be accepted on the IH 35W managed lanes. Toll charges could be automatically deducted from a prepaid credit account or would be mailed as a monthly statement to the driver if the video billing method is utilized. If the driver has a TxTag® or other toll transponder account, the tolls would automatically be deducted from the account when the facility is used. The account would be a prepay account which means

the driver must maintain sufficient funds in his/her account to cover incurred toll charges, such as for accounts currently in use for existing toll roads.

TxTag® Account Payment Methods

With a TxTag® “AutoPay” account, the user would pay a minimum installment of \$29.65 (\$20 credit and a \$9.65 one-time fee for the TxTag®) through a credit or debit card. The account would then be established with a \$20 credit, which would be reduced each time the transponder passes through an operating toll gantry. The account holder’s credit or debit card would be automatically charged when the funds in the “AutoPay” account exceed a pre-set threshold value. There is no fee for this service. A user can sign up for “AutoPay” by accessing the account online and providing credit or debit card information or by calling the TxTag® Customer Service Center.

For those who choose to maintain a prepaid TxTag® “Manual Pay” account, an initial deposit of \$9.65 would be required for the toll transponder, as well as a \$20 payment to establish the account. The account would then be established with a \$20 credit, which would be reduced each time the transponder passes through an operating toll gantry. The user would be responsible for maintaining sufficient funds in his/her account to cover incurred toll charges. Toll rates would be the same as “AutoPay” account toll rates. “Manual Pay” accounts can be replenished via credit card, debit card, cash, or check/money order. Paying by credit or debit card can be handled online (<http://www.TxTag.org>), via the phone (1-888-468-9824), or at the TxTag® Customer Service Center located in Austin, Texas. Cash payments must be made at the TxTag® Customer Service Center in Austin. Check or money orders can be taken or mailed to the TxTag® Customer Service Center in Austin.

The TxTag® sticker must be permanently placed on the windshield and cannot be moved between vehicles without damaging the toll transponder. If a user has more than one vehicle, the user can order more transponders and manage them all through one account. Regardless of the user type, TxTag® accounts may be monitored free of charge via the internet. Should the user request a monthly invoice, a \$1.00 charge per five pages invoiced would be incurred each month.

TollTag® Account Payment Methods

With a NTTA TollTag® prepaid “credit user” account, the driver would pay a minimum amount of \$40 installment through a credit or debit card. The account would then be established with a \$40 credit, which would be reduced each time the transponder passes through an operating toll gantry. When the driver’s account reaches \$10 or less, the “credit user” credit or debit card would again be charged \$40 to automatically increase the available balance. Should the “credit user” lose or fail to surrender the TollTag® when the account is closed, the credit or debit card would be charged \$25 to cover the cost of the transponder.

Similar to the TxTag® “Manual Pay” account, the NTTA also allows cash payments. For those who choose to maintain a prepaid “cash user” account, an initial deposit of \$25 would be required for the toll transponder as well as a \$40 payment to establish the account. Per NTTA policy, this automatic deposit is required of “credit user” accounts. The “cash user” deposit can be refunded without interest if the user returns the transponder in good condition or if the “cash user” account is converted into a “credit user” account. The prepaid “cash user” account would require the driver to maintain sufficient funds in his/her account to cover incurred toll charges. Cash payments can be made at the NTTA’s TollTag® Store in Dallas, at the TollTag®, Customer Center in Plano or at any of the ACE Cash Express, Inc. locations in the DFW area. Toll rates would be the same as “credit user” account toll rates. When passing through a toll lane

equipped with a traffic signal, a yellow light on the traffic signal indicates that the account balance is at or below \$10. A red light indicates that the account balance is \$0. The NTTA must receive payment at one of the TollTag® locations before the account reaches \$0 to avoid the incurrence of toll violations.

The TollTag® may only be displayed in the vehicle specifically assigned to that TollTag®. The license plate number of a vehicle listed on the TollTag® account cannot be registered on another TollTag® account. Regardless of the user type, TollTag® accounts may be monitored free of charge via the internet. Should the user request a monthly invoice, a \$1.50 charge would be incurred each month.

Video Billing Payment Methods

Through a system known as video billing, it would still be possible to drive the managed lanes of IH 35W without an electronic toll transponder or prepaid user account. The user's license plate would be recorded and matched to the state's vehicle registration file, and a monthly bill would be mailed to the registered owner of the vehicle for the accumulated toll charges. The toll rates for drivers without a toll transponder would include an additional percentage toll rate premium plus an incidental administrative fee commensurate with the costs related to processing the vehicle registration information.

The owner of the vehicle may be charged a toll rate premium of up to 45 percent, which is to offset the costs related to processing license plate information. In addition to this premium, incidental administrative fees would be incurred. These include such things as costs to prepare and mail the monthly statements.

In order to identify the potential economic impact to users of the managed lanes, the three scenarios analyzed for costs related to ETC have been analyzed as video billing scenarios by accounting for the assumed 45 percent surcharge to cover the anticipated additional cost of processing toll transactions. Each scenario provides assumptions and an explanation of input variables used to arrive at a total cost impact to users of the proposed managed lanes. Anticipated toll rates and total cost impacts to users are provided for each scenario for the assumed opening year of 2030. For each scenario, the same assumptions related to average user travel distance on the managed lanes, toll rate, and number of round trips as provided for the ETC scenarios also apply to the following three video billing scenarios.

Scenario 1 (Afternoon Peak, 4:30pm – 6:30pm)

Scenario 1 assumes that the toll rate at the time IH 35W would be open to traffic in 2030 would be 63 cents per mile and reflects the highest priced period for use of the managed lanes among the three scenarios. Scenario 1 also assumes the average household would make 2.5 round trips per week during this peak period or 130 round trips per year. Under this scenario, the annual cost to the user based on the stated assumptions in addition to a 45 percent surcharge would be approximately \$831.29 per year. A user with a CPI-adjusted (2.9 percent) annual household income in 2030 of \$97,967 based on the ACS reported median household income for Tarrant County (\$55,306) would spend approximately 0.8 percent of his or her annual household income on IH 35W managed lane tolls. However, households with CPI-adjusted incomes in 2030 of \$38,561 based on the 2012 DHHS-established poverty level of \$23,050 (for a family of four) would spend approximately 2.2 percent of their annual household income on IH 35W managed lane tolls, which would account for approximately 1.4 percent more of total household income than the median for Tarrant County households.

Scenario 2 (Morning Peak, 6:30am – 8:00am)

Scenario 2 assumes that the toll rate at the time IH 35W would open to traffic in 2030 would be 63 cents per mile and reflects the second highest priced period for use of the managed lanes among the three scenarios. Scenario 2 also assumes the average household would make 2 round trips per week during this period or 104 round trips per year. Under this scenario, the annual cost to the user based on the stated assumptions in addition to a 45 percent surcharge would be approximately \$665.03 per year. A user with a CPI-adjusted (2.9 percent) annual household income in 2030 of \$97,967 based on the ACS reported median household income for Tarrant County (\$55,306) would spend approximately 0.7 percent of his or her annual household income on IH 35W managed lane tolls. However, households with CPI-adjusted incomes in 2030 of \$38,561 based on the 2012 DHHS-established poverty level of \$23,050 (for a family of four) would spend approximately 1.7 percent of their annual household income on IH 35W managed lane tolls, which would account for approximately 1.0 percent more of total household income than the median for Tarrant County households.

Scenario 3 (Off-Peak, 7:30pm – 8:00am)

Scenario 3 assumes that the toll rate at the time IH 35W would be open to traffic in 2030 would be 19 cents per mile and reflects the lowest priced period for use of the managed lanes among the three scenarios. Scenario 3 also assumes the average household would make 2 round trips per week during this period or 104 round trips per year. Under this scenario, the annual cost to the user based on the stated assumptions in addition to a 45 percent surcharge would be approximately \$200.56 per year. A user with a CPI-adjusted (2.9 percent) annual household income in 2030 of \$97,967 based on the ACS reported median household income for Tarrant County (\$55,306) would spend approximately 0.2 percent of his or her annual household income on IH 35W managed lane tolls. However, households with CPI-adjusted incomes in 2030 of \$38,561 based on the 2012 DHHS-established poverty level of \$23,050 (for a family of four) would spend approximately 0.5 percent of their annual household income on IH 35W managed lane tolls, which would account for approximately 0.3 percent more of total household income than the median for Tarrant County households.

The scenarios above demonstrate that not maintaining a pre-paid TxTag®, TollTag® or EZ TAG® account results in higher costs for those who utilize the video billing option. There is no interest charged on unpaid tolls; however, there are delinquent penalty fees associated with an unpaid or delinquent bill. Common penalties are listed below:

Returned Check (Insufficient Funds)	\$25.00
Administrative Fee - Violation Notice *	\$5.00
Administrative Fee - Violation in Collections *	\$25.00
Administrative Fee - Violation Sworn Complaint Issued *	\$100.00

* Fee amounts are pending final determination and will be adjusted annually per Texas Administrative Code.

If the registered owner does not have a toll transponder, he/she would receive a bill every month for the balance. There is no minimum threshold for video billing to occur. As with the prepaid account, video billing would allow for cash, credit or debit payments.

Comparison of Payment Methods

Not maintaining a prepaid account would impact any user, including low-income users, because the cost of paying the accumulated toll charges without an account would represent a higher toll rate than toll charges affiliated with a prepaid account. Cash payment options are available for each payment method; however, only those users who maintain automatic and manual pay prepaid accounts would benefit from reduced toll rates compared to the video billing policy.

Paying for the TxTag® by credit or debit card can be handled online (<http://www.TxTag.org>), via the phone (1-888-468-9824), or at the TxTag® Customer Service Center located in Austin, Texas. Cash payments can be made at the TxTag® Customer Service Center in Austin. Check or money orders can be taken or mailed to the TxTag® Customer Service Center in Austin.

In summary, toll rates are generally 45 percent higher for drivers who do not have an electronic toll transponder to offset the costs related to processing the license plate information associated with video billing. Although certain toll transponder account holders are required to pay up-front fees or deposits for toll transponders (\$9.65 fee per transponder for TxTag® accounts and \$25 deposit for TollTag® “cash users” accounts), the toll transponder account holders would benefit from lower toll rates compared to the total toll rates associated with video billing. In other words, the up-front fees associated with toll transponders may be offset through time when considering the premium and processing fees affiliated with the video billing method of payment.

c. Summary of Impacts to Environmental Justice Populations

The EO 12898 term “disproportionately high and adverse effect” considers the *totality* of impacts to human health and environment. ROW acquisition occurs throughout the proposed project corridor and is not concentrated in environmental justice areas. Additionally, although residential displacements would occur in blocks with high minority populations, efforts were made to avoid, minimize, and mitigate impacts to these populations and no alternative to the displacements is available. Values of the homes to be displaced range from \$20,700 to \$80,900 indicating a lower socio-economic status of the property owners. However, the number of displacements is minor and the commercial/industrial nature of the corridor lends the area to lower-value residential areas.

Impacts related to tolling have been analyzed and there would be an economic impact to low-income users of the proposed managed lanes, and the potential for longer travel times on the general purpose lanes or frontage roads compared to the managed lanes. However, the improved capacity on the proposed facility would improve mobility for all users compared to the existing facility. Mitigation for noise impacts to EJ neighborhoods has been proposed and improved pedestrian facilities are proposed throughout the project and specifically at Butler Place. In the past, toll gantries were built as plazas which were large areas with the potential for negative noise, light and visual effects on nearby neighborhoods. The current ETC system reduces toll gantries to the size of an overhead sign. There would be no negative noise, light or visual impacts to EJ neighborhoods from the proposed toll gantries.

Numerous public involvement activities have occurred during the planning stages of this project. Input from neighborhood associations containing EJ populations were discussed in **Section V.A.3**. Additional information on public involvement activities is provided in **Section VI**. Input from these neighborhood associations was considered by TxDOT and incorporated into the design when possible.

Based on the data provided and the analysis of the totality of effects (avoidance, minimization, and mitigation of impacts plus benefits to affected groups, e.g. Butler Place), there are no disproportionately high or adverse impacts on minority or low-income populations. Therefore, the requirements of EO 12898, pertaining to environmental justice, are satisfied.

7. Public Facilities and Services

No Build Alternative

Implementation of the No Build Alternative would not require displacement or relocation of any public facilities. Some community services, such as police and fire protection, may be negatively affected due to predicted increased traffic congestion resulting in reduced accessibility and increased travel time.

Build Alternative

Community resources along the proposed project boundaries (within a ¼-mile radius) include the following:

- **Schools:** I.M. Terrell Elementary School, Charles E. Nash Elementary School, Montessori At Sundance Square and Calvary Christian Academy
- **Churches/Places of Worship:** Allen Chapel, Greater St. James Baptist Church, Morning Chapel Church, Wayside Christ Holy Sanctified, Paradise Baptist Church, True Light Baptist Church, Pentecostal Church of God, Prayer of Faith Temple, Greenway Church, Calvary Cathedral International, Iglesia Bautista Getsemani and Hilltop Baptist Church
- **Recreational Facilities:** Fort Worth Water Gardens, Harmon Field Park, Greenway Park, Delga Park, Bertha Collins Community Center, Riverside Park and Trinity Trail
- **Hospitals:** Medicare Health Center and Sundance Center
- **Fire Departments:** None
- **City Halls:** None
- **Libraries:** None
- **Day Cares:** Gwendolyn C. Craig Headstart and Child Development Training Center
- **Senior Centers:** None
- **Other:** Education Service Center Region XI, Butler Place – FWHA, Tarrant County 9-1-1 Administration Office, and the Intermodal Transportation Center

Four public facilities/services would be impacted by the proposed project: Harmon Field Park, the Trinity Trail, the Education Service Center Region XI, and the Tarrant County 9-1-1 District Administration Office. Harmon Field Park is located on the opposite side of US 287 from Butler Place. A pedestrian bridge over US 287 connects Butler Place to the park and the Bertha Collins Community Center. TxDOT, the City of Fort Worth, the FWHA and the Butler Place community worked together to determine whether this pedestrian bridge would be replaced or removed. It was determined that the US 287 pedestrian bridge would be replaced and the landing would impact approximately 0.20 acre of Harmon Field Park.

The Trinity Trail is a bicycle/pedestrian trail located adjacent to the West Fork Trinity River. According to *Mobility 2035*, bicycle and pedestrian enhancements are included as strategies to reduce dependency on automobile travel. The plan identifies the widening of outside lanes on arterial streets to create a safer environment and recommends the development of a companion off-street system referred to as the Regional Veloweb. A veloweb is composed of trails with limited stop signs and traffic signals to accommodate fast moving cyclists. According to the MTP, primary design considerations for the Regional Veloweb include grade-separated crossings, easy access from roadways, and easy access to common trip destinations. The Trinity Trail is included in the Regional Veloweb off-street trail system and a portion is located within the project area.

New bridge structures spanning the trail are proposed where IH 35W crosses the West Fork Trinity River. The construction of new bridge structures would occur above the Trinity Trail on property owned by the TRWD. Construction would not be allowed on or over the trail during the hours of operation (6:00 am to 10:00 pm). All construction over the trails would take place outside of these times. No property ownership transfers for any portion of the hike and bike trail or for any property owned by TRWD would occur. No portion of the Trinity Trail or property owned by TRWD would be retained for long-term use by TxDOT. A portion of the trail at IH 35W and Delga Park would be shifted to accommodate the proposed bridge. Through coordination between TxDOT and TRWD, the final location of the reconstructed trail was determined to the satisfaction of TRWD (**Appendix D**). The proposed trail would be constructed while the existing trail remains in operation and before highway construction. Once the proposed trail has been completed, the existing trail would be removed and construction on the proposed IH 35W would begin. **Figure 4, Sheet 10** depicts which portion of the trail would be reconstructed. Besides the reconstruction of a portion of the trail at Delga Park, no other permanent impacts to the Trinity Trail would occur due to the proposed project.

The proposed project would displace two public facilities: the Education Service Center Region XI and the Tarrant County 9-1-1 District Administration Office. The ROW needed from the Education Service Center Region XI parcels will be acquired early, as requested by the center. A separate Categorical Exclusion document was prepared for this early acquisition (CSJ 0014-16-179). It was approved on April 15, 2011. TxDOT can now acquire the property before the environmental process is complete. This will enable the Education Service Center Region XI to plan, fund, and construct a new facility and move their office and employees to the new space without substantial interruption to their services.

No other public facilities would be impacted by the Build Alternative. The proposed improvements to IH 35W would provide increased accessibility to the various public facilities in the surrounding area. Emergency public services would have a safer and more efficient facility to use in the performance of their various duties. Interruptions to public facilities and services during construction of the proposed project would be minimized through the use of appropriate traffic control and sequencing procedures.

8. Detours

No Build Alternative

Implementation of the No Build Alternative would not require detours related to new construction. However, normal pavement and structure maintenance and repair would occur under this alternative. Temporary reduction of capacity and detour of traffic may occur as these maintenance procedures were implemented.

Build Alternative

Implementing the Build Alternative would require temporary detour and handling of traffic during construction. This would be planned during the construction plan preparation stage and coordinated during the construction stage. Traffic control planning and design would include efforts to maintain existing traffic capacity during peak travel periods and minimize detours. The temporary reduction of capacity and detour of traffic would be coordinated to ensure that substantial reduction in capacity and delay would not occur during the peak period. Access to properties would be maintained at all times.

Transportation Code, Chapter 228, Subchapter E places limitations on the conversion of free roads to toll roads. The proposed project would be constructed in two phases. The managed

lanes would be constructed during the initial phase of construction. During both stages of construction, the number of general purpose lanes open to the public would never decrease from the existing number of general purpose lanes while the managed lanes are open for use.

9. Utility Relocations/Adjustments

No Build Alternative

Implementation of the No Build Alternative would not require utility relocations or adjustments.

Build Alternative

Implementation of the Build Alternative may require the relocation and adjustment of utilities such as water lines, sewer lines, gas lines, telephone cables, electrical lines, and other subterranean and aerial utilities. The relocation and adjustment of any utilities would be coordinated with the affected utility provider to ensure that no substantial interruption of service would take place.

B. Natural Resources

1. Description of Natural Regions and Vegetation Type

The proposed project area is located within the Cross Timbers region and the Grand Prairie sub-region of Texas (Omernik, 1987). According to the Texas Parks and Wildlife Department's (TPWD) *Vegetation Types of Texas* maps (1984), the proposed project area is within the Crops and Urban physiognomic regions. Crops vegetation type is a statewide vegetation category that includes cultivated cover-crops and row-crops utilized for food and/or fiber for humans or domesticated animals. The Crops designation pertains to the area along IH 35W between Meacham Boulevard and Long Avenue and the vegetation is consistent with this classification. From Long Avenue south to IH 30, the project area is designated as Urban. Urban regions reflect major metropolitan areas with vegetation usually restricted to road ROW areas, building landscapes, or undeveloped areas, and may be expected to include remnants of the land cover types that predate urbanization. The vegetation in the proposed project area is consistent with the Urban physiognomic region.

The study corridor has been highly urbanized for several decades. Most of the native habitat has been replaced through steady urban development (industrial, commercial, and residential). Land use within the proposed project area is a mix of urban development with interspersed open fields. The dominant vegetation type is maintained vegetation in the form of cultivated fields, mowed ROW, and urban landscaping. Few areas of natural vegetation occur within or immediately adjacent to the proposed project area. With the exception of some old trees that potentially pre-date urban development in the area, the vegetation encountered during the field reconnaissance was secondary growth following various types of man-made disturbances.

Unmaintained vegetation within or immediately adjacent to the proposed project area included small woodlots and open undeveloped areas (exhibiting sapling-shrub and prairie-type vegetation). The dominant vegetation observed in these areas consisted of a mix of native and non-native woody and herbaceous species. Overstory species included sugarberry (*Celtis laevigata*), American elm (*Ulmus americana*), cedar elm (*Ulmus crassifolia*), bois d'arc (*Maclura pomifera*), box-elder (*Acer negundo*), pecan (*Carya illinoensis*), eastern cottonwood (*Populus deltoides*), black willow (*Salix nigra*), live oak (*Quercus fusiformis*), Shumard's oak (*Quercus shumardii*), mesquite (*Prosopis glandulosa*), and China-berry (*Melia azedarach*). Understory species included Western soapberry (*Sapindus saponaria*), gum bumelia (*Bumelia lanuginosa*),

white mulberry (*Morus alba*), deciduous holly (*Ilex decidua*), yaupon (*Ilex vomitoria*), Chinese privet (*Ligustrum sinense*), saw greenbrier (*Smilax bona-nox*), common greenbrier (*Smilax rotundifolia*), Carolina coral berry (*Cocculus carolinus*), grape (*Vitis spp.*), Japanese honeysuckle (*Lonicera japonica*), and seedling and saplings of the overstory species. Herbaceous vegetation included Johnson grass (*Sorghum halepense*), Bermuda grass (*Cynodon dactylon*), perennial rye grass (*Lolium perenne*), little bluestem (*Schizachyrium scoparium*), windmill grass (*Chloris verticillata*), Southern dewberry (*Rubus trivialis*), wild mustard (*Brassica juncea*), common sunflower (*Helianthus annuus*), giant ragweed (*Ambrosia trifida*), annual ragweed (*Ambrosia artemisiifolia*), western ragweed (*Ambrosia psilostachya*), giant goldenrod (*Solidago gigantea*), and Canada goldenrod (*Solidago canadensis*).

No Build Alternative

Implementation of the No Build Alternative would not impact native and non-native vegetation in the proposed project area. If the No Build Alternative were implemented, the existing facilities and clear zones would be mowed and maintained at the current maintenance intervals. The wildlife habitat in the unmaintained sections of the existing ROW would change with normal biological succession. The No Build Alternative would not result in any conversion of land to transportation use.

Build Alternative

Field surveys of vegetation in the proposed project corridor showed that the vegetation within the existing and proposed ROW is more consistent with a predominantly urban environment, interspersed with remnants of pre-urbanization woodland scrub-shrub and prairie-type vegetation to a limited extent.

Nearly all of the vegetation (86.2 percent) within existing and proposed ROW is mowed and maintained grassland, at times interspersed with a variety of broadleaf herbaceous plants. The dominant species throughout the ROW is Bermuda grass. The most commonly occurring associated grass species observed include Johnson grass, little bluestem, windmill grass, and silver bluestem (*Bothriochloa laguroides*). Common forbs identified in the ROW are western ragweed, giant ragweed, and annual ragweed. Additional broadleaf herbaceous plants occasionally observed are nightshade species (*Solanum spp.*), Canada goldenrod, numerous aster species (*Aster spp.*), common sunflower, and Southern dewberry. Small areas of mature landscape trees or naturally occurring trees that have been incorporated into urban landscaping are present sporadically along the length of the proposed project corridor. Understory woody and herbaceous vegetation consists of maintained shrubs species such as yaupon and deciduous holly and landscaping grasses such as Bermuda grass and St. Augustine grass (*Stenotaphrum secundatum*).

Woody vegetation comprises the remainder of the proposed project corridor (13.8 percent) and includes upland woodland/landscaped trees, one riparian area, and areas of scattered tree/scrubby/sapling tree and shrub vegetation (unmaintained). Areas of mature landscape trees or naturally occurring trees have been incorporated into urban landscaping. Throughout the proposed project corridor, portions are dominated by urban landscaping trees in the overstory and maintained woody and herbaceous vegetation in the understory. American elm, cedar elm, live oak, pecan, sugarberry, and crape myrtle (*Lagerstromia indica*) comprise a majority of the urban woodland landscape component. Small fragmented woodlots are also common. The various scattered, fragmented woodlots are comprised predominantly of cedar elm, American elm, ash (*Fraxinus spp.*), pecan, cottonwood, bois d'arc, live oak, sugarberry, and Western soapberry in the overstory. Gum bumelia, Chinese privet, rough-leaf dogwood, Chinese tallow

(*Sapium sebiferum*), and numerous saplings of overstory species dominate the understory. In addition to the tree species previously mentioned, other occasionally occurring trees include, Chinese pistache (*Pistachia chinensis*), Eastern red cedar (*Juniperus virginiana*), Bradford pear (*Pyrus calleryana*), post oak (*Quercus falcata*), and Buford holly (*Ilex cornuta*). **Figure 4** illustrates the specific locations of the wooded areas along the length of the proposed project.

According to the design engineer, all the vegetation within the existing and proposed ROW would be impacted. These impacts are provided in **Table 18** and are associated with clearing of existing vegetation cover as required for the construction of the travel lanes, frontage roads, ramps, connectors, safety clear zones, and bridges. The woody and riparian vegetation would be permanently impacted due to not only the aforementioned activities, but additionally by construction phasing, storage, and staging activities. The impacts are summarized separately for areas within the proposed ROW and for areas within existing ROW. Refer to **Figure 16** for the Project Area Photographs.

Table 18: Vegetation Impacts				
Habitat Type	Approximate Acres Within Existing ROW	Approximate Acres Within Proposed ROW	Total Acreage	% of Total Impacts
Maintained Vegetation	183.22	40.83	224.05	86.2
Wooded Area Vegetation ¹	21.51	12.44	33.95	13.1
Riparian Vegetation	1.33	0.42	1.75	0.7
Total	206.06	53.69	259.75	100%
¹ Wooded area vegetation is comprised of areas dominated by mature and/or sapling vegetation, and includes upland/landscaped areas, and unmaintained vegetation.				

Unusual habitat features as outlined in the TxDOT-TPWD Memorandum of Agreement (MOA) for the *Finalization of the 1998 Memorandum of Understanding Concerning Habitat Descriptions and Mitigation*, were observed in areas along the proposed project corridor that are expected to be impacted by the proposed project. The only “special habitat features” (as defined in the MOA) occurring in the study area are water bodies. The following paragraphs provide detailed descriptions of the unusual and special habitat features. The estimated acreage associated with each of these features is included within the acreage estimates and aerial coverage percentages in **Table 18**.

Unmaintained upland vegetation: Vacant unmaintained land within the existing and proposed ROW is comprised of upland wooded areas. These wooded areas contain some large trees, but are generally dominated by scrubby tree growth indicating some disturbance to these areas in the past. The unmaintained vegetation primarily consists of small diameter sapling/scrub species including cedar elm, box-elder, white mulberry, Western soapberry, Chinese tallow, cottonwood, silktree (*Albizia julibrissin*), sugarberry, live oak, Shumard oak, and pine (*Pinus sp.*). However, three live oak and four pecan trees that each exhibit a dbh of 20 inches are scattered among these areas as well as one American elm with a 24-inch dbh, bois d’arc ranging from saplings to 48-inches in dbh, and cottonwoods ranging from 16 to 18 inches in dbh. However, these areas are generally dominated by scrub/sapling species that range up to approximately 6 inches in dbh. The understory consists of predominately saw greenbrier, Japanese honeysuckle (*Lonicera japonica*), poison ivy (*Toxicodendron radicans*), and sparse herbaceous vegetation previously mentioned. Areas of unmaintained vegetation of various sizes as defined in the MOA are interspersed along the length of the proposed project. **Figure 4** illustrates the specific locations of these wooded areas along the length of the proposed project.

An area north of Northside Drive between IH 35W and the Calvary School exhibits trees 40 to 60 feet in height with a canopy cover of 45 percent. Overstory species include a relatively equal distribution of cedar elm, American elm, pecan, green ash, sugarberry, box elder, bois d'arc, willow oak (*Quercus phellos*), and china-berry. The understory consists of Bermuda grass, giant goldenrod, Virginia wildrye, saw greenbrier, and honey locust saplings.

An approximate 3-acre wooded area exists west of IH 35W between East Belknap Street to the north and East Weatherford Street to the south. The overstory vegetation consists of mature trees including live oak (10 percent), pecan (10 percent), sugarberry (50 percent), bois d'arc (10 percent), Western soapberry (10 percent), and gum bumelia (10 percent). The understory consists of overstory saplings, Chinese privet, giant reed (in some areas), grape, Carolina coral bead, common greenbrier, and saw greenbrier. Bermuda grass, Johnson grass, and giant ragweed were the dominant herbaceous species. Individual live oak trees ranging from 20 to 24-inches in dbh, sugarberry ranging from saplings to 18-inch in dbh, and bois d'arc ranging from saplings to 18-inch in dbh were observed in this area. Canopy coverage of this area is approximately 70 percent.

In an area south of East 4th Street and west of IH 35W, the vegetation within the semi-triangular area bounded by railroad tracks is dominated by Western soapberry (100 percent) with box-elder and cedar elm saplings comprising the understory. Giant ragweed was the dominant herbaceous vegetation along the edges of this area. Canopy coverage of this wooded area is 80 percent. Tree height ranges from saplings (as low as 1-foot) to mature 60-foot high trees.

The vegetation within the area south of the railroad and north of Spur 280 consists of patches of woodlands to the north and west and open areas to the south and east. The woodland area's overstory consists of cedar elm (20 percent), Eastern red cedar (60 percent), Western soapberry (10 percent), and bois d'arc (10 percent). Chinese privet, saw greenbrier, common greenbrier, and overstory saplings comprise the understory. Canopy coverage is approximately 60 percent. Trees in this area range from 1 foot to 50 feet tall. Bermuda grass, Johnson grass, perennial rye grass, little bluestem, Canada goldenrod, common sunflower, and nightshade species were observed in the more open areas.

Two areas of woody vegetation are south of Meacham Boulevard on the west side of IH 35W; Sylvania Cross Drive is almost directly east of one area across IH 35W. The second area is approximately 1,000 feet south of the first area; both areas are depicted on **Figure 4, Sheet 4**. The portion of the vegetation along the existing IH 35W ROW varies from 50 to 70 feet wide and is approximately 620 feet in length (approximately 0.97 acre). The vegetation primarily consists of a row of mature, cultivated bois d'arc with other trees. Five of these trees (three eastern cottonwoods, one post oak, and one American elm) measured greater than 20 inches in dbh. Sugarberry is the dominant species with gum bumelia, saw greenbrier, and grape scattered throughout the understory. Another smaller area south of the aforementioned area comprises approximately 0.17 acre and also contains two American elms with dbh of 20 inches or greater. In summary, sugarberry (60 percent), bois d'arc (20 percent), and American elm (10 percent) dominate the overstory with 10 percent consisting of other overstory and understory species. Trees range in height from 1 foot saplings to 60 foot mature trees.

Riparian vegetation: One riparian area along Ham Branch bisects a woodlot (1.23 acres) bounded by IH 35W to the west, a railroad to the north and North-South Service Road East to the east. The overstory vegetation of this woodlot/riparian area consists of mature trees including American elm (40 percent) ranging from saplings to 21-inch dbh, sugarberry (30 percent) ranging from saplings to 16-inch dbh, black willow (10 percent) ranging from

saplings to a multi-trunked 30 inch dbh, and green ash (10 percent) ranging from saplings to 6 inches dbh. Silk tree, white mulberry, and box-elder comprise the remaining 10 percent. Chinese privet, saw greenbrier, common greenbrier, grape, poison ivy, Virginia wild rye (*Elymus virginiana*) and overstory saplings such as sugarberry, black willow and white mulberry were observed in the understory. A 0.52 acre riparian area of similar composition exists on the west side of IH 35W. These riparian areas (collectively 1.75 acres, but divided by IH 35W) would be considered good quality due to the biodiversity and value as habitat for wildlife. **Figure 4, Sheet 16** illustrates the location of these areas. Canopy coverage is approximately 70 percent. Trees comprising these riparian areas range in height from 1 foot saplings to 60-foot tall mature trees.

Large trees: Some large trees occur within the existing and proposed ROW. These trees stand out because they are relatively isolated or are taller than other trees that may be nearby. These trees were either left in place when IH 35W was constructed or planted shortly thereafter. The species represented by these large trees include cottonwood (*Populus deltoids*), post oak (*Quercus stellata*), American elm (*Ulmus americana*), pecan (*Carya illinoensis*), live oak (*Quercus virginiana*), bois d'arc (*Maclura pomifera*), sugarberry (*Celtis laevigata*), sycamore (*Platanus occidentalis*), and cedar elm (*Ulmus crassifolia*). These trees have at least a 20-inch dbh (this includes trees with multiple stems at dbh).

Water bodies: The proposed project crosses five water bodies and one abutting wetland:

- One perennial stream crossed twice – West Fork Trinity River;
- One unnamed tributary to the West Fork Trinity River;
- One unnamed tributary to the West Fork Trinity River – no impacts; and,
- One unnamed tributary to Fossil Creek and abutting wetland area.

Each water body is identified on **Figures 2 and 4**. Permanent impacts within the ordinary high water mark (OHWM) are expected to occur within four of these water bodies during roadway, culvert, and bridge widening and construction. All waters of the U.S. and their expected impacts are presented in **Table 21**.

Mitigation for the loss of riparian habitat and other unique or special features (large trees in woodland habitat) would be in accordance with Provision (4) (A)(ii) of the MOA between TxDOT and TPWD. This states that some habitats may be given consideration for non-regulatory mitigation during project planning (at the TxDOT District's discretion). Habitats given consideration for non-regulatory mitigation during project planning include the following:

- Habitat for federal candidate species (impacted by the proposed project) if mitigation would assist in prevention of the listing of the species;
- Rare vegetation series (S1, S2, or S3) that also provides habitat for a state listed species;
- All vegetation communities listed as S1 or S2, regardless of whether or not the series in question provide habitat for state-listed species;
- Bottomland hardwoods, native prairies and riparian sites; and,
- Any other habitat feature considered locally important that the TxDOT District chooses to consider.

In accordance with the MOA, vegetative impacts qualifying for compensatory mitigation consideration are the approximately 1.75 acres of riparian vegetation. During construction,

TxDOT would minimize the amount of wildlife habitat disturbed. Riparian mitigation would occur at an off-site mitigation bank. The specific mitigation bank has not been determined but would be selected from a list that serves the Fort Worth District. During final design, unmaintained, riparian, woodland vegetation or unusually large trees may not require clearing if they are beyond the safety clear zone, or in areas where guard fencing may be used, or if other design options are found practicable for preserving these features. Every effort would be made to avoid and/or minimize impacts to the aforementioned areas.

Coordination with TPWD was initiated in August 2009. **Appendix D** provides a copy of TPWD's comments pertaining to the proposed project, TxDOT's response to these comments, and further coordination efforts due to design changes.

Fish and Wildlife Coordination Act (FWCA)

Section 404 General Permits would be utilized for the proposed project; therefore, the U.S. Fish and Wildlife Service (USFWS) considers FWCA coordination to have been completed as part of the NWP's review last authorized and reissued in 2012.

Invasive Species/Beneficial Landscaping

Permanent soil erosion control features would be constructed as soon as feasible during the early stages of construction through proper sodding and/or seeding techniques. Disturbed areas would be restored and stabilized as soon as the construction schedule permits and temporary sodding would be considered where large areas of disturbed ground would be left bare for a considerable length of time. In accordance with EO 13112, *Invasive Species* and the Executive Memorandum on Beneficial Landscaping, seeding and replanting with TxDOT approved seeding specifications that are in compliance with EO 13112 would be done where possible. Moreover, abutting turf grasses within the ROW are expected to re-establish throughout the proposed project length. Soil disturbance would be minimized to ensure that invasive species would not establish in the ROW.

2. Threatened and Endangered Species

No Build Alternative

Implementation of the No Build Alternative would have no effect on any federally listed species, its habitat, or designated critical habitat, nor would it adversely affect any state listed species.

Build Alternative

The Natural Diversity Database (NDD), available through the TPWD, was consulted on November 1, 2011, to determine if any threatened/endangered or rare species, natural plant communities, managed areas, or special features had been recorded within the proposed project area. According to NDD data, one sighting has occurred within 1.5 miles of the proposed project. A rookery (element of occurrence identification [EO ID] 3282) is located near the southern limit of the proposed project, on the west side of IH 35W. It is described as a nesting colony of Cattle Egret (*Bubulcus ibis*), Little Blue Heron (*Egretta caerulea*), Great Egret (*Ardea alba*), Black-Crowned Night-Heron (*Nycticorax nycticorax*), and Snowy Egret (*Egretta thula*). The rookery is bordered by Spur 280/5th Street to the south and the UPRR to the east. The western limits of the proposed improvements along Belknap Street and Weatherford Street, are within the boundaries of the rookery. However, the directions according to the EO Record, state that the rookery is located in a wooded lot near an industrial plant in the city; at the intersection of Belknap and Main Streets, along the West Fork Trinity River. This location is outside the limits of the proposed improvements; therefore, it is not anticipated that the proposed project would impact this community. No additional sightings are reported within 1.5 miles of the

proposed project, and no managed areas are recorded within 1.5 miles of the proposed project. Sightings reported greater than 1.5 miles, but less than 10 miles, from the proposed project are listed below in **Table 19**. The proposed project would not impact these communities. One managed area is recorded greater than 1.5 miles, but less than 10 miles, from the proposed project. The Benbrook Lake (USACE) Managed Area is located approximately 9.3 miles southwest of the proposed project. The proposed project would not impact this managed area. Due to the limitations of NDD information, the results of the database search cannot be interpreted as presence/absence data.

Table 19: NDD Data Search Results				
EO Id	Scientific Name	Common Name	Federal Status	State Status
2127	<i>Quercus stellata-Quercus marilandica series</i>	Post oak-blackjack oak series		
549	<i>Rookery</i>			
769	<i>Rookery</i>			
7373	<i>Rookery</i>			
5905	<i>Schizachyrium scoparium-Sorghastrum nutans series</i>	Little bluestem-Indiangrass series		
3396	<i>Thamnophis sirtalis annectens</i>	Texas garter snake	—	
“—” – No designation occurring within identified county “blank” – Rare, but with no regulatory listing status Source: TPWD TxNDD, November 1, 2011				

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

A review of state and federal lists of threatened and endangered species for Tarrant County was performed. On December 18 and 19, 2008 and March 3, 2011, qualified biologists conducted field reconnaissance of the project area, identifying potential habitat and noting the presence of wildlife. The federal and state-listed threatened and endangered species of Tarrant County are shown in **Table 20**. A discussion of the species that might be affected or impacted by the Build Alternative, if implemented, follows the table.

Table 20: Federal & State Listed Threatened/Endangered Species, and Texas Parks and Wildlife Department's Species of Concern, Tarrant County

SPECIES	FEDERAL STATUS	STATE STATUS	DESCRIPTION OF SUITABLE HABITAT	HABITAT PRESENT	SPECIES EFFECT	PERTINENT PROJECT INFORMATION
BIRDS						
American Peregrine Falcon <i>Falco peregrinus anatum</i>	DL	T	Year-round resident and local breeder in west Texas, nests in tall cliff eyries; also, migrant across state from more northern breeding areas in U.S. and Canada, winters along coast and farther south; occupies wide range of habitats during migration, including urban, concentrations along coast and barrier islands; low-altitude migrant, stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands.	No	No effect	There is no habitat present such as cliff eyries.
Arctic Peregrine Falcon <i>Falco peregrinus tundrius</i>	DL	—	Migrant throughout state from subspecies' far northern breeding range, winters along coast and farther south; occupies wide range of habitats during migration, including urban, concentrations along coast and barrier islands; low-altitude migrant, stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands.	No	No effect	There is no habitat present such as lake shores, coastlines, and barrier islands.
Bald Eagle <i>Haliaeetus leucocephalus</i>	DL	T	Found primarily near rivers and large lakes; nests in tall trees or on cliffs near water; communally roosts, especially in winter; hunts live prey, scavenges, and pirates food from other birds.	No	No effect	There is no habitat present such as large lakes and cliffs.
Henslow's Sparrow <i>Ammodramus henslowii</i>	—	—	Wintering individuals (not flocks) found in weedy fields or cut-over areas where lots of bunch grasses occur along with vines and brambles; a key component is bare ground for running/walking.	No	No impact	There is no habitat present such as bunch grasses with vines and brambles.

Table 20: Federal & State Listed Threatened/Endangered Species, and Texas Parks and Wildlife Department's Species of Concern, Tarrant County

SPECIES	FEDERAL STATUS	STATE STATUS	DESCRIPTION OF SUITABLE HABITAT	HABITAT PRESENT	SPECIES EFFECT	PERTINENT PROJECT INFORMATION
Interior Least Tern <i>Sterna antillarum athalassos</i>	LE	E	Subspecies is listed only when inland (more than 50 miles from a coastline); nests along sand and gravel bars within braided streams, rivers; also know to nest on man-made structures (inland beaches, wastewater treatment plants, gravel mines, etc); eats small fish and crustaceans, when breeding forages within a few hundred feet of colony.	No	No effect	There is no habitat present such as gravel barriers within braided streams.
Peregrine Falcon <i>Falco peregrinus</i>	DL	T	Both subspecies migrate across the state from more northern breeding areas in U.S. and Canada to winter along coast and farther south; subspecies (<i>F. p. anatum</i>) is also a resident breeder in west Texas; the two subspecies' listing statuses differ, <i>F.p. tundrius</i> is no longer listed in Texas; but because the subspecies are not easily distinguishable at a distance, reference is generally made only to the species level; see subspecies for habitat.	No	No effect	There is no habitat present such as cliff eyries.
Sprague's Pipit <i>Anthus spragueii</i>	C	—	Only in Texas during migration and winter, mid September to early April; short to medium distance, diurnal migrant; strongly tied to native upland prairie, can be locally common in coastal grasslands, uncommon to rare further west; sensitive to patch size and avoids edges.	No	No effect	There is no habitat present, such as native upland prairies and coastal grasslands. No impact.
Western Burrowing Owl <i>Athene cunicularia hypugaea</i>	—	—	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.	No	No impact	Species is primarily found in the western 2/3 of the state.

Table 20: Federal & State Listed Threatened/Endangered Species, and Texas Parks and Wildlife Department's Species of Concern, Tarrant County

SPECIES	FEDERAL STATUS	STATE STATUS	DESCRIPTION OF SUITABLE HABITAT	HABITAT PRESENT	SPECIES EFFECT	PERTINENT PROJECT INFORMATION
Whooping Crane <i>Grus americana</i>	LE	E	Potential migrant via plains throughout most of state to coast; winters in coastal marshes of Aransas, Calhoun, and Refugio counties.	No	No effect	There is no habitat present, such as coastal marshes.
FISHES						
Shovelnose sturgeon <i>Scaphirhynchus platyrhynchus</i>	—	T	Open, flowing channels with bottoms of sand or gravel; spawns over gravel or rocks in an area with a fast current; Red River below reservoir and rare occurrence in Rio Grande.	No	No impact	There is no habitat present.
MAMMALS						
Gray wolf <i>Canis lupus</i>	LE	E	Extirpated; formerly known throughout the western two-thirds of the state in forests, brushlands, or grasslands.	No	No effect	Extirpated species, last known occurrences in Texas was Brewster County in 1970.
Plains spotted skunk <i>Spilogale putorius interrupta</i>	—	—	Catholic; open fields, prairies, croplands, fencerows, farmyards, forest edges, and woodlands; prefers wooded, brushy areas and tallgrass prairie.	Yes	No impact	Some suitable habitat noted; however, no known occurrences have been documented in Tarrant County.
Red wolf <i>Canis rufus</i>	LE	E	Extirpated; formerly known throughout eastern half of Texas in brushy and forested areas, as well as coastal prairies.	No	No effect	There is no habitat present.
MOLLUSKS						
Fawnsfoot <i>Truncilla donaciformis</i>	—	—	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	May impact	Individuals could be adversely impacted during construction; however, best management practices (BMPs) would minimize potential impacts. There is potential habitat present such as creeks, rivers, or reservoirs.

Table 20: Federal & State Listed Threatened/Endangered Species, and Texas Parks and Wildlife Department's Species of Concern, Tarrant County

SPECIES	FEDERAL STATUS	STATE STATUS	DESCRIPTION OF SUITABLE HABITAT	HABITAT PRESENT	SPECIES EFFECT	PERTINENT PROJECT INFORMATION
Little spectaclecase <i>Villosa lienosa</i>	—	—	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	May impact	Individuals could be adversely impacted during construction; however, BMPs would minimize potential impacts. There is potential habitat present such as creeks, rivers, or reservoirs.
Louisiana pigtoe <i>Pleurobema riddellii</i>	—	T	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	May impact	Individuals could be adversely impacted during construction; however, BMPs would minimize potential impacts. There is potential habitat present such as streams and moderate sized rivers.
Texas heelsplitter <i>Potamilus amphichaenus</i>	—	T	Quiet waters in mud or sand and also in reservoirs. Sabine, Neches, and Trinity River basins.	Yes	May impact	Individuals could be adversely impacted during construction; however, BMPs would minimize potential impacts. There is potential habitat present such as quiet perennial streams.
REPTILES						
Texas garter snake <i>Thamnophis sirtalis annectens</i>	—	—	Wet or moist microhabitats are conducive to the species occurrence, but is not necessarily restricted to them; hibernates underground or in or under surface cover; breeds March-August.	Yes	May impact	There is potential habitat present such as wet or moist microhabitats within the construction limits of the Build Alternative.
Texas horned lizard <i>Phrynosoma cornutum</i>	—	T	Open, arid and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush or scrubby trees; soil may vary in texture from sandy to rocky; burrows into soil, enters rodent burrows, or hides under rock when inactive; breeds March-September.	No	No impact	There is no habitat present such as open areas with sparse vegetation within the construction limits of the Build Alternative.

Table 20: Federal & State Listed Threatened/Endangered Species, and Texas Parks and Wildlife Department's Species of Concern, Tarrant County						
SPECIES	FEDERAL STATUS	STATE STATUS	DESCRIPTION OF SUITABLE HABITAT	HABITAT PRESENT	SPECIES EFFECT	PERTINENT PROJECT INFORMATION
Timber/ Canebrake rattlesnake <i>Crotalus horridus</i>	—	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	No impact	There is potential habitat present such as floodplains and riparian habitat.
PLANTS						
Glen Rose yucca <i>Yucca necopina</i>	—	—	Grasslands on sandy soils; flowering April-June(?), also found in limestone bedrock, clayey soil on top of limestone, and gravelly limestone alluvium.	No	No impact	There is no habitat present such as clayey soil on top of limestone.
LE/LT – Federally Listed Endangered/Threatened C – Federal Candidate for Listing DL – Federally Delisted E, T – State Listed Endangered/Threatened “—” – Rare or Species of Concern, but no regulatory listing status						
Sources: USFWS, TPWD Wildlife Division, Diversity and Habitat Assessment Programs, County Lists of Texas Special Species, and Field Visit (December 18 and 19, 2008, and March 3, 2011). Table Version: 1-4-2012						

After reviewing habitat requirements and conducting a field reconnaissance, it was determined that the proposed Build Alternative would have no effect on any federally listed species, its habitat, or designated critical habitat. However, construction of the Build Alternative may impact the following state-listed or species of concern and their habitats as shown in **Table 20**.

Mollusks

No mollusks or broken shells were observed during the field reconnaissance of Little Fossil Creek, West Fork Trinity River, and their associated tributaries within the limits of the proposed Build Alternative; however, a comprehensive biological survey for the presence of mollusks was not conducted. Based on the mollusk habitat requirements shown in **Table 20**, it is assumed that all of the creeks and tributaries shown in **Table 21** could contain habitat capable of supporting the following mollusks:

- Fawnsfoot
- Little spectaclecase
- Louisiana pigtoe
- Texas heelsplitter

During construction of the proposed Build Alternative, if implemented, there is the potential for temporary impacts to the mollusk habitat and any mollusks that may be present from adverse water quality conditions due to construction area storm water runoff. However, BMPs would minimize potential impacts. Construction of culverts and bridges would be in a method conducive for the preservation of the aforementioned mollusk species. In order to protect mussel species from permanent impacts, requirements would consist of either conducting a survey to determine the presence of the species and, if present, relocating the species and monitoring their survival for five years or prohibiting dewatering and equipment crossings within

the West Fork Trinity River. No permanent impacts to these species would be forthcoming as a result of the proposed project.

If the proposed Build Alternative is implemented, in addition to avoidance and minimization, mitigation for temporary project impacts that might occur to mollusk habitats would consist of the water quality measures discussed in **Section V.B.5. - Water Resources**. The proposed project Storm Water Pollution Prevention Plan (SW3P) would specify temporary and permanent erosion control measures, as well as drainage and discharge control. The SW3P would include erosion, sediment, and post-construction Total Suspended Solids (TSS) control BMPs such as the application of temporary vegetation for erosion control, installation of silt fences combined with rock berms for sedimentation control, and installation of vegetative filter strips and vegetation lined drainage ditches control post-construction TSS. To further protect water quality, soil disturbances would be limited to minimize excessive erosion and avoid sedimentation outside of the ROW and drainage easements. The existing vegetation would be preserved wherever possible.

The contractor would take appropriate measures to prevent, minimize, and control spillage of hazardous materials in the construction staging area so that these materials do not migrate into creeks and streams. Efforts would also be made to prevent permanent water pollution by reducing fertilizer and pesticide use during the installation and maintenance of landscaping. These water quality measures would minimize impacts to mollusk habitats.

Texas Garter Snake

No Texas garter snakes were observed during the field reconnaissance of the proposed Build Alternative; however, a comprehensive biological survey for the presence of the Texas garter snake was not conducted. Based on the Texas garter snake habitat requirements shown in **Table 20**, all of the water crossings shown in **Table 21** could contain wet or moist microhabitats that might serve as Texas garter snake habitat. Therefore, prior to construction at these locations, the engineer will ensure the construction team is able to properly identify the snake and avoid injury to the species at all costs. Should the Texas garter snake be observed, construction activities would stop at that location and the TxDOT District Environmental Biologist would be notified immediately.

During construction of the proposed Build Alternative, if implemented, there would be temporary impacts to streams which could serve as Texas garter snake habitat. After construction, the impacted areas of these streams would be returned to preconstruction contours and any Texas garter snake habitat would reestablish itself. There are also ample streams outside of the proposed construction limits of the proposed Build Alternative that could serve as Texas garter snake habitat to replace the temporarily impacted habitat.

Timber/Canebrake Rattlesnake

No timber/canebrake rattlesnakes were observed during the field reconnaissance within the limits of the proposed Build Alternative; however, a comprehensive biological survey for the presence of timber/canebrake rattlesnake was not conducted. Based on the timber/canebrake rattlesnake's habitat requirements shown in **Table 20**, the proposed project has the potential to contain timber/canebrake rattlesnake habitat (floodplains and riparian zones). Therefore, prior to construction at these locations, the engineer will ensure the construction team is able to properly identify the snake and avoid injury to the species at all costs. Should the timber/canebrake rattlesnake be observed, construction activities would stop at that location and the TxDOT District Environmental Biologist would be notified immediately.

During construction of the proposed Build Alternative, if implemented, there would be temporary impacts to streams which could serve as timber/canebrake rattlesnake habitat. After construction, the impacted areas of these streams would be returned to preconstruction contours and any timber/canebrake rattlesnake habitat would reestablish itself. There are also ample streams and wetlands outside of the proposed construction limits of the proposed Build Alternative that could serve as time/canebrake rattlesnake habitat to replace the permanently impacted habitat.

3. Migratory Birds

No Build Alternative

Implementation of the No Build Alternative would have no effect on migratory birds, their nests, eggs, or young.

Build Alternative

The Migratory Bird Treaty Act of 1918 states that it is unlawful to kill, capture, collect, possess, buy, sell, trade, or transport any migratory bird, nest, young, feather, or egg in part or in whole, without a federal permit issued in accordance within the Act's policies and regulations. Migratory patterns would not be affected by the proposed project. Bird nests were observed under both SH 121 bridges crossing the West Fork Trinity River. The bridges would be inspected for nests before construction is initiated. In the event that migratory birds are encountered on-site during project construction, adverse impacts on protected birds, active nests, eggs, and/or young would be avoided. The contractor would remove all old migratory bird nests from October 1 to February 15 from any structure where work will be done. In addition, the contractor would be prepared to prevent migratory birds from building nests between February 15 and October 1, per the Environmental Permits, Issues, and Commitments (EPIC) plans.

4. Farmland Issues

No Build Alternative

Implementation of the No Build Alternative would require no displacement, relocation, or division of farm operations.

Build Alternative

Implementation of the Build Alternative would require no displacement, relocation or division of farm operations. Additional ROW for the proposed project is developed, urbanized, or zoned for urban use; therefore, the proposed project is exempt from the requirements of the Farmland Protection Policy Act and requires no coordination with the NRCS.

5. Water Resources

No Build Alternative

Implementation of the No Build Alternative would have no effect on lakes, rivers, streams, existing water quality, threatened and impaired waters, floodplains, or wetlands. This alternative would have no channel impacts. No additional permitting would be required.

Build Alternative

The analysis of implementing the Build Alternative on lakes, rivers, streams, water quality, threatened and impaired waters, floodplains, wetlands, channel impacts, and permitting is presented in the following sections.

a. Watershed/Basin Information

Storm water runoff from the proposed project would flow into Little Fossil Creek, an unnamed tributary of Little Fossil Creek, an unnamed tributary to the West Fork Trinity River, the West Fork Trinity River, and Ham Branch. According to the Texas Commission on Environmental Quality (TCEQ) Water Quality Inventory, all branches, creeks, and streams that cross the proposed project, are located in Segment 0806 (West Fork Trinity River below Lake Worth). According to the 2010 Clean Water Act (CWA) Section 303(d) list, Segment 0806 is impaired due to dioxin and polychlorinated biphenyls in edible tissue. The proposed project is within 5 miles upstream of the threatened or impaired segments. The proposed project would not contribute to the constituents of concern. BMPs would be in place to minimize the runoff from the proposed project into the impaired water body. Coordination with TCEQ regarding the proposed project was conducted and the resulting letter is included in **Appendix D**.

b. Federal Emergency Management Agency Floodplain Information

According to the USGS 7.5-minute topographic quadrangle map (Haltom City, Texas) and the Federal Emergency Management Agency Flood Insurance Rate Maps for Tarrant County, Texas and Incorporated Areas (Map Panel Nos. 48439C0180K, 48439C0185K, 48439C0190K, 48439C0195K, 48439C0305K, and 48439C0310K [September 25, 2009]), the proposed project crosses four water bodies and five flood zones (includes West Fork Trinity River twice). According to National Flood Insurance Program (NFIP), Zone A and Zone AE are special flood hazard areas inundated by the 100-year level. No base flood elevations have been determined for Zone A. Base flood elevations have been determined for Zone AE.

IH 35W water bodies and their associated flood zones (from north to south):

- Little Fossil Creek, north of Meacham Boulevard is located in Zones A and AE.
- Unnamed tributary of Little Fossil creek, south of Meacham Boulevard, is located in Zone A.
- West Fork Trinity River, south of Yucca Avenue, is located in Zone AE.
- West Fork Trinity River, at SH 121, is located in Zone AE.
- Ham Branch, south of 4th Street, is located in Zone A.

The hydraulic design practices for the proposed project would be in accordance with current TxDOT and FHWA design policies and standards. The highway facility would permit conveyance of the 100-year flood levels, inundation of the roadway being acceptable, without causing substantial damage to the roadway, stream, or other property. Tarrant County and the City of Fort Worth are participants in the NFIP. A portion of the proposed project is within the Regulated Floodway Zone. The proposed project would not raise the base floodplain elevation to a level which would violate the applicable floodplain regulations or ordinances; therefore, no policies or procedures related to floodplain encroachment are required per 23 CFR 650. Participants of the NFIP are required to regulate development in the 100-year floodplain in exchange for the availability of federal flood insurance, disaster insurance, and federally backed loans for the community. This responsibility falls to the local floodplain administrator who issues permits (where applicable) and keeps records of all development in the 100-year floodplain.

c. Trinity River Corridor Development Certificate

The project is within the Trinity River Corridor Development Regulatory Zone and a Corridor Development Certificate would be required.

d. Waters of the U.S. (including Wetlands) and Channel Impacts

Pursuant to EO 11990 (Protection of Wetlands) and Section 404 of the CWA, a field reconnaissance was conducted to identify waters of the U.S. within the proposed project limits. According to the USACE, the Federal agency having authority over waters of the U.S., wetlands must possess three essential characteristics. Under normal circumstances, these characteristics include the presence of hydrophytic vegetation, wetland hydrology, and hydric soils.

Jurisdictional areas within the proposed project ROW and easements were identified, characterized, and delineated in order to evaluate the jurisdictional status of the locations in question. Five areas were identified containing five jurisdictional waters and one jurisdictional wetland.

The proposed project crosses four waters of the U.S. at five locations (crosses the West Fork Trinity River twice). One jurisdictional wetland was delineated totaling 0.29 acre. The locations of the wetland data points are presented in **Figure 4** and the associated USACE Wetland Determination Data Forms and Waters of the U.S. Photographs are included in **Appendix E**. Potential impacts to these areas are detailed in **Table 21**.

Crossing No.	Type of Potential Impact	Name	Crossing Type	Acres within ROW	Acres Approx. Permanent Impacts	Proposed Permit
1	Water	Unnamed Tributary Fossil Creek	Single and complete	0.09	0.09	NWP 14 with a PCN
	Wetland	Abutting wetland	Associated with Water 1	0.29	0.29	NWP 14 with a PCN
2	Water	Unnamed Tributary West Fork Trinity River	Single and complete	0.03	0.03	NWP 14
3	Water	West Fork Trinity River	Single and complete	5.50	0.02	NWP 25/RGP
4	Water	West Fork Trinity River	Single and complete	5.10	0.02	NWP 25/RGP
5	Water	Ham Branch	Single and complete	0.52	0.01	NWP 25
NWP – Nationwide Permit PCN – Preconstruction Notification RGP – Regional General Permit						

Mitigation measures that have been considered include:

- Avoidance, where practicable, by spanning jurisdictional areas with bridges;
- Minimization of impacts by limiting excavation and/or fill quantities; and,
- Compensatory mitigation for impacts would occur onsite when possible.

Permits

Impacts at Crossing Nos. 1 and 2 are authorized under NWP 14 – *Linear Transportation Projects*. Because impacts at Crossing No. 1 exceed the 0.1 acre impact threshold for NWP 14 and there is a discharge in a special aquatic site (the wetland area), a Preconstruction Notification (PCN) would be required for the proposed project corridor. Construction of the bridges over the West Fork Trinity River and levee system (Crossings No. 3 and 4) can be accomplished using Regional General Permit (RGP) 12 – *Modifications and Alterations of Corps of Engineers Projects* in conjunction with the Section 408 approval process or by the use of NWP 25 – *Structural Discharges*. Crossing No. 5 would be authorized under NWP 25. If temporary fills are needed in the jurisdictional waters then the affected areas would be returned to their pre-existing elevations. Channelization would not be required to construct the proposed project. Compensatory mitigation for Section 404 impacts would be coordinated with the USACE and performed in accordance with the terms of the approved permits.

e. TCEQ Section 401 Best Management Practice

General Condition 21 of the NWP Program requires applicants to comply with Section 401 of the CWA. Compliance with Section 401 requires the use of BMPs to manage water quality on construction sites. Section 401 Water Quality Certification was issued in association with the NWP or RGP as appropriate.

f. Texas Pollutant Discharge Elimination System

Because the proposed project would disturb more than 1 acre, TxDOT would be required to comply with the TCEQ Texas Pollutant Discharge Elimination System (TPDES) General Permit for Construction Activity. The proposed project would disturb more than 5 acres; therefore, a Notice of Intent would be filed with TCEQ stating that TxDOT would have a SW3P in place during construction of the proposed project. This SW3P would utilize the temporary control measures as outlined in TxDOT's manual *Standard Specifications for the Construction and Maintenance of Highways, Streets, and Bridges*. Adverse effects would be minimized by avoiding work by construction equipment directly in the stream channels and/or adjacent areas. No long-term water quality effects are expected as a result of the proposed project.

To minimize impacts to water quality during construction, the proposed project would utilize temporary erosion and sedimentation control practices from TxDOT's manual *Standard Specifications for the Construction and Maintenance of Highways, Streets, and Bridges*. Where appropriate, these temporary erosion and sedimentation control structures would be in place prior to the initiation of construction, and would be maintained throughout the duration of the construction. Clearing of vegetation would be limited and/or phased in, to maintain a natural water quality buffer and minimize the amount of erodible earth exposed at any one time. Upon completion of the earthwork operations, disturbed areas would be restored and reseeded according to the TxDOT's specifications for *Seeding for Erosion Control*.

g. General Bridge Act

The waterways crossed by IH 35W are not navigable waterways. Navigational clearance under the General Bridge Act of 1946, Section 9 of the Rivers and Harbors Act of 1899 (administered by the U.S. Coast Guard [USCG]) and Section 10 of the Rivers and Harbors Act of 1899 (administered by the USACE) is not applicable. Coordination with the USCG (for Section 9 and the Bridge Act) and the USACE (for Section 10) would not be required.

h. Section 402 of the CWA: TPDES, Municipal Separate Storm Sewer System

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

6. Section 408

No Build Alternative

Implementation of the No Build Alternative would have no effect on the Public Works projects.

Build Alternative

The USACE, Fort Worth District and associated non-federal sponsor, TRWD, constructed the existing Fort Worth Floodway, which is a public works project within the USACE Fort Worth District Civil Works Boundary. USACE is responsible for ensuring the integrity and primary function of public works projects are maintained at all times.

The proposed IH 35W project traverses and requires alterations to the Fort Worth Floodway Public Works project at Crossings 3 and 4 (**Table 21**). These proposed alterations require USACE approval. The authority for USACE approval of alterations to public works projects operated and maintained by non-Federal sponsors is 33 USC Section 408. Specifically, 33 USC Section 408 states:

“It shall not be lawful for any person or persons to take possession of or make use of for any purpose, or build upon, alter, deface, destroy, move, injure, obstruct by fastening vessels thereto or otherwise, or in any manner whatever impair the usefulness of any sea wall, bulkhead, jetty, dike, levee, wharf, pier, or other work built by the United States, or any piece of plant, floating or otherwise, used in the construction of such work under the control of the United States, in whole or in part, for the preservation and improvement of any of its navigable waters or to prevent floods, or as boundary marks, tide gauges, surveying stations, buoys, or other established marks, nor remove for ballast or other purposes any stone or other material composing such works: Provided, That the Secretary of the Army may, on the recommendation of the Chief of Engineers, grant permission for the temporary occupation or use of any of the aforementioned public works when in his judgment such occupation or use will not be injurious to the public interest: Provided further, That the Secretary may, on the recommendation of the Chief of Engineers, grant permission for the alteration or permanent occupation or use of any of the aforementioned public works when in the judgment of the Secretary such occupation or use will not be injurious to the public interest and will not impair the usefulness of such work.”

In accordance with 33 USC Section 408, any alteration of a USACE Public Works project requires USACE review and approval to ensure that the alteration does not adversely impact the USACE Public Work. In accordance with 33 CFR Section 230, *Procedures for Implementing NEPA* (Engineering Regulation 200-2-2), a NEPA document must be prepared to address the impacts to the environment as a result of the action. As such USACE will act as a coordinating agency throughout the NEPA process to assess the direct and cumulative impacts from these Proposed Actions on the human and natural environment. A Section 408 document, evaluating the potential impacts to the Public Works projects at Crossings 3 and 4, is provided in **Appendix B**.

Crossing 5, Ham Branch, is part of a USACE Public Works project called the Central City Project. The Central City Project was authorized by Sec 116, PL 108-447 (8 Dec 2004). The

Central City Project is documented in the Final Project Report dated March 2006, and the Final Environmental Impact Statement (FEIS) dated January 2006. The Assistant Secretary of the Army (Civil Works) [ASA (CW)] transmitted his Record of Decision (ROD) via memo to the USACE Director of CW on April 7, 2006. The Central City Project was modified to expand and include the Riverside Oxbow area as a result of a request from the City of Fort Worth on June 22, 2006. The Modified Central City Project is documented in the Final Supplement No.1 to the FEIS in March 2008 and the Final Modified Project Report dated April 2008. The ASA (CW) transmitted his ROD through a memorandum to the USACE Director of CW on May 21, 2008. The documents are posted on the USACE website www.swf.usace.army.mil/pubdata/notices/CentralCity/fseis.asp. The Modified Central City Project includes various sub-projects of which Ham Branch is one that provides hydraulic mitigation (valley storage) and aquatic mitigation.

TxDOT and the USACE have worked together to reduce impacts to the Central City Project. In order to avoid impacts to the Central City Project's valley storage area, the proposed IH 35W northbound frontage road between East 4th Street and the existing levee at Ham Branch has been modified from the original proposed design. It would tie back to the existing frontage road prior to impacting the existing levee clear zone, two proposed bridge bent locations have been modified to fall outside of the levee clear zone, and the vertical clearance at this location is greater than 16.5 feet. A secant wall would not be required. The proposed frontage road and bridge bent locations at Ham Branch would not impact the levee system nor affect the Central City project's valley storage area.

C. Hazardous Materials

No Build Alternative

Under the No Build Alternative for IH 35W, no impacts to hazardous waste/substance are anticipated.

Build Alternative

Pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the Resource Conservation and Recovery Act (RCRA), a preliminary investigation was conducted to identify sites within the proposed project study area which are "at risk" of environmental contamination by hazardous wastes and substances.

Sites considered likely to be contaminated and within the proposed ROW or sites which have the potential to pose a hazard to construction of the Build Alternative are categorized as "high risk". Examples of "high risk" sites include landfills or sites which have a subsurface plume of contamination with the potential to have migrated within the proposed project limits. Sites are categorized as "low risk" if available information indicated that some potential for contamination exists, but the site is not likely to pose a contamination problem to highway construction.

The TxDOT Fort Worth District has procedures intended to minimize cost and construction delays when petroleum-contaminated soils are encountered during roadway construction. The Fort Worth District has a contractor to remove underground storage tanks (USTs); and a contract to excavate and haul petroleum-contaminated soils. This procedure has reduced the degree of impact that USTs could have for TxDOT construction activities. If this or any other type of encounter with hazardous substances does occur, it would be handled according to all applicable state, federal, and local regulations.

The proposed project area is located in an urban area with predominantly commercial and industrial land interspersed with residential properties.

The scope of the preliminary investigation consisted of a review of the TxDOT-specified compliant federal and state environmental databases and the performance of site visits to confirm information from the databases and note additional field observations. No land use history, title searches, records/historic aerial photographs/historic maps review, interviews, or consultation with local/state/federal authorities was conducted. A hazardous materials regulatory database search was conducted in November 2010 and site visits were completed on February 19, 2009, and March 3, 2011. The databases and specified search distances are shown in **Table 22**.

Regulatory Database	Radius Search Distance
Federal National Priorities List (NPL)	1.0 mile
Federal Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) list	0.5 mile
Federal RCRA Treatment, Storage, and Disposal (TSD) facilities list	0.5 mile
Federal RCRA Generators (G)	Build Alternative limits (existing and proposed ROW)
National Response Center (NRC) (formerly the Federal Emergency Response Notification System [ERNS]) list	Build Alternative limits (existing and proposed ROW)
State-equivalent CERCLIS list	1.0 mile
State Landfill and/or Municipal Solid Waste Landfill Facility (MSWLF) list	0.5 mile
Texas Voluntary Compliance Program (TX VCP) list	0.5 mile
State Registered Leaking Petroleum Storage Tank (LPST) list	0.5 mile
State Registered Petroleum Storage Tank (PST) list	0.25 mile
Source: TxDOT Hazardous Materials and Project Development website, 2010. http://www.txdot.gov/txdot_library/consultants_contractors/publications/environmental_resources.htm	

The database identified 222 facilities at 160 locations within the specified distance parameters. **Table 23** provides a summary of the database search results. Only seven of the 10 databases are shown in the table because no entries or listings were identified for the federal NPL, federal RCRA TSD, and state-equivalent CERCLIS site databases. The high risk facilities are discussed following the table.

Database	Facilities Within Search Distance (Table 21)	No. of High Risk Sites	Date Database Updated
Federal CERCLIS	7		09/2010
Federal RCRA G	5	1*	08/2010
NRC/ERNS	1		12/2009
State MSWLF/CALF	9		10/2010
TX VCP	12		09/2010
LPST	84	2	09/2010
PST	104	2**	09/2010
Total	222	5	
*This RCRA site is also listed as a LPST facility and is not included in the LPST category. ** PST facilities that are also listed as LPST facilities are not included in this category. Source: GeoSearch (November 11, 2010).			

There are five sites (PST, LPST, and RCRA G) that pose high risk to the proposed ROW acquisition and/or construction of the proposed project. Additionally, a natural gas well pad site would be impacted. These six sites are discussed as follows:

- #1 - Conoco A-1 (PST Facility ID No. 74227), 3250 Braswell Drive, Fort Worth, Texas. The acquisition of additional ROW would impact two PSTs at this station. According to the PST database, two 10-year old gasoline PSTs are currently in use. This site was formerly occupied by a Chevron gas station (LPST ID No. 92518, PST Facility ID No. 5606) from 1969 to 1989. The former occupant had six underground storage tanks (UST) that were removed from the ground in 1989. According to the LPST database, a subsurface release of petroleum hydrocarbons from this site was reported on January 10, 1989. The site had a TCEQ priority description of “ground water impacted, no apparent threats or impacts to receptors” and a status code “Final Concurrence Issued, Case Closed”. The site poses a high risk to construction of the Build Alternative because additional ROW would be acquired from this site and would displace the entire facility comprising the pumps and convenience store. Refer to **Figure 4, Sheet 6** for the location of this high risk site.
- #2 - Hertz Equipment Rental Area 9463 (PST Facility ID No. 31972), 3299 North Freeway, Fort Worth, Texas. The acquisition of additional ROW would impact two USTs and one aboveground storage tank (AST) at this fleet refueling site. According to the PST database, the USTs were removed from the ground in 1994. The 17-year old diesel AST is currently in use. The facility is not listed in the LPST database. The site poses a high risk to construction of the Build Alternative because additional ROW would be acquired from this site and would displace the entire facility comprising the AST and facility structures. Refer to **Figure 4, Sheet 6** for the location of this high risk site.
- #3 - Circle K Truck Stop (LPST ID Nos. 94889, 95031 and 103331, PST Facility ID No. 44043), 3201 and 3245 North Freeway, Fort Worth, Texas. The acquisition of additional ROW would impact five USTs and one AST at this location. According to the PST database, five 24-year old gasoline and diesel PSTs and one three year-old diesel AST are currently in use. According to the LPST database ID No. 94889, a subsurface release of petroleum hydrocarbons from this site was reported on February 8, 1990. The site had a TCEQ priority description of “soil contamination only, requires full site assessment and remedial action plan” and a status code “Final Concurrence Issued, Case Closed”. According to the LPST database ID No. 95031, a subsurface release of petroleum hydrocarbons from this site was reported on February 12, 1990. The site had a TCEQ priority description of “groundwater impacted, no apparent threats or impacts to receptors” and a status code “Final Concurrence Issued, Case Closed”. According to the LPST ID No. 103331 database, a subsurface release of petroleum hydrocarbons from this site was reported on June 4, 1992. The site had a TCEQ priority description of “minor soil contamination, does not require a remedial action plan” and a status code “Final Concurrence Issued, Case Closed”. The site poses a high risk to construction of the Build Alternative because additional ROW would be acquired from this site and would displace the facility’s front pumps. The convenience store and the pumps to south of the store would not be displaced. Refer to **Figure 4, Sheet 6** for the location of this high risk site.
- #4 - Bruckners Mack Truck/Truck Center of Fort Worth (LPST ID No. 107544, RCRA G Environmental Protect Agency [EPA] ID No. TXD981905359) 2901 North Freeway, Fort Worth, Texas. According to the LPST database, a subsurface release of petroleum hydrocarbons from this site was reported on October 29, 1993. The site had a TCEQ

priority description of “soil contamination only, requires full site assessment and remedial action plan” and a status code “Final Concurrence Issued, Case Closed”. This site is also listed as a small quantity RCRA G facility (EPA ID No. TXD981905359) with an industry classification of New Car Dealers. Hazardous waste generated at this site includes ignitable waste, benzene, 1,4-dichlorobenzene, and tetrachloroethylene. No evaluations, violations, or enforcements were reported under the compliance, monitoring, and enforcement section of the database report. The site poses a high risk to construction of the Build Alternative because additional ROW would be acquired from this site and would displace the facility structure. Refer to **Figure 4, Sheet 7** for the location of this high risk site.

- #5 - Chesapeake’s Mercado pad site, 2299 Mercado Drive, Fort Worth, Texas. The additional ROW required from this property would impact storage tanks but not the wells. The site has 10 active gas wells and production equipment that include gas pipelines, containment areas, tank batteries, and separators. The site also contains Texas Midstream Gas Services’ Mercado Compressor Facility, which serves as a key component in the local gas pipeline network. The facility is regulated by the Texas Railroad Commission and is operated by Chesapeake Operating, Inc. Although the facility’s gas wells and production equipment would not be displaced, the site poses a high risk to construction of the Build Alternative because additional ROW would be acquired from this site. Refer to **Figure 4, Sheet 8** for the location of this high risk site.
- #6 - Cowtown Plaza (Chevron station) (PST Facility ID No. 77170), 100 N. Nichols, Fort Worth, Texas. The acquisition of additional ROW would impact two USTs at this site. According to the PST database, the eight-year old USTs are currently in use. The facility is not listed in the LPST database. The site poses a high risk to construction of the Build Alternative because additional ROW would be acquired from this site and would displace the entire facility comprising the pumps and convenience store structures. Refer to **Figure 4, Sheet 15** for the location of this high risk site.

Additional investigation, including file review, would be conducted for these release sites within the project limits to better determine the potential for project impacts.

According to the PST database, three 16-year old gasoline PST’s and one 15-year old diesel PST are currently in use at the Texaco Service Station/7-Eleven 34094 (LPST ID No.’s 110577 and 104980, and PST Facility ID No. 0059543) located at 1908 Yucca Avenue, Fort Worth, Texas. According to the LPST database ID No. 110577, a subsurface release of petroleum hydrocarbons from this site was reported, date unknown. The tank was reported as being installed January 1, 1983, and removed on November 1, 1995. The site has a TCEQ priority description of “no groundwater impact, no apparent threats or impacts to receptors” and a status code “Final Concurrence Issued, Case Closed”. According to the LPST database ID No. 104980, a subsurface release of petroleum hydrocarbons from this site was reported on June 26, 1991. The site had a TCEQ priority description of “Group 3 groundwater, not within 0.5 mile radius” and a status code “Final Concurrence Issued, Case Closed”. It should be noted that this facility is now a Shell station.

Upon initial site investigation, the site was determined to be a high risk. However, on October 12, 2011 the LPST files were reviewed at TCEQ Central Records by TxDOT Environmental Affairs Division staff. This file review was conducted as part of the review process for the advanced acquisition State Categorical Exclusion for Parcels 852 and 853 (approved October 24, 2011). Based on the information reviewed by TxDOT ENV staff, it was determined that this site would be a low risk.

A visual survey of the proposed project limits and surrounding area was performed by qualified personnel to identify possible hazardous materials within the Build Alternative ROW. No surface evidence of contamination such as stained, discolored, barren, exposed or foreign soil or dead, damaged, or stressed vegetation was observed. Natural gas pipelines that are adjacent to the proposed project pose potential hazardous materials risk on areas where additional ROW would be acquired. High powered electrical lines and towers are located south of McMillan Parkway (**Figure 4, Sheet 3**). The contractor would take appropriate measures to prevent, minimize, and control the spill of hazardous materials in the construction staging area. The use of construction equipment within sensitive areas would be minimized or eliminated entirely. All construction materials used for this project would be removed as soon as work schedules permit.

The proposed project includes the demolition of approximately 40 vehicular and pedestrian bridges. The bridges may contain asbestos containing materials (ACM) and shall be inspected to verify the presence or absence of ACM. Prior to the bridge demolition(s), a 10-Day Notification shall be submitted to the DHHS. Coordination with TCEQ regarding the proposed project was conducted and the resulting letter is included in **Appendix D**.

D. Air Quality

No Build Alternative

Implementation of the No Build Alternative would lead to increased traffic congestion and decreased mobility on IH 35W, resulting in decreased vehicular speed and increased stop-and-go traffic. This, in turn, would likely increase vehicular pollutant National Ambient Air Quality Standards (NAAQS) emissions compared to the existing (2012) levels; however, it would be lower than the Build Alternative.

Build Alternative

This project is located within Tarrant County, which is part of the nine-county area that has been designated by the U.S. Environmental Protection Agency (EPA) as a serious non-attainment area for ozone; therefore, transportation conformity rules apply. Coordination with TCEQ was conducted and a letter with the commission's comments is included in **Appendix D**.

The proposed project is included in the area's financially constrained MTP NCTCOG *Mobility 2035* and 2011-2014 TIP, as revised, adopted by NCTCOG in June 2010 and found to conform to the TCEQ State Implementation Plan (SIP) by FHWA on July 14, 2011. However, the proposed project is not consistent with this conformity determination because the project is not accurately reflected in the TIP. FHWA and TxDOT will not take final action on this environmental document until the proposed project is consistent with a currently conforming MTP and TIP. Copies of the MTP and TIP pages are included in **Appendix F**. All projects in the NCTCOG TIP, as revised that are proposed for federal or state funds were initiated in a manner consistent with federal guidelines in Section 450, of Title 23 CFR and Section 613.200, Subpart B, of Title 49 CFR. Energy, environment, air quality, cost, and mobility considerations are addressed in the programming of the TIP.

1. Traffic Air Quality Analysis

The primary pollutants from motor vehicles are volatile organic compounds (VOCs), carbon monoxide (CO), and nitrogen oxides (NO_x). VOCs and NO_x can combine under the right conditions in a series of photochemical reactions to form ozone. Because these reactions take place over a period of several hours, maximum concentrations of ozone are often found far

downwind of the precursor sources. Thus, ozone is a regional problem and not a localized condition.

The modeling procedures of ozone require long term meteorological data and detailed area wide emission rates for all potential sources (industry, business, and transportation) and are normally too complex to be performed within the scope of an environmental analysis for a highway project. Accordingly, concentrations of ozone for the purpose of comparing the results of the NAAQS are modeled by the regional air quality planning agency for the SIP. However, concentrations for CO are readily modeled for highway projects and are required by federal regulations.

Topography and meteorology of the area in which the proposed project is located would not seriously restrict dispersion of the air pollutants. The traffic data used in the analysis was obtained from the TxDOT TPP Division. The estimated time of completion year 2030 ADT is estimated to be 377,900 vpd and the design 2035 year ADT is estimated to be 398,200 vpd. CO concentrations for the proposed project were modeled using the worst case scenario (adverse meteorological conditions and sensitive receptors at the ROW line) in accordance with the TxDOT Air Quality Guidelines. Local concentrations of CO are not expected to exceed national standards at any time. The results of the analysis are summarized in **Table 24**.

Year	Traffic Volume		Emission Factor (g/mile) ³	CO Concentration ¹ (ppm)		% NAAQS ²	
	ADT (vpd)	DHV (vph)		1-Hour	8-Hour	1-Hour	8-Hour
2030	377,900	24,980	5.7	3.4	2.2	9.7%	24.0%
2035	398,200	26,334	5.7	3.5	2.2	10.0%	24.7%

¹ – Includes an ambient concentration of 1.8 ppm for the 1-hour averaging time and 1.2 ppm for the 8-hour averaging time.
² – 1-hour NAAQS of 35 ppm and an 8-hour NAAQS of 9 ppm.
³ – At a speed of 65 mph.
 DHV – Daily Hour Volume

2. Lead NAAQS

This project is located in the DFW nine-county non-attainment area which is in attainment or unclassifiable for all NAAQS, except ozone and lead. A small portion of Collin County in the vicinity of Frisco City is in non-attainment for the lead NAAQS; however, this project is located outside that portion of Collin County in non-attainment for lead, effective December 31, 2010.

3. Congestion Management Process (CMP)

The CMP is a systematic process for managing congestion that provides information on transportation system performance and on alternative strategies for alleviating congestion and enhancing the mobility of persons and goods to levels that meet state and local needs. The project was developed from NCTCOG's operational CMP, which meets all requirements of 23 CFR 500.109. On April 9, 2009, the NCTCOG RTC approved the MTP, which contains elements of the CMP.

The region commits to operational improvements and travel demand reduction strategies at two levels of implementation: program level and project level. Program level commitments are

inventoried in the regional CMP, which was adopted by NCTCOG; they are included in the financially constrained MTP, and future resources are reserved for their implementation.

The CMP element of the plan carries an inventory of all project commitments (including those resulting from major investment studies) that details type of strategy, implementing responsibilities, schedules, and expected costs. At the project's programming stage, travel demand reduction strategies and commitments will be added to the regional TIP or included in the construction plans. The regional TIP provides for programming of these projects at the appropriate time with respect to the single occupancy vehicle (SOV) facility implementation and project-specific elements.

Committed congestion reduction strategies and operational improvements within the study boundary will consist of the individual projects listed in **Table 25**.

Table 25: CMP/Operational Improvements in the Corridor					
Street / Name	City	Implementing Agency	Project Type	Year of Implementation	Total Project Cost
Magnolia Village Pedestrian District Pennsylvania Avenue to the north, Jennings Street to the east	Fort Worth	Fort Worth	Bike/Pedestrian	2011	\$1,542,110
Sierra Vista Pedestrian And Bicycle Connection - Near Berry/Riverside Urban Village	Fort Worth	FWTA	Bike/Pedestrian	2011	\$488,000
Race St from Sylvania to Belknap/US 377 Retta St to the west, Murphy St to the north, and Plumwood St to the south	Fort Worth	Fort Worth	Bike/Pedestrian	2011	\$4,000,000
Intermodal Transportation Center (ITC) Parking Expansion	Fort Worth	FWTA	Park & Ride/ Rail Station	2011	\$953,015
SH 199 at bypass channel; in Fort Worth	Fort Worth	TxDOT – Fort Worth	New Roadway	2011	\$55,815,000
BNSF/UP Railroad Crossing at Tower 55 from Meacham Blvd at Cotton Belt Railroad to Page St at the BNSF railway Fort Worth subdivision line	Fort Worth	TxDOT – Fort Worth	Special Studies	2011	\$93,200,000
BU 287P at bypass channel near Trinity River	Fort Worth	TxDOT – Fort Worth	New Roadway	2012	\$43,100,000
W Rosedale from Forest Park to South Main St	Fort Worth	Fort Worth	Bike/Pedestrian	2012	\$2,500,000

Street / Name	City	Implementing Agency	Project Type	Year of Implementation	Total Project Cost
E Rosedale from IH 35W to US 287	Fort Worth	Fort Worth	Bike/Pedestrian	2012	\$5,000,000
Cottonbelt Corridor ROW acquisition in central Fort Worth (Duncan Subdivision)	Fort Worth	FWTA	Rail Transit	2013	\$2,500,000
East Rosedale Street from US 287 to west of Miller	Fort Worth	Fort Worth	Addition of Lanes	2015	\$13,964,720

Source: NCTCOG, www.dfwmaps.com, accessed January 2012.

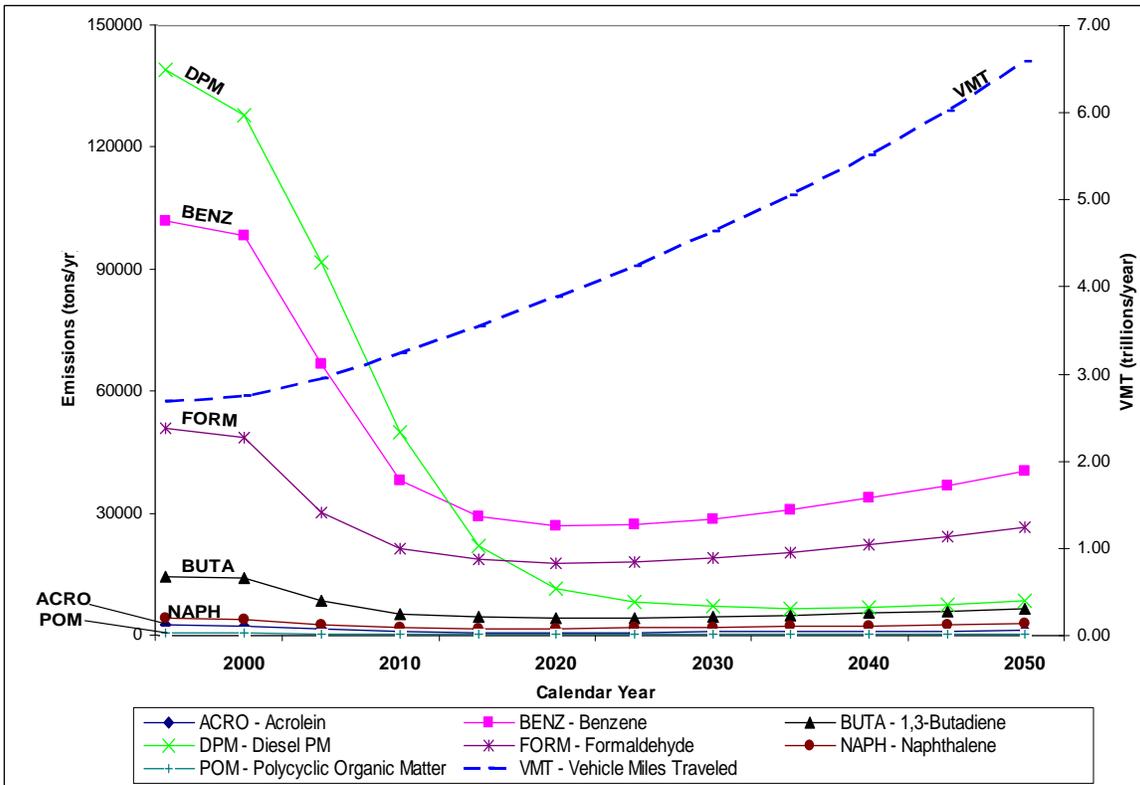
In an effort to reduce congestion and the need for SOV lanes in the region, TxDOT and NCTCOG will continue to promote appropriate congestion reduction strategies through the CMAQ program, the CMP, and the MTP. The congestion reduction strategies considered for this project would help alleviate congestion in the SOV study boundary, but would not eliminate it. Therefore, the proposed project is justified. The CMP analysis for added SOV capacity projects in the Transportation Management Area is on file and available for review at NCTCOG.

4. Mobile Source Air Toxics (MSATs)

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

The 2007 EPA MSAT rule mentioned above requires controls that will dramatically decrease MSAT emissions through cleaner fuels and cleaner engines. According to an FHWA analysis using EPA's MOBILE6.2 model, even if vehicle activity (vehicle-miles travelled, VMT) increases by 145 percent as assumed, a combined reduction of 72 percent in the total annual emission rate for the priority MSAT is projected from 1999 to 2050, as shown in the graph below and **Table 26**.

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



Source: Table 26 below.

Note:

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

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

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

Air toxics analysis is a continuing area of research. While much work has been done to assess the overall health risk of air toxics, many questions remain unanswered. In particular, the tools and techniques for assessing project-specific health outcomes as a result of lifetime MSAT exposure remain limited. These limitations impede the ability to evaluate how the potential health risks posed by MSAT exposure should be factored into project-level decision-making within the context of the National Environmental Policy Act (NEPA). The FHWA, EPA, the Health Effects Institute, and others have funded and conducted research studies to try to more clearly define potential risks from MSAT emissions associated with highway projects. The FHWA will continue to monitor the developing research in this emerging field.

Project Specific MSAT Information

During a conference call between the NTTA, TxDOT, and the FHWA on August 19, 2010, the FHWA recommended that a quantitative analysis was appropriate to determine the potential MSAT emission impacts of the proposed project. A quantitative analysis provides a basis for identifying and comparing the potential differences among MSAT emissions, if any, from the various alternatives. The quantitative assessment presented below is derived in part from a study conducted by the FHWA entitled A Methodology for Evaluating Mobile Source Air Toxic Emissions Among Transportation Project Alternatives, found at:

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

For each alternative in this document, the amount of MSAT emitted would be proportional to the vehicle miles traveled (VMT), assuming that other variables such as fleet mix are the same for each alternative. The VMT estimated for the Build Alternative is slightly higher than that for the No Build Alternative because the additional capacity increases the efficiency of the roadway and attracts rerouted trips from elsewhere in the transportation network. Refer to **Table 27** for a comparison of VMT between the Build and No Build Alternatives.

Table 27: Comparison of Vehicle Miles Traveled (VMT)		
Alternative	Roadway Description	2035 VMT/Day
Build Alternative	Twelve through lanes	6,732,699
No Build Alternative	Four to six-lane existing roadway	5,050,854

This increase in VMT would lead to higher MSAT emissions for the preferred action alternative along the highway corridor, along with a corresponding decrease in MSAT emissions along the parallel routes. The emissions increase is offset somewhat by lower MSAT emission rates due to increased speeds; according to EPA's MOBILE6.2 emissions model, emissions of all of the priority MSAT except for diesel particulate matter decrease as speed increases. The extent to which these speed-related emissions decreases would offset VMT-related emissions increases cannot be reliably projected due to the inherent deficiencies of technical models. Also, regardless of the alternative chosen, emissions will likely be lower than present levels in the design year as a result of EPA's national control programs that are projected to reduce annual MSAT emissions by 72 percent between 1999 and 2050. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in nearly all cases.

The additional travel lanes contemplated as part of the project alternatives will have the effect of moving some traffic closer to nearby homes, schools, and businesses; therefore, under each alternative there may be localized areas where ambient concentrations of MSAT could be higher under certain Build Alternatives than the No Build Alternative. The localized increases in MSAT concentrations would likely be most pronounced along the expanded roadway sections that would be built near IH 30, US 287, SH 121, and SH 183. However, the magnitude and the duration of these potential increases compared to the No Build alternative cannot be reliably quantified due to incomplete or unavailable information in forecasting project-specific MSAT health impacts. In sum, when a highway is widened, the localized level of MSAT emissions for the Build Alternative could be higher relative to the No Build Alternative, but this could be offset due to increases in speeds and reductions in congestion (which are associated with lower MSAT emissions). Also, MSAT will be lower in other locations when traffic shifts away from them. However, on a regional basis, EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions that, in almost all cases, will cause region-wide MSAT levels to be lower in the future.

MSAT Modeling

The EPA's highway vehicle emission factor model, MOBILE, is a program that provides average in-use fleet emission factors for criteria pollutants (CO, and NOx) and also provides emission factors for VOCs. These emission factors can be estimated for any year between 1952 and 2050 and under various conditions affecting in-use emission levels. The output from the model is in the form of emissions factors expressed as grams of pollutant per vehicle mile traveled (g/mi).

A quantitative analysis of mass air toxic emissions from the travel study area of the proposed project was completed by following the +/- 5 percent "link by link" methodology and by using the latest version of the EPA's mobile emission factor model (MOBILE6.2). The travel study area used for the MSAT analysis is the same area as the Metropolitan Planning Area within the NCTCOG Region. The analyzed "affected transportation network" represents the traffic volumes that are expected to change by a certain threshold as a result of project construction. The thresholds for this project are based on the ultimate build-out year +/-5 percent vehicle volume change relative to 2035 No Build vehicle volumes. The 2035 +/- 5 percent links were selected by overlapping common data base files by using the aid of ArcGIS 9.3. The resulting "affected transportation network" for scenario years 2012 and 2035 includes those links determined to change +/- 5 percent in 2035. Because the 2012 base year scenario represents the existing condition, the model area for 2012 is composed of those links determined to change +/- 5 percent or greater in 2035 and selected by overlapping with the existing 2012 network. The 2012 +/- 5 percent links did not have any common database field and were selected manually using ArcGIS 9.3. Two scenarios were modeled:

- "2012 base year" or existing condition in 2012;
- "2035 design year" build and no build.

Maps of the affected transportation networks are present in **Appendix G**.

Total Emission of MSATs for the Build and No Build Alternatives

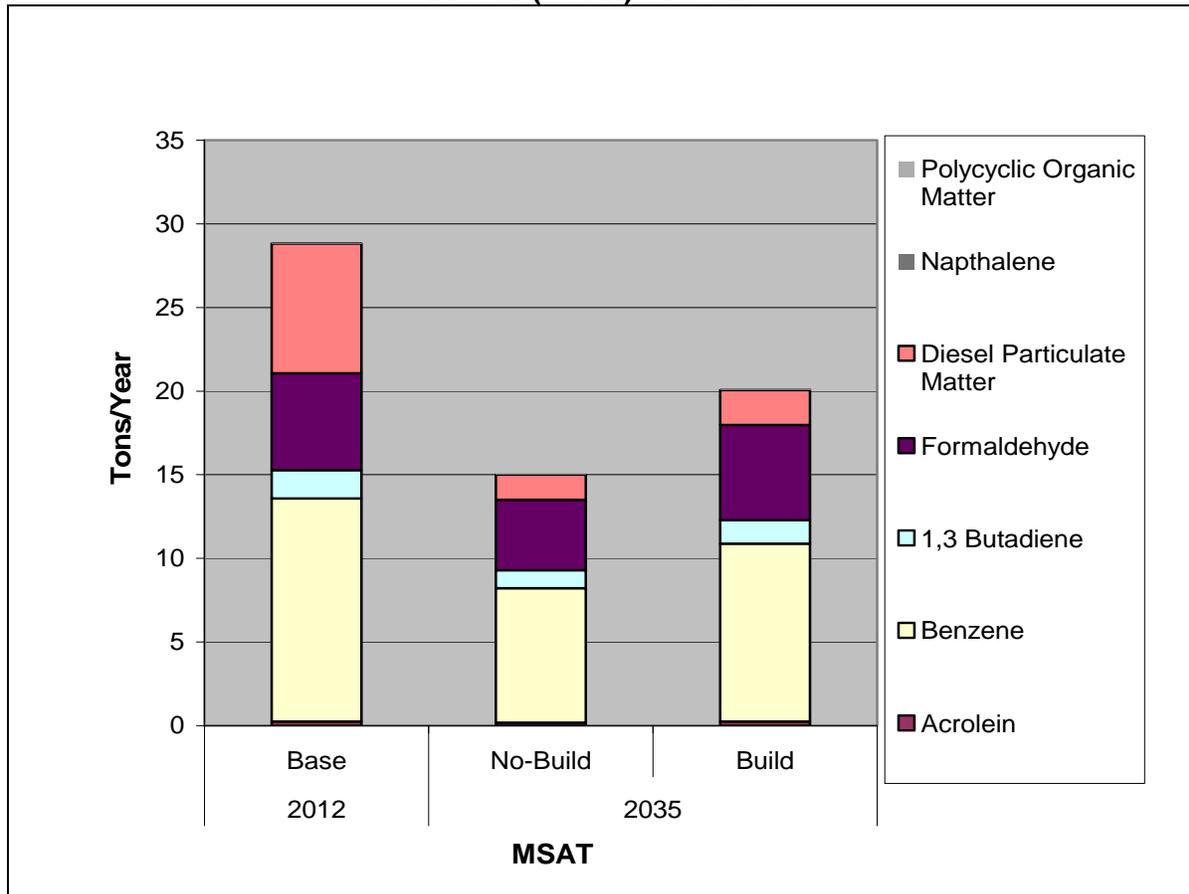
Specific data from the MSAT study area of the NCTCOG Regional Transportation Model were used to determine the mass of MSAT emissions associated with the Build and No Build scenarios. In addition, the base case or existing conditions mass of MSAT was also modeled. The total mass of MSAT in the year 2012 (base case) was higher than either the Build or No Build scenarios in the year 2035. This is reflective of the overall national trend in MSAT

emissions as previously described. The mass of emissions associated with the base case and design year are shown in **Table 28** and the subsequent graph.

Compound	Year / Scenario			% Difference	
	2012 Base	2035 No Build	2035 Build	2012 to 2035 No Build	2012 to 2035 Build
Acrolein	0.258	0.185	0.249	-28%	-3%
Benzene	13.323	8.039	10.638	-40%	-20%
1,3 Butadiene	1.695	1.063	1.414	-37%	-17%
Formaldehyde	5.790	4.217	5.680	-27%	-2%
Diesel Particulate Matter	7.752	1.509	2.079	-81%	-73%
Napthalene	0.045	0.051	0.069	12%	52%
Polycyclic Organic Matter	0.008	0.008	0.010	-7%	27%
Total MSAT	28.871	15.071	20.139	-48%	-30%
Total VMT (Miles/Year)	1,292,408,553	1,843,561,542	2,457,435,197	43%	90%

Source: Study Team, December 2011.

**Projected Changes in MSAT Emissions by Scenario
IH 35W (South) over Time**

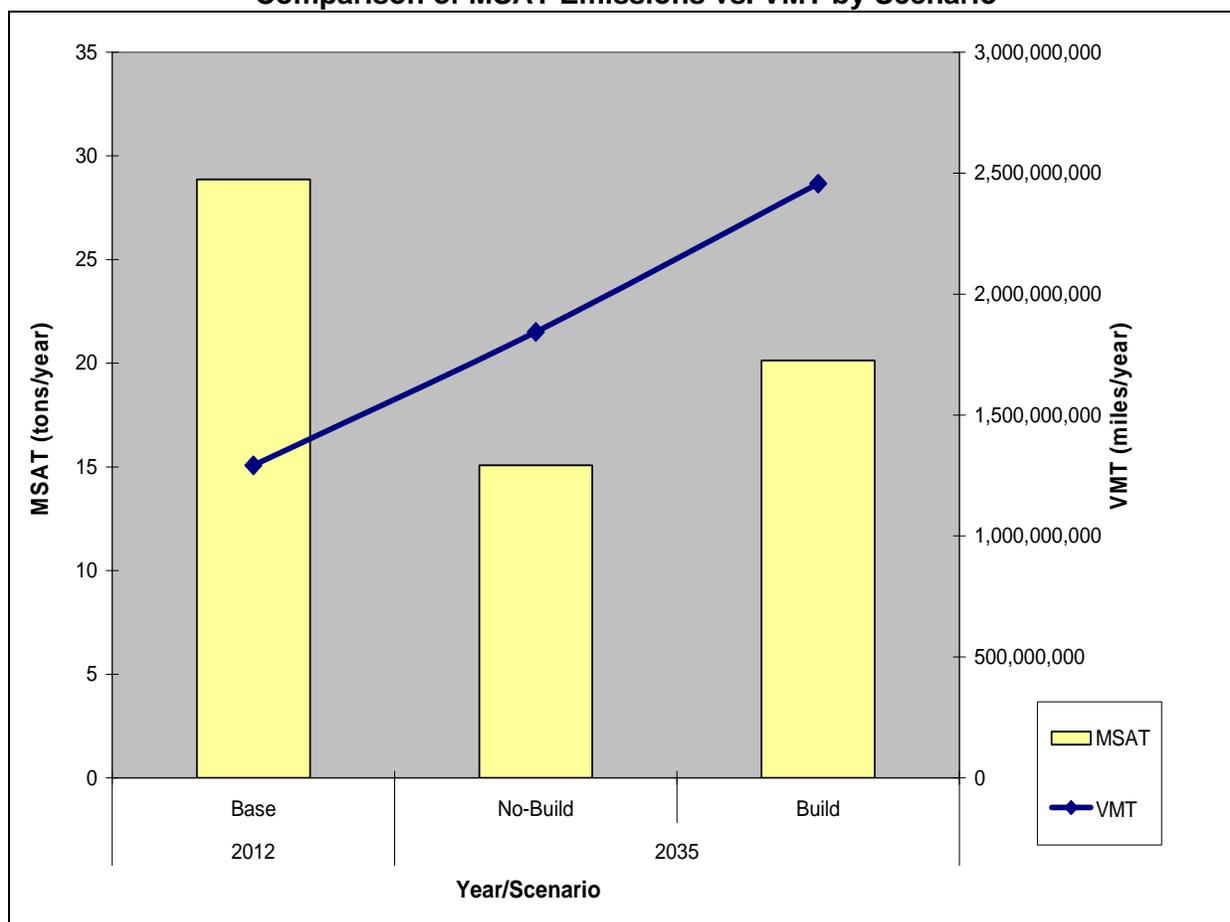


Source: Study Team, December 2011.

The analysis indicates a decrease in MSAT emissions for both the Build and No Build Alternatives for the design year of 2035 versus the 2012 base year. Total MSAT emissions under a Build scenario are predicted to decrease by 30 percent between 2012 and 2035.

Of the seven priority MSAT compounds, benzene and DPM contribute the most to the emissions total in base year (see **Table 28** and the graph above). In future years a decline in benzene is anticipated (20 percent reduction in benzene from 2012 to 2035, Build). And an even larger reduction in DPM emissions is predicted (73 percent decrease from 2012 to 2035, Build). Although overall VMT is expected to increase over time, MSAT emissions are expected to be lower in 2035 compared to the base year (see the graph below).

Comparison of MSAT Emissions vs. VMT by Scenario



Source: Study Team, December 2011.

The estimated emission levels noted in graph above are for all MSAT evaluated and are based on the projected total VMT. The reasons for these dramatic improvements are twofold; a change in vehicle fuels, both gasoline and diesel fuel, and a change in emission standards that both light-duty and heavy-duty on-highway motor vehicles must meet. The EPA predicts substantial future air emission reductions as the agency's new light-duty and heavy-duty on-highway fuel and vehicle rules come into effect (Tier II, light-duty vehicle standard, Heavy-Duty Diesel Vehicle and (HDDV) standards and low sulfur diesel fuel, and the EPA's proposed Off-Road Diesel Engine and Fuel Standard). These projected air emission reductions will be realized even

with the predicted continued growth in VMT. See the EPA's Tier II Regulatory Impact Analysis (RIA) and HDDV RIA; Regulatory Impact Analysis.

The estimated MSAT emissions of the seven priority air toxics are shown in **Table 29**.

Table 29: MSAT Emissions Per Year	
Year	IH 35W Project (Affected Traffic Network)
2012 Base	28.8 tons
2035 No Build	15.1 tons
2035 Build	20.1 tons

Source: Study Team, December 2011.

Discussion

Although the VMT for the IH 35W (South) Build scenario would increase approximately 90 percent by 2035 when compared to 2012, total MSAT emissions for the same scenario would decrease at least 30 percent by 2035. In 2035, the total MSAT load for the Build scenario is 5 tons/year higher than for the No Build scenario. The higher level of MSAT emissions for the Build scenario is due to a higher VMT when compared to the No Build scenario.

Regardless of the alternative chosen, emissions would likely be lower than present levels in the future year as a result of the EPA's national control programs that are projected to reduce MSAT emissions by 72 percent between 1999 and 2050. Local conditions may differ from these national projections in terms of fleet mix, vehicle turnover rates, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great that MSAT emissions in the study area are likely to be lower in the future in all cases.

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

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

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

Other organizations are also active in the research and analyses of the human health effects of MSAT, including the Health Effects Institute (HEI). Two HEI studies are summarized in Appendix D of FHWA's 2009 Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA Documents, which can be found at the following address: (http://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/100109guidm)

[em.cfm](#)). This Appendix also discusses a variety of FHWA research initiatives related to air toxics. Among the adverse health effects linked to MSAT compounds at high exposures are cancer in humans in occupational settings; cancer in animals; and irritation to the respiratory tract, including the exacerbation of asthma. Less obvious is the adverse human health effects of MSAT compounds at current environmental concentrations (HEI, <http://pubs.healtheffects.org/view.php?id=282> or in the future as vehicle emissions substantially decrease (HEI, <http://pubs.healtheffects.org/view.php?id=306>).

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

Regarding air dispersion modeling, an extensive evaluation of EPA's guideline CAL3QHC model was conducted in an NCHRP study www.epa.gov/scram001/dispersion_alt.htm#hyroad, which documents poor model performance at 10 sites across the country - three where intensive monitoring was conducted plus an additional seven with less intensive monitoring. The study indicates a bias of the CAL3QHC model to overestimate concentrations near highly congested intersections and underestimate concentrations near uncongested intersections. The consequence of this is a tendency to overstate the air quality benefits of mitigating congestion at intersections. Such poor model performance is less difficult to manage for demonstrating compliance with NAAQS for relatively short time frames than it is for forecasting individual exposure over an entire lifetime, especially given that some information needed for estimating 70-year lifetime exposure is unavailable. It is particularly difficult to reliably forecast MSAT exposure near roadways, and to determine the portion of time that people are actually exposed at a specific location.

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

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

or "acceptable" level of risk due to emissions from a source, which is generally no greater than approximately 100 in a million. Additional factors are considered in the second step, the goal of which is to maximize the number of people with risks less than 1 in a million due to emissions from a source. The results of this statutory two-step process do not guarantee that cancer risks from exposure to air toxics are less than 1 in a million; in some cases, the residual risk determination could result in maximum individual cancer risks that are as high as approximately 100 in a million. In a June 2008 decision, the U.S. Court of Appeals for the District of Columbia Circuit upheld EPA's approach to addressing risk in its two step decision framework. Information is incomplete or unavailable to establish that even the largest of highway projects would result in levels of risk greater than safe or acceptable.

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

Conclusion

The ability to discern differences in MSAT emissions among transportation alternatives is difficult given the uncertainties associated with forecasting travel activity and air emissions 25 years or more into the future. The main analytical tool for predicting emissions from on-road motor vehicles is the EPA's MOBILE6.2 model. The MOBILE6.2 model is regional in scope and has limited applicability to a project-level analysis. However, the effects of a major transportation project extend beyond its corridor and an evaluation within the context of an affected transportation network can be accomplished.

When evaluating the future options for upgrading a transportation corridor, the major mitigating factor in reducing MSAT emissions is the implementation of the EPA's new motor vehicle emission control standards. Decreases in MSAT emissions will be realized from the 2012 through an estimated time of completion for a planned project and its design year some 24 years in the future. Accounting for anticipated increases in VMT and varying degrees of efficiency of vehicle operation, total MSAT emissions are predicted to decline approximately 32 percent from 2012 base year to 2035 design year. While benzene emissions are predicted to decline 20 percent, emissions of DPM are predicted to decline even more (i.e., 73 percent). MSAT emissions decreases from the base year are substantial even with the associated increase in VMT in the travel study area.

The MSAT from mobile sources, especially benzene, have dropped dramatically since 1995, and are expected to continue dropping. The introduction of reformulated gasoline has led to a substantial part of this improvement. In addition, Tier II automobiles introduced in model year 2004 will continue to help reduce MSAT. Diesel exhaust emissions have been falling since the early 1990s with the passage of the CAAA. The CAAA provided for improvement in diesel fuel through reductions in sulfur and other diesel fuel improvements. In addition, the EPA has further reduced the sulfur level in diesel fuel, which took effect in 2006. The EPA has also called for dramatic reductions in NOx emissions and PM from on-road and off-road diesel engines. MSAT emissions related to 35W are not expected to increase overall air toxics levels in Tarrant County in the future years investigated.

5. Air Quality Construction Emissions Reduction Strategies

During the construction phase of this project, temporary increases in air pollutant emissions may occur from construction activities. The primary construction-related emissions are particulate matter (fugitive dust) from site preparation. These emissions are temporary in nature (only occurring during actual construction); it is not possible to reasonably estimate impacts from these emissions due to limitations of the existing models. However, the potential impacts of particulate matter emissions will be minimized by using fugitive dust control measures such as covering or treating disturbed areas with dust suppression techniques, sprinkling, covering loaded trucks, and other dust abatement controls, as appropriate.

The construction activity phase of this project may generate a temporary increase in MSAT emissions from construction activities, equipment and related vehicles. The primary MSAT construction related emissions are particulate matter from site preparation and diesel particulate matter from diesel powered construction equipment and vehicles.

Construction emission reduction includes strategies that reduce engine activity, reduce emissions per unit of operating time, such as reducing the numbers of trips and extended idling, or have construction occur during non-normal business hours. These strategies would be determined and implemented if feasible during the proposed construction. However, considering the temporary and transient nature of construction-related emissions, as well as the mitigation actions to be utilized, it is not anticipated that emissions from construction of this project will have any significant impact on air quality in the area.

E. Noise

No Build Alternative

Traffic noise has been, is, and would continue to be the primary component of the existing ambient noise level in the study area. The predicted increase in future traffic volumes on IH 35W would likely increase future ambient noise levels.

Build Alternative

This analysis was accomplished in accordance with TxDOT's (FHWA approved) *Guidelines for Analysis and Abatement of Roadway Traffic Noise* (2011). Sound from highway traffic is generated primarily from a vehicle's tires, engine and exhaust. It is commonly measured in decibels and is expressed as "dB." Sound occurs over a wide range of frequencies. However, not all frequencies are detectable by the human ear; therefore, an adjustment is made to the high and low frequencies to approximate the way an average person hears traffic sounds. This adjustment is called A-weighting and is expressed as "dB(A)."

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

The traffic noise analysis typically includes the following elements:

- Identification of land use activity areas that might be impacted by traffic noise.
- Determination of existing noise levels.
- Prediction of future noise levels.
- Identification of possible noise impacts.

- Consideration and evaluation of measures to reduce noise impacts.

The FHWA has established the Noise Abatement Criteria (NAC) listed in **Table 30** for various land use activity areas that are used as one of two means to determine when a traffic noise impact would occur.

Table 30: Noise Abatement Criteria			
Activity Category¹	FHWA dB(A) Leq	TxDOT dB(A) Leq	Description of Land Use Activity Areas
A	57 (exterior)	56 (exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 (exterior)	66 (exterior)	Residential
C	67 (exterior)	66 (exterior)	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52 (interior)	51 (interior)	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E	72 (exterior)	71 (exterior)	Hotels, motels, offices, restaurants/bars, and other developed lands, properties, or activities not included in A-D or F.
F	--	--	Agricultural, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G	--	--	Undeveloped lands that are not permitted.
NOTE: primary consideration is given to <u>exterior</u> areas (Category C) where frequent human activity occurs. However, <u>interior</u> areas (Category D) are used if exterior areas are physically shielded from the roadway, or if there is little or no human activity in exterior areas adjacent to the roadway.			
¹ Determined by land use.			

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

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

Relative criterion: the predicted noise level substantially exceeds the existing noise level at a receiver even though the predicted noise level does not approach, equal or exceed the NAC. Approach is defined as one dB(A) below the FHWA NAC. "Substantially exceeds" is defined as

more than 10 dB(A). For example: a noise impact would occur at a Category B residence if the existing level is 54 dB(A) and the predicted level is 65 dB(A).

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

The FHWA traffic noise modeling software Traffic Noise Model was used to calculate existing and predicted traffic noise levels. The model primarily considers the number, type, and speed of vehicles; highway alignment and grade; cuts, fills, and natural berms; surrounding terrain features; and the locations of activity areas likely to be impacted by the associated traffic noise. Existing and predicted traffic noise levels were modeled at receiver locations (**Table 31** and **Figure 4**) that represent the land use activity areas adjacent to the proposed project that might be impacted by traffic noise and potentially benefit from feasible and reasonable noise abatement.

Table 31: Noise Assessment Results						
Representative Receiver	NAC Category	NAC Level	Existing Noise Level dB(A)	Predicted Noise Level (2035) dB(A)	Change (+/-)	Noise Impact
R1 - Hotel (Holiday Inn)	E	72	61	68	+7	No
R2 - Hotel (Hilton Garden Inn)	E	72	68	70	+2	No
R3 - Westwood College	D	52	44	46	+2	No
R4 - Bank	E	52	62	68	+6	Yes
R5 - Motel (Classic Inn)	E	72	60	66	+6	No
R6 - Single-family residential (Oakhurst Neighborhood/ Historic District)	B	67	69	69	0	Yes
R7 - Motel (Country Inn)	E	72	62	66	+4	No
R8 - Church (Calvary Cathedral)	D	52	47	51	+4	Yes
R9 - School (Calvary Christian Academy)	C	52	66	69	+3	Yes
R10 - Riverside Park (at IH 35W)	C	67	63	66	+3	Yes
R11 - Delga Park	C	67	61	65	+4	No
R12 - Single-family residential	B	67	65	67	+2	Yes
R13 - Single-family residential	B	67	65	66	+1	Yes
R14 - Single-family residential	B	67	68	70	+2	Yes
R15 - Single-family residential	B	67	68	70	+2	Yes
R16 - Single-family residential	B	67	69	73	+4	Yes
R17 - Riverside Park (at SH 121)	C	67	60	62	+2	No
R18 - Office complex	E	52	68	69	+1	Yes
R19 - Single-family residential	B	67	68	71	+3	Yes
R20 - Single-family residential	B	67	69	72	+3	Yes
R21 - Bar	E	52	69	70	+1	Yes
R22 - Law Office	E	52	68	69	+1	Yes
R23 - Tarrant County College	D	52	43	45	+2	No
R24 - Multifamily residential	B	52	66	68	+2	Yes
R25 - Active sport area (soccer field)	E	52	68	70	+2	Yes

Table 31: Noise Assessment Results						
Representative Receiver	NAC Category	NAC Level	Existing Noise Level dB(A)	Predicted Noise Level (2035) dB(A)	Change (+/-)	Noise Impact
R26 - Multifamily residential	B	67	60	62	+2	No
R27 - Recreation Center	D	52	48	49	+1	No
R28 - Terrell High School	D	52	41	43	+2	No
R29 - Multifamily residential	B	52	73	76	+3	Yes
R30 - Multifamily residential	B	52	64	66	+2	Yes

As indicated in **Table 31**, the Build Alternative would result in a traffic noise impact at 19 representative receivers and the following noise abatement measures were considered: traffic management, alteration of horizontal and/or vertical alignments, acquisition of undeveloped property to act as a buffer zone, and the construction of noise barriers.

Before any abatement measure can be proposed for incorporation into the project, it must be both feasible and reasonable. In order to be "feasible," the abatement measure must be able to reduce the noise level at greater than 50% of impacted, first row receivers by at least five dB(A); and to be "reasonable," it must not exceed the cost-effectiveness criterion of \$25,000 for each receiver that would benefit by a reduction of at least five dB(A) and the abatement measure must be able to reduce the noise level at least one impacted, first row receiver by at least seven dB(A).

Traffic Management: control devices could be used to reduce the speed of the traffic; however, the minor benefit of one dB(A) per five mph reduction in speed does not outweigh the associated increase in congestion and air pollution. Other measures such as time or use restrictions for certain vehicles are prohibited on state highways.

Alteration of Horizontal and/or Vertical Alignments: Alteration of horizontal and/or vertical alignments: any alteration of the existing alignment would displace existing businesses and residences, require additional ROW and not be cost effective/reasonable. Buffer zone: the acquisition of undeveloped property to act as a buffer zone is designed to avoid rather than abate traffic noise impacts and, therefore, is not feasible.

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

Noise Barriers: this is the most commonly used noise abatement measure. Noise barriers were considered for eight representative impacted residential receivers.

Noise barriers would not be feasible and reasonable for any of the following impacted receivers and, therefore, are not proposed for incorporation into the proposed project:

R4, R18, R21, and R22: these receivers represent commercial businesses with driveways, roads, and alleys connecting to the roadway. Continuous noise barriers at each of these receivers would restrict access to these residences. Gaps in a noise barrier would satisfy access requirements but the resulting non-continuous barrier segments would not be sufficient to achieve the minimum feasible reduction of 5 dB(A) while achieving a 7 dB(A) noise reduction design goal.

R6, R8 through R10, R24, and R25: Due to the topography, noise barriers that would achieve the minimum feasible reduction of 5 dB(A) while achieving a 7 dB(A) noise reduction design goal at each of these receivers would exceed the reasonable, cost-effectiveness criterion of \$25,000.

R30: This representative receiver represents a multi-family apartment with existing noise barrier that achieve the minimum feasible reduction of 5 dB(A) while achieving a 7 dB(A) noise reduction design goal. Because of the benefits provided by these existing noise barriers, further noise mitigation that would achieve the minimum feasible reduction of 5 dB(A) while achieving a 7 dB(A) noise reduction design goal at this receiver would exceed the reasonable cost-effectiveness criterion of \$25,000.

Noise barriers would be feasible and reasonable for the impacted receivers listed in **Table 32**, and are proposed for incorporation into the project. Any subsequent project design changes may require a reevaluation of this preliminary noise barrier proposal. The final decision to construct the proposed noise barrier would not be made until after the completion of the project design, utility evaluation, and polling of adjacent property owners.

Table 32: Noise Barriers Summary				
Proposed Barrier Segment Location¹	# of Benefited Receivers	Length (feet)	Height (feet)	Total Cost
Noise Barrier 1, West of IH 35W (R12-R16)	11	1,036	14	\$261,072
Noise Barrier 2, South of SH 121 (R19)	11	683	10	\$122,940
Noise Barrier 3, North of SH 121 (R20)	7	1,474	15-16	\$403,218
Noise Barrier 4, East of IH 35W (R29)	10	545	10-12	\$105,912
Total	39	3,738	--	\$893,142
Average Cost per Benefited Receiver				\$22,901
Note: 1. Noise Barrier 1 is comprised of five segments, Noise Barrier 2 is comprised of three segments, Noise Barrier 3 is comprised of two segments, and Noise Barrier 4 is comprised of one segment.				

To avoid noise impacts that may result from future development of properties adjacent to the project, local officials responsible for land use control programs must ensure, to the maximum extent possible, no new activities are planned or constructed along or within the following predicted (2035) noise impact contours.

<u>Land Use</u>	<u>Impact Contour</u>	<u>Distance from ROW</u>
NAC category B & C	66 dB(A)	260 feet
NAC category E	71 dB(A)	Within ROW

Noise associated with the construction of the project is difficult to predict. Heavy machinery, the major source of noise in construction, is constantly moving in unpredictable patterns. However, construction normally occurs during daylight hours when occasional loud noises are more tolerable. None of the receivers is expected to be exposed to construction noise for a long duration; therefore, any extended disruption of normal activities is not expected. Provisions would be included in the plans and specifications that require the contractor to make every reasonable effort to minimize construction noise through abatement measures such as work-hour controls and proper maintenance of muffler systems.

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

F. Cultural Resources

Cultural resources are structures, buildings, archeological sites, districts (a collection of related structures, buildings, and/or archeological sites), cemeteries, and objects. Both federal and state laws require consideration of cultural resources during project planning. At the federal level, NEPA and the National Historic Preservation Act (NHPA) of 1966, among others, apply to transportation projects such as this one. In addition, state laws such as the Antiquities Code of Texas apply to these projects. Compliance with these laws often requires consultation with the Texas Historical Commission (THC)/ Texas State Historic Preservation Officer (SHPO) and/or federally-recognized tribes to determine the proposed project's effects on cultural resources. Review and coordination of this project followed approved procedures for compliance with federal and state laws.

Build Alternative

A discussion of the potential effects from the Build Alternative on cultural resources is provided below.

1. Archeology

A TxDOT archeologist evaluated the potential for the proposed undertaking to affect archeological historic properties (36 CFR 800.16(l)) or State Archeological Landmarks (SAL) (13 TAC 26.12) in the area of potential effects (APE). The APE for archeology is the footprint of the proposed ROW. The existing ROW footprint is typically 350 feet wide. The proposed new ROW would vary in width, requiring up to 200 feet of new ROW in some areas. The proposed ROW would be built at grade or slightly elevated above surrounding grade, with vertical impacts of less than 3 feet, except at the West Fork Trinity River and at Little Fossil Creek. At the West Fork Trinity River, the proposed design calls for widening the existing bridge which would have impacts to a depth of more than 12 feet. At Little Fossil Creek, not only would the existing bridge be widened, but new frontage roads would be constructed which would also have impacts of more than 12 feet.

Section 106 review and consultation proceeded in accordance with the First Amended Programmatic Agreement among the FHWA, TxDOT, SHPO, and the Advisory Council on Historic Preservation (ACHP) Regarding the Implementation of Transportation Undertakings (PA-TU), as well as the Memorandum of Understanding (MOU) between the THC and TxDOT. The following documentation presents TxDOT's findings and explains the basis for those findings.

A review of the Texas Archeological Sites Atlas revealed two previously recorded prehistoric archeological sites (41TR202 and 41TR203) within 1 kilometer of the APE. An archeological survey conducted by Geomarine Inc. in 2005 for the USACE under Antiquities Permit 3704 documented these sites on either side of IH 35W on the north bank floodplain of the West Fork Trinity River directly adjacent to the proposed project area.

SWCA performed a survey of the project APE on behalf of TxDOT under Texas Antiquities Permit No 4924. TxDOT coordinated with THC/SHPO twice. The first time, TxDOT presented the results of SWCA's survey. The second time, TxDOT proposed no additional survey based on a design change that occurred following the survey work. Due to additional design changes additional survey is required and will occur and be coordinated with THC/SHPO and Tribes at a later date.

Evaluation of the sites was not completed due to denial of right of entry by a private property owner. Under existing agreements with THC and SHPO/FHWA/ACHP, TxDOT may continue project planning and the NEPA process as long as review and consultation are completed prior to construction.

Section 106 consultation with federally recognized Native American tribes with a demonstrated historic interest in the area was initiated on April 7, 2009 and June 6, 2011 (**Appendix D**). No objections or expressions of concern were received within the comment period. 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 and MOU.

2. Standing Structures

A review of the National Register of Historic Places (NRHP), the list of SAL, and the list of Recorded Texas Historic Landmarks (RTHL) indicated that two historically significant resources have been previously documented within the APE: the Butler Place and Oakhurst neighborhoods. It has been determined through consultation with the SHPO that the APE for the project is 150 feet from the proposed ROW for all impacts except noise.² A reconnaissance survey revealed that there are 135 historic-age resources (built prior to 1967) on 102 numbered resources located within the project area of potential effects. The historic-age resources include four suburban neighborhoods, one flood control system, five bridges, seven industrial resources, 23 commercial resources, and 73 residences. TxDOT determined that three of the historic-age resources, sites 41, 42, and 101 are eligible for listing in the NRHP.

Site 41 is the Fort Worth Floodway and West Fork Trinity River Levees. The Fort Worth Floodway system was constructed between 1950 and 1958 and determined NRHP eligible by the USACE. The Fort Worth Floodway system was included in the list of NRHP eligible resources attached to the Programmatic Agreement between the USACE and the Texas SHPO signed March 17, 2006. While the USACE's determination does not inventory all of the Floodway's contributing features, the levees in the project APE run for approximately 24 miles along the West Fork Trinity River and its tributaries in Tarrant County. The Floodway is NRHP eligible as a historic landscape under Criterion A: Community Development at the local level. It is also NRHP eligible for Criterion C: Engineering at the state level.

Site 42 is the East Belknap Street at Trinity River Bridge, constructed in 1932. It is the longest concrete cantilever span bridge in Texas in terms of both its main span and its overall length. Decorative features include a pointed arch motif on the piers, bents, and railings. It is NRHP eligible under Criterion C: Engineering at the state level.

² For noise impacts, the APE is the 66 dBA contour line per state and federal standards. Historic resources beyond the 150 APE, but within the noise APE, were not individually inventoried in the historic resources survey report.

Site 101, the Ralston Purina Complex Historic District, is NRHP eligible under Criterion A: Industry at the local level for association with Fort Worth grain processing. Under Criterion C, it is eligible at the local level for type (both terminal and receiving grain elevator) and period of construction (early use of steel, reinforced concrete, and slip form construction in grain elevators). The Fort Worth Elevator Facility is individually eligible as one of the earliest reinforced concrete grain elevators in the city. Between its early beginnings and the longevity of the companies, the designers employed new structural materials and construction processes as they became available in Texas. The Ralston Purina Complex Historic District is also eligible under C at the state level as a work of a Master (civil engineer Charles M. Davis). Contributing resources include the Fort Worth Elevator facility, the Purina Mills facility, the conveyor connecting the two facilities, and the section of the railroad bed between East 1st and East 4th Streets.

The Oakhurst Historic District was constructed between 1924 and 1959. It consists of both the Oakhurst and Oakhurst West additions. It was determined NRHP eligible in 2007 by SHPO under Criteria A: Community Development and C: Design. A suburban middle class neighborhood, the Oakhurst Historic District features a mix of architectural styles from Bungalow to Ranch houses. The boundaries proposed by a forthcoming NRHP nomination are Oakhurst Scenic Drive, Watauga Road, North Sylvania Avenue, and Yucca Avenue. Contributing resources in the 150 foot APE are sites 8-15.

Resource #103 (sub numbers 1 to 25) is the Butler Place Historic District. It was constructed between 1939 and 1940 with funding from the United States Housing Authority as a segregated low-income housing project. Several prominent architects and landscape designers were associated with the design. Even with the loss of two buildings and the installation of an unsympathetic concrete sound wall during the construction of IH 35W, the district retains a high degree of integrity location, design, setting, materials, workmanship, feeling, and association. The district was formally placed on the NRHP on August 8, 2011. Butler Place is significant under Criterion A: Ethnic Heritage – African-American, Politics/Government, and Social History at the local level. The period of significance is 1938 -1960. It is also significant under Criterion C: Design at the local level with a period of significance of 1940. Defining characteristics include the site plan, landscaping (plantings, sidewalk layout), streamlined poly-chrome brick construction, concrete entrance screens, wood-sash double hung windows, decorative brick cornices, rounded-brick window jams, and stripped Colonial Revival detailing such as cupolas. Of the 25 contributing resources, only building numbers 1-5, 7-11, 14, and 25 are in the APE.

Resource #97 (111 Hampton) had the potential to be considered eligible for the NRHP under Criterion C; however, further review of the property by TxDOT historians revealed that the rear half of the original building has been removed and the property does not have integrity of design, materials, workmanship, feeling, or association. SHPO concurred on September 12, 2011 that the property was not eligible for listing on the NRHP (**Appendix D**).

On July 17, 2009 SHPO concurred that all other historic-age resources in the APE were not NRHP eligible (**Appendix D**).

In accordance with 36 CFR 800.5, TxDOT Historians applied the Criteria of Adverse Effect and determined the project will have no adverse effects to NRHP eligible or listed resources in the APE except to the Oakhurst Historic District.

The project would pose no direct effects to the Butler Place Historic District (Resource #103) as no new ROW would be acquired from it. The existing sound wall complies with FHWA noise

criteria and would conceal all new construction from the historic district. Intersection improvements at the east end of the Luella Street overpass would have no potential to cause effects to historic resources per the programmatic agreement (PA). SHPO concurred with this determination on September 12, 2011 (**Appendix D**).

The project would pose no direct effects to East Belknap Street at Trinity River Bridge (Resource #42) as the proposed work would be limited to restriping for one way traffic. Construction of a new bridge approximately 4-6 feet downstream would have no direct impacts. An EPIC has been created to ensure SHPO would be provided the opportunity to comment on the design of the new bridge.

TxDOT Historians determined that the proposed project would have no adverse effect and *de minimis* impacts to the NRHP eligible Fort Worth Floodway system (Resource #41). The estimated size of Resource #41 is on the order of 1,164 acres representing two levees with 200 foot wide bases on each side of the 24 miles of NRHP eligible waterway. The proposed project would require 5.57 acres of new easements from the Floodway along the crest of the right bank levee. This represents 0.47 percent of the historic property. Using 5.57 acres of the floodway would neither change the contours of the levee nor hinder its operation as a component of the flood control system. Thus the proposed use would have no adverse effect to the property's integrity of location, design, setting, materials, workmanship, feeling, and association. SHPO concurred with these findings on September 12, 2011 (**Appendix D**).

The proposed activity at the NRHP eligible Ralston Purina Complex Historic District (Resource #101) would neither hinder current operations at Resource #101 nor change the location of the historic entrance. Widening IH 35W and construction of the flyover at this location would not be an adverse visual effect. Under Section 4(f) regulations, 23 CFR 774.17, the proposed ROW acquisition is not an adverse effect and no use occurs. No land is being permanently incorporated into TxDOT ROW from within the contributing portion of the Ralston-Purina Complex Historic District. Further, the proposed construction would not hinder the operations of the historic elements of the facility. In accordance with 23 CFR 774.15(f), the proximity impacts of this proposed action will not result in substantial impairment to the activities, features, or attributes of the Ralston Purina Complex Historic District. SHPO concurred with this determination on September 12, 2011 (**Appendix D**).

The project would pose no direct effects as no new ROW would be acquired from the Oakhurst Historic District or from the contributing resources in the APE (Resources #8 – #15). Because the Oakhurst Historic District is currently impacted by traffic noise, TxDOT noise specialists reviewed the abatement measures available under 23 CFR 772 and determined that none would be reasonable and feasible. Noise modeling of the no-build alternative for 2035 indicates noise impacts to fewer contributing resources than to the build alternative. On April 27, 2012, SHPO determined that the predicted noise impacts to the Oakhurst Historic District would be adverse under 36 CFR 800.5 as they would impact integrity of feeling of the bucolic landscape and secluded country-like qualities. In recognition that none of the many alternatives considered address the current and predicted noise impacts, SHPO accepted inclusion of a stipulation in the contract with any third party developer requiring the use of a Registered Landscape Architect in the development of the landscaping plan for the proposed project as sufficient measure to resolve the adverse effect. In addition, residents of the historic district will have the opportunity to pursue noise barriers on local or private property (**Appendix D**).

Potential indirect economic impacts from noise to real estate values are expected to be commensurate with changes to real estate values throughout the Oakhurst Historic District.

Further, Donovan Rypkema, Owner, Heritage Strategies International, has established that historic districts are less vulnerable to market volatility.

Efforts to minimize harm to historic resources in the APE have been an integral part of the project planning and development process:

- No ROW or easements would be acquired from the Butler Place or Oakhurst historic districts.
- The travel lanes at the point where the existing lanes are closest to the Oakhurst Historic District would be relocated 18 feet away from the Oakhurst Scenic Drive.
- TxDOT noise specialists reviewed the abatement measures available under 23 CFR 772 and determined that none would be reasonable and feasible at the Oakhurst Historic District.
- SHPO, TxDOT, and FHWA consulted broadly, including NCSHPO and RE: NEPA networks, in unsuccessful efforts to identify other feasible and reasonable mitigation alternatives.
- An EPIC has been created to minimize light-related issues within the Oakhurst Historic District. The final design of the project will prohibit high mast lighting systems in that vicinity. Additionally, compliance with Texas regulations concerning “Dark Sky” lighting will help reduce light spill beyond the roadway.
- An EPIC has been created to minimize any visual-related impacts to the Oakhurst historic district, the TxDOT Fort Worth District will include a stipulation in the contract with any third party developer requiring the use of a Registered Landscape Architect in the development of the landscaping plan for the proposed project.
- No work, other than restriping would be done to the Belknap Street at Trinity River Bridge.
- An EPIC has been created to ensure SHPO has the opportunity to comment on the design of the new bridge proposed immediately downstream.
- Numerous alternatives at the Ralston Purina Complex Historic District were investigated. Options placing the frontage road near the loading shed were discarded as they would seriously impact plant operations.
- Proposals to relocate the centerline of the access road in front of Ralston Purina Complex Historic District to within 37’ – 8” of the loading shed were revised to require about 0.2 acres less ROW and to ensure the facility could continue to function as it currently does. The historic entrance to the Ralston Purina Complex Historic District would remain where it is. Only 0.68, or 5.7%, of the 11.85 acres that comprise the historic district would be required from Ralston Purina.
- The flyover was originally designed with an earth-fill embankment, but was redesigned for bents and the increased transparency they provide. Bent placement options were discussed with Ralston Purina to ensure they would not hinder plant operations.
- The flyover bents and crash-tested rail at the Ralston Purina Complex Historic District would be of plain, unornamented design and would not create a false sense of history. Crashed tested rail of more transparent designs were investigated to minimize visual impacts, but were judged not prudent or feasible because of constructability, safety, or cost considerations.

Pursuant to Stipulation IX.D.7 “Resolution of Effects” of the First Amended Statewide Programmatic Agreement for Transportation Undertakings (PA-TU) between FHWA, SHPO, the Advisory Council on Historic Preservation, and TxDOT and the MOU, consultation with SHPO and consulting parties resulted in concurrence of adverse indirect effects based on noise

impacts. SHPO accepted TxDOT's measure to resolve the adverse effect on April 27, 2012 (**Appendix D**).

TxDOT historians reviewed 23 CFR 774.15 (Section 4(f) - Constructive use Determinations) and on the basis of the consultation with the jurisdictional authority, TxDOT intends to pursue a *no constructive use* of the Oakhurst Historic District determination with FHWA for this project.

TxDOT Historians determined that the proposed project would have no adverse effect to the historic Fort Worth Floodway system and complies with FHWA's *de minimis* 4(f) guidelines. SHPO concurred with these determinations of effect on September 12, 2011 and November 2, 2011. As a result, TxDOT intends to pursue a *de minimis* 4(f) determination with FHWA for this project. Coordination documents are included in **Appendix D**.

G. Section 4(f) Properties

Section 4(f) of the Department of Transportation (DOT) Act of 1966, as amended, provides for the protection of certain lands affected by transportation projects. Section 4(f) provides that the Secretary of Transportation may not approve any program or project which requires the use of land from a publicly-owned park, recreational area, or wildlife and waterfowl refuge lands or historic sites of national, state, or local significance as determined by the official having jurisdiction thereof or any significant historic site, unless there is no feasible and prudent alternative to the use of such land and the proposed action includes all possible planning to minimize harm.

1. Historic Properties

Per 23 CFR 774.15, a constructive use occurs when the transportation project does not incorporate land from a Section 4(f) property, but the project's proximity impacts are so severe that the protected activities, features, or attributes that qualify the property for protection under Section 4(f) are substantially impaired. Substantial impairment occurs only when the protected activities, features, or attributes of the property are substantially diminished.

Fort Worth Floodway

One historic property, the Fort Worth Floodway system (Resource #41), will be impacted by the project. The estimated size of the property is on the order of 1164 acres representing two levees with 200 foot wide bases on each side of the 24 miles of NRHP eligible waterway. The proposed project would require 5.57 acres of new easements from the Floodway along the crest of the right bank levee. This represents 0.47% of the historic property. Using 5.57 acres of the floodway would neither change the contours of the levee nor hinder its operation as a component of the flood control system. Thus the proposed use would have no adverse effect to the property's integrity of location, design, setting, materials, workmanship, feeling, and association. As defined in Part 774 of the Section 4(f) Final Rule and Section 6009(a) of SAFETEA-LU, TxDOT Historians determined, and THC concurred on September 12, 2011, that the proposed project would have no adverse effects to the historic properties and complies with FHWA's *de minimis* 4(f) guidelines. TxDOT intends to pursue a *de minimis* 4(f) determination with FHWA for this project.

Oakhurst Historic District

The noise impacts to the Oakhurst Historic District described in TxDOT's April 3, 2012 letter to SHPO do not constitute constructive use as defined in 23 CFR 774.15 (Section 4(f) - Constructive use Determinations.)

In addition to the plat, internal scenic views, bucolic landscape, preservation of trees, residential architecture, and association with Hare & Hare described in the National Register nomination, a quiet setting is generally recognized as an attribute of a historic residential suburban development per SHPO's April 27, 2012 letter (see Appendix D) and 23 CFR 774.15(e)(1)(iii).

The noise model for the existing conditions predicts that three of the Oakhurst Historic District's 565 contributing resources fall within the 66 dBA contour line that defines the noise APE. Ten contributing resources would be impacted by noise in 2035 if the proposed project was not built. Finally, the noise modeling predicts the build alternative would impact 24 contributing resources in 2035. See April 3, 2012 letter to SHPO, Appendix D. The design of the proposed alternative would reduce the noise level for one receiver and no change for a second in the Oakhurst Historic District when compared to the existing facility. Predicted 2035 impacts for the no-build alternative are 10 contributing resources. The net number of resources impacted by the proposed project, per 23 CFR 774.15(e)(2), would be 14 – or 2.5% of the contributing resources.

TxDOT has consulted extensively with SHPO on matters of eligibility and effect between July 2009 and April 2012. See Appendix D.

The proposed project would not impair the esthetic features of the Oakhurst Historic District as there would be no impacts to integrity of location, design, materials, workmanship, or association. On April 27, 2012 SHPO concurred that there would be no adverse visual effects to setting. The project would not restrict access or have vibration impacts to the historic district.

Since the noise impacts beyond what would reasonably be expected from the no build alternative in 2035 would be to less than 2.5% of the contributing resources, the protected activities, features or attributes that qualified the Oakhurst Historic District for listing on the NRHP would not be substantially diminished or substantially impaired.

2. Public Park Properties

There are five Section 4(f) park properties located within the study area.

- Harmon Field Park located on US 287 N, east of IH 35W
- Greenway Park located at 2000 Pharr Street, east of IH 35W and north of SH 121
- Delga Park located at 1001 Nixon Street, west of IH 35W and south of the West Fork Trinity River
- Riverside Park located at 501 Oakhurst Scenic Drive, north of SH 121
- Trinity Trails along the West Fork Trinity River at IH 35W and SH 121

There would be no take or constructive use of Delga Park, Riverside Park, or the Trinity Trail at SH 121; therefore, these Section 4(f) properties would not require a 4(f) evaluation. Pharr Street, which acts as the entrance into Greenway Park would be reconstructed within the park to accommodate the proposed frontage road. Reconstruction of Pharr Street would affect approximately 0.04 acre of existing pavement in the 15.97 acre park. There would be no impact to the use of Greenway Park; therefore, a Section 4(f) evaluation is not required. Impacts would occur to Harmon Field Park and the Trinity Trail at IH 35W. These two publicly-owned park/recreation facilities are discussed below.

Harmon Field Park

A ROW easement (ROWE) between TxDOT and TRWD for use of approximately 0.20 acre of Harmon Field Park (approximately 122.7 acres in size) would be required due to the reconstruction of the pedestrian bridge over US 287. A ROWE would allow TxDOT to construct and maintain the proposed pedestrian bridge; however, TRWD would retain ownership of the 0.20 acre of park. The proposed highway improvements require that the existing pedestrian bridge be removed. The bridge connects Butler Place to Harmon Field Park and the Bertha Collins Community Center and is used by Butler Place residents to cross US 287. In order to provide a safe crossing to the park, TxDOT proposes to reconstruct the pedestrian bridge to current design and ADA standards. In order to be ADA-compliant, the bridge must be extended beyond its existing limits which would cause it to use 0.20 acre of the park. The location of the proposed bridge is shown in **Figure 4, Sheet 17**.

Extending the pedestrian bridge into Harmon Field Park would improve access to the park without diminishing the use of the park. Because the proposed project would use less than 0.10 percent of the park and the area to be impacted would be retained by TRWD, the reconstruction of the pedestrian bridge would be a temporary use of the park and would be considered a *de minimis* impact.

Harmon Field Park was avoided by the proposed project in the original preliminary design; however, the introduction of improvements to US 287 required that the bridge be replaced or removed. An initial meeting with Butler Place residents held in March 2011 indicated that they use the US 287 pedestrian bridge and would like to see it replaced. A second meeting was held in January 2012 with Butler Place residents to gather residents' opinions on the design of the proposed US 287 bridge. After this meeting, TxDOT decided to reconstruct the US 287 bridge. **Section VI. – Public Involvement and Local Government Coordination** provides more information regarding the meetings held with Butler Place residents.

Because the pedestrian bridge has to cross both the highway and the frontage road and the park is very close to the frontage road, it is not possible to construct a new bridge to ADA standards without impacting the park. Efforts were made to minimize the design; however, because the pedestrian bridge crosses US 287 and a connector ramp, it is higher than normal and requires more area to safely bring the bridge back to the ground. The ramp was reduced as much as possible to lessen the impact on the park and still maintain ADA standards. No mitigation for impacting the park is currently proposed. The temporary use of the park for constructing the pedestrian bridge would not affect the use of the park and would provide improved access to the park.

Trinity Trail at IH 35W

A ROWE between TxDOT and the TRWD for use of approximately eight acres of the Fort Worth Trinity Trail (approximately 154.5 acres in this section) at IH 35W would be required to construct the proposed IH 35W bridge over the West Fork Trinity River. The placement of columns associated with the proposed IH 35W bridge would require that an access trail that connects Nixon Street to the Trinity Trail be realigned. The final location of the realigned access trail was determined through coordination between TxDOT and TRWD (**Appendix D**). Approximately 685 feet of the access trail would be realigned. The realignment of the existing paved trail would reduce the connection between Nixon Street and the trail from 685 to 454 linear feet. To minimize impacts and inconvenience to trail users and maintain trail access, TxDOT has committed to TRWD in a letter dated March 29, 2012 to construct the realigned access trail connection to Delga Park prior to closing and removing the existing section of access trail. The Trinity Trail would remain open during normal operating hours. In the Section 4(f) concurrence letter dated March 29, 2012, TxDOT acknowledged TRWD's hours of operation as between 6:00 a.m. to 10:00 p.m. for the Trinity Trail. Occasionally factors beyond the control of TxDOT may occur during the placement of bridge beams requiring additional time to complete. To ensure the safety and mobility of vehicles along the corridor and construction personnel, beam placement may be required to extend into hours the Trinity Trail is open for public use. In the event the Trinity Trail would need to be temporarily closed due to construction activities, TxDOT would coordinate with TRWD to provide information on when the Trinity Trail would re-open.

Although the proposed project would require a ROWE from the Fort Worth Trinity Trail, there would be no physical or permanent impacts to the trail prohibiting the use thereof. Based on the minimal amount of additional ROWE required from the Trinity Trail and agreement from TRWD that the proposed project would not adversely affect the activities, features, and attributes that qualify Trinity Trail for protection under Section 4(f), this would be considered a *de minimis* impact.

The Trinity Trail is parallel to the West Fork Trinity River and passes directly underneath IH 35W. Rerouting the entire IH 35W corridor in order to avoid the Trinity Trail is not feasible. The river and trail would be spanned to minimize permanent impacts to the facility. Another minimization measure included in the design is shifting the proposed centerline to the west of the existing centerline. This allows the proposed ROW to be centered at a point in the West Fork Trinity River that is perpendicular to the river and the trail. If the highway remained at the existing centerline, the proposed bridge would be at an angle to the river and would impact a longer length of the trail. Mitigation for the realignment of the access path is not proposed.

Summary

Because the proposed minimal impacts at Harmon Field Park and the Trinity Trail would not adversely affect the activities, features, and attributes of the open recreation areas, Section 4(f) *de minimis* determinations are anticipated to be received by FHWA. The coordination letters from the agencies with jurisdiction over the facilities indicating no adverse effects are included in **Appendix D**.

H. Items of Special Nature

Coastal Zone Management Plan

The proposed project is not located within the Texas Coastal Zone Management Program boundary; therefore, the proposed project is not subject to the guidelines of the associated plan.

Wild and Scenic Rivers

There are no wild and scenic rivers in the proposed project area; therefore, there would be no impacts to a river designated as a component or proposed for inclusion in the national system of Wild and Scenic Rivers.

Airway-Highway Clearance

There is one airport, Fort Worth Meacham International Airport, and two heliports, SW Region Federal Aviation Administration (FAA) heliport and a City of Fort Worth heliport, found within the vicinity of the proposed project area. Elevations of the airport, heliports, and the proposed project's structures (plus 17 feet per federal guidelines) were determined, as well as the distances between the airport, heliports, and proposed structures. These measurements are provided in **Table 33**. Based on the distances and elevations indicated in **Table 33** and current Federal Regulations for Objects Affecting Navigable Airspace (CFR 77), the proposed structures do not penetrate the 100:1 approach surface slope for airports, and one structure, shown in bold italics in **Table 33**, penetrates the 25:1 approach surface slope for heliports. A FAA Notice of Proposed Construction or Alteration form (Form AD-7460-1) will be completed during the design phase and submitted by TxDOT to the FAA for their approval prior to construction of proposed improvements surrounding the heliport.

Table 33: Airfields & Proposed Structures - Distance and Elevation					
Point No.	Point Name	Elevation (FT)	Distance to Closest Runway (FT)	Closest Runway	Elevation* (FT)
1	35W ML @ Meacham	651	15,000	Meacham Int'l Airport	674
2	35W ML @ Meacham	651	2,419	SW Region FAA Heliport	598
3	35W GPL-SB ML over 35W SB	673	13,718	Meacham Int'l Airport	674
4	35W GPL-SB ML over 35W SB	673	5,441	SW Region FAA Heliport	598
5	35W NB ML-GPL over 35W NB	672	13,846	Meacham Int'l Airport	674
6	35W NB ML-GPL over 35W NB	672	5,401	SW Region FAA Heliport	598
7	35W ML @ RR and Dooling	677	13,516	Meacham Int'l Airport	674
8	35W ML @ RR and Long	672	13,105	Meacham Int'l Airport	674
9	35W SB ML-183 over 35W SB	664	12,294	Meacham Int'l Airport	674
10	183-35W NB ML over 35W NB	663	12422	Meacham Int'l Airport	674
11	35W SB-Northside Dr over 183-35S	633	12,895	Meacham Int'l Airport	674
12	35W SB-Northside Dr over 183-35S	633	4,814	City of Fort Worth Heliport	538
13	35W SB frontage road over RR and Chesapeake	607	13,644	Meacham Int'l Airport	674
14	35W SB frontage road over RR and Chesapeake	607	3,751	City of Fort Worth Heliport	538
15	183-35W SB over RR and Chesapeake	616	13,362	Meacham Int'l Airport	674

Table 33: Airfields & Proposed Structures - Distance and Elevation

Point No.	Point Name	Elevation (FT)	Distance to Closest Runway (FT)	Closest Runway	Elevation* (FT)
16	183-35W SB over RR and Chesapeake	616	4,207	City of Fort Worth Heliport	538
17	35W SB over RR and Chesapeake	618	13,333	Meacham Int'l Airport	674
18	35W SB over RR and Chesapeake	618	4,365	City of Fort Worth Heliport	538
19	35W ML over RR and Chesapeake	623	13,293	Meacham Int'l Airport	674
20	35W ML over RR and Chesapeake	623	4,498	City of Fort Worth Heliport	538
21	35W GPL-NB ML over RR and Chesapeake	626	13,403	Meacham Int'l Airport	674
22	35W GPL-NB ML over RR and Chesapeake	626	4,431	City of Fort Worth Heliport	538
23	35W NB over RR and Chesapeake	621	13,367	Meacham Int'l Airport	674
24	35W NB over RR and Chesapeake	621	4,527	City of Fort Worth Heliport	538
25	35W NB frontage road over RR and Chesapeake	619	13,705	Meacham Int'l Airport	674
26	35W NB frontage road over RR and Chesapeake	619	4,218	City of Fort Worth Heliport	538
27	35W SB @ Northside Dr	577	15,389	Meacham Int'l Airport	674
28	35W SB @ Northside Dr	577	1,749	City of Fort Worth Heliport	538
29	35W ML @ Northside Dr	579	15,436	Meacham Int'l Airport	674
30	35W ML @ Northside Dr	579	1,804	City of Fort Worth Heliport	538
31	35W NB @ Northside Dr	576	1,5514	Meacham Int'l Airport	674
32	35W NB @ Northside Dr	576	1,806	City of Fort Worth Heliport	538
33	35W SB frontage road over Trinity River	563	16,765	Meacham Int'l Airport	674
34	35W SB frontage road over Trinity River	563	1,300	City of Fort Worth Heliport	538
35	35W SB GPL to Belknap St over Northside Dr-35W SB	588	16,106	Meacham Int'l Airport	674
36	35W SB GPL to Belknap St over Northside Dr-35W SB	588	1,161	City of Fort Worth Heliport	538
37	35W SB over Trinity River	568	16,920	Meacham Int'l Airport	674
38	35W SB over Trinity River	568	1,483	City of Fort Worth Heliport	538
39	35W ML over Trinity River	574	17,793	Meacham Int'l Airport	674

Table 33: Airfields & Proposed Structures - Distance and Elevation

Point No.	Point Name	Elevation (FT)	Distance to Closest Runway (FT)	Closest Runway	Elevation* (FT)
40	35W ML over Trinity River	574	2,238	City of Fort Worth Heliport	538
41	35W NB over Trinity River	568	17,015	Meacham Int'l Airport	674
42	35W NB over Trinity River	568	1,599	City of Fort Worth Heliport	538
43	Belknap St to 35W NB GPL over Trinity River	586	17,584	Meacham Int'l Airport	674
44	Belknap St to 35W NB GPL over Trinity River	586	2,067	City of Fort Worth Heliport	538
45	35W NB-Northside Dr over Trinity River	566	17,329	Meacham Int'l Airport	674
46	35W NB-Northside Dr over Trinity River	566	1,876	City of Fort Worth Heliport	538
47	35W NB frontage road over Trinity River	565	17,424	Meacham Int'l Airport	674
48	35W NB frontage road over Trinity River	565	1,964	City of Fort Worth Heliport	538
49	35W SB-121N @ 121 Interchange	657	20,011	Meacham Int'l Airport	674
50	35W SB-121N @ 121 Interchange	657	4,639	City of Fort Worth Heliport	538
51	35W SB ML to Downtown @ 121 Interchange	604	20,000	Meacham Int'l Airport	674
52	35W SB ML to Downtown @ 121 Interchange	609	5,000	City of Fort Worth Heliport	538
53	Downtown to 35W NB Managed Lanes @ 121 Interchange	625	20,000	Meacham Int'l Airport	674
54	Downtown to 35W NB Managed Lanes @ 121 Interchange	626	5,000	City of Fort Worth Heliport	538
55	121 SB-35W NB @ 121 Interchange	610	20,000	Meacham Int'l Airport	674
56	121 SB-35W NB @ 121 Interchange	611	4,560	City of Fort Worth Heliport	538
57	121 SB-280 @ 121 Interchange	624	20,000	Meacham Int'l Airport	674
58	121 SB-280 @ 121 Interchange	624	4,648	City of Fort Worth Heliport	538
59	121 SB @ 121 Interchange	626	5,000	City of Fort Worth Heliport	538

*Airport Diagram 11125, Fort Worth Meacham International (FTW), Fort Worth, TX, SC-2, 30 JUN 2011 to 28 JUL 2011

Heliport runway elevation: http://www.faa.gov/airports/airport_safety/airportdata_5010/menu/index.cfm.

NB – Northbound

SB – Southbound

ML – Mainlanes

RR – Railroad

GPL – General purpose lanes

I. Indirect Impacts

FHWA generally describes the consequences of an action as falling into two broad categories: direct and indirect. Indirect effects are defined as those "...which are caused by an action and are later in time or farther removed in distance but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems" (40 CFR 1508.8). Potential indirect effects could include the following:

- Development and land use changes due to improved access;
- Increases in storm water runoff due to changes in land use and increased development on land surrounding the proposed facility;
- Increased sedimentation of wetlands and streams and decreased water quality due to future development of land adjacent to the new facility;
- Loss of wildlife habitat and decreased habitat value in areas of increased land development spurred by the proposed project;
- Impact to cultural resource sites from development projects on private properties that do not require cultural resource investigations because public funds or permits are not required;
- Increased use of parks and recreational areas due to more convenient access provided by the new facility;
- Stimulation of the local economy from the circulation of construction spending; improved access to employment opportunities, markets, goods, or services such as health and education; an increased work force related to construction; and development stemming from the new facility; and,
- Impacts to air quality as a result of the redistribution of traffic.

Indirect effects were assessed based on guidance described in TxDOT's *Revised Guidance on Preparing Indirect and Cumulative Impact Analysis* (September 2010), the Transportation Research Board's (TRB) National Cooperative Highway Research Program (NCHRP) Report 466: *Desk Reference for Estimating the Indirect Effects of Proposed Transportation Projects* (TRB, 2002), and NCHRP 25-25, Task 22: *Forecasting Indirect Land Use Effects of Transportation Projects*. Indirect impacts can occur in three broad categories:

1. Encroachment-Alteration Effects - Alteration of the behavior and functioning of the affected environment caused by project encroachment (e.g., physical, chemical, biological);
2. Induced Growth Effects - Project-influenced development impacts (i.e., the land use effect); and,
3. Effects Related to Induced Growth - Impacts such as the effects of the change of land use on the human and natural environment.

For transportation projects, Category 1 impacts include project impacts such as fragmentation of habitat by a roadway or dispersal of pollutants onto adjacent lands. Indirect impacts from Categories 2 and 3 are typically encountered outside of the project ROW, and may result from actions taken by other parties such as private land developers not directly associated with the project. The CEQ regulations state that the environmental document must identify all the indirect impacts that are known and make a good faith effort to explain the impacts that are not known, but which are "reasonably foreseeable." CEQ has issued guidance that further explains "reasonably foreseeable" as events that must be "probable."

The indirect impacts analysis was conducted in accordance with the seven-step process suggested in TxDOT's *Revised Guidance on Preparing Indirect and Cumulative Impact Analysis*. **Table 34** details the seven steps.

Table 34: Seven Step Approach to Estimate Indirect Impacts	
Step 1 – Scoping:	The basic approach, effort required, and geographical boundaries of the study are determined.
Step 2 – Identify the Study Area’s Direction and Goals:	Information regarding the study area is compiled with the goal of defining the context for assessment.
Step 3 – Inventory the Study Area’s Notable Features:	Additional data on environmental features are gathered and synthesized with a goal of identifying specific environmental issues by which to assess the proposed project.
Step 4 – Identify Impact-Causing Activities of Proposed Action and Alternatives:	Fully describe the component activities of each project alternative
Step 5 – Identify Potentially Substantial Indirect Effects for Analysis:	Indirect effects associated with project activities and alternatives are cataloged, and potentially substantial effects meriting further analysis are identified.
Step 6 – Analyze Indirect Effects and Evaluate Analysis Results:	Qualitative and quantitative techniques are employed to estimate the magnitude of the potentially substantial effects identified in Step 5 and describe future conditions with and without the proposed transportation improvement.
Step 7 – Assess Consequences and Consider/Develop Mitigation:	The consequences of indirect effects are evaluated in the context of the full range of project effects. Strategies to avoid or lessen any effects found to be unacceptable are developed. Effects are reevaluated in the context of those mitigation strategies.

All indirect effects would occur outside of the ROW. As to the cause and effect relationship between the proposed project and the indirect impact, the CEQ states that indirect effects may include induced changes to land use resulting in resource impacts (40 CFR 1508.8). Indirect effects can be linked to direct effects in a causal chain (NCHRP Report 466). The chain can be extended as indirect effects produce further consequences.

Step 1 - Scoping

Study Approach and Level of Effort

The process described in NCHRP Report 466 Figure 3-1 was used to determine the general study approach and required level of effort for the indirect effects analysis. The results are shown in **Table 35**.

Table 35: Level of Effort for Indirect Impacts Analysis		
Project Variables		Assessment Methodology*
Project Type	Roadway Expansion	Qualitative – not a new highway or complex intermodal project
Project Scale	Medium – 5.4 miles; 85.4 acres of new ROW	Quantitative – medium-sized project with complex issues
Project Scope	Regional	Quantitative – not limited to local movements
Stage of Study	Design Alternatives	Quantitative – specific design identified and direct impacts are quantifiable

Table 35: Level of Effort for Indirect Impacts Analysis		
Project Variables		Assessment Methodology*
Project Setting	Urban area within the City of Fort Worth. Land uses adjacent to the project area are commercial, residential, industrial, recreational, entertainment and floodplain with some undeveloped areas.	Qualitative – urban area with limited development potential
Design Features	Full access control and added capacity	Quantitative – additional lanes with access maintained
Project Purpose	To improve mobility within the IH 35W corridor.	Qualitative – does not change local or regional accessibility
Data Available	Discussions with City of Fort Worth. Review of maps and field data.	Qualitative – limited digital data available for use

*Methodology is determined based on measures identified in NCHRP Report 466.

Because of the project variables associated with the proposed project, the indirect impacts analysis will be a qualitative analysis with some quantitative data provided.

Geographic and Temporal Boundaries of the Indirect Effects Area of Influence

Geographic Boundary

The Area of Influence (AOI) is the 20.71 square mile (approximately 13,200 acres) traffic study area utilized by the NCTCOG in generating the performance reports for the proposed project. The traffic study area along the IH 35W corridor extends approximately 1 mile around the proposed project. These performance reports allowed for direct comparison of average trip times, changes in average speed, levels of service, and total trips within the traffic study area. This boundary was similar to a boundary identified by local planners during the December 2008 meeting. The AOI is presented in **Figure 20**.

Temporal Boundary

The temporal component of the indirect impacts analysis is the timeframe in which impacts to resources are expected to occur, which for this analysis is 2012 to 2035. Extending the timeframe forward to 2035 for indirect effects matches *Mobility 2035*, the MTP for the region.

Step 2 – Identify the Study Area’s Direction and Goals

The 13,200-acre AOI is within the limits of the City of Fort Worth. Within the AOI, approximately 3,297 acres of land is undeveloped. The City has developed plans and policies and compiled data which would provide information for identifying the direction and goals associated with the proposed project’s AOI.

Goals

Mobility 2035: The Metropolitan Transportation Plan (NCTCOG)

This plan defines transportation systems and services in the DFW metropolitan area. It serves as a guide for the expenditure of State and Federal funds through the year 2035. The Plan addresses regional transportation needs that are identified through forecasting current and future travel demand, developing and evaluating system alternatives and selecting those options which best meet the mobility needs of the region.

Excess Toll Revenue Sharing Policy: Managed Lane Policy

This policy was developed by NCTCOG to determine how and where excess revenue generated by TxDOT managed lanes would be spent. Excess revenue is considered the annual revenue generated after debt, maintenance, reserve funds, profit, and other expenses related to

the managed lanes are covered. Excess funds would remain within the county where the managed lanes are located. For this project, all excess revenue would be distributed in Tarrant County according to the Excess Toll Revenue Sharing Policy (**Appendix A**).

City of Fort Worth Comprehensive Plan

The Comprehensive Plan is the City's official guide for making decisions about growth and development. It was adopted on February 23, 2010 and is the ninth update of the 2000 Comprehensive Plan. It is a summary of the recommended policies, strategies, programs, and projects that would enable the City to achieve its mission of "focusing on the future, working together to build strong neighborhoods, develop a sound economy, and provide a safe community". In developing the Plan to achieve its mission, five major themes emerged:

1. Promoting Economic Growth
 - Strengthen the effectiveness of economic development incentives by including appropriate capital improvement funding in an overall incentive package that encourages central city redevelopment.
2. Meeting the Needs of an Expanding Population
 - Encourage development that reduces daily VMT for commuters through the creation of growth centers.
 - Encourage new development adjacent to developed or platted areas so as to utilize existing infrastructure and services.
3. Revitalizing the Central City
 - Promote neighborhood stability through a comprehensive and coordinated strategy that addresses housing, neighborhood economic development, infrastructure, parks, cultural programs, safety improvements, and human services.
 - Use the Neighborhood Empowerment Zone program to promote the development of designated urban villages, model blocks, and other targeted redevelopment areas.
4. Developing Multiple Growth Centers
 - Promote location of multifamily units within walking distance of public transportation, employment, and/or shopping to increase accessibility and decrease vehicular traffic generation.
 - Link growth centers with major thoroughfares, public transportation, trails and linear parks.
 - Accommodate higher density residential and mixed uses in areas designated as commercial on the City's future land use maps.
 - Locate large industrial uses along rail lines, highways, or airports within industrial growth centers and other appropriate locations.
5. Celebrating the Trinity River
 - Pursue implementation of the Trinity River Vision Master Plan in cooperation with Streams and Valleys, Inc., the Tarrant Regional Water District, and the USACE.
 - Encourage redevelopment and infill in order to reduce the amount of new impervious surfaces.

The Master Thoroughfare Plan and Street Development

The Master Thoroughfare Plan Standards (adopted by City Council on March 10, 2009) provides a network of public streets that offers access to private and public properties on one hand and mobility on the other. The Plan was developed based on the following criteria: the Comprehensive Plan; future traffic capacity needs; environmental issues (floodplain, drainage, topographic features, etc.); safe utilization by pedestrians, bicyclists, buses, and truck traffic; existing and planned neighborhoods; existing roadways; construction feasibility; and coordination with the NCTCOG's Regional Transportation Plan and with adjacent cities' plans.

The Plan identifies existing and future roadways for the City and its extraterritorial jurisdiction consistent with the above criteria. It recognized that classifications and/or locations of arterials may change based on future conditions.

Mobility and Air Quality (MAQ) Plan

In January 2009, the City Council adopted the MAQ Plan which identifies, analyzes, and recommends transit and roadway projects that will reduce congestion and air pollution. The MAQ Plan also provides a strategic implementation plan, including a financial element. The final product is a comprehensive and multimodal transportation system plan and a programmed effort to improve mobility and air quality. The MAQ Plan identified 12 corridors containing over 80 major roadway and transit alternatives for analysis. The IH 35W is one of these 12 corridors.

Zoning

Zoning is the City's tool in implementing the land use component of the Comprehensive Plan. Through the use of district classifications, zoning helps to regulate land use, promote orderly growth, and protect existing property owners by ensuring a convenient, attractive and functional community. Both the Comprehensive Plan and the Zoning Map designate the AOI as industrial district (primarily along IH 35W and along the northern limits of the study area) and residential and mix-used district. Industrial district in the City may include light, medium, and heavy industrial. Residential includes single-family and low to high density multifamily. Mixed-use includes residential, commercial, institutional, and light industrial. The City guides land use to ensure that land resources appropriately encourage economic development, promote a variety of housing choices, preserve natural and historic resources, and accommodate transportation routes and public facilities, in order to protect and improve Fort Worth's quality of life. Predevelopment conferences with City staff are offered for applicants to learn more about City development policies and procedures and to address site specific issues.

Trinity River Vision Master Plan – The Trinity Uptown Project

The Trinity River Vision Master Plan was adopted by City Council in 2003. It encompasses 88 miles of the Trinity River and its greenbelts and tributaries throughout the Fort Worth area. The master plan identifies opportunities for conservation, linkages, and open space. The primary objectives of the Plan include identifying and improving adjoining land uses, enhancing environmental quality, and flood control. The plan focuses on eight segments of the Trinity River and its tributaries. One of these segments is the Trinity Uptown, which is a bold new plan for waterfront development. It aims to revitalize an 800-acre area north of downtown Fort Worth with a combination of public improvements and private development. Its goal is to provide a vibrant, stimulating environment in which families can live, work, shop, play, and learn. Private development of the area will be possible once flood protection is in place and levees are removed to open up the land. The area will enable up to 10,000 new homes to be constructed in the area, providing a solution to the demand for high-density urban housing.

Bike Fort Worth

Bike Fort Worth is the City of Fort Worth's comprehensive bike plan that was prepared in 2009. The goal of the plan is to improve bicycle facilities in the city in order to make bicycling viable as an alternate form of transportation throughout the city. Supportive policies, programs and facilities are included in the plan. Three goals were identified to measure the success of the plan. 1) Triple the number of bicycle commuters from 0.2 percent to 0.6 percent; 2) decrease the level of bicycle crashes by 10 percent; and, 3) attain official designation as a Bicycle Friendly Community through the League of American Bicyclists. Both on-street and off-street facilities have been identified in the plan. Promoting the plan will create a safe, bicycle-friendly environment for those who choose to use their bicycle for transportation purposes.

Trends

Population

According to the NCTCOG, Fort Worth ranked 2nd after Dallas in the 2009 top 25 cities by population. Fort Worth's 2010 population was 741,206 persons. From 2000 to 2010, Fort Worth's total population increased by 206,512 persons. This represents an average annual increase of 20,651 persons since the 2000 Census, a growth rate of approximately 3.8 percent a year.

Tarrant County is expected to experience growth through the year 2035. Tarrant County experienced a 25 percent growth rate from 2000 to 2010. Population forecasts indicate that Tarrant County will experience a 56 percent growth rate from 2010 through 2035.

Economy

Recently, the Fort Worth area has seen a dramatic increase in the total number of natural gas wells throughout the City and surrounding counties. This increase in natural gas wells is attributed to the large natural gas reserve under Tarrant, Wise, Denton, Johnson, and Parker counties, known as the Barnett Shale. Rising production of natural gas in Tarrant County has helped make Fort Worth a leader in Texas' energy production. Tarrant County is now ranked 7th in top gas producing counties by the Texas Railroad Commission.

The changing economy provides the City with several challenges and many opportunities. The national, state, and local economies began emerging from a slowdown after September 11, 2001. According to the Comprehensive Plan, the City fared well during this time due to its diverse economy and its close proximity to Alliance and DFW airports and the North American Free Trade Agreement IH 35 corridor. In addition, the community's pro-business stance has helped diversify the Fort Worth economy. These factors provide Fort Worth with a firm foundation for growth in future years. However, the policies and programs of the City will be continuously examined to ensure that the City will help mitigate the impacts of a slowing economy and rising energy costs, while promoting its economic strengths.

Employment

Once dependent on agriculture, oil, and defense, the City is developing into a major center for industry, technology, distribution, and transportation. All sectors of the economy are expected to continue to add jobs, with services capturing over 30 percent of the jobs by 2030. Employment in the City grew at a rate of 2.5 percent per year between 2000 and 2010. Per **Table 10**, employment in Tarrant County is expected to grow by 74 percent between 2005 and 2035.

Job growth in the Fort Worth-Arlington Metropolitan Division is forecasted to increase, though at a slightly slower rate than that of the late 1990s. Between 1990 and 2010, the area gained jobs at a rate of 2.3 percent per year. Total job growth is expected to slow to 1.8 percent annually through the year 2030 (2007-2030). This projection takes into account the slowing of the national economy in the face of increasing global competition, geopolitical conflicts, and tightening labor markets. Rising energy costs may play a further role in limiting job growth as gasoline prices continue to rise. According to the Bureau of Labor Statistics (January 2012 report), the DFW unemployment rate is 7.4 percent. The national and state unemployment rates are 8.5 and 7.8 percent, respectively.

Single-Family Home Construction

Single-family home construction was identified as one of the primary land use types in the City. There were 139,200 single-family home units in the City of Fort Worth in 2000 (66 percent of all residential uses) and an estimated 203,912 (69.1 percent of all residential uses) in the year

2010. This development has triggered the construction of public facilities, and development of commercial and retail areas.

School Enrollment

The Texas Education Agency (TEA) guides and monitors activities and programs related to public education in Texas. According to the TEA’s Public Education Information Management System, the 2010-2011 enrollments totaled 9,903 students compared to the 2008-2009 enrollments of 9,241 students within the AOI. This represents a growth rate of 7.2 percent over a period of three years.

NCTCOG Development Monitoring

The NCTCOG maintains a development monitoring database that tracks over 8,000 major developments that exist, are under construction, are announced, or are in the conceptual stages within the MPA. **Table 36** presents a summary of major developments that are either under construction or announced within the City. The table indicates that the AOI is continuing to become more urbanized.

Table 36: Major Developments Within the AOI		
City	Number of Developments	Development Types
Fort Worth	163	Apartment, Condominium, Loft, Business Services, Construction, Convention Center, Correctional Facility, Court, Distribution, Fine Arts, Hotel, Library, Local Administration, Federal Administration, Manufacturing, Single-Tenant Office, Multi-Tenant Office, Entertainment, Parking Garage, Police, Primary Education, Secondary Education, Higher Education, Commercial/Retail, Warehouse
Source: NCTCOG, March 2012.		

Step 3 – Inventory of Study Area’s Notable Features

The third step in the indirect impacts assessment framework involves conducting an inventory of notable features to identify specific issues by which to assess the project. Notable features include sensitive species and habitats; valued environmental components; relative uniqueness, recovery time, and unusual landscape features; and vulnerable elements of the population. The following notable features in the AOI are depicted in **Figure 20**.

Sensitive Species and Habitats

Sensitive species and habitats are those ecologically valuable species and habitats and/or those that are vulnerable to impacts. The undeveloped land identified in the AOI is vulnerable to impacts. This land is primarily located in the northwest quadrant of the AOI and in the floodplain area surrounding the West Fork Trinity River within the AOI. Undeveloped land in the AOI consists of approximately 231 acres of upland woodlands, 88 acres of fencerow vegetation, 228 acres of bottomland hardwoods, 60 acres of riparian woodlands, and 2,691 acres of herbaceous open land.

There is the potential for three state-listed threatened species (Louisiana pigtoe, Texas heelsplitter, and timber/canebrake rattlesnake) to be present in the AOI. In addition, there is the potential for four non-listed species of concern (plains spotted skunk, fawnsfoot, little spectaclecase, and Texas garter snake) to be present in the AOI. **Table 20** describes the habitat for these species.

The West Fork Trinity River and its unnamed tributaries, Little Fossil Creek and its unnamed tributaries, and Sycamore Creek traverse the AOI. There are approximately 21 linear miles of streams, 60 acres of wetlands, 6 acres of ponds, and 1,758 acres of flood plains associated with these water bodies in the AOI.

Valued Environmental Components

Valued environmental components are those characteristics or attributes of the environment that society seeks to use, protect, or enhance such as parks and recreation areas. There are 28 parks within the AOI. Collectively, these parks total approximately 246 acres. The parks range in size from less than one acre to approximately 63 acres. These notable features are not expected to be adversely affected by indirect effects from the proposed project; these valued environmental components identified in the AOI will not be carried forward in the analysis.

Relative Uniqueness, Recovery Time, and Unusual Landscape Features

Relative uniqueness refers to how many comparable examples of an element exist at different levels of scale. Recovery time refers to how long it would take to replace a landscape element if it were disturbed or destroyed. Unusual landscape features are those that occur once, or only a few times, across a landscape. The vegetation and water body features previously discussed in the Notable Features Sensitive Species and Habitats section are also included in this section because these features are relatively unique to the AOI, would require a long recovery time, and only occur a few times across the landscape.

There are 48 historical markers, 26 National Register Properties, and three National Register Districts within the AOI. There are nine archeological sites documented within the AOI.

There are three cemeteries documented within the AOI. Section 711.035(f) of the Health and Safety Code states that once property is dedicated for cemetery use, it cannot be used for any other purpose unless the dedication is removed by a district court or the cemetery is enjoined or abated as a nuisance. For these reasons, these notable features would unlikely be adversely indirectly affected by the proposed project; therefore, further analysis will not be carried forward.

Vulnerable Elements of the Population

Vulnerable elements of the population may include the elderly, children, persons with disabilities, minority groups, and low-income groups. Vulnerable elements of the population exist in the AOI. There are 17 schools, one hospital, 17 daycare/childcare facilities, and one senior living facility within the AOI.

The proposed project is located in Tarrant County, which is part of the EPA's designated nine-county serious non-attainment area for the 8-hour standard for the pollutant ozone. Vulnerable elements of the population have the potential to be adversely affected by declining air quality.

The project area includes the following low-income and/or minority communities: Butler Place, Greenway Place, Scenic Bluff, United Riverside, and Diamond Hill-Jarvis. Additional low-income and/or minority neighborhoods present in the AOI include Sylvan Heights West, Carter Riverside, Rock Island-Samuels Avenue, Near East Side, Glenwood Triangle, and Historic Southside. These environmental justice neighborhoods encompass approximately 29 percent (3,887 acres) of the AOI.

The FHWA owns and manages 1,320 units of public housing in the City. One of these conventional public housing developments is located within the AOI. Butler Place Apartments and Butler Place Addition were built in 1940 and 1964, respectively, with a total of 412 units in 42.57 acres. It is located east of downtown, bordered on the west side by IH 35W, IH 30 on the south side, and SH 287 on the east side.

Step 4 – Identify Impact-Causing Activities of the Proposed Improvements

A thorough understanding of project design features and the range of impacts they might cause is the first step toward the identification of encroachment-alteration and access-alteration indirect effects. The impact-causing activities from the proposed project are discussed below:

Modification of Regime Effects – Nearly all of the vegetation (86.2 percent) within existing and proposed ROW is mowed and maintained grassland, at times interspersed with a variety of broadleaf herbaceous plants. The dominant species throughout the ROW is Bermuda grass. Woody vegetation (areas of scattered tree/scrubby/sapling tree and unmaintained shrub vegetation) comprises approximately 13.1 percent of the proposed project corridor. Riparian vegetation comprises approximately 0.7 percent of the proposed project corridor. All vegetation in the existing and proposed ROW would be cleared as required for the construction of the travel lanes, frontage roads, ramps, connectors, safety clear zone, and bridges. The woody and riparian vegetation would be permanently impacted due to not only the aforementioned activities, but additionally by construction phasing, storage, and staging activities. The proposed project would permanently impact approximately 224.05 acres of maintained/herbaceous vegetation, 33.95 acres of woody vegetation, and 1.75 acres of riparian vegetation. The proposed project crosses four waters of the U.S. at five locations (crosses the West Fork Trinity River twice). It would permanently impact a 0.29-acre wetland area and streams ranging from 0.01 to 0.09 acre.

Land Transformation and Construction – The proposed project includes constructing new general purpose lanes, managed lanes, frontage roads, direct connector and collector/distributor ramps, reconstructing vehicle and pedestrian bridges, and constructing barriers separating the general purpose and managed lanes. Approximately 85 acres would be converted to transportation use.

Processing – TxDOT would comply with TCEQ's TPDES Construction General Permit and a construction site notice would be posted on the construction site. A NOI would be filed to comply with TCEQ stating that TxDOT would have a SW3P in place during construction of the proposed project. This SW3P utilizes the temporary control measures as outlined in TxDOT's manual *Standard Specifications for the Construction and Maintenance of Highways, Streets, and Bridges*. The contractor would take appropriate measures to prevent, minimize, and control spill of hazardous materials in the construction staging area. The use of construction equipment within sensitive areas would be minimized or eliminated entirely. Construction materials used for this project would be removed as soon as the work schedule permits. Unanticipated hazardous materials and/or petroleum contamination encountered during construction would be handled according to applicable federal, state, and local regulations per TxDOT Standard Specifications.

Land Alteration – Land alteration as a result of the proposed project would largely be limited to the increase in paved area. Vegetated areas within the ROW would be restored to their current condition with similar vegetation.

Resource Renewal – In accordance with the MOA, vegetative impacts qualifying for compensatory mitigation consideration are the approximately 1.75 acres of riparian vegetation. During construction, TxDOT would minimize the amount of wildlife habitat disturbed. During final design, unmaintained and riparian woodland vegetation or unusually large trees may not require clearing if they are beyond the safety clear zone, or in areas where guard fencing may be used, or if other design options are found practicable for preserving these features. In accordance with EO 13112 on Invasive Species and the Executive Memorandum on Beneficial Landscaping, seeding and replanting with TxDOT approved seeding specifications that is in compliance with EO 13112 would be done where possible. Moreover, abutting turf grasses within the ROW are expected to re-establish throughout the project length. Soil disturbance would be minimized to ensure that invasive species would not establish in the ROW.

Changes in Traffic – The proposed project is expected to improve mobility within the IH 35W corridor and facilitate access to existing and future land uses along the proposed project. The addition of general purpose lanes and managed lanes would add capacity and improve mobility. The improved design of the proposed project and addition of direct connectors would help to eliminate the operational deficiencies on IH 35W and SH 121. The installation of new frontage roads along IH 35W would provide access to adjacent land uses and encourage development in these areas along the roadway. The implementing of the concurrent managed lanes as part of the IH 35W project would provide congestion relief primarily within the peak hour travel times, as well as provide a revenue source to pay for the operational and maintenance costs of the facility and future rehabilitation or reconstruction of the facility.

Waste Emplacement and Treatment – Soil excavated from the project area would likely be stockpiled for use on another project or sold for other uses, depending on the results of soil testing. The contractor, when selected, may choose to provide portable sanitary facilities for employees at the field office. No other sanitary waste discharge is anticipated.

Chemical Treatment – No use of fertilizer is anticipated during re-vegetation. Periodic applications of herbicide may occur during the maintenance phase of the proposed project.

Access Alteration – The purpose of the proposed project is to improve mobility within the IH 35W corridor and facilitate access to existing and future land uses along the proposed project. The addition of general purpose lanes and managed lanes would add capacity and improve mobility. The improved design of the proposed project and addition of direct connectors would help to eliminate the operational deficiencies on IH 35W and SH 121. The installation of new frontage roads along IH 35W would provide access to adjacent land uses and encourage development in these areas along the roadway. The purpose of implementing concurrent managed lanes as part of the IH 35W project would be to provide congestion relief primarily within the peak hour travel times, as well as provide a revenue source to pay for the operational and maintenance costs of the facility and future rehabilitation or reconstruction of the facility.

Step 5 –Identify Potential Substantial Indirect Effects for Analysis

The objective of this step is to compare the list of project impact-causing activities with the lists of goals discussed in Step 2 and notable features discussed in Step 3 to explore potential cause-effect relationships and establish which effects are potentially substantial and merit subsequent detailed analysis. The analysis focuses on encroachment-alteration effects, induced growth effects, and effects related to induced growth. Indirect effects that are not potentially substantial and require no further assessment are dismissed in this step.

Encroachment-Alteration Effects

Ecological Effects

Wildlife Habitat

Implementation of the proposed project could create ecological encroachment-alteration effects to vegetation and wildlife habitat in the AOI over time. This includes potential habitat for three state-listed threatened species (Louisiana pigtoe, Texas heelsplitter, and timber canebrake rattlesnake) and four non-listed species of concern (plains spotted skunk, fawnsfoot, little spectaclecase, and Texas garter snake) that have the potential to be present in the AOI. The habitat preferred by these threatened and endangered species and species of concern would not be substantially altered, fragmented, or polluted because of the proposed project. Therefore, vegetation and wildlife habitat encroachment-alteration effects will not be carried forward in the analysis.

Hydric Regime

The proposed project would not create substantial ecological encroachment-alteration effects to the hydric regime of the West Fork Trinity River, Little Fossil Creek, and Sycamore Creek. Although the proposed project would require the water body modifications described in Step 4: Modification of Regime, portions of the West Fork Trinity River and its unnamed tributaries, Little Fossil Creek and its unnamed tributaries, and Sycamore Creek have already been channelized and/or placed in culverts as a result of surrounding intense urbanization. Hydric regime encroachment-alteration effects on the West Fork Trinity River and its unnamed tributaries, Little Fossil Creek and its unnamed tributaries, and Sycamore Creek will not be carried forward in the analysis.

The proposed project would not create substantial ecological encroachment-alteration effects to the hydric regime of the 1,758 acres of floodplain in the AOI. According to the Comprehensive Plan, one of the City's listed policies and strategies on land use is to leave floodplains in their natural state (with bike trails encouraged) to improve water quality and minimize flooding. Hydric regime encroachment-alteration effects on floodplains will not be carried forward in the analysis.

Induced Growth Effects

The proposed project has the potential to create substantial induced growth effects. Approximately 1,486 acres of land is available for development within the AOI. These developable lands consist of vacant and undeveloped lands that are outside the floodplains and are not designated as park lands. Vacant lands were digitized using ArcGIS 9.3. Refer to **Figure 20** for the locations of the developable lands. The City's Land Use Plan has identified the project area as a potential growth area.

A meeting with the City of Fort Worth's planners took place on December 19, 2008 and the planners were contacted again on April 12, 2010 to determine the potential impacts from proposed improvements to IH 35W and to discuss how these effects would influence their current comprehensive plans, zoning, and land use plans. Local developers were also contacted on January 12, 2009.

- According to the City planners, IH 35W has been operating as a highway facility for many years with the development growth occurring when the highway was originally constructed. The proposed project is consistent with current and future land uses. The addition of managed lanes to the proposed project would enhance the flow and accessibility to the area. The concentration of workforce is from southeast of the City. This workforce commutes north for their employment. The IH 35W corridor provides one of the direct routes from south to north. The proposed project is needed to keep pace

with traffic demand resulting from growth and development trends. This growth would occur even in the absence of the proposed project. Vacant lands are located in the north section of the AOI. Some undeveloped lands support projects which are currently planned, funded or under construction (reasonably foreseeable projects).

- Mercantile Center, a business/commercial development center, currently encompasses approximately 1,540 acres of land in the AOI. It is bounded by IH 820 to the north, Beach Street to the east, UPRR to the south, and IH 35W to the west. According to the engineering firm representing Mercantile Center, the facility currently houses “high-end” distribution centers, retail-hotel facilities, and multi-family residential structures. Also, development would continue to occur regardless of the proposed project; however, without the proposed improvements, the rate of development would be much slower. An aerial map showing the boundaries and vacant lands of the Mercantile Center was provided by the engineering firm. Approximately 928 acres are vacant and open for development. The Mercantile Center property boundary is shown on **Figure 20**.

Land available for development within the AOI is not expected to be developed as a result of the proposed project since that land is expected to be developed with or without the proposed project.

A system level analysis for the proposed project (Build Scenario) was conducted using the Complete Performance Reports provided by NCTCOG. According to the Performance Reports, the Build Scenario appears to improve LOS on most roadway classifications. **Table 37** shows a summary of LOS changes provided by the Performance Reports for the classifications of roadways within the AOI. For congested urban areas, the goal of transportation improvement projects is to reduce the amount of lane-miles performing at LOS F. Typically, for these congested urban corridors, designers attempt to achieve an LOS E in the design year during peak periods. As projected in **Table 37**, the percentage of lane-miles in each roadway type for LOS F decreases between the No Build and Build Alternatives except for freeways.

Table 37: Year 2035 Level of Service for the AOI				
Location	No Build LOS lane-miles		Build LOS lane-miles	
Freeways No Build = 116.50 total lane-miles Build = 130.58 total lane-miles	A, B, C	35%	A, B, C	31%
	D, E	39%	D, E	44%
	F	25%	F	25%
Principal Arterials No Build = 55.84 total lane-miles Build = 56.28 total lane-miles	A, B, C	57%	A, B, C	60%
	D, E	9%	D, E	15%
	F	34%	F	25%
Minor Arterials No Build = 71.28 total lane-miles Build = 73.38 total lane-miles	A, B, C	65%	A, B, C	74%
	D, E	19%	D, E	22%
	F	16%	F	4%
Collectors No Build = 82.68 total lane-miles Build = 86.07 total lane-miles	A, B, C	74%	A, B, C	79%
	D, E	8%	D, E	7%
	F	18%	F	14%
Frontage Roads No Build = 39.09 total lane-miles Build = 51.53 total lane-miles	A, B, C	79%	A, B, C	69%
	D, E	9%	D, E	21%
	F	11%	F	10%
Managed HOV Lanes No Build = 13.42 total lane-miles Build = 41.04 total lane-miles	A, B, C	100%	A, B, C	100%
	D, E	0%	D, E	0%
	F	0%	F	0%

Source: NCTCOG, 2011.

Table 8 compares the vehicles hours of congestion delay between the 2035 No Build versus the 2035 Build Alternative for different roadway types along the IH 35W South corridor for AM, PM, Off-Peak, and Daily traffic. As shown in **Table 8**, the total roadway network would experience a decrease in vehicle hours of congestion delay during AM (8 percent), PM (10 percent), and Off-Peak (28 percent) times as well as Daily traffic (17 percent) in the 2035 Build Alternative.

Since there will be a decrease in vehicle hours of congestion delay for the total roadway network as a result of the Build Alternative (**Table 8**) and the LOS for roadways within the AOI is expected to generally improve under the Build Alternative (**Table 37**), the proposed project is expected to improve access to land available for development within the AOI. Based on this, the proposed project is expected to increase the rate that land is developed within the AOI.

Effects Related to Induced Growth

Ecological Effects

Wildlife Habitat and Hydric Regime

Induced growth has the potential to create substantial effects on the vegetation and wildlife habitat in the AOI by displacing the vegetation and wildlife habitat. In addition, this induced growth has the potential to adversely affect waters of the U.S. in the AOI by fill and degradation of the waters from development. The increased rate of development within the AOI from the proposed project is not expected to create substantial effects to vegetation and wildlife habitat (including upland woodlands, fencerow vegetation, bottomland hardwoods, riparian woodlands, herbaceous vegetation, and habitat for state-listed species and species of concern) and water-related notable features (including floodplains, ponds, the West Fork Trinity River, Little Fossil Creek, Sycamore Creek, and associated tributaries and wetlands) within the AOI.

Air Quality

The AOI is part of the EPA designated nine-county nonattainment area for ozone. The AOI is currently in attainment for all other NAAQS pollutants, including CO. Based on project-related actions that can indirectly impact air, it was determined that the proposed project would be anticipated to cause indirect air quality impacts in the AOI. As the proposed project is anticipated to result in indirect air quality impacts, further evaluation and discussion of air quality and MSATs is necessary in Steps 6-8.

Socio-economic Effects

The increased rate of development within the AOI from the proposed project is not expected to create substantial effects to the notable features within the AOI identified in Step 3, including schools, hospital, daycare/childcare facilities, senior living facility, low-income and/or minority communities.

Cultural Resources

The increased rate of development within the AOI from the proposed project is not expected to create substantial effects to the historical markers, National Register Properties, National Register Districts, and archeological sites documented within the AOI.

Steps 6 – Analyze Indirect Effects and Evaluate Analysis Results

The objective of this step is to assess the effects identified in Step 5 by determining magnitude, probability of occurrence, timing and duration, and degree to which the effects can be controlled or mitigated to determine if those effects have the potential to be substantial.

Induced Growth Effects

Both the City of Fort Worth's Comprehensive Plan and the Zoning Map designate the AOI as an industrial district (primarily along IH 35W and along the northern limits of the study area) and a residential and mix-used district. There are approximately 1,486 acres of developable land within the AOI, primarily located in the northern half of the AOI. According to the Future Land Use Plan, the undeveloped land in the northeast quadrant is zoned as an Industrial Growth Center. Intense industrial uses would be located within industrial growth centers that incorporate other compatible uses and are well integrated into the transportation network. An industrial growth center will primarily consist of industrial and commercial uses, with a high concentration of jobs, mostly industrial in nature. Other related and supporting uses include office space and services. Residential uses are generally discouraged within industrial growth centers. Because IH 35W is part of NAFTA, the improvements would support growth in the industrial growth center.

The induced growth effects resulting from the proposed project (increased rate of development) is consistent with the City of Fort Worth's Comprehensive Plan.

Effects Related to Induced Growth

Air Quality

Direct impacts on air quality and MSATs from the project are primarily those associated with the increased capacity and accessibility, as well as the resulting projected increases in VMT. EPA's new fuel and vehicle standards projected to reduce emissions of air pollutants and MSATs are expected to offset these impacts resulting from the increases in VMT. These net emissions reductions are expected to contribute to continued maintenance and improvement of air quality and MSAT levels in the AOI.

The potential indirect impacts on air quality and MSATs are primarily related to the increased rate of land development resulting from the project's increased accessibility to the area. The project would not be expected to result in increased development/redevelopment in the area.

Step 7 – Assess Consequences and Consider/Develop Mitigation

The induced growth effects resulting from the proposed project (increased rate of development) is consistent with the City of Fort Worth's Comprehensive Plan.

Any increased air pollutant or MSAT emissions resulting from development within the AOI must meet regulatory emissions limits established by the TCEQ and EPA, as well as obtain appropriate authorization from the TCEQ. Regulatory emission limits set by TCEQ and EPA are established to attain and maintain the NAAQS by assuring any emissions sources resulting from new development or redevelopment will not cause or contribute to a violation of those standards. Therefore, because the project's potential direct and indirect impacts on air quality and MSATs are projected to be offset by federal fuel and vehicle control programs or state and federal regulatory programs, negative impacts on air quality are not anticipated.

J. Cumulative Impacts

1. Project Level Cumulative Impacts

Cumulative effects are defined as effects “on the environment which result from the incremental impact of the action when added to other current and reasonably foreseeable future actions, regardless of what agency (Federal or non-Federal) or person undertakes such other actions. “Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time” (NEPA, Section 1508.7, 1978). Cumulative impacts tend to be less defined than indirect impacts and are therefore more difficult to quantify.

In accordance with TxDOT’s *Guidance on Preparing Indirect and Cumulative Impacts Analyses* (September 2010), this analysis follows the following recommended approach:

1. Identify the affected resources.
2. Define the study area for each resource.
3. Describe the current health and historical context of each resource.
4. Identify direct impacts and indirect effects that may contribute to cumulative impacts.
5. Identify other reasonably foreseeable actions that may contribute to a cumulative impact.
6. Assess the potential cumulative impacts to each resource.
7. Report the results.
8. Assess and discuss mitigation issues for adverse impacts.

Step 1 – Identify the Resource to Consider in the Analysis

This analysis focuses on resources that are affected by the proposed project. The resources considered were narrowed down by carrying forward the direct and indirect impacts that may contribute to a cumulative impact. In addition, only those resources substantially impacted or in poor or declining health were analyzed for cumulative impacts. **Table 38** identifies the resources to be analyzed in the cumulative impacts analysis.

Table 38: Resources Considered for the Cumulative Impacts Analysis					
Resource		Direct Impacts from Proposed Project	Indirect Effects from Proposed Project	Poor/ Declining Health or At Risk Resource?	Result
Socio-economics	Community Cohesion	None	No substantial effects	No	No substantial direct or indirect effects. No cumulative analysis performed.

Table 38: Resources Considered for the Cumulative Impacts Analysis

Resource		Direct Impacts from Proposed Project	Indirect Effects from Proposed Project	Poor/ Declining Health or At Risk Resource?	Result
	Environmental Justice	Based on the O&D analysis, it is not anticipated that there would be any disproportionate impacts to low-income or minority populations from the implementation of the proposed project.	No substantial effects	At Risk	Potential cumulative effects from tolling are discussed in Section V.J.2 Regional Toll Analysis .
	Economic Impacts	875+ employees could be affected at potentially displaced businesses. However, the demand for services, driven by growth, could aid the ability for displaced businesses to relocate within the project area, owing to the available commercial options in the area.	No substantial effects	No	No substantial direct or indirect effects. No cumulative analysis performed.
Public Facilities/ Services		Four public facilities/ services would be impacted by the proposed project: <ul style="list-style-type: none"> • Placement of new ADA-compliant pedestrian bridge landing on Harmon Field Park property. • Trail reconstruction at Delga Park. • Displacement of two public facilities: the Education Service Center Region XI and the Tarrant County 9-1-1 District Administration Office. 	No substantial effects	No	No substantial direct or indirect effects. No cumulative analysis performed.

Table 38: Resources Considered for the Cumulative Impacts Analysis

Resource	Direct Impacts from Proposed Project	Indirect Effects from Proposed Project	Poor/ Declining Health or At Risk Resource?	Result
Historic Sites	No adverse effect to historic properties except for noise-related issues at the Oakhurst Historic District. The net noise impacts (build alternative compared to no build alternative) would result in an impact to 2.5 percent of the contributing resources within Oakhurst.	No substantial effects	No	No substantial direct or indirect effects. No cumulative analysis performed.
Archeological Resources	No potential to affect archeological properties on proposed project's APE that had already been surveyed. Evaluation was not completed due to denial of right of entry by a private property owner.	No substantial effects	No	No substantial direct or indirect effects. No cumulative analysis performed.
Threatened/ Endangered Species	Habitat present for one mammal, four mollusks, and two reptiles. May impact the following state-listed threatened species: <ul style="list-style-type: none"> • Louisiana pigtoe • Texas heelsplitter • Texas horned lizard • timber/canebrake rattlesnake 	No substantial effects	No	No substantial direct or indirect effects. No cumulative analysis performed.
Vulnerable Populations	None	No substantial effects	No	No substantial direct or indirect effects. No cumulative analysis performed.
Air Quality	Tarrant County in non-attainment for 8-hour standard for the pollutant ozone	Negative impacts on air quality are not anticipated.	At Risk	Cumulative impact analysis conducted.

Table 38: Resources Considered for the Cumulative Impacts Analysis				
Resource	Direct Impacts from Proposed Project	Indirect Effects from Proposed Project	Poor/ Declining Health or At Risk Resource?	Result
Land Use	85.4 acres of land would be converted from commercial, residential, and vacant land use to transportation land use	No substantial effects (induced rate of development consistent with local planning efforts)	No	No substantial direct or indirect effects. No cumulative analysis performed.
Water Resources (Waters of the U.S.)	417 linear feet (0.17 acre) waters and 0.29 acre wetlands would be permanently impacted	No substantial effects	No	No substantial direct or indirect effects. No cumulative analysis performed.
Floodplains	None	No substantial effects	No	No analysis. No substantial direct or indirect effects. No cumulative analysis performed.
Vegetation and Wildlife Habitat	The following would be permanently impacted: - 224.05 acres of maintained vegetation - 33.95 acres of wooded area vegetation (consisting of upland/landscape and unmaintained vegetation) - 1.75 acres of riparian vegetation	No substantial effects	At Risk	Cumulative impact analysis conducted.
Farmland	None	No substantial effects – commercial land.	No	No substantial direct or indirect effects. No cumulative analysis performed.

As presented in **Table 38**, the following resources will be evaluated:

- Vegetation and Wildlife Habitat
- Air Quality

- Socio-economic Impacts (potential cumulative effects from tolling are discussed in **Section V.J.2 Regional Toll Analysis**)

Step 2 – Resource Study Areas

The Resource Study Area (RSA) for each resource was chosen using resource-specific data, and reflects the influence that the proposed project would have on the surrounding area. The RSAs have both temporal and geographic components. The temporal component of an RSA is the timeframe in which effects to resources are expected to occur, which for all RSAs in this analysis is 2000 to 2035. Extending the timeframe forward to 2035 matches *Mobility 2035*, the MTP for the region. Extending the timeframe back to 2000 incorporates an important decennial U.S. Census to account for trends in population growth and demographic change, and includes a substantial period of the business cycle (since the last major economic growth occurred in 1990’s), which is also a determinant in regional and community growth. This 35-year period should also be sufficient to capture cumulative impacts resulting from those actions for which construction has been planned or initiated, but not yet completed.

The resources subject to indirect and cumulative impacts (vegetation and wildlife habitat, and air quality) are discussed below in separate sub-sections. Steps 1, 2, and 5 are discussed collectively for the affected resources. Steps 3, 4, 6, 7, and 8 of the cumulative impacts evaluation process are discussed separately within each resource sub-section.

The geographic area of each RSA would vary from resource to resource. **Table 39** lists the affected resources and their corresponding RSAs. Maps of the RSAs are shown in **Figures 21 and 22**.

Table 39: Resource Study Area for Affected Resources	
Affected Resource	Resource Study Area
Vegetation and Wildlife Habitat	Drainage sub-basin of the West Fork Trinity River (approximately 11,365 acres); Figure 21
Air Quality	Ozone – DFW 8-hour Non-attainment Area CO – ROW Line MSAT – Affected Transportation Network; Figure 22
Socio-Economics	Figure 23 shows the funded recommendations for controlled access facilities from <i>Mobility 2035</i> . The land-use and demographic forecasts from 2040 Demographic Forecast were used as the basis for all travel demand modeling in <i>Mobility 2035</i> and <i>Regional Tolling Analysis</i> .

As shown in **Table 39**, the 11,365-acre drainage sub-basin of the West Fork Trinity River was chosen as the RSA for vegetation and wildlife habitat. It was determined that this RSA would provide a suitable study area for examining the availability of vegetation, wildlife habitat, and water resources in the surrounding area, and for serving as a baseline for assessing cumulative impacts. The sub-basin contains the streams, wetlands, floodplains, and the associated vegetative habitat that wildlife depends on for food, water, and shelter. In addition, all of the drainage from the proposed project, project induced development, and current and reasonably foreseeable actions in the area are contained within this sub-basin. Due to laws and regulations concerning waters of the U.S., agricultural practices and residential/commercial development usually avoid streams and can leave portions of pristine habitat in place. For this reason, quality wildlife habitat and vegetation are usually found within stream systems, adjacent to intermittent and perennial streams.

Evaluating Air Quality in relation to cumulative impacts requires looking at three distinct RSAs, as described below:

- Ozone - The RSA for evaluating the ozone NAAQS was designated as the DFW eight-hour ozone non-attainment area, which includes Collin, Dallas, Denton, Tarrant, Ellis, Johnson, Kaufman, Parker, Rockwall.
- CO - The RSA for CO was based on the ROW line, which represents the locations with the highest potential for CO concentrations.
- MSAT - The RSA for MSAT is the affected transportation network in the 12-county MPA. Air quality impacts from MSAT have been evaluated quantitatively in this proposed project by TxDOT and FHWA. MSAT are regulated by EPA on a national basis through requirements for fuels and vehicle technology. The MSAT RSA quantitatively evaluated emission changes based upon the Build Alternative and national trends.

Step 5 – Identify Other Reasonably Foreseeable Future Effects

The other current and reasonably foreseeable actions discussed in this section of the EA could contribute to the cumulative effects on the resources shown in **Table 40**. Data collection associated with other current and reasonably foreseeable actions included literature reviews; analyses of demographic and economic records; aerial photograph review; correspondence (2008, 2009, and 2011) with the City planners and local developers.

The results of the data analysis revealed the following current or planned development projects that are considered other current and reasonably foreseeable future effects:

Table 40: Current or Planned Development Projects (Current and Reasonably Foreseeable Future Effects)		
Project	Type	Acreage
Restaurant	Commercial	1
Warehouse	Commercial	22
Commercial Lease Space	Commercial	21
Warehouse	Commercial	37
Office/Retail	Commercial	0.4
Distribution Center	Commercial	6
School	Commercial	6
Meat Packing	Commercial	26
Office/Trucking	Commercial	4
Gas Well Compressor Station	Commercial	9
UPS distribution	Industrial	44
Cold Storage Warehouse	Commercial	130
Mixed Use	Commercial	24
Employee Fitness Center (The T)	Commercial	0.1
Employee Fitness Center (The T)	Commercial	0.1
Warehouse/Manufacturing	Commercial	8
Uniform Retail Store	Commercial	1
Gas Well	Commercial	5
Electrical Repair	Commercial	0.1
Middle School Addition	Institutional	1
Industrialized Housing	Industrial	0.2
Collector Street to Connect	Commercial	2
Hotel	Commercial	2
Relocation of Auto Pound	Commercial	12
Renewable Energy Park	Industrial	20

Table 40: Current or Planned Development Projects (Current and Reasonably Foreseeable Future Effects)		
Project	Type	Acreage
New ROW and Channel Improvements	Industrial	18
Office	Commercial	9
Metal Recycling	Commercial	7
Tarrant Regional Water District Property	Commercial	16
Automotive Impound Lot	Commercial	18
Warehouse	Commercial	1
Treatment Center	Commercial	0.3
Police Office and Community Room	Commercial	0.2
Office/Storage	Commercial	0.4
Accessory Parking	Commercial	1
Bus Stop Shelter	Commercial	0.1
Storage	Commercial	2
Retail	Commercial	1
Commercial	Commercial	14
Commercial	Commercial	0.4
Equipment Sales	Industrial	13
Urban development (Trinity Uptown)	Mixed use	87
Urban development (Mercantile Center)	Industrial	928
Total		1,498

Planned transportation improvements included in the City's Thoroughfare Plan consist of the following:

Table 41: Planned Transportation Improvements (Current and Reasonably Foreseeable Future Effects)	
Project	Acreage
Beach Street (Principal Arterial)	2.08
Blue Mound Road (Principal Arterial)	4.72
Cantrell Samson Road (Major Arterial)	0.59
Great Southwest Parkway (Minor Arterial)	4.83
Lone Star Boulevard (Minor Arterial)	6.04
Mark IV Parkway (Major Arterial)	1.04
Meacham Boulevard (Principal Arterial)	37.93
Northeast Parkway (Minor Arterial)	1.23
Northern Cross Boulevard (Major Arterial)	3.33
Sylvania Avenue (Minor Arterial)	3.55
IH 820 from IH 35W to SH 121/183	289
Total	354.35

The results of the data analysis indicate that current and reasonably foreseeable future effects total approximately 1,852 acres.

Discussion of Cumulative Impacts by Resource (Steps 3, 4, 6, 7, and 8)

Vegetation and Wildlife Habitat

Step 3 – Resource Health and Historical Context

Once dependent on agriculture, oil, and defense, the City is developing into a major center for industry, technology, distribution, and transportation. As the population increased in the region, the RSA began to become urbanized with residential developments and associated businesses. Most of the developments were located in close proximity to IH 35W and other major roadways in the area. Many areas in the RSA have been developed or fragmented to such an extent that little habitat exists for wildlife. Native vegetation has been removed by urbanization and replaced by non-native species. As a result of a change in vegetation and habitat, wildlife species in the RSA are shifting to species better able to adapt to an urban environment. The current condition of the vegetation and wildlife habitat within the RSA is considered “at risk”.

The land within the approximately 11,365-acre West Fork Trinity River drainage sub-basin RSA consists of approximately 2,692 acres of herbaceous vegetation, 196 acres of upland woodlands, 155 acres of bottomland hardwoods, 89 acres of fencerow vegetation, and approximately 45 acres of riparian vegetation.

Step 4 – Direct and Indirect Impacts

The Build Scenario would directly impact approximately 260 acres of vegetation (224.05 acres maintained, 33.95 acres woody, and 1.75 acres of riparian vegetation). No indirect impacts to vegetation are expected.

Step 6 – Assessment of Potential Cumulative Impacts

Potential cumulative impacts considered and discussed include direct and indirect impacts to the vegetation and wildlife habitat as a result of implementation of the Build Scenario in combination with the effects of current and reasonably foreseeable public and private actions. The approximately 11,365-acre sub-basin RSA was considered sufficient to capture all potential cumulative effects of the Build Scenario on vegetation and wildlife habitat because this sub-basin contains the streams, floodplains, and the associated vegetative habitat that wildlife depends on for food, water, and shelter. Acreages of vegetation types in the RSA were determined from aerial photographs and topographic maps. Acreages of impacted vegetation types were determined by using development overlays for the Build and No Build Scenarios. For the purposes of this analysis, it was assumed that any of the other current or reasonable foreseeable development would displace all the native vegetation and wildlife habitat within the confines of the development.

Step 7 – Results of the Cumulative Impact Assessment

The cumulative impacts for the Build Scenario on vegetation and wildlife habitat resulting from the direct impacts (260 acres), indirect impacts (none), and other current and reasonably foreseeable actions (1,777 acres) would decrease the amount of vegetation and wildlife habitat in the RSA by 2,037 acres.

Under the No Build Scenario, vegetation and wildlife habitat would still be impacted from the previously described other current and reasonably foreseeable public and private actions, and would decrease the amount of vegetation and wildlife habitat in the RSA by 1,777 acres.

Table 42 provides a summary of the direct, indirect, and cumulative impacts associated with the Build and No Build Scenarios.

Step 8 – Potential Mitigation

Other than the mitigation discussed in **Section V.B.1**, no mitigation is proposed for vegetation and habitat. Federal, State, and local regulations and ordinances would minimize effects within the RSA. The City of Fort Worth has a local tree ordinance (18615-05-2009) which addresses the preservation, protection, and replacement of trees.

Air Quality

Step 3 – Resource Health and Historical Context

The enactment of the CAA of 1970 authorized the development of comprehensive federal and state regulations to limit emissions from both stationary (industrial) sources and mobile sources.

The EPA establishes limits on atmospheric pollutant concentrations through enactment of the NAAQS for six principal, or criteria, pollutants. The EPA designated nine counties in the DFW area as non-attainment for ozone. The region is currently in attainment for all other criteria pollutants (except for lead in portions of Collin County). Although there have been year-to-year fluctuations, the ozone trend continues to show improvement. The trend of improving air quality in the region is attributable in part to the effective integration of highway and alternative modes of transportation, cleaner fuels, improved emission control technologies, and NCTCOG regional clean air initiatives.

Step 4 – Direct and Indirect Impacts

Direct impacts on air quality and MSATs from the project are primarily those associated with the increased capacity, accessibility and the resulting projected increases in VMT. Emission reductions as a result of EPA's new fuel and vehicle standards are anticipated to offset impacts associated with VMT increases.

Indirect impacts on air quality and MSATs are primarily related to the increased rate of land development resulting from the project's increased accessibility to the area. The project would not be expected to result in increased development/redevelopment in the area. Any increased air pollutant or MSAT emissions resulting from the potential development of the area must meet regulatory emissions limits established by the TCEQ and EPA as well as obtain appropriate authorization from the TCEQ and therefore are not expected to result in any degradation of air quality or MSAT levels.

Step 6 – Assessment of Potential Cumulative Impacts

Any increased air pollutant or MSAT emissions resulting from increased capacity, accessibility and development rates are projected to be more than offset by emissions reductions from EPA's new fuel and vehicle standards or addressed by EPA's and TCEQ's regulatory emissions limits programs. Projected traffic volumes are expected to result in minimal impacts on air quality;

improved mobility and circulation may benefit air quality. Increases in urbanization would likely have a negative impact on air quality. However, planned transportation improvements in the project area as listed in a conforming MTP and TIP coupled with EPA's vehicle and fuel regulations fleet turnover, are anticipated to have a cumulatively beneficial impact on air quality.

Step 7 – Results of the Cumulative Impact Assessment

The cumulative impacts on air quality from the Build Scenario and from other current and reasonably foreseeable transportation projects are addressed at the regional level by analyzing the air quality impacts of transportation projects in the MTP and the TIP. The Build Scenario and the other reasonably foreseeable transportation projects were included in the MTP and the TIP and have been determined to conform to the ozone non-attainment SIP.

Under the No Build Scenario, the cumulative impacts on air quality from other current and reasonably foreseeable transportation projects would still be addressed at the regional level by analyzing the air quality impacts of transportation projects in the MTP and the TIP, and would still conform to the ozone non-attainment SIP.

Step 8 – Potential Mitigation

The cumulative impact of reasonably foreseeable future growth and urbanization on air quality would be minimized by complying with state and federal regulations, mandated and enforced by the EPA and TCEQ. These regulations are designed to ensure that growth and urbanization do not prevent regional compliance with the ozone standard or threaten the maintenance of the other air quality standards.

Direct, Indirect, and Cumulative Impacts Summary

Table 42 provides a summary of the direct, indirect, and cumulative impacts associated with the Build and No Build Scenarios:

Table 42: Summary of Direct, Indirect, and Cumulative Impacts Associated With the Build and No Build Scenarios

Resource	BUILD SCENARIO IMPACTS				NO BUILD SCENARIO IMPACTS			
	Direct Impacts (DI)	Indirect Effects (IE)	Current and Reasonably Foreseeable Actions (CRFA)	Cumulative Impacts (DI+IE+CRFA)	Direct Impacts (DI)	Indirect Effects (IE)	Current and Reasonably Foreseeable Actions (CRFA)	Cumulative Impacts (DI+IE+CRFA)
Vegetation and Wildlife Habitat	260 acres of vegetation consisting of: <ul style="list-style-type: none"> • 224.05 acres maintained • 33.95 acres woody (consisting of upland and landscape vegetation,) • 1.75 acres riparian 	None	1,777 acres of vegetation consisting of: <ul style="list-style-type: none"> • 1,600 acres herbaceous • 175 acres woody (upland, bottomland, and fencerow) • 2 acres of riparian 	2,037 acres of vegetation consisting of: <ul style="list-style-type: none"> • 1,827 acres herbaceous/maintained • 209 acres woody (upland, bottomland, and fencerow) • 3.75 acres of riparian 	None	None	1,777 acres of vegetation consisting of: <ul style="list-style-type: none"> • 1,600 acres herbaceous/maintained • 175 acres woody (upland, bottomland, and fencerow) • 2 acres of riparian 	1,777 acres of vegetation consisting of: <ul style="list-style-type: none"> • 1,600 acres herbaceous/maintained • 175 acres woody (upland, bottomland, and fencerow) • 2 acres of riparian

Table 42: Summary of Direct, Indirect, and Cumulative Impacts Associated With the Build and No Build Scenarios

Resource	BUILD SCENARIO IMPACTS				NO BUILD SCENARIO IMPACTS			
	Direct Impacts (DI)	Indirect Effects (IE)	Current and Reasonably Foreseeable Actions (CRFA)	Cumulative Impacts (DI+IE+CRFA)	Direct Impacts (DI)	Indirect Effects (IE)	Current and Reasonably Foreseeable Actions (CRFA)	Cumulative Impacts (DI+IE+CRFA)
Air Quality	<p>The NAAQS CO revealed that local concentrations of CO under the worst meteorological conditions are not expected to exceed national standards at any time.</p> <p>Results of the MSAT analysis indicate a substantial decrease in MSAT emissions for both the Build and No Build Scenarios (2035) versus the base year (2012).</p>	<p>Impacts from an increased rate of development would not adversely affect the regional ozone standard compliance or maintenance of the other air quality standards.</p>	<p>Impacts from point sources, area sources, on-road mobile sources, and non-road mobile sources associated with other current and reasonably foreseeable public and private actions would not adversely affect the regional ozone standard compliance or maintenance of the other air quality standards.</p>	<p>The cumulative impacts on air quality from the Build Scenario and other reasonably foreseeable transportation projects are addressed at the regional level by analyzing the air quality impacts of transportation projects in the MTP and the TIP. The Build Alternative and the other reasonably foreseeable transportation projects were included in the MTP and the TIP and have been determined to conform to the ozone non-attainment SIP.</p>	None	None	<p>Impacts from point sources, area sources, on-road mobile sources, and non-road mobile sources associated with other current and reasonably foreseeable public and private actions would not adversely affect the regional ozone standard compliance or maintenance of the other air quality standards.</p>	<p>Under the No Build Scenario, the cumulative impacts on air quality from other current and reasonably foreseeable transportation projects would still be addressed at the regional level by analyzing the air quality impacts of transportation projects in the MTP and the TIP, and would still conform to the ozone non-attainment SIP.</p>

2. Regional Toll Analysis

To assess the significance of regional impacts and address the potential need for mitigation of the tolled components of the long-range metropolitan transportation plan, NCTCOG prepared the *Regional Tolling Analysis for the Dallas-Fort Worth Metropolitan Planning Area based on Mobility 2035 (Regional Tolling Analysis)* technical memorandum. This technical memorandum can be viewed at www.nctcog.org/mobility2035. The purpose of the analysis is to evaluate the effects of proposed expansion of the regional priced facility system in the DFW region based on the improvements included in the metropolitan transportation plan (MTP): *Mobility 2035: The Metropolitan Transportation Plan for North Central Texas (Mobility 2035)*. The technical memorandum provides the context of the transportation system, planned improvement potential effects, incomplete and unavailable information, summary, and conclusion. The following summarizes the methodology, effects, and conclusion of the analysis.

Methodology

Section 4.0 of the *Regional Tolling Analysis* evaluates potential effects of the regional toll system elements of *Mobility 2035* on land-use, air quality, and environmental justice populations. **Figure 23** shows the funded recommendations for controlled access facilities from *Mobility 2035*. The land-use and demographic forecasts from *2040 Demographic Forecast* were used as the basis for all travel demand modeling in *Mobility 2035* and *Regional Tolling Analysis*.

The *Regional Tolling Analysis* environmental justice analysis focuses on differential impacts (see **Table 44**) between environmental justice populations and non-environmental justice populations at the transportation survey zone (TSZ) geography. Based on 2010 census data and 2005-2009 American Community Survey data, the *Regional Tolling Analysis* classifies TSZs into four categories: non-environmental justice TSZs, low-income alone TSZs, minority alone TSZs, and both low-income and minority TSZs. Regional traffic was modeled under three transportation network conditions:

- 2012 network (2012 roadway and transit facilities with 2012 demographics)
- 2035 build network (all *Mobility 2035* recommended roadway and transit facilities with 2035 demographics)
- 2035 priced facilities no build network [all recommended transportation (roadway and transit) facilities in *Mobility 2035* except proposed facilities with any priced elements (built after 2012) with 2035 demographics]

Regional Toll System Effects

Table 43 lists the resource areas and performance metrics analyzed in *Regional Tolling Analysis*. A more detailed analysis of each item is included in the full technical memorandum in section 4.0.

Table 43: Analysis of Potential Effects		
Analysis	Section of Technical Memorandum	Results
Land Use	4.1	The priced facilities components of <i>Mobility 2035</i> may affect land-use by helping to enhance land development or redevelopment opportunities.
Air Quality	4.2	The regional roadway network (including priced facilities) would show a decrease in nitrogen oxides and emissions of volatile organic compounds, which are both precursors to ozone.

Table 43: Analysis of Potential Effects		
Analysis	Section of Technical Memorandum	Results
Environmental Justice Populations		
Access to Jobs*	4.3.1	The 2035 build network (including priced facilities) would provide protected populations access to more jobs accessible within 30 minutes by car and more jobs accessible within 60 minutes by transit in the future when compared to the 2012 network
Regional Congestion*	4.3.1	While congestion increases for both the protected and non-protected populations in the 2035 networks, the non-protected population sees a larger increase in localized congestion.
Average Travel Times*	4.3.1	Under the 2035 build network (including priced facilities), travel times would increase for both protected and non-protected populations, but travel times for both populations would be substantially lower than under the 2035 full no build network.
Daily Vehicle Miles Travelled	4.3.2	The greater VMT on freeways and priced facilities under the 2035 build network would reduce the amount of congestion on arterials and collectors compared to the 2035 priced facilities no build network.
Average Loaded Speed	4.3.2	The 2035 build network would result in a slight increase in daily roadway speed for most roadway classifications compared to the 2035 priced facilities no build network.
Morning Peak Period Level of Service	4.3.2	Under the 2035 build network the overall proportion of lane-miles at LOS F is lower than the 2035 priced facilities no build network for all roadway classifications.
Morning Peak Period Roadway Trip Times	4.3.3	Under the 2035 build network the average vehicle trip times are lower than in the 2035 priced facilities no build network for both environmental justice and non-environmental justice populations.
Morning Peak Period Roadway Trip Length	4.3.3	Under the 2035 build network the average vehicle trip lengths are longer than in the 2035 priced facilities no build network for both environmental justice and non-environmental justice populations.
Morning Peak Period Roadway Trip Speeds	4.3.3	Under the 2035 build network the average vehicle trip speed is higher than in the 2035 priced facilities no build network for both environmental justice and non-environmental justice populations.
Morning Peak Period Transit Usage	4.3.3	Under the 2035 build network the number of transit trips is higher than in the 2035 priced facilities no build network for both environmental justice and non-environmental justice populations.
Morning Peak Period Transit Trip Times	4.3.3	Under the 2035 build network the average transit trip times are higher than in the 2035 priced facilities no build network for both environmental justice and non-environmental justice populations.
Morning Peak Period Transit Trip Length	4.3.3	Under the 2035 build network the average transit trip lengths are longer than in the 2035 priced facilities no build network for both environmental justice and non-environmental justice populations.
Morning Peak Period Transit Trip Speeds	4.3.3	Under the 2035 build network the average vehicle trip speed is higher than in the 2035 priced facilities no build network for both environmental justice and non-environmental justice populations.
Congestion Levels	4.3.4	Environmental justice TSZs are projected to have fewer congestion and severe congestion TSZs, but more light to moderate congestion TSZs than the non-environmental justice areas. The construction of additional facilities in the 2035 build network would reduce the percentage of environmental justice TSZs with severe congestion.

Table 43: Analysis of Potential Effects		
Analysis	Section of Technical Memorandum	Results
Regional Origin-Destination Study	4.3.5	Under the 2035 build network, slightly more TSZs would send trips to priced facilities than under the 2035 priced facility no build network. Proposed priced facilities would be built closer to environmental justice populations than the existing priced facility system. This would increase accessibility to these roadway facilities as shown by the slightly higher proportion of trips from environmental justice TSZs on priced facilities in the 2035 build network than in the 2035 priced facility no build network.
Annual Toll Costs	4.3.6	As a percentage of total household income, regular use of priced facilities would cost a household at the low-income threshold approximately 1.4 times more than a median income household.
Transportation Benefits		
Quality of Life	4.3.7	The planned priced facility projects would help to reduce traffic congestion, improve air quality, improve travel time reliability, improve safety, and enhance health compared to the full no build and priced facility no build alternatives.
Bus Transit and Emergency Vehicles	4.3.7	An increase in service for both bus and emergency vehicles would improve the quality of life for those choosing to use or in need of those services, respectively.
Transportation System Financing	4.3.7	The revenue from priced facilities would help to finance improvements/rehabilitation of both tolled and non-tolled facilities. It would also accelerate the funding for construction as compared to traditional tax-supported highway finance, thereby reducing capital costs and making new transportation capacity available to the traveling public sooner.
*Analysis conducted and documented within <i>Mobility 2035</i> , summarized in the <i>Regional Tolling Analysis</i> ** <i>Mobility 2035</i> includes a 2035 full no build network, which is defined as the 2012 roadway and transit facilities with 2035 demographics		

Section 6.0 of the *Regional Tolling Analysis* provides the results of the assessment. Based on the environmental justice analysis conducted for *Mobility 2035* and summarized in *Regional Tolling Analysis*, it was determined that the recommended transportation projects included in *Mobility 2035* do not have a highly adverse or disproportionate impact on protected populations.

In addition, results from the performance reports prepared for the metropolitan planning area (MPA) showed a marginal increase in roadway speed and a slight improvement in LOS for the majority of the roadway classifications in the 2035 build network compared to the 2035 priced facilities no build network. The 2035 build network for the MPA would generally maintain the 2012 network roadway performance conditions for freeways and toll roads throughout the NCTCOG region while accommodating the travel demands of the growing regional population.

Although environmental justice populations would see an increase in spending for priced facility usage under the 2035 build scenario, it is proportional to the increased spending for non-environmental justice populations on priced facilities for the entire MPA. Almost all environmental justice TSZs are projected to generate trips along priced facilities in the 2012 network and 2035 build network. For populations (including environmental justice populations) who would choose to use non-priced facilities, the 2035 build network would provide a non-priced roadway network that would operate at better traffic conditions (slightly higher speeds

and an improved LOS) on all roadways and an increased benefit over the 2035 priced facilities no build network.

The planned transit system is the same for both the 2035 build network and 2035 priced facility no build network. The analysis in the *Regional Tolling Analysis* show that improved roadway performance would lead to slightly longer and higher speed transit trips in the 2035 build network compared to the 2035 priced facility no build network.

While the analysis focused on the potential impacts, priced facilities are also expected to provide benefits to system users which can be categorized into two forms: quality of life and economic. The transportation system, including priced facilities, increases the number of travel options available to transportation system users. These facilities serve as bus transit corridors, improving the performance of the on-road transit system. The priced facilities will help reduce traffic congestion, improve air quality, improve travel time reliability, improve safety, and enhance health compared to the no build and priced facility no build alternatives. By helping to reduce overall congestion levels, improvements to the overall transportation system, including priced facilities, also contributes to the economic vitality of the region. Additionally, the revenue from priced facilities will help to finance improvements/rehabilitation of both priced and non-priced facilities. Compared to traditional tax-supported highway finance, priced facilities are implemented more quickly, thereby minimizing capital costs and making new transportation capacity (via transit, roadway, or other modes) available to the traveling public sooner.

Conclusion

Based on the analysis documented in the *Regional Tolling Analysis*, the 2035 build network for the MPA, including future priced facilities, would result in a fair distribution of impacts and benefits among the regional population including environmental justice communities. The 2035 build network for the MPA, including priced facilities, would not cause disproportionately high and adverse impacts on any minority or low-income populations as per EO12898 regarding environmental justice. Therefore, no regional mitigation measures are proposed. This regional analysis is based on the most recent policies, programs, and projects included in *Mobility 2035*. Changes in tolling/managed lane policies could necessitate that the regional tolling analysis be revised if, after a thorough review, the changes are of sufficient magnitude. All of these elements are subject to change in future MTPs. During the development of future MTPs, new analyses of the effects of pricing to environmental justice and protected classes would be conducted.

The *Regional Tolling Analysis* concludes that *Mobility 2035* and the regional transportation planning process provide ways to avoid and minimize potential impacts that could occur due to transportation projects. It also indicates that NCTCOG has performed an environmental justice and Title VI analysis, using the best available data, to ensure that no person is excluded from participation in, denied benefits of, or discriminated against in planning efforts, including the development of the MTP. This assures that *Mobility 2035* is consistent with Title VI of the Civil Rights Act of 1964 and EO 12898 on environmental justice, as well as the Civil Rights Restoration Act of 1987.

VI. PUBLIC INVOLVEMENT AND LOCAL GOVERNMENT COORDINATION

The following milestone public/agency events were conducted during the course of the study:

- First Public Meeting combined with IH 820 project held at the North Richland Hills Community Recreation Center on June 3, 1993.
- Agency Coordination Workgroup Meeting #1 held at the Fort Worth East Regional Library on July 11, 2006.
- Stakeholder Workgroup Meeting #1 held at the Region XI Education Service Center on August 17, 2006.
- Second Public Meeting for IH 35W Corridor Study held at Region XI Education Service Center on October 5, 2006.
- Joint Agency Coordination Workgroup / Stakeholder Workgroup Meeting #2 held at the Region XI Education Service Center on March 14, 2007.
- Third Public Meeting for the IH 35W Corridor Study held at Region XI Education Service Center on April 3, 2007.
- Project Coordination Workgroup/Stakeholder Workgroup Meeting #3 held at the Region XI Education Service Center on April 30, 2009.
- Project Coordination Workgroup/Stakeholder Workgroup Meeting #4 held at the City of Fort Worth Council Chambers on October 27, 2010.
- Fourth Public Meeting held at the Calvary Christian Academy on November 16, 2010.
- Butler Place Community Meeting regarding pedestrian bridges held at the Butler Housing Community Room on March 30, 2011.
- ONA Meeting regarding design changes held at Calvary Christian Academy on September 8, 2011.
- Butler Place Community Meeting regarding pedestrian bridges held at the Butler Housing Community Room on January 25, 2012.

Three public meetings (open house format) specifically for this project were held over the past five years in order to solicit public comments on the proposed design. The meetings were held at the Region XI Education Service Center facility and the Calvary Christian Academy because these facilities are centrally located in the project area and provide adequate space for large crowds. Registered attendance totaled 94 people in 2006, 46 people in 2007, and 121 people in 2010.

Viewing of the project exhibits and informal discussion sessions were held throughout the duration of the meetings to provide attendees an opportunity to review displays and to ask questions regarding the proposed project, including the managed lane tolling component, with project team members present. Attendees were asked to provide written comments the night of the meeting or within a ten-day timeframe after each meeting. Thirty-seven written comments were received either at the public meetings or mailed to TxDOT before the written comment period expired. These comments were reviewed and considered during the development of the project.

The main concerns expressed by citizens during the public outreach process were: future traffic volumes and associated noise levels; a desire for noise walls; ingress/egress ramps; maintaining access to downtown via Belknap; maintaining an exit for 4th Street; and, existing property access. Copies of the written comments received and public sign-in sheets are

available for review at the TxDOT Fort Worth District Office located at 2501 SW Loop 820, Fort Worth, Texas 76133.

Based on information received by TxDOT after the November 2010 Public Meeting, it was determined that the proposed ROW would impact 10 Chesapeake gas well heads. The estimated ROW impacts to the Chesapeake gas well site based on the design presented at the Public Meeting would have dramatically increased the cost of the project. This increase in cost had the potential to make the project financially not reasonable or feasible resulting in further delays in providing safety and mobility improvements along the IH 35W corridor. The proposed design was revised at Chesapeake and the proposed roadway was shifted east toward the Oakhurst neighborhood. TxDOT met with the ONA in order to explain the new design of the proposed IH 35W facility and how the new design would affect the Oakhurst neighborhood. The proposed design would remain within existing TxDOT ROW but would shift the proposed pavement to the east.

The primary concerns expressed by Oakhurst homeowners were impacts to the neighborhood related to light, noise and air pollution, and questioning why Chesapeake could not move their wells to maintain the November 2010 design. The homeowners are concerned about how the proposed IH 35W would affect their historic neighborhood and in order to make sure all their concerns are addressed, ONA has been included as a consulting party as part of the Section 106 coordination process. The coordination process was completed on April 27, 2012 when THC determined the noise impacts would be an adverse effect to the Oakhurst Historic District.

The meetings held at Butler Place were initiated by TxDOT to discuss the removal and potential replacement of the existing pedestrian bridges with community residents. The first meeting introduced the residents to the proposed project, discussed the removal and potential replacement of both pedestrian bridges, and explained that the replacement of the pedestrian bridge over US 287 would impact Harmon Field Park. The proposed improvements to the Luella Street and Cypress Street bridges were explained and comment forms were provided for residents to voice their opinions. A show of hands at the meeting indicated a preference for the US 287 pedestrian bridge to be replaced but not the IH 35W pedestrian bridge. Based on the comment forms provided, approximately 75 percent of respondents indicated that they use the pedestrian bridges. Approximately 90 percent indicated they would use the proposed improved vehicular bridges even if the pedestrian bridges were replaced.

The second meeting at Butler Place was held to provide the residents with more detailed information regarding the proposed pedestrian bridges. An informational matrix was provided to the residents which provided data on the existing and proposed bridges, including pedestrian counts on the pedestrian bridges and vehicular bridges, height of the bridges, travel distance over the pedestrian bridges and vehicular bridges, and safety and crime data from FWHA and local police. This matrix is included in **Appendix H**. Additionally, photographic renderings of the proposed pedestrian bridges and proposed vehicular bridges were displayed. TxDOT provided time for residents to review the displays and ask any questions. A comment form was provided for residents to provide their input. The final decision regarding the proposed pedestrian bridges has not been made. Once all comment forms have been received and analyzed by TxDOT, a decision will be made.

The proposed project is fully supported by the City of Fort Worth, Tarrant County and the NCTCOG. Public outreach associated with the proposed project is on-going and would continue through a public hearing and comment period associated with the release of the EA.

VII. DETERMINATION OF ASSESSMENT

A. Preferred Alternative

The Build Alternative would consist of widening the existing roadway to a 12-lane highway with eight general purpose lanes and two to four managed lanes with auxiliary lanes, reconstructing existing frontage roads, and constructing additional frontage roads. The existing facility is a four to eight-lane divided highway with limited access entrances and exits to adjacent land uses, discontinuous frontage roads, and does not meet current design standards. The proposed project is needed to address operational deficiencies on IH 35W, SH 121, and US 287. The freeway is not up to current design standards. Examples include the following:

- The IH 35W northbound left-hand off-ramp to Pharr Street and the left-hand on-ramp from Pharr Street to southbound IH 35W are counter to driver expectancy. Typically, drivers anticipate right-hand exits.
- Due to the increased demand on the existing facility, the distance from the exit ramps to the cross street intersections on IH 35W is too short, causing traffic to back up into the general purpose lanes and create congestion.
- There is inadequate capacity for the existing and projected 2035 traffic volumes. Inadequate capacity results in frequent starts and stops along the roadway decreasing air quality and increasing the likelihood of accidents.
- The inside shoulders of IH 35W from 28th Street/SH 183 to Spur 280/US 287 are substandard in some locations. The standard minimum width of the inside shoulders is 4-foot for four-lane freeways and 10-foot for six lanes or more.
- The vertical bridge clearances under IH 35W at the Meacham Boulevard u-turns, 28th Street/SH 183, 4th Street and Papurt Street, and over SH 121 at Sylvania Avenue and Riverside Drive are less than the standard 16.5 feet.
- The interchange between IH 35W, US 377/SH 121, Spur 280/US 287, and IH 30 contains merging and weaving conditions that occur within general purpose lanes. The distances provided for these maneuvers are insufficient to provide an acceptable LOS and result in bottleneck situations.

The proposed project would fulfill the need and purpose through the construction of additional general purpose lanes and two to four managed lanes; improving interchanges and ramps to better handle weaving movements; removing left-hand ramps; increasing shoulder widths; increasing vertical bridge clearance; improving frontage road facilities; and, providing auxiliary lanes where needed to prevent traffic queues on through lanes on the highway and frontage road facilities.

B. Mitigation and Monitoring Commitments

The following mitigation and monitoring commitments are proposed for the Build Alternative.

Right-of-Way Requirements, Relocations, and Displacements

Implementing the Build Alternative would require approximately 85.4 acres of additional ROW to accommodate the proposed facility. One hundred and twenty-six parcels would be impacted by ROW acquisition and 63 structures, including 50 commercial structures and 13 residential structures would be displaced by the proposed project. The TxDOT *Right-of-Way Acquisition and Relocation Assistance Program* would be conducted in accordance with the *Uniform Relocation Assistance and Real Property Acquisition Policy Act of 1970*, as amended.

Environmental Justice Populations

Thirteen residences would be displaced within EJ blocks. As mandated by the *Uniform Relocation Assistance and Real Properties Acquisitions Act of 1970*, as amended in 1987, additional assistance for Housing of Last Resort would be provided should the local existing housing market be outside the financial means of a displaced owner or tenant.

Mitigation for noise impacts to EJ neighborhoods has been proposed and four noise barriers are proposed adjacent to Butler Place, Greenway Place, Scenic Bluff and United Riverside. Improved pedestrian facilities are proposed throughout the project and improved community access via an exit ramp from the general purpose lanes is proposed at Greenway Place.

TxDOT will commit to including TWC staff at the Public Hearing for the proposed IH 35W project to answer questions or present services information on behalf of the Workforce Solutions for Tarrant County.

Vegetation and Wildlife Habitat

Approximately 224.05 acres of maintained vegetation, 33.95 acres of woody vegetation, and 1.75 acres of riparian vegetation would be impacted by the proposed project. Mitigation for the loss of riparian habitat would be in accordance with Provision (4) (A)(ii) of the MOA between TxDOT and TPWD. Riparian habitat mitigation would occur at an off-site mitigation bank. The specific mitigation bank has not yet been determined but would be selected from a list that serves the Fort Worth District.

Permanent soil erosion control features would be constructed as soon as feasible during the early stages of construction through proper sodding and/or seeding techniques. Disturbed areas would be restored and stabilized as soon as the construction schedule permits and temporary sodding would be considered where large areas of disturbed ground would be left bare for a considerable length of time. In accordance with EO 13112 on Invasive Species and the *Executive Memorandum on Beneficial Landscaping, Seeding and Replanting* with TxDOT approved seeding specifications that are in compliance with EO 13112 would be done where possible.

Threatened and Endangered Species

During construction of the proposed Build Alternative, if implemented, there is the potential for temporary impacts to two state threatened species (Louisiana pigtoe and Texas heelsplitter) and two state species of concern (fawnsfoot and little spectacle case), and their habitats from adverse water quality conditions from construction area storm water runoff. In addition to avoidance and minimization, mitigation for temporary project impacts that might occur to mollusk habitats would consist of the water quality measures discussed in **Section V.B.5**.

In order to protect mussel species from permanent impacts, requirements would consist of either conducting a survey to determine the presence of the species and, if present, relocating the species and monitoring their survival for five years or prohibiting dewatering and equipment crossings within the West Fork Trinity River.

Also during construction, there would be temporary impacts to streams which could serve as Texas garter snake habitat and temporary impacts to floodplains and riparian zones which could serve as timber/canebrake rattlesnake habitat. After construction, the impacted areas would be returned to preconstruction contours and any Texas garter snake and timber/canebrake

rattlesnake habitats would reestablish themselves. There are also streams, wetlands, and floodplains outside of the proposed construction limits of the proposed Build Alternative that could serve as Texas garter snake and timber/canebrake rattlesnake habitats to replace the impacted habitats. Prior to construction at water crossings, the construction team would be able to properly identify the Texas garter snake and timber canebrake rattlesnake and would be instructed to avoid injury to both species. Should either species be observed, construction activities would stop immediately and the TxDOT District Biologist would be notified immediately.

Floodplains

The proposed project crosses five water bodies (includes West Fork Trinity River twice) and flood zones. According to NFIP, Zone A and Zone AE are located in a special flood hazard area inundated by the 100-year level. The hydraulic design practices for the proposed project would be in accordance with current TxDOT design policy and standards. The highway facility would permit the conveyance of the 100-year flood levels, inundation of the roadway being acceptable, without causing substantial damage to the roadway, stream, or other property. A portion of the proposed project is within the Regulated Floodway Zone. The proposed project would not increase the base flood elevation to a level that would violate applicable floodplain regulations or ordinances; therefore, coordination with either the FEMA or the local floodplain administrator is not required. However, informal coordination with the local floodplain administrator would occur.

Waters of the U.S.

Approximately 11.21 acres of waters of the U.S. were delineated within the proposed ROW. One (Crossing No. 2) of the five waters of the U.S. would not be impacted by the proposed improvement. One jurisdictional wetland (Crossing No. 1) was delineated totaling 0.29 acre. Because impacts at a crossing exceeded the 0.1 acre threshold impact for NWP 14 and there is a discharge in a special aquatic site (the wetland area), a PCN would be required for the proposed project corridor. Construction of the bridges over the West Fork Trinity River (Crossings Nos. 3 and 4) can be authorized by NWP 25 with a PCN or RGP 12 in conjunction with the Section 408 approval process. The unnamed tributary to the West Fork Trinity River (Crossing No. 5) would be authorized under NWP 25. NWP 14 would also be considered at Crossing No. 5; however, impacts would be less than 0.1 acre. If temporary fills are needed in the jurisdictional waters then the affected areas would be returned to their pre-existing elevations. Channelization would not be required to construct the proposed project. Compensatory mitigation for Section 404 impacts would be coordinated with the USACE and performed in accordance with the terms of the approved permit(s).

Water Quality

General Condition 21 of the NWP Program requires applicants to comply with Section 401 of the CWA. Section 401 Water Quality Certification was required in association with the NWP or RGP as appropriate. Once TCEQ issues water quality certification conditions for the new NWPs, these new conditions will be incorporated into the EPIC sheet.

Because the proposed project would disturb more than 1 acre, TxDOT would be required to comply with the TCEQ-TPDES General Permit for Construction Activity. The proposed project would also disturb more than 5 acres; therefore, a NOI would be filed to comply with TCEQ stating that TxDOT would have a SW3P in place during construction of the proposed project.

The proposed project is located within the boundaries of the Phase I MS4, and would comply with the applicable MS4 requirements.

The proposed project is within the Trinity River Corridor Development Regulatory Zone and a CDC would be required.

Section 408

Section 404 permitting can be accomplished using RGP 12 in conjunction with the Section 408 approval process or by the use of NWP 14 and NWP 25.

Cultural Resources

In the event that unanticipated archeological deposits are encountered during construction, work in the immediate area will cease and TxDOT archeological staff will be contacted to initiate post-review discovery procedures under the provisions of the PA and MOU.

To minimize light-related issues within the Oakhurst historic district, the final design of the project will prohibit high mast lighting systems in that vicinity to comply with lighting safety requirements. Additionally, compliance with Texas regulations concerning "Dark Sky" lighting will help reduce light spill beyond the roadway.

To minimize visual-related issues within the Oakhurst historic district, the TxDOT Fort Worth District will include a stipulation in the contract with any third party developer requiring the use of a Registered Landscape Architect in the development of the landscaping plan for the proposed project.

SHPO shall be given the opportunity to comment on the detail design of the NB Belknap St. Bridge proposed for construction immediately downstream from the existing SB Belknap St. at Trinity River Bridge.

Hazardous Materials

The build alternative would require the acquisition of petroleum USTs, UST system components, and petroleum ASTs from multiple facilities, as identified in the Hazardous Materials discussion. Removal of the tank systems would be addressed during the ROW negotiation and acquisition process, prior to construction.

Four sites were identified within the project limits which have had known petroleum releases (Conoco A-1, Circle K Truck Stop, Bruckners Mack Truck, and the Shell at 1908 Yucca Ave). All sites have received final concurrence from TCEQ; however, closures may have been achieved with substantial levels of contamination left in place. Review of TCEQ file records was conducted for the site at 1908 Yucca Avenue, and the potential for contamination impacts appears to be low. Additional investigation, including file review, would be conducted for the other release sites within the project limits to better determine the potential for project impacts.

The contractor would take appropriate measures to prevent, minimize, and control the spill of hazardous materials in the construction staging area. The use of construction equipment within sensitive areas would be minimized or eliminated entirely. All construction materials used for this project would be removed as soon as work schedules permit.

The proposed project includes the demolition of approximately 40 vehicular and pedestrian bridges. The bridges may contain asbestos containing materials (ACM) and shall be inspected to verify the presence or absence of ACM. Prior to the bridge demolition(s), a 10-Day Notification shall be submitted to the DHHS.

Air Quality

The potential impacts of particulate matter emissions will be minimized by using fugitive dust control measures such as covering or treating disturbed areas with dust suppression techniques, sprinkling, covering loaded trucks, and other dust abatement controls, as appropriate.

Noise

The Build Alternative would result in a traffic noise impact at 19 representative receivers and the following noise abatement measures were considered: traffic management, alteration of horizontal and/or vertical alignments, acquisition of undeveloped property to act as a buffer zone, and the construction of noise barriers. Four noise barriers for representative receivers R12 through R16, R19 and R29 would be reasonable and feasible.

Airway-Highway Clearance

A FAA Notice of Proposed Construction or Alteration form (Form AD-7460-1) will be completed during the design phase and submitted by TxDOT to the FAA for their approval prior to construction of proposed improvements surrounding the heliport.

C. Recommendation for Alternative Selection and a FONSI

The engineering, social, and environmental investigations conducted thus far indicate that the proposed project would have no significant impact on the quality of the human environment. A FONSI is anticipated for this proposed project.