

ENVIRONMENTAL ASSESSMENT & SECTION 4(f) *DE MINIMUS*
DOCUMENT

STATE HIGHWAY 121 / STATE HIGHWAY 183
(AIRPORT FREEWAY)

FROM IH 820 TO SH 161

CSJ NOS. 0364-01-054, 0364-05-025, 0364-05-026, AND
0094-02-077

TARRANT AND DALLAS COUNTIES
TEXAS

PREPARED BY:

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
AND
FEDERAL AVIATION ADMINISTRATION
AND
TEXAS DEPARTMENT OF TRANSPORTATION
FORT WORTH DISTRICT

OCTOBER 2009

TABLE OF CONTENTS

I.	INTRODUCTION	1
	A. OVERVIEW OF PROJECT.....	1
	B. RATIONALE FOR DEVELOPMENT OF AN ENVIRONMENTAL ASSESSMENT.....	3
	C. IMPLEMENTATION AND USE OF MANAGED (TOLL) LANES.....	7
II.	DESCRIPTION OF EXISTING FACILITY	9
	A. EXISTING FACILITY PLAN/CONDITIONS	9
	B. LAND USE	10
III.	DESCRIPTION OF PROPOSED FACILITY	13
	A. PROPOSED FACILITY PLAN.....	13
	B. LAND USE	14
IV.	NEED AND PURPOSE FOR THE PROPOSED PROJECT	15
	A. NEED.....	15
	B. PURPOSE	15
	C. POPULATION GROWTH IN THE AREA	17
	D. CHANGING LAND USE AND ACCESS NEEDS	19
	E. EXISTING TRAFFIC AND PROJECTIONS	24
	F. ACCIDENT RATES.....	24
	G. CONGESTION MANAGEMENT PROCESS	26
V.	ALTERNATIVES INCLUDING PROPOSED ACTION.....	29
	A. NO-BUILD	29
	B. BUILD.....	30
VI.	DIRECT IMPACTS TO ENVIRONMENTAL ISSUES.....	35
	A. SOCIAL AND ECONOMIC ISSUES	35
	B. NATURAL RESOURCES.....	74
	C. HAZARDOUS MATERIALS	91
	D. AIR QUALITY	96
	E. NOISE.....	111
	F. AIRWAY/HIGHWAY CLEARANCE.....	117
	G. CULTURAL RESOURCES	117
	H. SECTION 4(f) PROPERTIES	120
	I. SUMMARY OF IMPACTS - DALLAS DISTRICT SH 183 PROJECT (COUNTY LINE TO SH 161).....	122

VII. INDIRECT IMPACTS ANALYSIS 124

A. STEP 1: SCOPING 125

B. STEP 2: IDENTIFY THE STUDY AREA’S DIRECTION AND GOALS 128

C. STEP 3: INVENTORY OF THE STUDY AREA’S NOTABLE FEATURES 136

D. STEP 4: IDENTIFY IMPACT-CAUSING ACTIVITIES OF THE PROPOSED IMPROVEMENTS 137

E. STEP 5: IDENTIFY POTENTIALLY SUBSTANTIAL INDIRECT IMPACTS..... 142

F. STEPS 6-8: ANALYZE INDIRECT IMPACTS, EVALUATE ANALYSIS RESULTS, AND ASSESS CONSEQUENCES/DEVELOP MITIGATION 153

G. INDIRECT IMPACTS OF THE REGIONAL TOLL AND MANAGED/HOV SYSTEM.....165

VIII. CUMULATIVE IMPACTS ANALYSIS 168

A. INTRODUCTION AND METHODOLOGY 168

B. STEPS 1-6: AIR QUALITY 172

C. STEPS 1-6: COMMUNITY 184

D. STEP 7 (AIR QUALITY AND COMMUNITY): RESULTS 231

E. STEP 8 (AIR QUALITY AND COMMUNITY): MITIGATION..... 237

F. CUMULATIVE IMPACTS OF THE REGIONAL TOLL AND MANAGED/HOV SYSTEM..... 243

IX. PUBLIC INVOLVEMENT 262

A. PUBLIC MEETINGS 262

B. OTHER PUBLIC INVOLVEMENT MEETINGS 265

X. RECOMMENDATION OF THE PREFERRED ALTERNATIVE 268

A. IDENTIFICATION AND RATIONALE FOR THE PREFERRED ALTERNATIVE..... 268

B. MITIGATION AND MONITORING COMMITMENTS..... 269

C. ALTERNATIVE SELECTION AND RECOMMENDATION OF A FONSI 270

LIST OF TABLES

I-1	Cross Reference to Environmental Resource Categories Assessed by FAA	2
IV-1	Regional Population Projections	18
IV-2	Regional Employment Projections	18
IV-3	Proposed Entrance Ramps to SH 121/SH 183	23
IV-4	Proposed Exit Ramps from SH 121/SH 183	24
IV-5	SH 121/SH 183 Average Daily Traffic (ADT) Volumes	24
IV-6	SH 121/SH 183 Traffic Accident Data	25
IV-7	Selected Individual Operational Improvement Projects	28
VI-1	Study Area Minority and Low-Income Characteristics	37
VI-2	Comparison of Airport Freeway Origin-Destination Data	46
VI-3	Limited English Proficiency (LEP) (County Level)	48
VI-4	Limited English Proficiency (LEP) (Affected Census Tracts)	49
VI-5	Impacts to Communities	54
VI-6	ROW Requirements and Displacements	57
VI-7	Summary of Study Area Residential Relocations	61
VI-8	Summary of Study Area Displaced Businesses/Business Facilities	64
VI-9	Available Commercial Floor Space and Land for Businesses	67
VI-10	Summary of Study Area Public Facilities Affected	70
VI-11	Estimated Vegetation / Habitat Impacts Associated with the Build Alternative	80
VI-12	Federal and State Listed Threatened and Endangered Species and Species of Concern in Tarrant County	82
VI-13	Estimated Channel Impacts Associated with the Build Alternative	87
VI-14	Best Management Practices (BMP) List	89
VI-15	Identified Hazardous Material Sites Along the Project Corridor	93
VI-16	Projected Carbon Monoxide Concentrations for SH 121/SH 183 (2015-2030)	98
VI-17	Sensitive Receptors in the SH 121/SH 183 Study Area	102
VI-18	Sensitive Receptors by Distance from Centerline	102
VI-19	MSAT Emissions for SH 121/SH 183 by Scenario (tons/year)	107
VI-20	FHWA Noise Abatement Criteria	111
VI-21	Traffic Noise Levels (dBA Leq)	112
VI-22	Noise Barrier Proposal (Preliminary)	116
VII-1	Factors Considered in Determining Methodology and Detail of Analysis	126
VII-2	Indirect Impacts Study Area - 1995 and 2005 Land Use	130
VII-3	Major Arterial Roadway Projects within the AOI	133
VII-4	Dallas and Tarrant County Residential Permits	134
VII-5	School District Enrollment Totals	134
VII-6	NCTCOG Development Monitoring for 2007	135
VII-7	Dallas and Tarrant County Non-Residential Permits (1980-1995)	136
VII-8	Notable Features	137
VII-9	Estimated Approximate Channel Lengths within the Indirect Impacts AOI	144
VII-10	Public Parks within One Mile of the SH 121/SH 183 Corridor	151

VII-11	Public Facilities Located within the Indirect Impacts AOI	162
VII-12	Future Toll Road and Managed HOV Lane Projects	166
VIII-1	Resources for Cumulative Impacts Analysis.....	169
VIII-2	Resource Indicators and Resource Study Areas for the Cumulative Impacts Analysis	171
VIII-3	Projected Carbon Monoxide Concentrations for SH 121/SH 183 (2015-2030).....	178
VIII-4	MSAT Emissions for SH 121/SH 183 by Scenario (tons/year)	179
VIII-5	Municipal Incorporations	192
VIII-6	Major Projects Affecting the DFW Region.....	193
VIII-7	CNNMoney “Best Places to Live” Index.....	199
VIII-8	Public Parks within One Mile of the SH 121/SH 183 Corridor	201
VIII-9	Toll Road Features Relevant for Environmental Justice Analysis	211
VIII-10	North Tarrant Express Segment Descriptions	221
VIII-11	Existing Resource Conditions and Potential Direct, Indirect, and Cumulative Impacts	233
VIII-12	Alternative Growth Scenarios Compared to Historical Growth Model	246
VIII-13	2030 Average Loaded Speed (mph).....	251
VIII-14	Levels of Service (LOS) for the Traffic Study Area (2030)	252
VIII-15	Levels of Service (LOS) Visual and Technical Descriptions.....	253
VIII-16	Origin-Destination Results	254
IX-1	SH 121/SH 183 Public Involvement Meetings	267
X-1	Alternatives’ Ability to Achieve the Project Objectives	268

LIST OF FIGURES

V-1	Alternative 1 Configuration - “Staggered” (Alternating) Lane Configuration - East of the SH 121/SH 183 Diverge.....	31
V-2	Alternative 2 Configuration (First) - From IH 820 to SH 360 [Refer to Typical Section in Appendix A-4 (IH 820 to Hurstview Drive; Ector Drive to SH 360)].....	31
V-3	Alternative 2 Configuration (Second) - From SH 360 to SH 161 [Refer to Typical Section in Appendix A-5 (SH 360 to SH 161)].....	31
V-4	Alternative 3 Configuration - West of the SH 121/SH 183 Diverge [Refer to Typical Section in Appendix A-4 (Hurstview Drive to Norwood Drive; Industrial Boulevard (FM 157) to Ector Drive)]	32
V-5	Alternative 4 Configuration - “One Up, Three Down” Design [Refer to Typical Section in Appendix A-5 (Norwood Drive to Industrial Boulevard (FM 157))]	33
VI-1	U.S. Annual VMT vs. MSATs (2000 - 2020).....	100
VI-2	Projected Changes in MSAT Emissions by Scenario over Time	108
VI-3	Comparison of MSAT Emissions vs. VMT by Scenario	108
VIII-1	Projected Changes in MSAT Emissions by Scenario over Time	180
VIII-2	Comparison of MSAT Emissions vs. VMT by Scenario	181
VIII-3	North Tarrant Express Segment Map.....	220
VIII-4	Mobility 2030 Transportation Plan Components	257

LIST OF APPENDICES

- A Project Exhibits
- B Regional Transportation Council (RTC) Policies
- C Site Photographs
- D Advance Purchase Data/Discussion
- E SH 121/SH 183 Sensitive Receptors
- F Agency Coordination
- G Section 4(f) Evaluation / Coordination
- H Indirect Impacts
- I Cumulative Impacts
- J TIP and MTP

THIS PAGE INTENTIONALLY LEFT BLANK

I. INTRODUCTION

The Texas Department of Transportation (TxDOT) - Fort Worth District, in cooperation with the Federal Highway Administration (FHWA) as the lead federal agency, has undertaken the preparation of this Environmental Assessment (EA) for the proposed 10.8-mile State Highway (SH) 121/SH 183 (Airport Freeway) improvements project in Tarrant and Dallas Counties, Texas. This EA provides the public and decision makers with adequate and appropriate information regarding the social, economic, and environmental impacts associated with the proposed project. This document presents the potential impacts for the proposed project from Interstate Highway (IH) 820 located in southeast North Richland Hills, eastward through the cities of North Richland Hills, Hurst, Bedford, Euless, and Fort Worth in Tarrant County to SH 161 in Irving, Dallas County, Texas (see the Project Vicinity and Location Maps, **Appendices A-1** and **A-2**, respectively).

A. OVERVIEW OF PROJECT

The proposed project would involve the reconstruction and widening of the existing six-lane highway to a 12-lane facility between IH 820 and SH 360 and a 14-lane facility between SH 360 and SH 161, reconstruction of the cross street bridges and ramps, and the construction of continuous two-lane, one-way frontage roads (this includes removal and replacement of the three existing general purpose lanes in each direction and the addition of three managed (toll) lanes in each direction). After completion of the project, all general purpose and frontage road lanes would remain non-tolled (i.e., free), as they currently exist. The proposed freeway includes inside and outside shoulders, fully controlled access points, and grade-separated interchanges.

The proposed facility would acquire approximately 1.8 acres of new ROW from Dallas/Fort Worth (DFW) International Airport, which is a department of both the cities of Dallas and Fort Worth (see **Appendix A-45**). Since airport property represents federally obligated land, Federal Aviation Administration (FAA) involvement is mandatory. When land is acquired from an airport, FAA must make a federal action to release the airport property for sale. This condition applies to the proposed acquisition from the DFW International Airport for the proposed SH 121/SH 183 (Airport Freeway) project.

The FAA has statutory responsibility for promoting safe flight of civil aircraft in air commerce. The purpose of FAA action in connection with the proposed construction of the proposed project is to ensure that the proposed alterations to the airport do not adversely affect the safety, utility, or efficiency of the airport. FAA action is necessary in connection with the proposed use of airport residual property because, pursuant to 49 USC § 47107(a)(16), the FAA Administrator (under authority delegated from the Secretary of Transportation) must approve any revision or modification to an Airport Layout Plan (ALP) before the revision or modification takes effect. The Administrator's approval includes a determination that the

proposed alteration to the airport, reflected in the ALP revision or modification, do not affect adversely the safety, utility, or efficiency of the airport.

The FAA federal action requires a NEPA analysis that meets the requirements of FAA Order 5050.4B: National Environmental Policy Act (NEPA) Implementing Instructions for Airport Projects and FAA Order 1050.1E: Policies and Procedures for Considering Environmental Impacts. Appendix A of the FAA Order 1050.1E requires the evaluation of specific resource categories as part of an environmental assessment. Each of these impact categories has been evaluated against FAA's thresholds of significance as indicated in the order. Table I-1 displays a summary of the resource categories and references page numbers for the discussion to these resource categories in this document.

Table I-1 Cross Reference to Environmental Resource Categories Assessed by FAA	
FAA Resource Categories	Reference Page Number(s)
Air Quality	96-110
Coastal Issues	90
Compatible Land Use	14
Construction Impacts	73 (Water 89-90; Air 110; Noise 115)
4(f)	119-121
Farmland	85
Fish/Wildlife/Plants	74-84
Floodplains	86
Hazardous Material	91-96
Historical, Architectural, Archeological and Cultural Resources	116-119
Light Emissions and Visual Impacts	72
Natural Resources and Energy Supply	91
Noise	110-116
Secondary (Induced) Impacts	123-166
Socioeconomic Impacts, Environmental Justice, and Children's Environmental Health and Safety Risks	35-74
Water Quality	85-91
Wetlands, jurisdictional or non-jurisdictional	87
Wild and Scenic Rivers	90-91
Public Involvement	259-264

B. RATIONALE FOR DEVELOPMENT OF AN ENVIRONMENTAL ASSESSMENT

The FHWA has developed federal environmental 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. Under 23 CFR 771.115(a), Class I (EISs), certain proposed projects, whose activities would significantly affect the environment, require an Environmental Impacts Statement (EIS). Examples of projects that would normally require an EIS include:

- 1) A new controlled access freeway;
- 2) A highway project of four or more lanes on a new location;
- 3) New construction or extension of fixed guideway systems (i.e., rapid rail, light rail, commuter rail, automated guideway system); or
- 4) New construction or extension of a separate roadway for buses or high occupancy vehicles (HOVs) not located within an existing highway facility.

Title 23 CFR 771.115 also states that the State must prepare an EA for any proposed project “in which the significance of the environmental impact is not clearly established.” Additionally, 23 CFR 771.119 gives states and the FHWA the ability to produce EA documents “for each action that is not a [categorical exclusion] (CE) and does not clearly require the preparation of an EIS, or where the Administration believes an EA would assist in determining the need for an EIS.”

The Fort Worth District (FWD) presents in this document the proposed project, SH 121/SH 183 (Airport Freeway) within the limits described above, where the level of impact justifies the preparation of an EA. Project specific information is presented in this EA as requested in the FHWA letter to TxDOT Environmental Affairs Division, dated August 29, 2007 (see **Appendix F**, Agency Coordination). The following information summarizes the findings presented in this document and serves as the justification of and EA versus and EIS.

a) Planning Process:

The proposed action is consistent with the 2008-2011 Transportation Improvement Program (TIP). TxDOT and the North Central Texas Council of Governments (NCTCOG) continue to promote appropriate congestion reduction strategies through the Congestion Mitigation and Air Quality Improvement Program (CMAQ), the Congestion Mitigation Process (CMP), and the Metropolitan Transportation Plan (MTP) known as Mobility 2030 – 2009 Amendment, approved August 31, 2009. The State Implementation Plan (SIP) for the Dallas/Fort Worth nonattainment area was developed by the Texas Commission on Environmental Quality (TCEQ) and contains emissions budgets for the on-road transportation system. Transportation conformity emission budgets have been established for ozone precursors. The NCTCOG has demonstrated that the existing transportation network plus the

planned projects in Mobility 2030 – Amended 2009, approved August 31, 2009 will not exceed the emission budgets in the SIP.

b) Summary of Findings:

- **Right-of-Way (ROW)** - The proposed project would require the acquisition of approximately 83 acres of ROW from 324 properties. Of these 83 acres, approximately 1.8 acres would be required from the DFW International Airport property.
- **Relocations/Displacements** - The proposed reconstruction of SH 121/SH 183 would require the relocation of 128 single-family homes and 104 multi-family units and the displacement of 29 businesses.
- **Social Impacts / Public Facilities and Services** - The proposed project result in displacements at two public facilities and impact landscaping or parking at eight other public facilities. The two displacements would involve the HEB ISD Administration Complex and the First United Methodist Church of Euless; each would lose one structure (the church's being a non-essential office structure that would be rebuilt elsewhere onsite). Though access to the public facilities may change with construction activities and relocation of access points and routes, the project would not affect the essential function of the facilities.
- **Environmental Justice** - No disproportionately high and adverse impacts to minority and/or low-income populations are anticipated to occur as a result of the proposed project; however, implementation of system-wide managed (toll) lanes may disproportionately impact low-income persons by assessing a toll they cannot afford. Field reconnaissance indicates that construction of the project would not bisect ethnic groups or neighborhoods.
- **Vegetation Impacts** - The proposed project would result in approximately 6.91 acres of permanent vegetation impacts consisting of mesquite shrub/grassland, unmaintained woods, post oak groves, and riparian vegetation. Another approximately 51.3 acres of mowed and maintained grassland would also be permanently impacted. TxDOT has proposed onsite mitigation along Bear Creek for two acres of riparian vegetation impacts along the creek.
- **Threatened and Endangered Species** - No impacts to any federal or state listed threatened or endangered species are anticipated from the proposed project.
- **Migratory Birds** - Implementing the Build Alternative would have no effect on migratory birds, their nests, or their young.
- **Farmlands** - The proposed project would be developed within ROW that is developed and therefore is considered exempt under the Farmland Protection Policy Act (FPPA). There would be no impact on farmlands.
- **Floodplains** - There would be no impact, since the proposed project would not increase the base flood elevation to a level that would violate the applicable floodplain regulations or ordinances.
- **Waters of the United States (Including Wetlands)** - Construction of the project would result in permanent impacts to five of the nine waterbodies crossed by

SH 121/SH 183. Impacts would be less than 0.1 acre at each water crossing, and no wetlands were identified within any of the waterbodies.

- **Hazardous Materials** - Numerous regulatory facilities with historical environmental conditions have been identified in or within a close proximity of the proposed ROW. The majority of the environmental conditions are related to underground storage tank (UST) releases of petroleum substances (gasoline, diesel, and possibly new or used oil). Four leaking petroleum storage tank (LPST) facilities were identified on the north side of Airport Freeway and 11 LPST facilities were identified on the south side of the freeway. The LPST facilities have been assessed by soil and/or groundwater testing; the majority of the facilities may have received case closure concurrence from the TCEQ, stating, “no further action is necessary” based on the information they received. The TCEQ does not warrant or guarantee that residual and/or isolated areas of petroleum-affected soil and/or groundwater do not exist at these facilities. Additionally, some degree of residual contamination is often permitted at these facilities. Based on project reconnaissance, gasoline service stations/convenience stores were identified as having the greatest potential to be an environmental concern to the project from an environmental standpoint. A total of nine gasoline service stations were identified on the north side of Airport Freeway; and 18 gasoline service stations were identified on the south side.
- **Air Quality** - Estimated Time of project Completion (ETC) traffic (2015) is estimated to be 297,800 vehicles per day (vpd) from Bedford-Eules Road to the SH 121/SH 183 Diverge and 331,550 vpd from the SH 121/SH 183 Diverge to SH 161. The design year traffic (2030) is estimated to be 378,100 vpd from Bedford-Eules Road to the SH 121/SH 183 Diverge and 421,700 vpd from the SH 121/SH 183 Diverge to SH 161. Based on modeling of carbon monoxide concentrations for the proposed action, local concentrations are not expected to exceed national standards at any time. Substantial decreases in mobile source air toxics (MSAT) emissions will be realized from a current base year (2007) through the ETC for the planned project and its design year some 23 years in the future. Accounting for anticipated increases in vehicle miles traveled (VMT) and varying degrees of efficiency of vehicle operation, total MSAT emissions were predicted to decline approximately 60 percent from 2007 to 2030. While benzene emissions were predicted to decline more than 47 percent, emissions of DPM were predicted to decline even more (i.e., 88% in the Build scenario).
- **Traffic Noise** - The proposed project would result in a traffic noise impact. It has been determined that noise barriers would be feasible and reasonable for impacted receivers; therefore, they have been incorporated into the project.
- **Cultural Resources (Archeological and Historic Resources)** - The proposed project has no potential to cause effects on archeological properties or State Archaeological Landmarks, and no further consultation is required prior to project construction. Regarding historic resources, the area of potential effect (APE) was limited to 150 feet beyond the edge of the existing or proposed ROW. A reconnaissance survey of the project area identified 168 resources that appear to be at least 50 years of age and two Official Texas Historic Markers. Only the Old Bedford Road Bridge is eligible for listing in the National Register of Historic Places

(NRHP). However, the proposed project would have no effect on this resource. Therefore, there would be no impacts to historic resources as a result of the proposed project.

- **Section 4(f) Properties** - There would be impacts to one section 4(f) property, L.D. Bell High School. The open, grassy area along the eastern property line fronting Brown Trail and the open, grassy area/parking area along the SH 121/SH 183 northern frontage (totaling approximately 0.68 acre). These open, grassy areas are considered publicly owned recreation areas that are open to the public. The Hurst-Eules-Bedford (HEB) Independent School District (ISD) has approved a Letter of Understanding with TxDOT indicating no adverse effect, and a preliminary *de minimis* determination has been obtained from FHWA.
- **Public Involvement Conducted to Date** - Three public meetings have been held (August 1993, November 2001, and May 2006). Notices for these meetings were sent to government officials and adjacent landowners, and they were posted in local newspapers. Two joint public officials meetings were held in November 2005 and March 2006. Meetings with individual cities (North Richland Hills, Bedford, Hurst, and Eules) occurred between 2005 and 2006. TxDOT held a large meeting with the HEB Chamber of Commerce in March 2006. Five meetings were conducted with the HEB ISD between 2006 and 2007 to discuss impacts to the administration complex and L.D. Bell High School.
- **Controversy** - There is no known opposition to the reconstruction of SH 121/SH 183. This is not to say that some aspects of the proposed SH 121/SH 183 highway expansion project did not meet with modest and healthy levels of concern. For example, in public meetings concerns were expressed.
 - noise (a desire for sound barriers) and air pollution;
 - ground vibrations caused by large trucks;
 - increases in traffic and exhaust;
 - insufficient entrance and exit ramps;
 - proposed ROW takings and compensation; and,
 - proposed pedestrian bridge at Cavender Drive and a desire to leave the existing pedestrian bridge.

In many cases, changes to design came from the meetings, and the proposed pedestrian bridge at Cavender Drive was ultimately removed from the design. A more important objection was the possibility of tolls being used to fund the project. Meeting attendees expressed a general opposition to the funding mechanism (i.e., tolling), but this did not translate into an opposition to the overall proposed highway expansion project.

- **Resource Agency Coordination** - TxDOT has coordinated with resource agencies such as the Texas Historical Commission (THC), the TCEQ, and the Texas Parks and Wildlife Department (TPWD) during the preparation of this EA, in accordance with applicable Memoranda of Agreement or Understanding.
- **Local Government** - The local cities that would incur the impacts of the project, North Richland Hills, Hurst, Bedford, and Eules, support the SH 121/SH 183 (Airport Freeway)

project, and have had strong participation in developing the Build Alternative (the access to and from the general purpose (non-tolled) and managed (toll) lanes, in particular).

Due to minimal environmental impacts, justification that the proposed project's classification as an EA is as follows:

- There are minimal environmental impacts: 232 residential relocations (128 single-family homes and 104 multi-family units) and 29 displaced businesses.
- The project would result in traffic noise impacts; however, noise barriers are proposed to mitigate this issue.
- The entire project is reconstruction of an existing facility (SH 121/SH 183).

Based on the potential social, economic, and environmental impacts identified and presented in this EA, TxDOT does not anticipate that an EIS would be required.

C. IMPLEMENTATION AND USE OF MANAGED (TOLL) LANES

C.1 Implementation

According to the FHWA study *Managed (toll) Lanes: A Cross-Cutting Study* (November 2004), managed (toll) lanes are defined as: "A limited number of lanes set aside within an expressway cross-section, where multiple operational strategies are utilized, and actively adjusted as needed, for the purpose of achieving pre-defined performance objectives. Such multiple operational strategies could include flexible pricing, vehicle eligibility (HOV), and controlled access." Therefore, managed (toll) lanes increase freeway efficiency by offering a reasonably predictable trip with generally little congestion. HOVs (i.e., carpools and vanpools), single occupancy vehicles (SOVs), and motorcycles would be charged a toll; transit vehicles would not be charged a toll.

C.2 Use

Use of the managed (toll) lane funding concept is based on the need for alternative funding for major highway construction projects. First, a managed (toll) lane solution would enable TxDOT to address the project needs sooner than using a traditional funding mechanism. In the traditional mechanism, monies are allocated as needs and availability presents themselves. This could delay a project where the needs are great, but the funding is limited. Second, a managed (toll) lane funding mechanism would make funding for other projects more readily available.

The Regional Transportation Council (RTC) is the independent transportation policy body of the Metropolitan Planning Organization (MPO), and is responsible for overseeing the metropolitan transportation planning process. As part of that roll, the RTC has developed *Managed Lane Policies* (see **Appendices B-1** through **B-4**) for all managed (toll) lane corridors in the NCTCOG region. These

policies are not static and may be adjusted at any time to better serve modal needs of the region. Further discussion on managed (toll) lanes is provided in **Section VI - A** of this document.

As indicated earlier, a managed (toll) lane funding mechanism would make funding for other projects more readily available. This is accomplished through the use of the RTC's Regional Toll Revenue Funding Initiative (RTRFI), for which excess toll revenue sharing policies have been established for managed lanes. In accordance with this RTRFI *Excess Toll Revenue Sharing: Managed Lane Policy* (see **Appendices B-5** through **B-6**), the excess revenue generated from an individual managed lane toll project shall remain in the county for which the revenue-generating project is located. Further, excess revenue shall be returned to the project's funding partners in proportion to their shares and be used to fund future transportation projects. In the case of the RTC, their shares will be used to support air quality related and sustainable development programs, as well as other federal transportation funds.

Preliminary RTRFI projects anticipated from the excess toll revenue have yet to be identified. The excess funds obtained from the managed (toll) lanes of SH 121/SH 183, as well as other managed lane projects, allow for the allocation of other state transportation funds for critical, but otherwise unbudgeted, safety, capacity, and air quality projects. These projects could include roadway, transit, bicycle, intersection improvement, intelligent transportation systems (ITS), regional/innovative, and park-and-ride projects. New projects that were originally budgeted through gasoline tax revenue, such as SH 121/SH 183, can be built or opened as toll facilities with accelerated construction schedules. The gasoline tax revenue would then be used to build additional transportation facilities with accelerated construction schedules.

In accordance with the RTC's *Excess Toll Revenue Sharing: Managed Lane Policy*, local governments and transportation authorities have the right to invest in a Comprehensive Development Agreement (CDA) project as a means to fund a proposed facility, as well as to generate local revenue. The proposed project, as well as others including the SH 121 corridor between SH 183 and FM 157/Mid-Cities Boulevard in Euless, is being developed as part of a proposed CDA under procurement by TxDOT - Fort Worth District. This CDA, recently dubbed as "The North Tarrant Express Project," will reconstruct portions of the IH 35W, IH 820, and SH 121/SH 183 in Tarrant County with expanded general purpose lanes, improved ramps, and concurrent HOV/managed (toll) lanes. A CDA is a public-private partnership allowing a consortium of companies to perform a combination of finance, design, construct, operate, and maintain a roadway under the guidelines of TxDOT.

II. DESCRIPTION OF EXISTING FACILITY

A. EXISTING FACILITY PLAN/CONDITIONS

The existing SH 121/SH 183 facility is a heavily traveled east-west highway corridor that runs through the heavily urbanized area between Fort Worth and Dallas, two cities in north-central Texas that together are known as the Dallas/Fort Worth Metroplex (Metroplex) (see **Appendix A-1**). The United States (U.S.) Census 2000 reflects a population of 5.1 million for the Metroplex, making it the fifth largest metropolitan area in the U.S.

The existing SH 121/SH 183 facility begins in North Richland Hills at IH 820 and ends in west Irving at SH 161, passing through the cities of Hurst, Bedford, Euless, and Fort Worth (see **Appendix A-2**). Located approximately 1.3 miles west of SH 161 is the Dallas/Fort Worth (DFW) International Parkway 80(Spur 97), which leads directly north to the DFW International Airport. The SH 121/SH 183 facility is therefore commonly referred to as the “Airport Freeway.”

The portion of the Airport Freeway under consideration (the “existing facility”) is approximately 10.8 miles long. SH 121 and SH 183 run concurrently from the western terminus of the project to the SH 121/SH 183 split (diverge), with SH 121 continuing north towards Grapevine and SH 183 continuing eastward towards Dallas.

The existing facility, which is an urban expressway in functional classification, was constructed in various stages from 1966 to 1989. The segment from Bedford-Euless Road to the SH 121/SH 183 diverge was initially constructed with asphalt pavement in 1966-1969 (see **Appendices A-24** through **A-28**). The segment from IH 820 to Bedford-Euless Road (now W. Euless Boulevard) was constructed with concrete pavement in phases between 1967 and 1970 (see **Appendices A-23** through **A-30**). The segment from Bedford-Euless Road (now W. Euless Boulevard) to 0.1 mile west of SH 360 was constructed with concrete pavement in 1969-1972 (see **Appendices A-30** through **A-31**). The segment from 0.1 mile west of SH 360 to 0.3 mile east of the Tarrant/Dallas County line was constructed with concrete pavement in 1971-1974; this included construction of DFW International Parkway (Spur 97) (see **Appendices A-31** through **A-33**). The interchange with SH 360 was constructed in 1989. Routine maintenance has occurred as needed; resurfacing was recently conducted in the summer of 2006 as a TxDOT maintenance project.

The existing facility incorporates three general purpose (non-tolled) lanes in each direction, inside and outside shoulders, fully controlled access points (entrance and exit ramps), and frontage roads. The roadway is typically at-grade, with the exception of grade-separations at various intersections. Lane width is typically 12 feet. Inside shoulders vary from 7.5 feet to 12 feet in width and outside shoulders

vary from 10 feet to 12 feet in width. The frontage roads are typically continuous, two-lane, one-way facilities.

The existing ROW width varies from 330 feet to over 1,000 feet (at certain major interchanges) with a typical average width of 350 feet (see **Appendix A-3**). The existing ROW between IH 820 and SH 161 incorporates approximately 949 acres.

Local access is provided by the frontage roads on each side. Currently, four cross streets do not have an entrance or exit ramp to access the main lanes of SH 121/SH 183: Hurstview, Brown Trail, Forest Ridge Drive, and Bear Creek Parkway/American Boulevard. An entrance and/or exit ramp to the eastbound and/or westbound main lanes exists for all other major cross streets: West Bedford-Eules Road, Precinct Line Road (FM 3029), Norwood Drive, Bedford Road, Central Drive, Murphy Drive/West Park Way, Industrial Boulevard (FM 157), Ector Drive, Eules Main Street, W. Eules Boulevard (SH 10), SH 360, Amon Carter Boulevard, DFW International Parkway (Spur 97), County Line Road, and Valley View Lane. In addition to the previously mentioned crossroads, overpasses are also provided at Murphy Road, West Park Way, Eules Main Street, SH 360, Amon Carter Boulevard, County Line Road, Valley View Lane, and SH 161.

B. LAND USE

The existing land use along the SH 121/SH 183 corridor consists of commercial, residential, and industrial, with a few undeveloped areas adjacent to the corridor.

In North Richland Hills, from IH 820 to Precinct Line Road (FM 3029), the majority of the land use on the north side of the freeway is retail, institutional, and office space, while on the south side of the freeway land use is predominantly retail and single family homes (see **Appendices A-6** through **A-7**).

In Hurst, from Precinct Line Road (FM 3029) to Norwood, the majority of the land use on both sides of the freeway is residential with some retail southeast and southwest of the intersection of Precinct Line Road (FM 3029) and the freeway; multi-family residences are northeast of the intersection. Smith-Barfield Park is located one block north of the freeway (approximately 180 feet from the proposed ROW) within this section just off Cimarron Trail. Shady Oaks Elementary School is located south of the freeway just east of Cavender Road (see **Appendices A-7** through **A-8**).

In Bedford, from Norwood to the SH 121/SH 183 diverge, the land use is primarily mixed, with single family residential properties in close proximity to SH 121/SH 183 in the area between Brown Trail and Shady Wood Street. The remaining adjacent land use consists of office, retail, and several public facilities; L.D. Bell High School, Ziegler Ministries, First United Methodist Church, Parc Place Independent Living, HEB ISD Administration Complex, and the Harris Methodist HEB Hospital (see **Appendices A-9** through **A-13**).

In Euless, generally between the SH 121/SH 183 diverge and SH 360 on the north (American Boulevard on the south), the land use is a mix of retail, office, and industrial. Two small areas of single-family residences abut Airport Freeway west of Ector on the south side of the freeway and along Westwood on the north side. A third abuts the south side of W. Euless Boulevard between Euless Main Street and American Boulevard. Public facilities in this municipality include the First Baptist Church of Euless, Euless City Hall, Euless Junior High School, and the Church of Latter Day Saints (see **Appendices A-14** through **A-17**). Little Bear Creek Park, the largest park in the project vicinity, is just east of SH 360 and approximately 1.6 miles north of SH 183.

At the eastern terminus of the project, in Fort Worth and Irving, generally from SH 360 on the north (American Boulevard on the south) to SH 161, the land use is primarily industrial with DFW International Airport and its supporting facilities occupying the majority of the land. Vacant land is also noted in this area. No parks abut the proposed SH 121/SH 183 ROW within this area, and there are no designated parks within the proposed project area within Irving and Fort Worth (see **Appendices A-18** through **A-22**).

THIS PAGE INTENTIONALLY LEFT BLANK

III. DESCRIPTION OF PROPOSED FACILITY

A. PROPOSED FACILITY PLAN

The proposed project has logical termini (IH 820 and SH 161) and independent utility. At the western terminus, the proposed project would be designed to tie into the proposed improvements along the north portion of IH 820. The western construction limit is just east of IH 820, near Blackfoot Trail (see **Appendix A-24**). Similarly, the eastern end of the proposed project would be designed to tie into the TxDOT - Dallas District's expansion project, SH 183 (from 1.2 miles east of SH 360 to 0.66 miles west of Loop 12), the construction limit for which begins at the Tarrant/Dallas County line (under CSJ 0094-03-065). The eastern construction limit for the proposed project is the tie-in with the SH 183 expansion project at the Dallas County line (see **Appendix A-32**). Therefore, the construction area for the proposed project described in this document extends from just east of IH 820 to the Tarrant/Dallas County Line, and the environmental issues evaluated and discussed in **Section VI** cover the construction limits. The section of SH 183 from the Tarrant/Dallas County line to SH 161 is covered under the TxDOT - Dallas District's SH 183 EA. A Finding of No Significant Impact (FONSI) was issued by FHWA on February 10, 2004. The project is currently being re-evaluated for tolling.

The proposed facility from IH 820 to SH 360 would increase the number of main lanes from a total of six under existing conditions to a total of twelve (12) under proposed conditions. From SH 360 to SH 161, the proposed facility would increase the number of main lanes from a total of six under existing conditions to a total of fourteen (14) under proposed conditions. This includes from IH 820 to SH 360 the removal and replacement of three existing general-purpose (non-tolled) lanes in each direction and the addition of three at-grade or elevated managed (toll) (tolled) lanes in each direction. From SH 360 to SH 161, one general purpose (non-tolled) lane would be added to the existing three general purpose (non-tolled) lanes along with the addition of three at-grade or elevated managed (toll) (tolled) lanes in each direction. General-purpose (non-tolled) lanes would be at-grade throughout the project length. Continuous two-lane, one-way frontage roads going in both directions would also be provided (see **Appendices A-4** through **A-5**). The proposed freeway includes inside and outside shoulders, fully controlled access points, and grade-separated interchanges. The freeway design would be in accordance with current TxDOT specifications and standards. Approximately 83 acres of additional ROW would be required to accommodate these proposed improvements, of which approximately 1.8 acres would be required from the DFW International Airport property.

The RTC, a committee within the NCTCOG, is the independent transportation policy body of the Metropolitan Planning Organization (MPO). The proposed action is consistent with the area's financially constrained Metropolitan Transportation Plan Mobility 2030 – 2009 Amendment, approved August 31, 2009 and the 2008-2011 Transportation Improvement Program (TIP), as revised, as proposed by the NCTCOG. The U.S. Department of Transportation (FHWA/FTA) found the MTP to conform to the State

Implementation Plan on June 12, 2007, and the 2008-2011 TIP was found to conform on October 31, 2007. All projects in the NCTCOG's TIP 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. The appropriate MTP and Statewide TIP pages are located in **Appendix J**.

The estimated total cost in 2008 dollars for the proposed SH 121/SH 183 project, which includes preliminary engineering, construction, construction engineering, indirect costs and contingencies, ROW acquisition, and utilities relocation, is \$1.5 billion.

B. LAND USE

The proposed project is consistent with regional as well as local land use planning as regulated by the surrounding six cities (see **Appendix A-2** for city limits). The proposed project takes additional ROW consisting of both residential and commercial properties. Land use patterns in the already developed area are not expected to change. However, undeveloped land within the corridor, which is typically located near DFW International Airport, would most likely be developed as commercial property and thus commercial land use would increase within the corridor.

B.1 Compatible Land Use

FAA Order 1050.1E indicates that the compatibility of existing and planned land uses in the vicinity of an airport is associated with the extent of noise impacts related to that airport and the consistency with the local improvement plans. Noise originated from DFW International Airport would not adversely affect the project, and similarly, highway noise generated from the proposed SH 121/SH 183 (Airport Freeway) facility would not adversely affect the airport.

The use of the land to be acquired for the operation of the proposed roadway project would not include any buildings where the public would be received, office areas, noise sensitive areas, or activities where the normal noise level is low. Therefore, the use of this land would be compatible with normal aircraft operations from the DFW International Airport and the associated aircraft noise would not interfere with the normal activities and purposes associated with the proposed roadway project. Construction of the proposed facility would likely facilitate mobility in the vicinity of the airport. Refer to **Section VI – E** for a summary of the traffic noise analysis for the study area.

IV. NEED AND PURPOSE FOR THE PROPOSED PROJECT

A. NEED

The need for the proposed project is to address current and projected regional growth, travel demand, access and mobility, and safety concerns. NCTCOG regional population growth to 2030 is forecast to be approximately 9.1 million, with the six cities included in the corridor having a combined growth of approximately 48 percent, and an average individual growth of approximately 28 percent. Vehicle registration has increased approximately 15 percent over the past 15 years, and approximately 79 percent of the workers drive to work alone. According to 1990 data compiled by the FHWA, the DFW area ranked second nationwide in VMT per day (26.5 miles), which represents a 16-percent increase from 1980. Furthermore, it is anticipated that from 2007 to 2015 the population of the nine-county ozone non-attainment area will grow approximately 16.4 percent, while the VMT will increase approximately 18.7 percent. Overall, demand on SH 121/SH 183 could increase by roughly 40 percent by 2030. Finally, as demand increases, accident rates may steadily rise, affecting not only highway main lanes but also frontage roads and neighborhood and city streets. Most accidents occur at congestion points, areas along a highway where several different flows of traffic converge, often causing sudden slow-downs.

When highways become congested, a proportion of travelers will abruptly attempt to leave the main lanes for frontage roads (this is more likely to happen if the frontage roads “appear” to have a better level of service). Unfortunately, for these motorists, sudden movement from a highway to a frontage road requires quick responses to speed and lane change, as well as negotiating a weave pattern with potentially much slower traffic. The complex negotiation can result in wrecks at these access points. Also, congested main routes tend to encourage drivers to find short cuts through neighborhoods, and this can cause wrecks when rushed motorists must negotiate with slower moving traffic and stationary automobiles.

Traffic projections and accident rates are presented in **Tables IV-5** and **IV-6**, respectively. Lack of funding for highway construction and maintenance costs requires use of a managed (toll) lane funding mechanism. Tollway funding allows for planned projects to go forward in a shorter time frame than under other scenarios.

B. PURPOSE

The purpose of the proposed project is to meet the needs of growth, travel demand, access and mobility, and safety. First, the proposed project would accommodate current and projected growth by offering needed capacity. As already explained, NCTCOG regional population growth to 2030 is forecast to be approximately 9.1 million, with the six cities included in the corridor having a combined growth of approximately 48 percent, and an average individual growth of approximately 28 percent. Vehicle

registration has increased approximately 15 percent over the past 15 years, and approximately 79 percent of the workers drive to work alone. Subsequent sections in **Sections VI, VII, and VIII** provide more details on the projected growth that is to come to the DFW region. It is anticipated that a combination of managed (toll), general purpose, and frontage lanes would provide enough capacity to meet growth and demand to 2030.

Second, access would be improved by constructing entrance and exit ramps where they are most used. In total, there would be 32 entrance ramps as compared to the current 24, and 33 exit ramps as compared to the current 27. Much of the aforementioned growth in demand will come as a result of future land use plans for areas near to or adjacent the existing corridor. For example, the City of Bedford has released a plan that would enhance land uses along this corridor within their downtown area.

Third, the proposed project would improve safety through modernizing the roadway to current standards. Such work would include improved shoulder areas, fully grade-separated interchanges, and improved ramp horizontal or vertical alignments. To remove congestion points that could contribute to accidents, access would be fully controlled. Other improvements would be for pedestrians by way of a reconstructed pedestrian bridge, which would meet more stringent Americans with Disabilities Act (ADA) standards, and the closure of some streets, that would prevent pass-through short-cutting of neighborhoods.

Finally, a benefit of reducing congestion is reduced air emissions from idling. A managed (toll) lane solution would enable TxDOT to address congestion sooner than using a traditional funding mechanism. Also, as with neighboring SH 161, the SH 121/SH 183 proposed project may create surplus revenues that could be applied to other projects whose importance to their respective communities and the region in terms of congestion reductions is noted (i.e., transit, hike/bike trails, intelligent transportation systems (ITS)), but for which moneys are not readily available. Tolls would free up monies from the SH 121/SH 183 project to be used to fund these other projects sooner, thus moving the DFW region closer to its goals of attainment for ozone and other air quality-reducing toxics.

Success of the project can be measured through various objectives that fall into two categories:

- 1) Improve Mobility, Enhance Access, and Reduce Congestion on SH 121/SH 183.
- 2) Improve Safety and Reduce Accidents on SH 121/SH 183.

These objectives are defined in the following ways:

- 1) Improve Mobility, Enhance Access, and Reduce Congestion on SH 121/SH 183
 - Enhance local access to the facility.
 - Provide a managed (toll) lane facility, which increases capacity (improving mobility) and reduces traffic congestion (it also aids in achieving regional air quality conformity).

- Provide compatibility with other proposed and on going SH 121/SH 183 corridor projects, including managed (toll) lane facilities.
 - Provide transportation improvements consistent with regional goals presented in the MTP.
- 2) Improve Safety and Reduce Accidents on SH 121/SH 183
- Improve frontage roads and ramps to provide adequate visibility and merging distances.
 - Provide improvement that would upgrade the highway to current standards, including shoulders.
 - Improve lane widths, bridge deck clearances, and entrance/exit ramp geometry.

C. POPULATION GROWTH IN THE AREA

Population growth in the area has led to congestion and decreased mobility, which in turn has led to compromised safety. With added population comes more demand for roadways. This means more drivers vying for roadway space that may have at one time been able to handle the demand. As more and more vehicles crowd these roadways, the congestion causes motorists to make poor decisions, leading to accidents.

The NCTCOG region is comprised of the following 16 counties: Wise, Denton, Collin, Hunt, Palo Pinto, Parker, Tarrant, Dallas, Rockwall, Kaufman, Erath, Hood, Johnson, Ellis, Navarro, and Somervell. The NCTCOG Demographic Forecast reported the population of the region's 10 urban counties (Wise, Collins, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, and Tarrant) at 9,107,229 in 2030. Tarrant and Dallas Counties' 2030 projected population will be approximately 5.1 million. Most of the region's growth is in four core counties: Collin, Dallas, Denton, and Tarrant.

The SH 121/SH 183 project corridor passes through two counties (Tarrant and Dallas) and six cities (North Richland Hills, Hurst, Bedford, Euless, Fort Worth and Irving) as it travels a distance of approximately 10.8 miles between its western terminus, IH 820, and eastern terminus, SH 161. SH 121/SH 183 is a critical east/west corridor that links the two largest metropolitan cities, Dallas and Fort Worth, in the North Central Texas Region. SH 121/SH 183 provides direct access to the DFW International Airport, one of the largest and busiest airports in the country (fourth busiest behind Atlanta, Chicago, and Los Angeles), located near the project's eastern terminus.

The projected growth rates between 2000 and 2030 within the six cities adjacent to the SH 121/SH 183 corridor are projected to be from 7.7 percent to 57.6 percent, with Bedford making the lowest increase in population and Fort Worth the greatest. **Table IV-1** provides a summary of the population growth anticipated in the six cities along the SH 121/SH 183 corridor and their associated counties.

Table IV-1 Regional Population Projections

County/City	2000 Population	2005	2010	2015	2020	2025	2030	% Increase (2000-2030)
Tarrant County	1,435,186	1,620,761	1,746,082	1,909,469	2,047,553	2,184,869	2,291,723	59.7
N. Richland Hills	55,854	63,952	65,686	69,008	71,378	73,397	73,417	31.4
Hurst	36,315	37,090	37,362	38,021	38,067	39,135	39,637	9.1
Bedford	47,005	48,638	48,699	49,434	50,210	50,395	50,636	7.7
Eules	46,202	50,786	51,910	54,444	56,724	60,671	62,314	34.9
Fort Worth	524,535	580,152	624,956	675,864	727,416	784,263	826,665	57.6
Dallas County	2,232,476	2,390,491	2,486,989	2,564,350	2,624,989	2,746,427	2,817,191	26.2
Irving	196,632	207,639	213,977	217,223	218,476	223,382	225,714	14.7

Source: North Central Texas Council of Governments (NCTCOG) 2030 Demographic Forecast, www.nctcog.org Research & Information Services

C.1 Employment

As shown in **Table IV-2**, the projected growth rates in employment between 2000 and 2030 within the six cities adjacent to the SH 121/SH 183 corridor are projected to range from 12.6 percent to 81.9 percent, with Bedford making the lowest increase in employment and Eules the greatest.

Table IV-2 Regional Employment Projections

County/ City	2000 Employment	2005	2010	2015	2020	2025	2030	% Increase (2000-2030)
Tarrant County	864,360	985,109	1,077,319	1,168,731	1,265,489	1,340,172	1,388,247	60.6
N. Richland Hills	20,980	25,109	28,808	30,924	32,845	34,213	34,376	63.9
Hurst	19,123	21,465	22,580	23,622	24,977	25,465	26,156	36.8
Bedford	23,380	24,767	25,594	26,281	26,734	26,740	26,748	12.6
Eules	18,403	23,316	26,866	30,945	33,361	33,458	33,477	81.9
Fort Worth	449,793	504,441	542,452	581,616	632,942	676,429	701,524	56.0
Dallas County	1,745,109	1,924,193	2,055,686	2,198,367	2,344,392	2,467,769	2,817,191	61.4
Irving	165,435	194,103	219,495	247,148	267,633	276,676	276,941	67.4

Source: North Central Texas Council of Governments (NCTCOG) 2030 Demographic Forecast, www.nctcog.org - Research & Information Services

The NCTCOG conducted an analysis of the major employers by industry for the 16-county region and found that 47 percent of jobs in the region were service oriented, with the remaining divided between basic (41%) and retail (12%) industries. Service oriented jobs include real estate, professional or technical institutions, health care, social assistance, arts, entertainment, finance associations, recreation services, food services, and public administration. Basic jobs include agriculture, mining, utilities, construction, manufacturing, wholesale, transportation, and warehousing, and information based companies. Retail includes retaining merchandise. In 2000, the region employed just fewer than 3.1 million. By 2010, it is projected that the region could grow by over 700,000 jobs, and by 2030 it is estimated the region could have 5.4 million employed (NCTCOG, 2004 Major Employers, 6/2004).

The DFW region ranks as one of the most congested urban areas in America. Between 1982 and 1992, the area had the highest growth in congestion levels among all metropolitan areas in Texas (NCTCOG, Regional Mobility Initiatives, 10/1996). This congestion is in part due to DFW being one of the fastest growing areas in the U.S., with the population and employment growth projected to increase by 30 to 50 percent. Vehicle registration has also increased approximately 15 percent over the past 15 years, and approximately 79 percent of the workers drive to work alone, making the average vehicle occupancy rate of the DFW area approximately 1.09 persons per vehicle. According to 1990 data compiled by the FHWA, the DFW area ranked second nationwide in VMT per day (26.5 miles), which represents a 16% increase from 1980. Furthermore, it is estimated that from 2007 to 2015 the population from the nine county ozone non-attainment areas will grow by 16.4% and that the VMT will increase by 18.7%.

D. CHANGING LAND USE AND ACCESS NEEDS

The proposed project area is almost completely developed with land uses such as retail/commercial, industrial and residential. There is a limited stock of land along or near the proposed project alignment that is undeveloped or planned for immediate development. The following details the planned developments in four of the surrounding six cities along the project corridor.

- *North Richland Hills (NRH)* - In 2004, an NRH average new house value was \$183,873. Most new subdivisions are located along Davis Boulevard and North Tarrant Parkway. As of May 4, 2006, there were 1,007 single family residential (SFR) units under construction ranging in size from 1,500 sq ft to 3,500 sq ft and in price from \$140,000 to \$700,000, with an additional 541 SFR units being planned (source: <http://www.nrhupclose.com/residential.aspx>).
- *Hurst* - Hurst City Council has made a strategic priority to develop and implement an Action Plan for Community Corridor Redevelopment. One of the three corridors identified is within the project area and is known as Bedford-Eules Road from Precinct Line Road (FM 3029) to Brown Trail. This corridor is envisioned as a municipal road with pedestrian improvements in concert with a specific building and shopping center redevelopment to encourage pedestrian and transit oriented buildings nearer to the street with a mix of uses and shared parking.

Most of the new development in Hurst is north of Airport Freeway, but there are significant pockets of activities elsewhere. As of May 4, 2006, there was one multi-unit retirement housing complex planned and 607 planned to be developed as SFR homes in the price range of \$140,000 to \$300,000 and ranging in size from 1,800 sq ft to 3,500 sq ft (source: <http://ci.hurst.tx.us/development/devprocts/residential.htm>).

- *Bedford* - Bedford has reached the limits of its corporate boundaries, and has no extra territorial jurisdiction (ETJ) as it is bounded by Colleyville to the north, Hurst to the west, and Eules to the east and south; there is very little expansion land available for growth.

- *Eules* - In Eules, on the southwest and southeast corners of the intersection of SH 121 and Glade Road, there are two large projects being planned: an 800,000 sq ft building and the 400,000 sq ft Vineyard Village anchored by Lowe's.
- *DFW International Airport* - Although it is technically in Eules and Irving, the DFW International Airport (DFWIA) operates as a separate decision-making entity with full autonomy of land use decisions. Therefore, it qualifies as a unique place, similar to any city.

The *Airport Development Plan Update - Dallas/Fort Worth International Airport: Gateway to the 21st Century* (1997) identified approximately 5,400 acres of land suitable for development, listing strong demand for retail, office, and industrial activity on Airport land as the primary drivers for such use. An additional approximately 1,844 acres would be set aside as greenbelt.

In 2007, airport officials released their 10-year update of the land use plan, *Development, You are Cleared for Takeoff*, in which they identified three major projects ready for immediate land development. The first (Passport Park) is a mixed use park of approximately 600 acres that would include retail and restaurant commercial, garden space office, and light industrial and warehouse. This project would be constructed at Valley View Lane and SH 183 at the east side of the airport complex, straddling the Eules/Irving boundary.

The second project (Southgate Plaza) is a mixed-use complex that would blend various types of restaurant experience (full dining and fast food) with a four-storey office complex and a limited-services hotel. This facility would be constructed adjacent the consolidate car rental facility also on the east side of the airport.

Finally, the Airport Authority is anticipating the construction of the Bear Creek Office Park. This complex of facilities would be constructed on the west side of the airport at SH 183, and would maintain much of the current natural landform and vegetation.

In addition to these major developments, the Airport is also negotiating with Dallas Area Rapid Transit (DART), and has secured a station to be constructed at the intersection of Beltline Road and Valley View Lane, with eventual service directly into the airport. These developments are all occurring at the same time that the Airport is expanding its Free Trade Zone to 2,500 acres, which will include a 21-acre business park.

- *Fort Worth* - Based on land annexation trends over the last 14 years, it is expected that the city limits will expand from 345 square miles in 2005 to 448 square miles by 2025, or approximately 4.5 square miles per year. Between 2000 and 2025, the population is expected to grow 50 percent, and the amount of developed land can be expected to increase by approximately the same percentage, from 163 square miles to 245 square miles. Applying a straight line projection, 54

percent of the City's total land area should be developed in the year 2025, compared to only 46 percent in 2000.

Fort Worth's 2008 *Comprehensive Plan Update* strongly endorses the concept of multiple growth centers as a way to accommodate citywide growth with fewer environmental impacts, less land consumption and traffic generation, and less pollution than a dispersed development pattern. The comprehensive plan identifies two types best suited for the portion of Fort Worth that is located in the SH 121/SH 183 corridor: 1) industrial, and 2) regional mixed use. An industrial growth center is located approximately at the intersection of SH 183 and the future SH 161, and primarily consists of industrial and commercial uses, with a high concentration of jobs (100,000+), mostly industrial in nature. Other related and supporting uses include office space and services; no residential is anticipated.

A regional mixed use growth center is anticipated approximately at the intersection of SH 183 and SH 360 (in likely anticipation of the development of the DFWIA land use plan). It would be a highly urbanized place containing many characteristics of a downtown: a concentration of jobs, housing units, schools, parks and other public facilities, public transportation hubs, pedestrian activity, and a sense of place. Its predominant land uses are residential and commercial. Within a relatively small geographic area, different land uses are found side by side or within the same building. These places tend to be bustling, diverse, and festive. Because of its proximity to the airport and its location at the intersection of several major regional urban freeways, this growth center would be a regional mixed use center.

- *Irving* - Although Irving is not within the construction limits of the project, its proximity to the project warrants limited discussion of trends that the municipality is considering. The construction of the SH 161 completion project means that the preponderance of the corridor as light commercial, retail, and office use. Uses with open storage should not be permitted. This area is appropriate for many airport related service uses such as auto rental, hotels, restaurants, shuttle companies, and office warehouse, among others. Any industrial or heavier commercial uses should be located north of Cabell Drive west of Belt Line Road along the north airport boundary or south of SH 183 west of Valley View Lane. Although this area currently supports some residential land use, due to airport noise impacts, the City plans not to allow any more such development. In addition to this land use and development policy direction, Irving has noted that Belt Line Road and most interchanges with SH 183 have serious congestion issues, and that land development near the airport will increase the pressure on Valley View Lane, County Line Road, and (to a lesser extent) various sections of Belt Line Road. To compensate for these conditions, Irving's recent *Master Thoroughfare Plan* calls for Valley View Lane to expand into a principal arterial. Several projects would also create new major collector roads: Conflans Road extended to join to FAA Boulevard; Trinity Boulevard spurred to connect with West Rock Island Road; and County Line Road expanded between Valley View Road and SH 183. North of SH 183, Walnut Hill Lane, and Northgate Drive would become minor arterial roads, while Rochelle would

become a major collector road. Beltline Road would be upgraded to a principal arterial road, Valley View Lane to a major arterial road, and Esters Road to a minor arterial road. Even with these plans, Valley View Lane by 2015 is anticipated to have an LOS rating of D or less.

D.1 Freeway Access

Access points along Airport Freeway would be modified as managed (toll) lanes do not currently exist, and therefore additional access would be provided for local residents and highway users. **Tables IV-3 and IV-4** provide listings of existing and proposed access points to general purpose (non-tolled) and managed (toll) lanes along SH 121/SH 183. Existing and proposed ramp configurations are shown on the Proposed Project Layout (**Appendices A-23 through A-33**). Ramp locations for freeway and managed (toll) lane access are shown in these exhibits. As presented in **Section IX - Public Involvement**, the proposed locations are the result of considerable coordination with local public officials to incorporate their access desires for the managed (toll) and general purpose lanes.

The locations of these ramps are the best that can be determined at this time in project development. It is not anticipated that the locations would change substantially; however, during the detailed design phase of project development, adjustments may need to be made due to geometry issues that are unforeseen at this time. These adjustments may include shifting the ramp east or west along the corridor or up and down in grade to provide the appropriate geometry to meet design criteria for the implementation of a safe facility. In the event of substantial ramp shifts, additional environmental review will be completed. In addition, if there are access impacts associated with ramp shifts, adjacent property owners would be met with and if necessary provided appropriate compensation.

Planned access points into and out of the managed (toll) lanes are planned to occur at Bedford-Eules Road, Brown Trail, SH 121, Industrial Boulevard (FM 157), W. Eules Boulevard (SH 10), Amon Carter Boulevard, and DFW International Parkway (Spur 97).

Due to the addition of managed (toll) lanes, SH 121/SH 183 would be modified to improve access. The following is a list of roads or features near or at where access to the facility would be improved by on ramps (i.e., entrance ramps). All of these access points were discussed and approved by local officials and public service providers (i.e., hospitals and emergency services) to ensure they are meeting the needs of the communities. The access points were presented to the public at the 2001 and 2006 public meetings.

Table IV-3 Proposed Entrance Ramps to SH 121/SH 183		
	General Purpose (Free) Lanes:	Managed (toll) (Toll) Lanes:
Eastbound	Bedford-Eules Road	Bedford-Eules Road
	Precinct Line Road (FM 3029)	
	Norwood Drive/Brown Trail	Brown Trail
	Bedford Road	
	Forest Ridge Drive / Central Drive / Hospital Parkway	
	Westpark Way-Murphy Road/ EB SH 183 (From SB SH 121)	
	Industrial Boulevard (FM 157)	
	Ector Drive/Eules Main Street	
		W. Eules Boulevard (SH 10)
		Amon Carter Boulevard
Westbound		SB International Parkway (Spur 97) to EB SH 183
		SB International Parkway (Spur 97) to WB SH 183
	Industrial Blvd. (FM 157)	Amon Carter Boulevard
	Eules Main St./Bear Creek Boulevard/American Boulevard	
	Industrial Boulevard/Ector Dr.	Industrial Boulevard (FM 157)
	SB SH 121 to WB SH 183	SB SH 121 to WB SH 183
	Murphy Rd.-Westpark Way	
	Central Dr.	
	Bedford Rd./Forest Ridge Dr.	
	Brown Trail/Norwood Dr.	
Precinct Line Rd. (FM 3029)		

The following is a list of roads or features near or at where access to the facility would be improved by exit ramps (i.e., off-ramps).

Table IV-4 Proposed Exit Ramps from SH 121/SH 183		
General Purpose (Free) Lanes:		Managed (toll) (Toll) Lanes:
Eastbound	Precinct Line Rd. (FM 3029)	
	Norwood Dr./Brown Trail	
	Bedford Rd./Forest Ridge Dr.	
	Central Dr.	
	EB SH 183 to NB SH 121	EB SH 183 to NB SH 121
	Hospital Parkway/Murphy Rd.-Westpark Way	
	Industrial Boulevard (FM 157)/Ector Dr.	Industrial Boulevard (FM 157)
	Eules Main St./American Blvd/Bear Creek Boulevard	
		Amon Carter Boulevard EB SH 183 to NB International Pkwy. (Spur 97)
Westbound		WB SH 183 to NB International Pkwy (Spur 97)
	Eules Main St./Ector Dr.	WB SH 183 to W. Eules Boulevard (SH 10) & Eules Main St.
	Industrial Boulevard (FM 157)	
	Murphy Rd.-Westpark Way /NB SH 121 (from WB SH 183)	
	Murphy Rd. (from SB SH 121)	
	Central Dr./Forest Ridge Dr.	
	Bedford Rd.	
	Brown Trail/Norwood Dr.	Brown Trail
	Precinct Line Rd. (FM 3029)	
Bedford-Eules Rd.	Bedford-Eules Rd.	

E. EXISTING TRAFFIC AND PROJECTIONS

Various traffic generators affect the conditions within the proposed project study area, including numerous commercial/retail centers and business/office complexes located at major intersections, major employment centers (e.g., Harris Methodist HEB Hospital, DFW International Airport and the American Airlines Training Center), and the daily traffic flowing east-west between Fort Worth and Dallas. **Table IV-5** presents the 2015 and 2030 average daily traffic (ADT) projections along SH 121/SH 183.

Table IV-5 SH 121/SH 183 Average Daily Traffic (ADT) Volumes			
SH 121/SH 183 Segment Location	2006 ADT	2015 ADT	2030 ADT
Bedford-Eules Rd. to SH 121/SH 183 Diverge	181,500	297,800	378,100
SH 121/SH 183 Diverge to SH 161	158,000	331,550	421,700

Source: TxDOT Transportation Planning and Programming (TPP) Division Memo for SH 121/SH 183 dated 12/19/06.

F. ACCIDENT RATES

As shown in **Table IV-6**, the Traffic Accident Data for SH 121/SH 183 reports that a total of 1,716 accidents were reported between the years 2003 and 2006 from IH 820 to SH 161. Of these, 277 resulted in confirmed injuries and six resulted in fatalities. As indicated in the table, the volume of accidents resulting in injuries or deaths and injuries between 2003 and 2006 remains fairly consistent. Accident

rates are given in ratios of accidents per hundred million miles traveled. The formula is as follows and is expressed in hundred million miles (hmm):

$$\frac{\text{Accidents} \times 100,000,000}{(\text{Length of Roadway} \times \text{ADT}) \times 365}$$

Therefore, when looking at accident data compared to average daily traffic, there appears to be a steady decline in the rate over the four-year period in review.

Table IV-6 SH 121/SH 183 Traffic Accident Data

Category	2003		2004		2005		2006		Change Over Time	
	# Accidents	Rate (hmm)	# Accidents %	Rate (hmm)						
Total Accidents	405	56.81	474	67.95	439	57.40	398	58.43	-1.76%	1.62
Confirmed Injury Accidents	73	10.24	65	9.32	73	9.55	66	9.69	-10.61%	- 0.55
Fatal Accidents	3	0.42	0	0	0	0	3	0.44	0.00%	0.02

Source: Traffic Operations Office - TxDOT Fort Worth District, and local law enforcement agencies, December 2006.

Note: Numbers are anticipated to be higher, since data is not 100% complete; the Cities of Hurst and Euless reported limited data availability.

hmm hundred million miles

Although it appears that a steady decline has occurred between 2003 and 2006, such a conclusion should be made with a great deal of caution. There are several reasons for caution. First, four years of data is not enough to make any kind of definitive conclusion about rates of any kind. Second, there are numerous variables (i.e., downturn in the economy, increase in fuel prices, migration of population, numerous consecutive poor weather weekends) that could prevent people from traveling. Third, modern vehicles are equipped with highly advanced accident avoidance/prevention technology (i.e., daytime running lights, anti-lock braking systems, tire-pressure monitoring systems, heated outside mirrors, high-intensity adaptive headlamps, all-wheel/four-wheel drive, vehicle stability control, back-up sensors). Vehicles prior to 2003 were not equipped with as much, or as developed, technology. Finally, many accidents are never reported. Fearing insurance premium increases, drivers will often negotiate between themselves for a private settlement. The steady decline in injuries and deaths caused by accidents is also misleading. The same technology drive that is reducing accidents is improving survival rates. Today's vehicles are equipped with technology and design not available prior to 2000 (e.g., next generation air bags, side-impact curtains, better roll cage design, impact-absorbent crumple zones). Over the next years, many more improvements will come that will further reduce injuries and fatalities; however, at some point these developments will taper off and will no longer be able to reduce rates. Over the next years, many more improvements will come that will further reduce injuries and fatalities; however, at some point these developments will taper off and will no longer be able to reduce accident rates and the injuries and deaths they cause.

ScienceDaily (May 16, 2008) pointed out that “as automotive safety systems become more complex, the risk of failure increases.” The onboard systems perform thousands of calculations per second to ensure the devices such as air bags deploy properly at the proper time. Nevertheless, no matter how soundly and routinely these systems function they cannot compensate for driver error or incapacity. For example, Fred Mannering (2006) with Purdue University notes that airbags and antilock braking systems are ineffective against reducing the likelihood of injury or death-causing accidents because they give drivers a false sense of security. Mannering’s research and that of the Brookings Institute and U.C. Berkeley found that the modest margin of protection these devices offer is nullified by drivers’ more aggressive behavior. The research looked at approximately 1,300 drivers who, between 1992 and 1996, had 614 accidents, 16 of which had various degrees of associated injuries. Because many of the households did not purchase new cars during that period, there was a built-in control group. The research supported the theory of increased risk due to over-confidence in technology in that approximately 270 of the drivers during the five years switched from a vehicle without an airbag to a vehicle with an airbag, and the same amount switched to vehicles equipped with antilock braking systems. As traffic volumes continue to increase, it is likely that this recorded trend in accidents and accidents causing injury and death will once again increase.

A comparison of SH 121/SH 183 with IH 30, prior to its expansion program, was conducted to determine if the rates of SH 121/SH 183 were comparatively high or low. It was determined that IH 30, in 2001, had an approximate accident rate of 109.2/hmm.

Typically, increased congestion interrupts normal traffic flow, which leads to a greater number of vehicle accidents. Without the proposed improvements, accident rates within the project limits are anticipated to increase in the future. Furthermore, as traffic continues to divert off SH 121/SH 183 to avoid traffic congestion, secondary roads in the area may also experience a decrease in safety.

G. CONGESTION MANAGEMENT PROCESS

The regional CMP is a transportation program that provides information on system performance and implements alternative strategies for alleviating congestion and enhancing the mobility of persons and goods. Strategies address both operational improvements and travel demand reduction, and are commitments made by the region at two levels: program level and project implementation level. Given the scale of required commitment to implement an effective CMP, the needed strategies are funded in part by private and public measures, including tolls.

While the process itself is driven by regulatory requirements, some of the measures within the process are based on an incentive model; for example, exempting buses to encourage the use of HOVs and providing a 50-percent toll reduction for car and vanpools and motorcycles during peak demand periods. The discount is set to phase out after the air quality attainment period (see **Appendix B**). Program level commitments are inventoried in the regional CMP, and future resources are reserved for their implementation in the financially constrained MTP.

Project-level implementation strategies are identified in the TIP and are included in future construction projects. A TIP is a staged, multi-year, intermodal program of prioritized transportation improvements that is compiled from, and consistent with, approved regional transportation plans, which meet projected local and regional needs. The regional TIP provides for programming of these projects at the appropriate times with respect to the Single Occupancy Vehicle (SOV) facility implementation and project specific elements. Committed congestion reduction strategies and operational improvements within the SH 121/SH 183 study area and immediate vicinity consist of signalization/intersection improvements, pedestrian/bicycle facilities, Intelligent Transportation Systems (ITS), HOV/managed (toll) lanes, and general purpose lane and turning lane additions. Selected individual operational improvement projects are listed in **Table IV-7**. Some of these projects have already been completed, others are in construction, and some are awaiting kickoff. The intent of the list is to show the type of work that is being done in the Fort Worth TxDOT District to reduce system deficiencies and implement a CMP, so that laypersons will have a better appreciation of the CMP concept.

Table IV-7 Selected Individual Operational Improvement Projects

Project Code	Street/Name	City, County	Implementing Agency/County	Project Type	Year
11251.1000 / 11251.2000 CSJs: 0008-14-058 0008-14-059 0014-16-194	IH 820 From SH 26 To Southwestern Railroad - AND - IH 820 From Southwestern Railroad To IH 35W	North Richland Hills / Haltom City / Fort Worth, Tarrant County	TxDOT-Fort Worth	Addition of Lanes	2007
4180.0000	Little Bear Creek Trail From Calloway Branch Trail (Near Precinct Line Rd) To Cotton Belt Trail	North Richland Hills, Tarrant County	North Richland Hills	Bike / Pedestrian	2005
4173.0000	Rufe Snow Dr at Karen Dr/IH 820	North Richland Hills, Tarrant County	North Richland Hills	Intersection Improvement	2006
11419.0000	FM 1938 (Davis Blvd.) at Mid- Cities Blvd.	North Richland Hills, Tarrant County	North Richland Hills	Intersection Improvement	2005
11189.5000	IH 820	North Richland Hills, Tarrant County	North Richland Hills	Park & Ride/Rail Station	2005
BED 201	S Central Blvd From SH 183 TO Knoxville Blvd.	Bedford, Tarrant County	Bedford	Traffic Signal Improvement	2004
11324.3000	Pipeline Road Redevelopment - Bus Transit Amenities Pipeline Road	Hurst, Tarrant County	Hurst	Bus Transit	2005
11414.0000	Norwood Dr From SH 26/Grapevine Hwy To SH 183/121	Hurst, Tarrant County	Hurst	Intersection Improvement	2005
1227.0000	Westpark Way From SH 183 To 500' S/O SH 10	Eules, Tarrant County	Eules	Addition of Lanes	1997
11213.0000	SH 10, FM 157, Etc.	Eules / Bedford, Tarrant County	TxDOT-Fort Worth	Traffic Signal Improvement	2005
11245.0000	SH 10 From Bell Spur To Westpark Way	Eules / Fort Worth / Hurst, Tarrant County	TxDOT-Fort Worth	Addition of Lanes	2005
1695.0000	County Line Rd From SH 183 To Valley View	Irving, Dallas County	IRVING	Addition of Lanes	2004
11527.0000	Loop 12 Interchanges Loop 12 at SH 183	Irving, Dallas County	TxDOT-Dallas	Interchange	2008
2964-01-029 and -030	SH 161 From North of IH 20 To Spur 303 - AND - SH 161 From Spur 303 To South of IH 30	Grand Prairie, Dallas County	TxDOT-Dallas	New Roadway	2005

Source: NCTCOG 2008/2011 Transportation Improvement Plan, and NCTCOG TIPINS (on-line) May 2008

V. ALTERNATIVES INCLUDING PROPOSED ACTION

The need for improving traffic mobility and safety on SH 121/SH 183 was first identified and studied in the early 1990s. Various alternative scenarios have been under consideration since that time, taking public input into consideration. Reasonable alternatives were limited to a corridor along and directly adjacent to the existing highway. As discussed in **Section IX - A.1 First Public Meeting - August 4, 1993**, non-tolled, including HOV alternatives, were likewise considered, but not included as part of this environmental assessment due to a combination of several factors, including:

- urgent concern over current and future traffic mobility (congestion); and
- funding inadequacies.

A. NO-BUILD

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. In addition to being a reasonable alternative under consideration in the Environmental Assessment, the No-Build Alternative provides a baseline of comparison to the Build Alternative. NEPA requires the same level of consideration for a no-build alternative as it does a build alternative.

Costs associated with the No-Build include:

- maintenance cost of the existing system; postponement of improvements with likely reconstruction cost increases;
- 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 SH 121/SH 183, 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 purpose and need.

B. BUILD

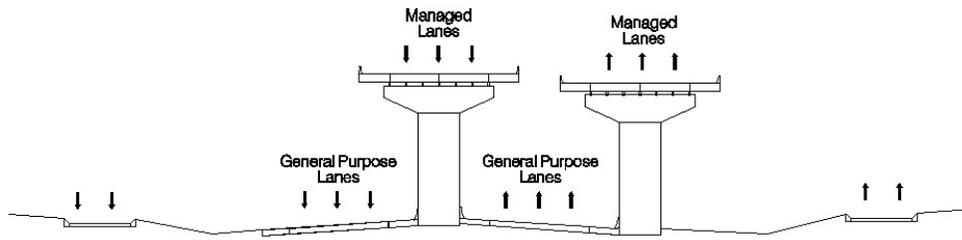
B.1 Alternatives Eliminated

Alternatives 1 through 5 were developed during the project development and public involvement stages of the proposed SH 121/SH 183 reconstruction and widening project. Each of the alternatives incorporated at-grade general purpose (non-tolled) lanes; elevated lanes were employed for some or all of the managed (toll) lanes, as described below. As discussed in **Section IX - Public Involvement**, numerous meetings and discussions were held with the various county and city officials along the project corridor, who had a key role in determining the locations of the various access points along the corridor. The alternatives were developed from an iterative process and were essentially different combinations of the various Proposed Typical Sections (**Appendices A-4** through **A-5**). Though each was similar in plan, they presented differing general purpose and managed (toll) lane access scenarios to and from Bedford-Eules Road, Precinct Line Road, W. Bedford-Eules Road, Brown Trail, West Park Way, Industrial Boulevard (FM 157), Eules Main Street, W. Eules Boulevard (SH 10), and Amon Carter Boulevard; therefore, ROW needs also differed between each alternative. Each scenario was modeled by NCTCOG to evaluate its effectiveness. Below are descriptions of the five eliminated build alternatives and reasons for ultimate elimination from consideration.

B.1.1 Alternative 1 - “Staggered” (Alternating) Lane Configuration

Alternative 1 involved the reconstruction of six at-grade general purpose (non-tolled) lanes between IH 820 and SH 360 and eight at-grade general purpose (non-tolled) lanes between SH 360 and SH 161. It also included, throughout the length of the project, the addition of six managed (toll) lanes, with the eastbound and westbound (i.e., both directions) managed (toll) lanes at-grade west of the SH 121/SH 183 diverge, and the managed (toll) lanes elevated in both directions east of the SH 121/SH 183 diverge. The alternative included “slip ramp” replacement with direct connections from the general purpose (non-tolled) lanes to managed (toll) lanes in the vicinity of Norwood Drive. It also included a “staggered” (i.e., alternating) general purpose (non-tolled) and managed (toll) lane section between West Park Way and SH 360, with three at-grade general purpose (non-tolled) lanes, three elevated managed (toll) lanes, three at-grade general purpose (non-tolled) lanes, and three elevated managed (toll) lanes (see the generalized typical section below, (**Figure V-1**)). This alternative was eliminated due to excessive ROW (44 acres) and relocation (88 commercial and 82 residential properties) impacts from Norwood Drive to Bedford-Eules Road. In addition, construction of six elevated managed (toll) lanes eastward from the SH 121/SH 183 diverge would have resulted in excessive construction costs.

Figure V-1: Alternative 1 Configuration - “Staggered” (Alternating) Lane Configuration - East of the SH 121/SH 183 Diverge



B.1.2 Alternative 2 - Managed Up / General Down

Alternative 2 consisted of the reconstruction of six at-grade general purpose (non-tolled) lanes between IH 820 and SH 360 and eight at-grade general purpose (non-tolled) lanes between SH 360 and SH 161, as well as the addition of six elevated managed (toll) lanes throughout the length of the project, with the managed (toll) lanes on the inside from IH 820 to SH 360 and the managed (toll) lanes on the outside from SH 360 to SH 161, as shown in the following typical sections (see **Figures V-2** and **Figures V-3**). This alternative was eliminated because the addition of six elevated managed (toll) lanes through the entire length of the project would have resulted in significant visual impacts and prohibitive construction costs, although this alternative would have taken the least number of commercial (62) and residential (66) properties and the second smallest amount of additional ROW, 20.0 acres.

Figure V-2: Alternative 2 Configuration (First) - From IH 820 to SH 360

[Refer to Typical Section in Appendix A-4 (IH 820 to Hurstview Drive; Ector Drive to SH 360)]

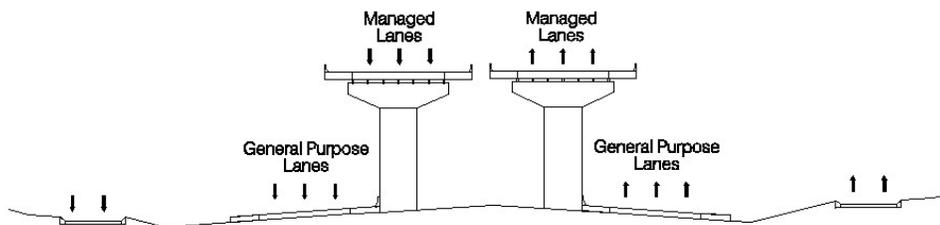
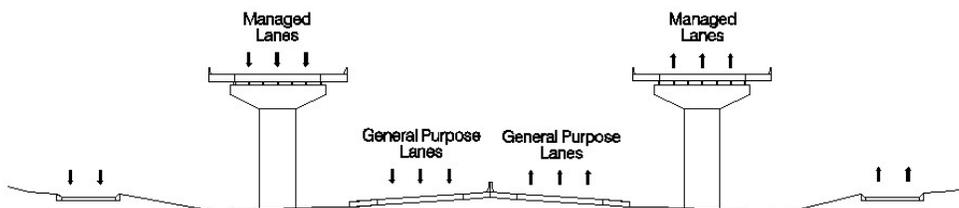


Figure V-3: Alternative 2 Configuration (Second) - From SH 360 to SH 161

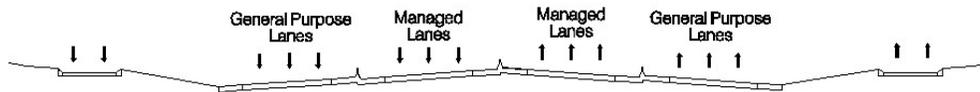
[Refer to Typical Section in Appendix A-5 (SH 360 to SH 161)]



B.1.3 Alternative 3 - Managed (Toll) Lanes At-Grade

Alternative 3 involved the reconstruction of the six at-grade general purpose (non-tolled) lanes between IH 820 and SH 360 and eight at-grade general purpose (non-tolled) lanes between SH 360 and SH 161, with the managed (toll) lanes at-grade in both directions west of the SH 121/SH 183 diverge, as shown below in **Figure V-4**. The managed (toll) lanes were elevated in both directions east of SH 121 and located between the general purpose (non-tolled) lanes, as shown above in Alternative 2. The exception to this was between Industrial Boulevard (FM 157) and Ector Drive.

Figure V-4: Alternative 3 Configuration - West of the SH 121/SH 183 Diverge [Refer to Typical Section in Appendix A-4 (Hurstview Drive to Norwood Drive; Industrial Boulevard (FM 157) to Ector Drive)]



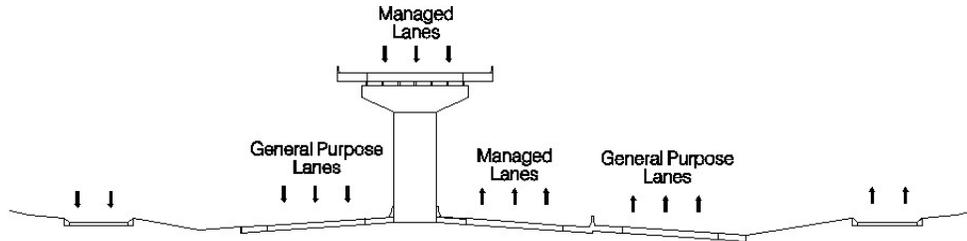
This alternative would have resulted in excessive ROW (44.8 acres) and relocation (85 commercial and 87 residential properties) impacts since much of the plan was at-grade, which requires maximum ROW. Furthermore, this alternative also included managed (toll) lane access to Precinct Line Road (FM 3029), which required excessive ROW. Numerous meetings and discussions were held with the various county and city officials along the project corridor to discuss the locations of general purpose (non-tolled) and managed (toll) lane access points. At that time, county and city officials were not satisfied with the suggested access point locations and the impacts, which would result and requested that TxDOT continue evaluating the access points. Therefore, this alternative was eliminated from further consideration. However, locals indicated access features they would like to see preserved in future alternatives.

B.1.4 Alternative 4 - “One Up, Three Down”

Alternative 4 involved reconstructions of the six at-grade general purpose (non-tolled) lanes and the addition of three at-grade managed (toll) lanes and three elevated managed (toll) lanes throughout the length of the project. Two additional at-grade general purpose (non-tolled) lanes were to be added between SH 360 and SH 161 for a total of eight in this section. This was the first alternative to suggest the “one up, three down” design between Bedford-Eules Road and Eules Main Street (see **Figure V-5**). In other words, there was one 3-lane set (3 lanes) of elevated (“up”) managed (toll) lanes (westbound), while both sets of general purpose (non-tolled) lanes and one set of managed (toll) lanes (eastbound) were at-grade (“down”).

Figure V-5: Alternative 4 Configuration - “One Up, Three Down” Design

[Refer to Typical Section in Appendix A-5 (Norwood Drive to Industrial Boulevard (FM 157))]



While Alternative 4 had the lowest ROW requirements of 18.4 acres and required the relocation of 55 commercial and 74 residential properties, this alternative was eliminated as a result of discussions with various county and city officials who expressed concerns regarding access points and visual aesthetics of the design. Additional discussions with county and city officials and requests from these officials for additional modifications to the access points to the general purpose and managed (toll) lanes led to the elimination of Alternative 4 and the development of Alternative 5.

B.1.5 Alternative 5 - Combo

Alternative 5 was essentially a combination of Alternatives 3 and 4 and involved the reconstruction of six at-grade general purpose (non-tolled) lanes for the length of the project; two additional at-grade general purpose (non-tolled) lanes were to be added between SH 360 and SH 161 for a total of eight. The project also included the addition of six managed (toll) lanes, whose elevations varied within the project area. From IH 820 to Hurstview Drive and from Ector Drive to SH 161, the plan included six elevated managed (toll) lanes. The managed (toll) lanes became at-grade from Hurstview Drive to Norwood Drive and from Industrial Boulevard (FM 157) to Ector Drive (see the lower, at-grade Typical Section in **Appendix A-4**). Between Norwood Drive and Industrial Boulevard (FM 157), the facility included three elevated westbound managed (toll) lanes and three at-grade eastbound managed (toll) lanes (see the upper Typical Section in **Appendix A-5**). This alternative required the acquisition of 28.2 acres that included 77 commercial and 70 residential properties.

Similar to Alternatives 3 and 4, this alternative was eliminated from further study as a result of meetings and discussions with the county and city officials along SH 121/SH 183, who had a key role in determining the locations of the various access points along the corridor. Alternative 5 evolved into Alternative 6, the Preferred Alternative, after the NCTCOG ran the travel model for the managed (toll) lanes and as a result of the last round of meetings with the various cities along the corridor to incorporate their access desires for the managed (toll) and general purpose (non-tolled) lanes balanced against design criteria and the safe and efficient operation of the facility.

B.2 Preferred Alternative

The Preferred Alternative, as discussed in **Section III - A - Proposed Facility Plan** and shown on the Proposed Project Layout (**Appendices A-23 through A-33**), involves reconstruction of the six existing, general purpose (non-tolled) lanes and the addition of six at-grade and elevated managed (toll) lanes throughout the length of the project. Two general purpose (non-tolled) lanes would also be added between SH 360 and SH 161. The proposal is a combination of the various typical sections developed for Alternatives 1, 2, and 5. Generally, the six managed (toll) lanes would be elevated from IH 820 to Hurstview Drive and at-grade to just east of Norwood Drive. East of Norwood to roughly Industrial Boulevard (FM 157), only the three westbound managed (toll) lanes would be elevated; the three eastbound lanes would be at-grade. From just east of Ector Drive to the eastern construction project limits, the six managed (toll) lanes would again be elevated. Access points along the project route are addressed in **Section IV - D.1**. This alternative was developed as a result of numerous meetings and collaboration with county and city officials in the affected cities of North Richland Hills, Hurst, Bedford, and Euless. In this alternative, ROW needs have been minimized to the maximum extent possible (would require approximately 83 acres of additional ROW) while still meeting the objectives of the project providing access needs where possible, as expressed by city officials. Ultimately, features from all alternatives were considered for development of the Preferred Alternative. This alternative received consensus from local officials. The resulting ROW to be acquired would be approximately 83 acres, including 104 multi-family units, 128 single family residences, and approximately 29 commercial property displacement. Approximately 1.8 acres of property is proposed to be acquired from DFW International Airport.

VI. DIRECT IMPACTS TO ENVIRONMENTAL ISSUES

Issues related to the cultural and natural environment potentially affected by the proposed project are discussed in detail in this section. Although the logical termini description includes the city of Irving in Dallas County, the TxDOT Dallas District is conducting an SH 183 expansion project that includes this section on SH 183 in Irving. Therefore, Irving was not assessed as part of this EA, and only descriptions of the affected environment and of the potential environmental consequences resulting from the proposed project within the construction limits are provided in **Sections VI - A through H**. **Section VI - I** provides a brief summary of the findings between the Tarrant/Dallas County Line and SH 161, summarized from the Dallas District's SH 183 EA.

The proposed project construction limits are from just east of IH 820, near Blackfoot Trail (see **Appendix A-24**) to the Tarrant/Dallas County Line (see **Appendix A-32**). However, the MSAT analysis provided in this document includes the entire NCTCOG traffic network to determine significant changes in volumes throughout the traffic network; therefore, that analysis extends beyond the project construction limits. Key issues and resources identified herein include the following: social and economic issues; natural resources; hazardous materials; air quality; noise; and cultural resources.

A. SOCIAL AND ECONOMIC ISSUES

A.1 Environmental Justice

A.1.1 No-Build Alternative

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

A.1.2 Build Alternative

The Civil Rights Restoration Act of 1987 and the Executive Order 12898, signed on February 11, 1994, requires all Federal agencies to identify and address, as appropriate, disproportionately high, and adverse human health and environmental effects on minority or low-income populations. A minority is defined as Black, Hispanic, Asian, American Indian, and Alaskan Native. Low-income is defined as a household income at or below the 2008 Department of Health and Human Services poverty guideline of \$21,200 for family of four. A study regarding adverse impacts for the proposed project was conducted. The results of the study are presented below.

According to the U.S. Census 2000 database, the State of Texas has a population of 21,779,893 consisting of approximately 71 percent White, 11.5 percent Black, 2.7 percent Asian, 12.4 percent reporting as other,

and 32.0 percent Hispanic (see **Table VI-1**). The median household income for the State was \$39,927 with 15.4 percent below the poverty level. The total population for Tarrant County as reported by the 2000 Census is 1,446,219 and is approximately 71.2 percent White, 12.8 percent Black, 3.6 percent Asian, 9.9 percent reporting as other, and 19.7 percent Hispanic. The median income for Tarrant County was \$46,179 with 10.6 percent in the county below the poverty level.

The construction limits are located within five cities, North Richland Hills, Hurst, Bedford, Euless, and Fort Worth, all of which are within Tarrant County. Within these five cities, there are 17 Census Tracts adjacent to the project corridor and 28 Block Groups. The five cities and their corresponding Census Tract identification numbers are as follows:

- NRH - 1132.13 and 1132.19
- Hurst - 1134.03, 1134.04, and 1136.13
- Bedford - 1135.12, 1136.18, 1136.28, and 1136.29, 1136.07
- Euless - 1135.07, 1135.09, 1135.10, 1135.11, 1135.13, 1135.14, and 1135.15
- Fort Worth - 1065.08

Table VI-1 describes the minority and low-income characteristics of the proposed project's reference areas (Tarrant County and the Cities of North Richland Hills, Hurst, Bedford, Euless, and Fort Worth), the Census Tracts (CTs), and Block Groups (BGs) adjacent to the proposed project. The Project Area averages pertain to the BGs and are the medians for racial distribution, Hispanic or Latino ethnic origin, poverty level, and median household income. As indicated in the table, several BGs contain minority and low-income populations that have been ranked in the area as having the highest concentration of EJ population.

Table VI-1 Study Area Minority and Low-Income Characteristics

Census Geography ¹	2000 Total Population	Racial Distribution							% Hispanic or Latino ³	Income		LEP		
		% White	% Black	% American Indian/Alaskan Native	% Asian/Pacific Islander	% Some Other Races	% Two or More Races	% Racial Minority ²		% Below Poverty Level ⁴	Median Household Income (\$) ⁵	% Limited English Proficiency		
<i>Texas</i>	21,779,893	71.0	11.5		2.7	12.4			32.0	15.4	39,927			
<i>Tarrant County</i>	1,446,219	71.2	12.8	0.6	3.6	9.1	2.5	28.6 ^b	19.7	10.6 ^b	46,179	21.9		
North Richland Hills	55,854	88.5	2.7	0.5	2.9	3.4	2.1	11.6	9.5	4.7	56,150	11.8		
Hurst	36,315	86.0	4.1	0.6	2.1	5.2	1.9	13.9	11.0	6.6	50,369	12.4		
Bedford	47,055	87.6	3.7	0.5	3.9	2.4	1.9	12.4	7.2	3.7	54,436	11.5		
Eules	46,202	75.5	6.5	0.6	9.0	5.4	3.0	24.5 ^b	13.3	7.0	49,582	21.5		
Fort Worth	524,535	59.7	20.3	0.6	2.7	14	2.7	40.3 ^b	29.8	15.9 ^b	37,074	29.1		
CT		BG	Census Tract / Block Group Data											
NRH	1132.13	---	3,393	89.9	2.1	0.7	1.6	4	1.7	10.1	8.5	4	54,622	14.21
		1	1,058	82.1	3.6	1	3.1	7.4	2.7	17.8	12.8	9.7 ^b	40,893	
	1132.19	---	8,420	82.3	4.8	0.5	3.1	6	3.3	17.7	18	10	40,254	22.0
		4	2,839	75	6.3	0.7	3.9	10.2	3.8	24.9 ^b	22.4	9 ^b	31,176	
Hurst	1134.03	---	2,576	90.4	1.9	0.7	2.4	2.8	1.9	9.7	6.8	9	51,696	4.9
		1	1,572	89.6	2.7	0.2	3.2	3.1	1.3	10.5	7.2	3.4	54,350	
		2	336	88.4	2.4	0.3	1.5	3	4.5	11.7	4.2	0	43,472	
	1134.04	---	5,523	88	3.6	0.6	1.7	3.9	2.2	12	9.4	6	46,087	9.5
		1	979	89.7	1.5	0.6	0.7	5.8	1.6	10.2	5.5	3.84	47,778	
	1136.13 ^a	---	4,880	88.5	2	0.5	1.8	5.6	1.6	11.5	10.4	8	74,444	11.9
		1	929	94.1	1.2	1	1.3	1.5	1	6	3.1	1.4	84,729	
		3 ^a	1,616 ^a	75.1 ^a	3.5 ^a	0.7 ^a	3 ^a	15.1 ^a	2.5 ^a	24.8 ^{a,b}	24.4 ^a	10.2 ^{a,b}	41,650 ^a	
	5	741	95.5	1.5	0.1	0.8	0.8	1.2	4.4	1.9	3.7	75,268		
Bedford	1135.12	---	5,309	88	4.1	0.5	2.8	2.4	2.3	12.1	7.9	4	48,373	8.3
		1	1,122	87	3.2	0.7	4.2	2.5	2.3	12.9	8.3	3.3	43,750	
		2	661	90.9	0.5	0.2	3	4.1	1.4	9.2	8.6	3.7	53,417	
		3	3,526	87.8	5	0.6	2.2	2	2.4	12.2	6.5	2.7	49,458	
	1136.18	---	6,065	87.6	3.8	0.5	3.7	2.5	1.9	12.4	7.8	3	53,899	9.6
		1	2,399	83.8	.6	0.6	4.3	3.5	1.8	16.2	8.4	0.8	52,438	
	1136.07	---	4,416	81.0	3.6	0.2	3.7	8.6	3.2	19.0	9.8	4.2	39,767	15.6
		1	1,120	81.0	3.6	0.0	6.8	6	2.6	18.6	7.8	2.4	38,750	
	1136.28	---	3,270	78.6	5.8	0.6	5.4	6.8	2.9	21.5	10.7	8	43,828	15.7
		1	302	82.8	3.3	1.7	5.3	5.6	1.3	17.2	10.6	0	37,065	
		3	1,113	77.3	4.9	0.3	5.4	9.2	3	22.8	14.8	3.7	36,982	
	1136.29	---	4,017	89.9	3.2	0.4	2.2	2.1	2.1	10	5.7	2	71,384	13.8
		1	1,615	86.5	4.6	0.5	3.4	3.4	1.6	13.5	7	3.5	36,354	
		2	950	89.5	3.8	0.2	1.3	1.6	3.7	10.6	4.7	3.7	60,081	
	3	1,452	94.1	1.4	0.4	1.3	1	1.7	5.8	3.3	0	82,577		
Eules	1135.07	---	8,224	86.2	4	0.5	4.6	2.9	1.6	13.6	8.2	3	60,787	10.3
		1	1,272	85.7	4.8	0.2	4.8	2.8	1.7	14.3	7.1	4.8	50,222	
	1135.09 ^a	---	4,829	67.6	4.7	0.6	15.7	7	4.4	32.4	15.9	11	47,879	28.3
		3 ^a	1,119 ^a	30.8 ^a	13 ^a	0.7 ^a	34.5 ^a	10.2 ^a	10.7 ^a	69.1 ^{a,b}	17.5 ^a	9.4 ^{a,b}	36,518 ^a	
		4	929	76.5	1.1	0.2	9.5	10	2.7	23.5	20.8	15 ^b	51,080	
	1135.10	---	3,482	65	6.2	0.5	20	4.8	3.5	35 ^b	11.7	5	50,531	31.1
		2	895	78.3	1.6	0.7	9.6	7.3	2.6	21.8	14.7	2.3	63,750	
	1135.11	---	3,222	75.3	5.1	1.3	10.1	5.3	2.9	24.7	12.6	6	51,814	21.7
		1	944	70.8	5.9	0.3	12.6	6	4.3	29.1 ^b	11.7	3.6	53,889	
	1135.13	---	4,892	77.7	4.6	0.9	8.4	4.8	3.5	22.2	9.1	6	63,482	22.8
		1	590	81.9	1.7	2.4	9.5	2.7	1.9	18.2	7.9	12.1 ^b	45,433	
	1135.14 ^a	---	5,337	63.1	12.2	0.7	11.5	8.7	3.8	36.9	25.2	16	35,694	38.1
		1 ^a	1,601 ^a	53.7 ^a	12.6 ^a	0.8 ^a	18.5 ^a	10.6 ^a	3.8 ^a	46.3 ^{a,b}	25.9 ^a	11.7 ^{a,b}	29,289 ^a	
	2	1,010	78.7	5.4	1.4	6.8	5.3	2.4	21.3	11.8	11.1 ^b	45,478		
1135.15	---	7,408	75.4	7.3	0.7	8.8	4.4	3.4	24.6	9.9	4	48,706	19.3	
	1	3,976	74.2	7	0.6	9.6	4.8	3.8	25.8 ^b	8.9	2.2	48,725		
Fort Worth	1065.08	---	6,311	62.4	16.6	0.4	12.6	5	3	37.6	13.7	10	38,209	29.5
		1	2,626	59.6	15.7	0.3	15.6	5.5	3.3	40.4 ^b	13.9	6.3	38,750	
		2	3,685	64.4	17.3	0.5	10.4	4.7	2.8	35.7 ^b	12.1	7.8	36,187	
Project Area Average⁶			1,306	79.4	5.1	0.6	6.8	5.3	2.8	21.0	10.9	5.3	48,956	18.1

Source: U.S. Census 2000 Data and NCTCOG.

Notes:

- 1 - The census tracts/blocks groups located within and/or adjacent to the study corridor were used to represent the population potentially affected by the proposed project.
- 2 - Total persons reporting in non-white racial categories, including Black or African American, American Indian or Alaskan Native, Asian or Pacific Islander, some other race, or two or more races.
- 3 - Total person reporting as Hispanic or Latino ethnic origin. The U.S. Census Bureau considers ethnicity separate from race. Hispanic or Latino is an ethnic population and may be of any race.
- 4 - 1999 poverty level data as reported in the 2000 Census (most recent).
- 5 - 1999 median household income reported in the 2000 Census (most recent available).
- 6 - Average of proposed project area block groups for BG population, racial distributions, Hispanic or Latino Ethnic origin, poverty level, and median household.
- a - Indicates impacted EJ (minority or low-income) Block Groups (BGs) where displacements/relocations are proposed to occur.
- b - Indicates EJ (minority or low-income) communities.

THIS PAGE INTENTIONALLY LEFT BLANK

Analysis of 2000 U.S. Census Bureau data was conducted at the BG level for EJ population as it appeared that there was a high level of Blacks, Asians, and Hispanics within the project area. The comparison determined the presence of an EJ population within the project area by identifying zones of small, medium, and relatively high levels of EJ populations. The results indicated that eight BGs have relatively high levels of minority populations (25% or more):

- CT 1132.19 - BG 4 (NRH)
- CT 1135.15 - BG 1 (Hurst)
- CT 1165.08 - BG 1 (Fort Worth)
- CT 1165.08 - BG 2 (Fort Worth)
- CT 1135.11 - BG 1 (Eules)
- CT 1135.09 - BG 3 (Eules)
- CT 1135.14 - BG 1 (Eules)
- CT 1136.13 - BG 3 (Eules)

For the percentage of the population below the poverty level, the results indicated eight BGs had levels of 9% or higher:

- CT 1132.19 - BG 4 (NRH)
- CT 1132.13 - BG 1 (NRH)
- CT 1136.13 - BG 3 (Hurst)
- CT 1135.09 - BG 3 (Eules)
- CT 1135.09 - BG 4 (Eules)
- CT 1135.13 - BG 1 (Eules)
- CT 1135.14 - BG 1 (Eules)
- CT 1135.14 - BG 2 (Eules)

Once the areas of the EJ (minority or low-income) communities were identified (they are denoted with the superscript “b” in **Table VI-1**), they were compared to the area in which displacements/relocations were proposed to occur. Three minority and low-income communities (CT 1136.13 - BG 3 in Hurst, CT 1135.09 - BG 3 and CT 1135.14 - BG 1 in Eules; denoted with the superscript “a” in **Table VI-1**) were found along the Project Area to be directly impacted by the project (see **Appendices A-34** through **A-35** for these CT locations). The proposed project would proceed to construction only when all displaced families have been provided the opportunity to be relocated to decent, safe, and sanitary housing within their financial means. Relocation assistance is discussed in more detail in this section (see the subsection *Compliance with the Uniform Relocation Assistance and Real Property Act*). The following presents the aforementioned EJ community impacts in more detail:

- Within Hurst, CT 1136.13 - BG 3 there would be 20 apartment units and 13 residences in the Shady Oaks Addition which would be impacted. The Sonterra Apartments are located along the north side of SH 121/SH 183. The complex would potentially lose the northeast building consisting of 20 units; 10 one-bedroom and 10 two-bedroom units, for a maximum of approximately 60 persons. The rent for these one- and two-bedroom apartments is currently \$435 and \$540, respectively. The Sonterra complex has Section 8 housing units available; however, none of the units that would be displaced is Section 8, as the Section 8 units are located on the northeast side of the complex.

- Within Euless, 32 apartment units in CT 1135.09 - BG 3 and six single family residences within CT 1135.14 - BG 1 would be impacted. The Manchester Apartment Homes is a multi-family residence located along the north side of SH 183, which would potentially lose eight buildings consisting of four one-bedroom/one-bath units each, for a maximum of 64 residents. The rent for these units currently range from \$485 to \$525.

Displacements of residents and businesses would directly impact the EJ community; however, compared to the general community in the entire project area, the ROW acquisition is being distributed evenly throughout the project corridor. Anticipated project ROW acquisition would not have disproportionate impacts on any minority and/or low-income populations or businesses (see **Table VI-7 and Table VI-8**). There is however, the potential that improved mobility and access resulting from the project could result in accelerated land conversion, redevelopment, and higher property values in the project area. In turn, low-income populations could be priced out of the area due to increased cost of living and forced to move to more affordable areas as an indirect effect of the project. Changes in land use from conversion and redevelopment would likely affect land uses universally along the project and would not have disproportionately high and adverse human health and environmental effects on minority and/low-income populations. Thus, the requirements of Executive Order 12898 pertaining to environmental justice appear to be satisfied.

Managed (Toll) Lanes

Variable Toll/Pricing

TxDOT traditionally funds projects based on priority and when funds become available. Due to funding shortfalls, it is unlikely that many of the major freeway reconstruction and widening projects could take place within the foreseeable future (2030) without seeking alternate funding methods. In the proposed SH 121/SH 183 project, a managed (toll) lane facility is being proposed for the 2030 build alternative. The proposed project would be expected to be conducted by a private partner to reconstruct and widen this facility to accommodate three general purpose lanes (non-tolled) in each direction between IH 820 and SH 360, two frontage road lanes (non-tolled) in each direction and three managed (toll) facility lanes in each direction. There would be four general purpose lanes (non-tolled) in each direction between SH 360 and SH 161. A managed (toll) lane is a lane that would have some type of cost associated with using it.

The RTC, which governs transportation in the DFW area, has established a policy for managed (toll) lanes. That policy sets criteria for the region, which guarantees the riders of the managed (toll) lane facility a minimum speed of operation. To accomplish this, the managed (toll) lane facility would not be a set fee, but would rather be set based on demand (i.e., variable toll/pricing). The higher the demand, the higher the fee for use. In turn, the build alternative would free up much needed demand on the general purpose lanes (non-tolled) so that travelers not using the managed (toll) lanes would also benefit. 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 (toll) lanes reliability and predictability.

The managed (toll) lane concept supports the build alternative because without it, the region would suffer from decreased LOS along many of the major freeway facilities along with air quality concerns created by idling vehicles. In addition, those individuals that depend on the freeway system for their livelihood would be negatively impacted by the increased congestion as it relates to their commute times.

Using 2010 dollars, and following the RTC's established business terms for setting toll rates, it is estimated that the user fee for SH 121/SH 183 would be approximately 14.5 cents per mile. Initially, there would be a set toll of an average of 14.5 cents per mile for the entire day. After some evaluation has been completed, a set of peak and off-peak tolls are likely to be established to better optimize the facility operations. The maximum average toll rate is the average of the maximum peak-hour toll rate (17 cents per mile) and the maximum off-peak toll rate (12.5 cents per mile). An investment grade traffic and revenue study is under development to determine a more detailed, appropriate pricing structure.

Toll rates for SH 121/SH 183 would be determined prior to the facility opening as a toll facility. Potential impacts from the proposed project can be illustrated using the following scenarios, which assume that the average household would make 250 round trips per year¹ and utilize the entire 10.8-mile length of the toll project:

- Off-Peak Scenario: Assuming that the toll rate is 12.5 cents per mile, the annual cost to use the entire tolled section of SH 121/SH 183 would be approximately \$675 per year. Households with an annual household income equal to the median household income of Tarrant County (\$46,179) would spend less than two percent (1.5%) of their annual household income on SH 121/SH 183 tolls. However, households with incomes at or below the poverty level of \$21,200 (for a family of four)² would spend at least 3.2 percent of their annual household income on tolls, or at least 1.7 percent more than the median Tarrant County household.
- Average Toll Rate Scenario: If an average toll rate of 14.5 cents per mile is used, the annual cost to use the 10.8-mile tolled section of SH 121/SH 183 would be approximately \$783 per year. Households with an annual household income equal to the median household income of Tarrant County (\$46,179) would spend less than two percent (1.7%) of their annual household income on SH 121/SH 183 tolls. Households with incomes at or below the poverty level of \$21,200 (for a family of four) would spend at least 3.7 percent of their annual household income on tolls, or at least 2.0 percent more than the median Tarrant County household.
- Peak-Hour Scenario: Assuming that the toll rate is 17 cents per mile during peak travel times, the annual cost to use the entire 10.8-mile tolled section of SH 121/SH 183 would be approximately \$918 per year. Households with an annual household income equal to the median household

¹ Average number of work trips per year based on tolling industry observations provided by the North Texas Tollway Authority (NTTA).

² U.S. Department of Health and Human Services (DHHS) poverty guidelines, 2008.

income of Tarrant County (\$46,179) would spend 2.0 percent of their annual household income on SH 121/SH 183 tolls. Households with incomes at or below the poverty level of \$21,200 (for a family of four) would spend at least 4.3 percent of their annual household income on tolls, or at least 2.3 percent more than the median Tarrant County household.

Electronic Toll Collection Systems

The toll collection system for the SH 121/SH 183 managed (toll) 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 system (ETC).

Recent advances have allowed another possible ETC toll collection method that would accommodate vehicles without a toll tag. In this method, known as “video tolling” or “video billing,” license plates are photographed and scanned by computers or read by the toll operator. 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 transponder and without needing to stop and pay. However, it should be noted that 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. For Texas Turnpike Authority (TTA) TxTags, a \$1 fee is currently (in 2008) applied to each monthly invoice for non-tag customers. For North Texas Tollway Authority (NTTA) TollTags, a \$1 fee is currently (in 2008) applied to each monthly invoice for non-tag customers.

Some users may be confused by the ETC-only tolling technology; however, other local toll facilities in the area utilize partial and full ETC technology, which give roadway users an opportunity to become familiar with using this technology prior to implementation on the proposed project tolled lanes. TxDOT is implementing a marketing program aimed at educating the public on where to purchase electronic toll tags and how to use them on area toll roads and managed (toll) lanes.

TxDOT’s objective is to establish interoperable toll accounts. Any ETC account set up with a toll facility operator in Fort Worth, Dallas, Austin, or Houston or other city would be able to access toll roads or managed (toll) lanes in any toll authority facility while having the tolls charged to the user’s home account. To achieve this objective, toll tags or stickers issued by a toll authority in one area of the state would be capable of being read by the toll system in another area of the state. Each toll authority would be capable of registering toll transactions to the user’s home toll account. Users from other states or international drivers would be billed similarly to users without toll tags.

Method of Toll Charge Collections

The toll collection system for the SH 121/SH 183 managed (toll) lanes would be interoperable with other toll facilities in the state. The Texas Turnpike Authority (TTA) TxTag, the North Texas Tollway Authority (NTTA) TollTag, and the Houston area EZ TAG would be accepted. Toll charge collections

would be automatically deducted from the user's prepaid credit or cash account. The user would be 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 would pay a minimum amount of \$40 dollars as an initial deposit and receive a tag. The account would be reduced each time the user opts to pass through an operating ETC gantry. Currently, when the user's account reaches \$10 or less, the user's credit card or debit card would be 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 tag. Depending on the type of tag, to add funds to the account cash users would need to visit a TollTag store in the DFW area or the TxTag Customer Service Center in Austin; both tags also allow a check or money order to be mailed in to maintain the account balance. The cash user deposit would be refunded without interest if the user returns the tag (by mail or in person) in good condition, or if the user converts the cash account to a credit card account.

Origin-Destination Analysis

Overview

Origin-destination (O&D) data secured from the NCTCOG was used for additional analysis of "user impacts" of the proposed Airport Freeway 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 towards 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 NCTCOG metropolitan planning area (MPA) consists of 5,000 square miles and encompasses five entire counties (Collin, Dallas, Denton, Rockwall, and Tarrant Counties) and four partial counties (Ellis, Johnson, Kaufman, and Parker Counties). A total of 4,813 TSZs comprise the NCTCOG MPA study area. Given the regional operating characteristics of Airport Freeway, it is reasonable to assume the NCTCOG MPA contains the proposed project daily users and therefore is considered the project 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 2030 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 Airport Freeway facility. NCTCOG’s O&D data for the Airport Freeway project provided data for the No-Build and Build for the year 2030.

Analysis Assumptions and Limitations

To clarify the intent of the O&D analysis, the analysis 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 scenarios mentioned above. In other words, the O&D analysis predicts the potential users of the Airport Freeway corridor in 2030 by correlating the general socio-economic characteristics of the future users based on *Census 2000* data to the intensity of use quantified by the number of trips per TSZ generated by TransCAD®. The correlation of *Census 2000* and TransCAD® data is the best available method to identify which TSZs would originate trips anticipated to utilize the Airport Freeway facility and the general demographics of the population associated with those TSZs. The model distinguishes between toll and non-toll scenarios by identifying the “toll links.” These “toll links” are assigned a cost per mile for the toll scenario and no cost per mile for the non-toll scenario. 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 Airport Freeway 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 scenarios.

Analysis of TSZs and Number of Trips Predicted to Utilize the Airport Freeway facility in 2030

Analysis of the O&D data for the 2030 Build and the 2030 No Build is discussed below and summarized in **Table VI-2**.

- 2030 Build Main Lanes - Of the total 4,813 TSZs located within the study area, 4,472 TSZs are anticipated to utilize the proposed Airport Freeway main lanes with at least one trip per day.

These TSZs are projected to generate 74,674 trips per day on the proposed main lanes. The number of projected trips from these TSZs varied from a high of 644 trips per day to a low of one trip per day in 2030. 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 main lanes in 2030 (**Appendix A-37**).

- 2030 Build Managed Lanes - Of the total 4,813 TSZs located within the study area, 3,264 TSZs are anticipated to utilize the proposed Airport Freeway managed lanes with at least one trip per. These TSZs are projected to generate 26,033 trips per day on the proposed managed lanes. The number of projected trips from these TSZs varied from a high of 259 trips per day to a low of one trip per day in 2030. 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 2030 (**Appendix A-38**).
- 2030 No Build - Of the total 4,813 TSZs located within the study area, 4,474 TSZs would utilize the existing Airport Freeway facility in 2030 with at least one trip per day. These TSZs would generate 77,410 trips per day on the existing facility. The number of projected trips from these TSZs varied from a high of 678 trips per day to a low of one trip per day in 2030. 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 2030 (**Appendix A-39**).

Data analysis indicates the vast majority of TSZs within the study area are expected to have at least one trip per day along the proposed Airport Freeway facility in 2030. The data also indicates that approximately 23,000 additional trips per day would occur under the Build scenario versus the No Build scenario. Also, two additional TSZs would use the non-managed 6-lane existing facility versus the proposed 12-lane facility in 2030.

Identification of Environmental Justice TSZs

The threshold for an environmental justice TSZ (“EJ TSZ”) was defined as a TSZ with an environmental justice population (specifically low-income and minority populations) equal to or greater than 51 percent of the total TSZ population. This percentage indicates a majority presence of environmental justice populations for that TSZ. A total of 1,542 EJ TSZs were identified within the NCTCOG MPA study area. **Appendix A-36** shows the TSZs and EJ TSZs that would utilize the proposed Airport Freeway facility with at least one trip per day in the 2030 Build Scenario.

Analysis of EJ TSZs and Number of Trips Predicted to Utilize the Airport Freeway facility in 2030.

Analysis of the O&D data for the 2030 Build and No Build focused on those EJ TSZs that are anticipated to utilize Airport Freeway with at least one trip per day in 2030. The analysis described below is summarized in **Table VI-2**.

- 2030 Build Main Lanes - Of the total 1,542 EJ TSZs within the study area, there are 1,488 EJ TSZs anticipated to utilize the proposed Airport Freeway main lanes with at least one trip per day. These EJ TSZs are projected to generate 14,765 trips per day on the main lanes (15 percent of main lane total trips). The number of projected trips from these EJ TSZs varied from a high of 263 trips per day to a low of one trip per day in 2030. The EJ TSZs predicted to utilize the proposed main lanes in 2030 were color-coded and mapped based on the number of trips per day from each EJ TSZ (**Appendix A-42**). **Appendix A-40** illustrates the environmental justice type (breakdown) of the EJ TSZs.
- 2030 Build Managed Lanes - Of the total 1,542 EJ TSZs within the study area, there are 959 EJ TSZs anticipated to utilize the proposed Airport Freeway managed lanes with at least one trip per day. These EJ TSZs are projected to generate 4,319 trips per day on the Airport Freeway managed lanes (17 percent of managed lane total trips). The number of projected trips from these EJ TSZs varied from a high of 130 trips per day to a low of one trip per day in 2030. The EJ TSZs predicted to utilize the proposed managed lanes in 2030 were color-coded and mapped based on the number of trips per day from each EJ TSZ (**Appendix A-43**). **Appendix A-41** illustrates the environmental justice type (breakdown) of the EJ TSZs.
- 2030 No Build - Of the total 1,542 EJ TSZs located within the study area, 1,481 EJ TSZs would utilize the existing Airport Freeway facility in 2030 with at least one trip per day. These EJ TSZs are projected to generate 15,072 trips per day on the existing facility (20 percent of total trips). The number of projected trips from these EJ TSZs varied from a high of 336 trips per day to a low of one trip per day in 2030. The EJ TSZs predicted to utilize the existing facility in 2030 were color-coded and mapped based on the number of trips per day from each EJ TSZ (**Appendix A-44**).

Summary Analysis Results

Table VI-2 compares the 2030 Build and the 2030 No Build O&D results and provides further information regarding users of the managed lanes versus the main lanes.

Table VI-2 Comparison of Airport Freeway Origin-Destination Data					
Scenario	Total TSZs Anticipated to Utilize Airport Freeway	Total TSZ Trips	Total EJ TSZs Anticipated to Utilize Airport Freeway	Total EJ TSZ Trips	% of EJ TSZ Trips of Total Trips
2030 Build Main Lanes	4,472	74,674	1,488	14,765	15
2030 Build Managed Lanes	3,264	26,033	959	4,319	17
2030 No Build	4,474	77,410	1,481	15,072	20
Source: NCTCOG TransCAD® data for 2030 Build and No Build scenarios. The study area (NCTCOG MPA) is comprised of 4,813 total TSZs and 1,542 EJ TSZs.					

Data analysis indicates that of approximately 100,707 total trips which originate from TSZs anticipated to utilize the proposed Airport Freeway facility; approximately 19 percent (19,084 trips) of the total trips originate from EJ TSZs. The total number of trips generated by TSZs anticipated to utilize the existing facility in 2030 is 77,410 trips. Approximately 20 percent, or 15,072 trips, originating from EJ TSZs are projected to utilize the existing Airport Freeway in 2030.

The EJ TSZ trip percentage suggests that all scenarios and lane types would have a similar percentage of EJ TSZs users; however, the majority of all trips would originate from non-EJ TSZs. The projected EJ TSZ trip percentages also indicate that there is no substantial difference in the percentage of EJ TSZ trips between the main lanes and managed lanes of the proposed Airport Freeway facility.

Tolling Effects to EJ Populations

There would be an economic impact to any motorist who utilizes the Airport Freeway 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 non-tolled general purpose main lanes and frontage roads. Motorists who use the general purpose main lanes during peak hours may experience longer travel times than motorists using the managed lanes. Motorists using the frontage roads may also experience longer travel times due to lower posted speed limits and traffic signals along the frontage roads. The difference in travel times between the managed lanes compared to the non-tolled general purpose main lanes would likely be highest during peak hours of travel when traffic congestion within the corridor would be the greatest. However, the proposed added capacity to the non-tolled main lanes and frontage roads; and the addition of the 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.

A.2 Limited English Proficiency (LEP)

Executive Order 13166, entitled "Improving Access to Services for Persons with Limited English Proficiency," mandates that Federal agencies examine the services they provide and develop and implement a system by which Limited English Proficiency (LEP) persons can meaningfully access those services consistent with, and without unduly burdening, the fundamental mission of the agency. According to the Order, each agency shall also work to ensure that recipients of Federal financial assistance provide meaningful access to their LEP applicants and beneficiaries (65 Federal Register 50123, August 16, 2000). TxDOT complies with EO 13166 by offering to meet the needs of persons requiring special communication accommodations in all public involvement activities and notices.

The public involvement process (e.g., public meetings, coordination, and community advisory group meetings) for this project began in 1993 prior to the signing of the EO 13166. Therefore, the public involvement process was initiated in English only. All future public notices for meetings and the future

public hearing would be advertised in a Spanish speaking newspaper(s) that circulates within the project area, and a Spanish interpreter would be available at all public meeting(s) and the public hearing. Reasonable steps would be taken to ensure that Spanish-speaking persons have meaningful access to the programs, services, and information TxDOT provides.

The construction limits are located within five cities, North Richland Hills (NRH), Hurst, Bedford, Euless, and Fort Worth, all of which are within Tarrant County. As shown in **Table VI-3**, 2000 U.S. Census Bureau data indicates that Tarrant County has approximately 1,332,055 total individuals who are five years old and over. A total of 137,727 individuals (or 10.3% of the population) represent a population who speak a language at home other than English. The three most common languages spoken (based on population information) are Spanish, Asian or Pacific Island, and Indo-European. In Tarrant County, Spanish is the most common language spoken other than English at 16.4 percent. Vietnamese and Chinese are the most common Asian-Pacific Island languages spoken and account for 1.3 percent and 0.4 percent of the total County population, respectively. French and German are the most common Indo-European languages spoken accounting for 0.4 percent of the total County population.

Table VI-3 Limited English Proficiency (LEP) (County Level)							
County	Population 5 years & over	Language Spoken at Home	Population 5 years & over	*Number who Speak English "Well"	*Number who Speak English "Not Well"	*Number who Speak English "Not at All"	Total of Common Language Spoken
Tarrant	1,332,055	Spanish	218,616	41,381	43,005	24,784	109,170
		Indo-European (**e.g., French, German)	26,817	5,226	2,438	346	8,010
		Asian-Pacific Islander (**e.g., Vietnamese, Chinese)	37,148	11,643	7,441	1,463	20,547
Total			282,581	58,250	52,884	26,593	137,727

Notes:

* Numbers are for the whole Spanish, Indo-European, and Asian-Pacific Islander.

** Examples of the two most common languages spoken.

As presented in **Table VI-3**, the 2000 U.S. Bureau Census Tract (CT) data indicates that 18.1 percent (average of adjacent CTs) of the proposed project area population speaks a language other than English at home. An analysis of 2000 U.S. Census Bureau data was conducted at the CT level for LEP, as data was not available at the Block Group (BG) level. The comparison determined the presence of the LEP population within the project area by identifying zones of small, medium, high, and relatively high levels of LEP populations. The results indicated that four CTs were identified as having and relatively high LEP population (greater than 28%): three in Euless (CT 1135.09, CT 1135.10, CT 1135.14) and one in Fort Worth (CT 1065.08). The three CTs in Euless would be directly impacted by the project with the relocation of 32 units at the Manchester Apartment complex, six single-family residences in Park Crestmoor, and 18 single-family residences in Westwood Village.

As shown in **Table VI-4** the 2000 U.S. Census Bureau CT data indicates that the three Euleess CTs that would be directly impacted by the proposed project have approximately 2,017 persons who speak English less than very well. This represents approximately 4.7 percent of the total Euleess population five years old and over.

The 2,017 persons who speak English less then very well represent 16 percent of the three CTs that are affected within Euleess and represent 0.15 percent of the total population of five years old and over in Tarrant County.

The three most common languages spoken in the three impacted CTs are Spanish (5.8% of the CT population), Asian-Pacific Islander (2.4% of the CT population), and Indo-European (2.3% of the CT population).

In the three impacted CTs, the most common Asian-Pacific Islander languages spoken are Laotian, Vietnamese, and Cambodian. For the Indo-European languages, the most common languages spoken in the three impacted CTs are German, Urdu, Hindi, French, and Gujarathi. In Euleess, the most common languages spoken at home are Spanish, Urdu, French, and Laotian. Overall, Spanish speakers have the highest number of LEP individuals in Euleess and in the three impacted CTs which is consistent with Tarrant County.

Table VI-4 Limited English Proficiency (LEP) (Affected Census Tracts)

City	Population 5 years & over	Census Tract	Census Tract Population 5 years & over	Common Languages Spoken	*Number who Speak English "Well"	*Number who Speak English "Not Well"	*Number who Speak English "Not at All"	Total of Common Language Spoken
Euleess	42,574	1135.09	4,512	Spanish	86	96	27	209
				Indo-European (**e.g., German, Urdu)	62	51	5	118
				Asian-Pacific Islander (**e.g., Laotian, Vietnamese)	92	127	5	224
		1135.10	3,091	Spanish	98	103	19	220
				Indo-European (**e.g., Hindi, Urdu)	144	45	21	210
				Asian-Pacific Islander (**e.g., Laotian, Vietnamese)	41	16	0	57
		1135.14	4,953	Spanish	115	370	154	639
				Indo-European (**e.g., French, Gujarathi)	109	18	9	136
				Asian-Pacific Islander (**e.g., Laotian, Cambodian)	104	37	63	204
Total Population			12,556		851	863	303	2,017

Notes:

* Numbers are for the whole Spanish, Indo-European, and Asian-Pacific Islander.

** Examples of the two most common languages spoken.

A field investigation of the area indicates that English is the language of usage for signage on buildings and other forms of posted information/advertisement along the proposed project corridor. HEB ISD offers an English as a Second Language (ESL) program. ESL classes provide instruction to students who speak languages other than English. Bilingual classes in Spanish are offered on designated campuses for eligible students in grades pre-kindergarten through five. The coursework includes listening activities to enable students to increase accuracy in comprehension, speaking activities to allow students to learn to express themselves, and reading and writing activities. Also this year within the HEB ISD, the Edge Program, an Asian language program, offers Chinese (Mandarin) and Hindi (the major language in India) classes. Activities that teach American cultural patterns are integrated into the ISD's curriculum.

TxDOT's objective is to establish interoperable toll accounts throughout the state. Once fully implemented, a single ETC account established by motorist with state or local toll authorities [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 SH 121/SH 183 managed (toll) lane facility. TxDOT will work with new toll authorities to ensure interoperability statewide. Currently, the NTTA and TxDOT are the only agencies offering bilingual (English and Spanish) information in both their websites and over the phone (Customer Service Center). The information available in English and Spanish includes account information, payment methods, instructions on how to set up online accounts, and how to manage toll violations among other subjects. HCTRA does not offer Spanish information on either their website or over the phone (Customer Service Center).

A.3 Community Cohesion

Community cohesion is a measure of how well members of a community interact with each other. Members of the community include residents, businesses, public service organizations, and people or organizations that provide assistance to other community members. The proposed project is located within five cities, NRH, Hurst, Bedford, Euless, and Fort Worth, all of which are within Tarrant County.

Reconnaissance for the purpose of qualifying community cohesion was conducted in March and November of 2007. The area was characterized overall as having positive cohesiveness. As reference of this condition, strong residential cohesion was evident in measures where people were actively helping each other, such as a backyard cleanup campaign, block parties, community bake sales, etc. In commercial land use, strong cohesion was shown through sponsorship of local events and efforts. Residential cohesion was evident in the project area. Most communities (e.g., NRH, Hurst, Bedford, and Euless) appeared very stable in terms of real estate turn-over.

The communities also had several streets that participated in neighborhood crime watch programs. In addition to residential cohesion, businesses and institutions were active in communities. For example, several businesses supported little league teams, and indoor signs and memorabilia indicated one business

as supporting the local high school. The HEB ISD had permitted a car and motorcycle training/testing program to use their parking lot.

Finally, there was evidence of people coming together for caring and celebration. Signs were posted for St. Patrick's Day festivities, a local food bank and a Goodwill clothing drop box were actively taking donations, and an Easter egg hunt was being advertised.

- *North Richland Hills (NRH)* - NRH's most popular recreational attraction for residents and visitors alike is the NRH2O Family Water Park. It has the world's tallest and longest uphill water roller coaster. The Iron Horse Golf Course is also a favorite among residents and visitors to our community. Iron Horse has been consistently voted among the best municipal golf courses in Texas. The City's public library is consistently ranked as one of the best in the state, and the parks and recreation department has been nationally recognized.

Based on the U.S. Census of 2000, NRH had a population 55,635 people, had 20,793 households, and 15,407 families. The population density was 3,055.8 per mi². There were 21,600 housing units at an average density of 1,186.4 per mi². The racial makeup of the city was 88.48 percent White, 2.70 percent African American, 0.54 percent Native American, 2.65 percent Asian, 0.17 percent Pacific Islander, 3.39 percent from other races, and 2.07 percent from two or more races. Hispanic or Latino of any race was 9.48 percent of the population. North Richland Hills has an area of 18.2 square miles.

The demographics to NRH were further spread by age and economic gradients: 27.2 percent under the age of 18, 9.0 percent from 18 to 24, 32.6 percent from 25 to 44, 22.3 percent from 45 to 64, and 8.8 percent who were 65 years of age and older. The median age was 35 years. For every 100 females there were 97 males. For every 100 females age 18 and over, there were 93 males.

The median income for a household was \$56,150, and the median income for a family was \$64,718. Males had a median income of \$44,548 versus \$30,392 for females. The per capita income was \$25,516. About 3.1 percent of families and 4.7 percent of the population were below the poverty line, including 5.3 percent of those under age 18 and 7.2 percent of those ages 65 years and older.

- *Hurst* - Based on the U.S. Census of 2000, Hurst had a population of 36,273 people, had 14,076 households, and 10,261 families. The population density was 3,662.6 per square mile (mi²). There were 14,729 housing units at an average density of 1,487.2 per mi². The racial makeup of the city was 85.98 percent White, 4.13 percent African American, 0.64 percent Native American, 1.83 percent Asian, 0.29 percent Pacific Islander, 5.20 percent from other races, and 1.93 percent from two or more races. Hispanic or Latino of any race was 11.02 percent of the population. Hurst has an area of 9.9 square miles.

The demographics of Hurst were further spread by age and economic gradients: 25.5 percent under the age of 18, 8.3 percent from 18 to 24, 30.3 percent from 25 to 44, 23.6 percent from 45 to 64, and 12.4 percent who were 65 years of age and older. The median age was 37 years. For every 100 females there were 94.6 males. For every 100 females age 18 and over, there were 91 males. The median income for a household in the city was \$50,369, and the median income for a family was \$57,955. Males had a median income of \$40,734 versus \$29,551 for females. The per capita income was \$23,247. About 4.5 percent of families and 6.6 percent of the population were below the poverty line, including 10.4 percent of those under age 18 and 3.7 percent of those ages 65 years and older. Most of Hurst is zoned to the Hurst-Eules-Bedford Independent School District (HEB ISD).

- *Bedford* - Based on the U.S. Census of 2000, Bedford had a population of 47,152 people, had 20,251 households, and 12,515. The population density was 14,713.6 per mi². There were 21,113 housing units at an average density of 2,110.6 per mi². The racial makeup of the city was 87.63 percent White, 3.65 percent African American, 0.51 percent Native American, 3.62 percent Asian, 0.25 percent Pacific Islander, 2.44 percent from other races, and 1.89 percent from two or more races. Hispanic or Latino of any race was 7.22 percent of the population. Bedford has an area of 10.0 square miles

The demographics of Bedford were further spread by age and economic gradients: 22.5 percent under the age of 18, 9.7 percent from 18 to 24, 32.9 percent from 25 to 44, 26.1 percent from 45 to 64, and 8.7 percent who were 65 years of age and older. The median age was 36 years. For every 100 females there were 93 males. For every 100 females age 18 and over, there were 91 males. The median income for a household was \$54,436, and the median income for a family was \$71,017. The per capita income was \$29,466. About 2.4 percent of families and 3.7 percent of the population were below the poverty line, including 4.2 percent of those under age 18 and 5.6 percent of those ages 65 years and older.

- *Eules* - Based on the 2000 U.S. Census, there were 46,005 people, 19,218 households, and 11,626 families residing in the City of Eules. The population density was 1,091.7 per 2,828.3/mi². There were 20,136 housing units at an average density of 477.8 per 1,237.9/mi². The racial makeup of the city was 75.52 percent White, 6.49 percent African American, 0.64 percent Native American, 7.15 percent Asian, 1.86 percent Pacific Islander, 5.38 percent from other races, and 2.96 percent from two or more races. Hispanic or Latino of any race was 13.31 percent of the population. Eules has one of the largest populations of Tongans in North America.

There were 19,218 households out of which 31.6 percent had children under the age of 18 living with them, 45.3 percent were married couples living together, 10.9 percent had a female householder with no husband present, and 39.5 percent were non-families. 31.0 percent of all

households were made up of individuals and 3.0 percent had someone living alone who was 65 years of age or older. The average household size was 2.38 and the average family size was 3.05.

In the city the population was spread out with 25.0 percent under the age of 18, 9.8 percent from 18 to 24, 39.7 percent from 25 to 44, 19.7 percent from 45 to 64, and 5.8 percent who were 65 years of age or older. The median age was 32 years. For every 100 females there were 98.6 males. For every 100 females age 18 and over, there were 98.0 males.

The median income for a household in the city was \$49,582, and the median income for a family was \$54,697. Males had a median income of \$39,169 versus \$32,370 for females. The per capita income for the city was \$23,764. About 5.7% of families and 7.0% of the population were below the poverty line, including 9.5 percent of those under age 18 and 5.7 percent of those aged 65 or over.

These four communities are neighboring communities and are traversed by the existing SH 121/SH 183. The distance between the two farthest communities is approximately 5.0 miles.

A.3.1 No-Build Alternative

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

A.3.2 Build Alternative

With the implementation of the proposed project, impacts would occur to community cohesion primarily in the form of the relocation of numerous residences along the existing freeway. Major portions of four subdivisions would be affected by the proposed project through relocation: Woodcrest Addition in NRH, Mayfair and Shady Oaks Additions in Hurst, and Stonegate Addition in Bedford. **Table VI-5** demonstrates how communities' housing stock would be impacted by the proposed project. The detail relocation and mitigation of these impacted communities is better described in **Section VI - A.4** of this report (**ROW Requirements, Relocations and Displacements**).

Woodcrest subdivision is comprised of approximately of 85 single family units and it is located on the southeastern end of NRH. The average house was built in 1969. This subdivision is bound to the north by the SH 121/SH 183, and to the east by commercial and residential properties. To the south are residential homes and to the west are commercial/business properties. The proposed project would not bisect the subdivision. The residential homes that would be displaced are all located on the northern end of the subdivision adjacent to SH 121/SH 183. Displacement would occur predominantly to the first and second lines of homes. There are no community facilities or services such as schools, parks, or churches, in the area of displacement. There would be a planned access roadway that would be constructed on the northern part of the subdivision in order to provide a continuous access to the whole subdivision. Also, a

planned noise abatement measure would be constructed to offer privacy and minimize the noise from the proposed roadway. The subdivision would still have access to community facilities and public services. The proposed project would provide mobility and reduce traffic, which would enhance cohesiveness within the communities.

Table VI-5 Impacts to Communities				
City	Subdivision/ Multi-family	Location	Number of Residential Units Impacted	2007 TAD Average Value for City
North Richland Hills	Woodcrest Addition	South of SH 121/SH 183 between Weyland Drive and Wreyhill Drive	20	\$144,417
Hurst	Sonterra	North side of SH 121/SH 183 between Precinct Line Road and Cimarron Trail	20	\$134,587
	Shady Oaks Addition	North side of SH 121/SH 183 between Cimarron Trail and Hurstview Drive	13	
	Mayfair Addition	North side of SH 121/SH 183 between Hurstview Drive and Norwood Drive	37	
Bedford	Colonial Village Apartment	North side of SH 121/SH 183 at Willow Creek	52	\$ 153,499
	Stonegate Addition	Along SH 121/SH 183	32	
	Century Place	Along SH 121/SH 183	2	
Eules	Manchester Apartments	North side of SH 121/SH 183 between Industrial Blvd. and Sheppard Drive	32	\$ 137,094
	Park Crestmoor	South side of SH 121/SH 183 west of Ector Drive	6	
	Westwood Village	North side of SH 121/SH 183 between Eules Main Street and Fuller Wiser Road	18	

Notes:

TAD - Tarrant Appraisal District

Sonterra is an apartment complex located west of the Shady Oaks Subdivision and north of SH 121/SH 183 in Hurst. The proposed project would encroach on the southeast corner of the apartment complex, requiring the residents of approximately 20 rental units to be relocated. To minimize impacts to this community, renters would first be relocated to any vacant unit within the Sonterra complex and then to other apartment complexes located within an approximate one-mile radius of SH 121/SH 183.

Shady Oaks and Mayfair Additions are two neighboring subdivisions located on the north side of SH 121/SH 183 in Hurst. These single family homes were built between 1970 and 1975 and the average price of a home within the area is between \$130,000 and \$150,000. Community facilities or services accessible by, or adjacent to, these two subdivisions include the Mayfair and Smith-Barfield Park, L.D. Bell High School, and a WalMart.

The proposed SH 121/SH 183 would not bisect either of the subdivisions; however, it would require the relocation of approximately 50 residential homes: 37 from Mayfair Addition and 13 from Shady Oaks Addition. These homes are all located on the southern end of the subdivision adjacent to SH 121/SH 183 and are all in the first row.

There would be no displacement of any community facilities or services that are located adjacent to these subdivisions. Access to community facilities or services would not be affected by the proposed project. Access between the two subdivisions would also not be affected by the proposed project. Access from and onto SH 121/SH 183 would still be available. A noise abatement measure would be constructed to minimize the traffic noise from the proposed project. This abatement measure would also offer privacy and a sense of seclusion from the traffic. The proposed project would increase the capacity of the facility, thus aiding mobility and lessening traffic congestion, which would enhance cohesiveness within the communities.

The Stonegate Subdivision is located on the north and south sides of SH 121/SH 183 in Bedford. A church is the only community facility or service accessible, or adjacent to, the subdivision. The church is located east of the subdivision near Bedford Road. The average price of a home within the area ranges from \$130,000 to \$160,000. The proposed project would require the displacement of approximately 32 homes. These homes are all located adjacent to SH 121/SH 183, and are mostly on the outer edges of the subdivision.

Major roadways leading in and out the subdivision would still be open for traffic. There would be no relocation of any community facilities or services that are located adjacent to the subdivisions. Means of access to the community facilities or services would not be affected by the proposed project. Also, a noise abatement measure would be constructed on both sides of the affected subdivision, in order to reduce the traffic noise from the proposed project. The proposed project would increase the capacity of the facility, thus aiding mobility and lessening traffic congestion, which would enhance cohesiveness within the communities. Displacements would also take place at Century Place. Two homes in the Century Place Subdivision, located south of SH 121/SH 183 between Bedford Road and Forrest Ridge, would be displaced. These homes are located on the northeast corner of the subdivision. They should be easily relocated within the same subdivision.

The Colonial Village is an apartment complex, which would require displacement of approximately 52 renters. Renters would be relocated first to any vacant unit within the complex, and then to other apartment complexes located within an approximate one-mile radius of SH 121/SH 183. All relocations from the existing neighborhoods occur along the outer edges of the neighborhoods so that remaining portions of the neighborhoods would not be split or isolated.

The Manchester Apartment Homes complex, which is composed of approximately 96 apartment units, is located on the north side of SH 121/SH 183 between Industrial Boulevard and Ector Drive in Euless. Community facilities within a quarter-mile radius surrounding this apartment complex include a church to

the west, a school to the north, and a library and City Hall to the east. The proposed project would require the removal of approximately eight apartment buildings involving the relocation of approximately 32 apartment units. To compensate for the displaced renters, they would be relocated first to any vacant unit within the apartment complex if vacancy is available, or to other apartment complexes located within approximately a one-mile radius of SH 121/SH 183.

Park Crestmoor Subdivision is located at the southwest corner of Ector Drive. The proposed project would require displacement of the first row of houses adjacent to SH 121/SH 183. Approximately six homes would be displaced. The approximate average value of homes within the area is \$137,094. This subdivision community is within one-half mile to a church, school, library, and City Hall. Available housing for the displaced families is available with one-mile radius of the subdivision. The subdivision community would not be bisected, since only the northern edge of the subdivision would be taken. The streets leading in and out the subdivision would remain open. A proposed noise barrier is also recommended for this subdivision community, which would provide extra privacy. The proposed project would improve mobility and reduce congestion, which would ultimately enhance cohesiveness within the communities.

The Westwood Subdivision is located on the north side of SH 121/SH 183 in Euless between Euless Main Street and Fuller Wiser Road. The proposed project would require the relocation of approximately 18 homes. These homes are all located adjacent to SH 121/SH 183 and are primarily on the outer edge of the subdivision.

There would be no relocation of any community facilities or services that are located adjacent to these subdivisions. Means of access to the community facilities or services would not be affected by the proposed project. Also, proposed noise barriers would be constructed along the Westwood Subdivision to reduce traffic noise from the proposed roadway. The 18 homes from the Westwood Subdivision that would be impacted can be relocated to an adjacent new subdivision located east of Fuller Wiser Road. Streets leading in and out of the subdivision would remain open for traffic to minimize impacts to the community. The proposed project would improve mobility and reduce traffic, which would enhance cohesiveness within the communities.

Most of the relocations from the existing impacted neighborhoods (subdivisions and apartment complexes) would take place along the outer edges so that remaining portions of the neighborhoods or populations would not be bisected or isolated by the proposed improvements to Airport Freeway.

A review of the Multiple Listing Service (MLS) indicate there is available housing within the respective cities if the persons being displaced desires to relocate there. **Section VI - A.4** of this report (**ROW Requirements, Relocations and Displacements**) describes in detail how the affected communities would be relocated and compensated. The existing SH 121/SH 183 is one of the major freeways servicing the northeast portion of Tarrant County with access to IH 820, SH 121, Industrial Boulevard (FM 157) and SH 360. It serves not only the Mid-Cities but provides a means for access between the

major metropolitan areas of Dallas and Fort Worth Central Business Districts (CBD). Adding roadway capacity would not alter the functionality of the other roadways in this area.

A.4 ROW Requirements, Relocations and Displacements

A.4.1 No-Build Alternative

Implementation of the No-Build Alternative would not require ROW acquisitions, or residential or commercial relocations or displacements.

A.4.2 Build Alternative

The majority of the ROW for the existing highway was acquired by TxDOT in the mid- to late-1960s. The proposed Build Alternative would require ROW acquisitions. The selected proposer involved in the CDA would be responsible for all ROW negotiations and acquisitions along SH 121/SH 183 unless eminent domain is needed, at which time TxDOT would take over and complete the process. **Table VI- 6** is a summary of the ROW requirements and estimated displacements for the proposed project.

Table VI-6 ROW Requirements and Displacements			
Roadway Segment	ROW Acquisition Required (acres, approx.)	Residential Displacements	Business / Professional Displacements
SH 121/SH 183 Study Area	83 (includes 1.8 acres from DFW International Airport)	128 Single family 104 Multi-family units	29 Commercial / professional buildings (includes 1 admin. office at a church and 1 maintenance building at HEB ISD Admin.Complex)

Source: *ROW Impact Analysis*, dated March 17, 2006, Lockwood, Andrews & Newnam (LAN) [Preliminary: Subject to Revision], and current schematics at time of environmental assessment document preparation.

Approximately 83 acres of additional ROW, including 1.8 acres from DFW International Airport (see **Appendix A-45**) is proposed. Approximately 324 properties would be impacted by a reduction of land, displacement of a portion of their structures, or complete displacement. Displacements of 29 business and professional buildings (no church or school displacement), 128 single family homes, and 104 multi-family units are anticipated. Property acquisition is proposed at a church and the HEB Administration Complex; however, only an office building and maintenance building would be displaced, respectively.

The above displacements consist of properties that have been purchased or are being purchased through the advance purchase process (residential properties only) and those properties not yet acquired (both residential and commercial/professional). Parcels that have been purchased and are pending purchase are identified on the **Proposed Project Layout** maps in **Appendix A (A24, A25, and A26)**. **Appendix D** provides a discussion on the advance purchase process and lists information about each parcel purchase and pending purchase at the time of submittal of this environmental assessment. To date (July 1, 2009), 86 early acquisitions have been requested. Sixty-two properties have been purchased with 24 pending.

These properties are residential only. Many of the earliest acquisitions were based solely on medical hardship; however, in May 2007 the ability to do early acquisition of residential properties was extended to voluntary acquisitions also; due to uncertainty of funding and the lengthy public involvement process.

The following list provides a synopsis of impacts to individual communities within the SH 121/SH 183 Project Area.

- *Bedford* - Of the five adjacent cities along the SH 121/SH 183 Project Area, Bedford would be the greatest impacted with the displacement of approximately 52 multi-family units, 34 single family residences, and nine businesses, and one public facility. Bedford would have two multi-family complexes impacted. Colonial Village at the Willow Creek Apartment complex, located along the north side of the freeway, would lose three buildings (the rental office, Building #5 and #6) and the pool. Building #5 consists of 24 one-bedroom units and Building #6 consists of 28 one-bedroom units, which would account for the 52 multi-family units stated previously and a maximum of 104 persons. The monthly rent on a one-bedroom apartment in this complex rents from between \$599 to \$679. The Timber Creek Apartment complex, located along the south side of the roadway just east of Dana Kay Road, would lose approximately 46 feet of entrance roadway; the proposed project would not take any residential units from this complex.

Displaced single family homes in Bedford would be from the Stonegate Addition and Century Place. The majority of homes in both communities are three-bedroom/two-bath units. Thirty-two homes in the Stonegate Addition would need to be displaced; the average price of the homes to be displaced is approximately \$115,489. Two homes in the Century Place development would need to be displaced; the average price of the homes to be displaced is approximately \$123,050.

Other impacts in Bedford would include 76 businesses, of which nine would be displacements. One of the commercial buildings, Tri-Cities Professional Building, consists of several separate businesses. Although no places of worship in Bedford would be displaced, land acquisition would impact two churches in Bedford. The First United Methodist Church (FUMC) of Bedford and the Ziegler Ministries (a.k.a., Embrace Church) would both lose land and parking area. The extent of impacts is not entirely known. Loss of parking at the FUMC could affect congestion. Embrace Church has indicated that the loss of parking may have an impact, as the parking lot is full on most Sundays, and during some special events, the grass area east of the church is used for overflow parking. By city ordinance, parking is not allowed on the adjacent streets. The church indicated that alternative parking may need to be found or that the congregation may desire to find another location for the church if it continues to grow; however, it was too early to tell the extent of the impacts at this time.

In addition to the residential and commercial business displacements in Bedford, the HEB ISD Administration Complex on Central Drive would have one maintenance building displaced and land acquired. HEB ISD land would also be impacted at three properties including approximately

0.68 acre of land/parking from the L.D. Bell High School property. Parc Place Plaza (a health care and physician's complex including an assisted living facility) would have land impacted. Of the properties impacted in Bedford, none would be from EJ populations.

- *Hurst* - Hurst would have the second greatest number of impacted properties: 20 multi-family units, 50 single family residences, and five businesses. The Sonterra Apartments, located along the north side of SH 183, would lose the northeast building consisting of 20 units. As indicated in the EJ section, this community is composed of minority and low-income families. One-bedroom apartments in the Sonterra Apartments rent for approximately \$435, while a two-bedroom unit rents for approximately \$540. Also from the EJ community, 13 single family residences from the Shady Oaks Addition would be taken. The homes in the Shady Oaks Addition generally consist of three bedrooms/two baths with an average price of \$119,991. Another 37 single family homes in Hurst would be displaced from the Mayfield Addition. Homes in this area typically consist of three bedrooms/two baths with an average price of \$132,587. Of the businesses impacted in Hurst, all five would need to be displaced or a portion of the structure on the lot would need to be reconfigured or reconstructed. One of the commercial buildings proposed to be displaced, Real Estate Office Building / Colonial Savings Office Plaza, consists of several separate businesses.
- *Eules* - Eules would have 32 multi-family units and 24 single family residences impacted by the proposed project. The Manchester Apartment Homes, a multi-family structure located along the north side of SH 183, would lose 32 one-bedroom units. One-bedroom apartments in the Manchester Apartments rent for approximately \$485 to \$525. All of the residences being displaced would be from the EJ community. Also from the EJ community, six single family homes from the Park Crestmoor and 18 single family homes from the Westwood Village would be taken. The average three-bedroom/two-bath home to be displaced in Park Crestmoor and Westwood Village costs \$78,925 and \$82,536, respectively.

In Eules, 68 businesses would be impacted by the project, 12 of which would be displaced. In addition to the residential and commercial, one administration office building at the First United Methodist Church of Eules would be displaced and land would be acquired from another piece of property. Although there would be no building displacements, land acquisition is proposed at the First Baptist Church of Eules and the Eules City Hall campus.

- *North Richland Hills* - NRH displacements would include 20 single family homes and one business. The average value of the three-bedroom/two-bath single family residences being displaced in NRH was approximately \$140,800.

- *Fort Worth* - Fort Worth would have no residential or business displacements and only one business property impacted (land acquisition only). In addition, the 1.8 acres proposed for acquisition at DFW International Airport is within the Fort Worth city limits.

Available Housing

A review of available housing was conducted in all the impacted cities. As of August 2, 2007, NRH had 100 available single family residences located north of Harwood and west of Grapevine Highway; prices ranged from \$100,000 to \$188,000 for a three-bedroom/two-bath residence. The average Tarrant Appraisal District (TAD) Value for homes in NRH for 2007 was \$144,417.

In Hurst, there are approximately 10 apartment complexes within a one-mile radius of Sonterra Apartments that have similar price ranges. A review of the MLS data indicated there were 97 three-bedroom/two-bath single family residences located south of SH 121/SH 183 within the \$100,000 to \$185,000 range to which residents of Shady Oaks and Mayfield may choose to move. The 2007 TAD Average values home in Hurst is \$134,587.

In Bedford, there were 84 three-bedroom/two-bath residences available within the \$105,000 to \$166,000 price range, and 19 apartment complexes within a one-mile radius of the impacted multi-family units. The 2007 TAD Average values home in Bedford is \$153,499.

In Euless, the available housing was the lowest with only 34 three-bedroom/two-bath residences available within the \$55,000 to \$117,000 price range, and the lowest price home on the market as of August 2, 2007 was \$85,000. There are 16 available apartment complexes within a one-mile radius with approximately 13 north of Airport Freeway, of which three were south of the freeway. The 2007 TAD Average values home for Euless is \$137,094, which is approximately \$57,000 higher than the average price of the homes to be relocated.

Although the communities are fairly stable, the cities are generally seeing development occur on their north and south sides. There is available housing in all cities; however, due to the lack of available housing at the time of the survey below \$85,000, finding a new residence in the Euless area would be harder for families with lower incomes. Further information regarding the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 and additional relocation assistance is provided in the subsection **Outcome of Displacements** later in this section. **Table VI-7** summarizes all the displacements and the available housing in each city.

Table VI-7 Summary of Study Area Residential Relocations

Subdivision/ Multi-family	Number of Relocations (family unit)	2007 TAD Avg. Value for City	MLS Available Housing Units as of 8/2/07	General Location of Available Housing	CT/ BG/ Block	Minority (BG)	Low- Income (BG)	LEP (CT)	Comments
North Richland Hills									
Woodcrest Addition	20	\$144,417	100	North of Harwood and west of Grapevine Hwy	1134.03 / BG 1	No	No	No	
Hurst									
Sonterra (Apartments)	10	\$134,587		10 other complexes within 1 mile, 4 south and 6 north of SH 121	1136.13 / BG 3	Yes	Yes	No	Has 4 Sections; 8 units in back that would not be affected. 1-Bedrm \$435, 2-Bedrm \$540
Mayfield Addition	10		97	Majority is south of SH 183	1136.13 / BG 5	No	No	No	
Shady Oaks Addition	37		97	Majority is south of SH 183	1136.13/ BG 3 and 5	BG 3- Yes BG 5- No	BG 3- Yes BG 5- No	No	
Bedford									
Colonial Village at Willow Creek (Apartments)	52	\$153,499		19 complexes within 1 mile, 15 north and 4 south of SH 121	1136.28 / BG 3	No	No	No	\$599 to \$679
Timber Creek Apartments	0				1135.12 / BG 2	No	No	No	Taking 43 feet of entrance roadway
Stonegate Addition	32		84	Throughout city	1136.07 / BG 1 1136.29 / BG 3	No	No	No	
Century Place	2		18	Located equal north and south of SH 121	1136.18 / BG 1	No	No	No	
Eules									
Manchester Apartment Homes	32	\$137,094		16 complexes within 1 mile, 13 north and 3 south of SH 121	1135.09 / BG 3	Yes	Yes	Yes	\$485-\$525
Park Crestmoor	6		34	Located equal north and south of SH 121	1135.14 / BG 1	Yes	Yes	Yes	
Westwood Village	18		34	Lowest price was \$85K	1135.10 / BG 2	No	No	Yes	
Total/Average Data	232	142,399	464						

THIS PAGE INTENTIONALLY LEFT BLANK

Advance Purchase

Approximately 86 parcels (residential) comprising approximately 22.93 acres were acquired through advance purchase³. Parcels obtained through advance purchase are identified on the **Proposed Project Layout** maps in **Appendix A (A24, A25, and A26)**. **Appendix D** provides a discussion on the advance purchase process and lists information about each parcel purchased at the time of submittal of this environmental assessment

Guidance from FHWA instructs that, “while [advance purchase] acquisitions are permissible, they are considered “at risk” acquisitions, meaning TxDOT or local agencies performing said acquisitions may be acquiring land which will not be incorporated into the Federally funded project in the event that a different alignment (or the “No Build” alternative) is chosen during the environmental process” (FHWA letter to Dianna Noble re: Early Acquisitions, December 6, 2007).

Non-Displaced Businesses

Due to ROW acquisition, the proposed project would impact approximately 156 commercial/business properties. Of the 156 commercial/business properties impacted, 130 properties would not be displaced. The impacts to these non-displaced commercial/business properties would include loss of parking and alterations to landscape; there would also be some impacts to vacant lots. Between 0 and 25 percent of the parking area would be acquired for the project at approximately 117 commercial/business properties, at 11 commercial/business properties between 25 and 50 percent of the parking area would be acquired. Approximately 1.8 acres of property is proposed to be acquired from DFW International Airport.

Displaced Businesses

The proposed project would displace 29 commercial/business properties, which are summarized in **Table VI-8**. Of the 29 business/commercial establishments that would be displaced, seven pertain to food service, eight pertain to retail, and five pertain to auto service related businesses. The remaining seven business/commercial structures or establishments consist of banking service facilities, hotels, a storage facility, one administrative building associated with a church, and one maintenance building associated with the HEB ISD Administration Complex.

In terms of location, of the same 29 displaced properties, one is located in NRH, five are located in Hurst, 10 are located in Bedford, and 13 are located in Euless. Most of the businesses (e.g., food services, retail, auto services) would employ minimum to medium wage work staff and their customers would generally be local. However, some of the businesses, such as the Carpet Mill Outlet and Billiards and Barstools would have more regional customers, and the professional businesses in the Tri-Cities Professional Building in Bedford and the Real Estate Office Building / Colonial Savings Office Plaza in Hurst would most likely have higher paid work forces than the other businesses.

³ No farms or rural residential properties would be affected or displaced.

Table VI-8 Summary of Study Area Displaced Businesses/Business Facilities

Description / Name	City	CT	Minority/ LEP/ Low- Income	Type	Width Taking (Feet)	Total Area (Sq. Ft.)	Area of Taking (Sq. Ft.)	% Area Taken	Year Built
Casual Male XL, Hertz Rental Car, Al's Formal Wear, Segway, Fed Ex Office, and a vacant business unit	NRH	1134.03	No	Retail	120	82,764	24,235	29.3	1975
Stone Mountain Carpet Mill Outlet	Hurst	1134.03	No	Retail	66	161,002	40,098	24.9	1978
Shell	Hurst	1134.03	No	Auto/gas	45	29,403	7,337	25.0	1982
Burger King	Hurst	1134.04	No	Food Service	55	32,931	7,637	23.2	1977
Starbucks Coffee, First Cash Advance, and T-Mobile	Hurst	1134.04	No	Food Service/Retail	NA				
Real Estate Office Building / Colonial Savings Office Plaza	Hurst	1136.13	Yes	Retail Businesses	87	90,605	37,552	41.4	NA
Fina Gas Station	Bedford	1136.07	No	Auto/gas	~ 60	NA			
Tri-Cities Professional Building	Bedford	1136.07	No	Business Bldg - Retail, Clinic, Insurance, etc.	152	107,593	68,253	63.4	1983
Texaco Gas Station	Bedford	1136.18	No	Auto/gas	111	42,253	23,249	55.6	NA
Mexican Inn Café	Bedford	1136.18	No	Food Service	98	40,075	16,176	40.4	NA
Cycle Gear	Bedford	1136.18	No	Retail	99	217,364	43,539	20.0	1984
Baymont Inn & Suites	Bedford	1136.18	No	Hotel	~ 95	NA			
Super 8 Motel	Bedford	1136.18	No	Hotel	39	80,573	8,218	10.2	1996
HEB ISD Administration Complex – one maintenance building	Bedford	1136.18	No	Administration Building	39	276,040	14,144	5.1	1986
Chevron	Bedford	1135.12	No	Auto/gas	63	42,424	11,193	26.4	1986
Shops at Central Park (Jason's Deli, Pho's Noodle House, and Chili's)	Bedford	1135.12	No	Food Service	44	763,856	28,864	3.8	NA
Wild West Custom Choppers	Euless	1135.12	No	Retail	46	89,675	8,512	9.5	1980
Billiards & Barstools	Euless	1135.12	No	Retail	42	108,000	12,141	11.2	1997
C&C Carpet	Euless	1136.28	No	Retail	~ 68	NA			
Bedford Gold and Silver	Euless	1136.28	No	Retail	~ 69	NA			
Extra Storage Space	Euless	1136.28	No	Storage	~ 70	NA			
Western American Nat'l Bank	Euless	1136.28	No	Banking	34	35,719	4,847	13.6	1984
Texaco	Euless	1135.09	Yes	Auto/gas	54	35,283	8,275	23.5	1986
Mobile	Euless	1135.14	Yes	Auto/gas	50	20,473	3,484	17.0	1981
McDonald's	Euless	1135.14	Yes	Food Service	50	35,750	8,645	24.2	1979
Whataburger	Euless	1135.14	Yes	Food Service	~ 85	NA			
Long John Silver's	Euless	1134.14	Yes	Food Service	~ 80	NA			
Wendy's	Euless	1135.10	Yes	Food Service	67	32,228	23,519	73.0	1977
Administration office at First United Methodist Church - Euless	Euless	1135.13	No	Administration Office	75	150,674	30,311	20.1	1985

Notes

NA Data not available at the time of document preparation.

~ Data provided is estimated from current schematics.

Most of the commercial buildings were built between 1975 and 1986. Of the commercial lots taken, the majority is single-structure/single-business lots; however, there are three lots that have structures that

house more than one business: Colonial Savings Office Plaza in Hurst, Tri-Cities Professional Building in Bedford, and Shops at Central Park in Bedford.

Again, of the 29 businesses, six are in minority/low-income/LEP census tracts. Of the six businesses in the minority/low-income/LEP census tracts, four are in the food service industry and the other two consist of gasoline service stations.

Many of the businesses are not exclusive to the Study Area; in fact 18 (66.7%) are national and multi-national chain franchises or corporate entities. The following list describes how many of each community's displaced businesses are national or multi-nation chains.

- North Richland Hills: 100.0%
- Hurst: 75.0%
- Bedford: 55.6%
- Euless: 69.2%

The preceding list indicates that, by-and-large, the bulk of the businesses, specifically their locations, are not ones upon which the community solely relies. The products and services can be found easily within a short distance from their present locations, albeit through other merchants and vendors. Where this would not apply is for those persons who rely upon the current locations for employment or services that they cannot acquire elsewhere. One group of consumers that may be inconvenienced is motorcycle owners. For various reasons (i.e., product line, interpersonal relationships with staff, riding to the store), most motorcycle owners have preferred merchants. The displacement of Cycle Gear may cause those loyal to the location to be inconvenienced.

There are several businesses that may have impact to EJ persons and community cohesion. Depending on the clientele, surrounding demographic, and various other factors, the Mexican Inn Café may provide a community meeting place function, which would be negatively impacted by the displacement. However, such loss would not be permanent, as ethnic enclave elements typically re-establish themselves elsewhere within a short time of their displacement, and this business would receive assistance under the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970.

Two other displacements, the Real Estate Office Building / Colonial Savings Office Plaza in Hurst and the Tri-Cities Professional Building, would occur as a result of the proposed project. Businesses located in the Tri-Cities Professional Building include medical clinics (for chiropractic, craniofacial pain, and sleep diagnostics), an insurance office (State Farm Insurance), and a massage therapy clinic. These displacements are not expected to cause substantial impacts to the community, as other similar services are available in the area. For example, Liberty Bank is located 0.54 mile to the south of the Colonial Savings branch on Bedford-Euless Road, and a Bank of America branch is 0.77 mile directly north at the intersection of Norwood Drive and Harwood Road. An Affiliated Bank branch is another 0.46 mile east of the Bank of America on Harwood Drive. At least three other bank branches can be found within one to

two miles of the Colonial Savings branch. In addition, massage clinics, dentists (to treat craniofacial pain), and chiropractors can be found within one to three miles of the Tri-Cities Professional Building. Three additional State Farm Insurance agents are located within three miles of the office building, and another sleep disorder facility is within one mile. Therefore, since similar businesses are found within close proximity to anticipated displacements, business relocations from this building are not anticipated to have an impact on the community, which does not have a minority or low-income population.

The First United Methodist Church in Euless provides community services that the loss of which may have impact for various people within the community. Organized in 1987 as an emergency weather shelter run out of a local church, Arlington Night Shelter has since grown into a primary source of services for Tarrant County's homeless, providing food and shelter to an average of 100 people per night. In addition to offering basic emergency services, the Night Shelter also provides individualized case management, substance abuse counseling, adult education, employment services, and numerous children's programs. Also, the church provides social services to the mainstream community. Stephen Ministry helps meet the needs of individuals who are:

- hospitalized
- terminally ill
- bereaved
- looking for a caring Christian friend
- lonely
- in a job crisis
- in a spiritual crisis
- new members of the church
- disabled
- homebound

However, because the project would only displace a single office structure and these ministries are not dependent on the office structure, the ministries are not anticipated to be impacted by the displacement.

The ROW to be taken from each of the commercial lots ranges from 34 feet to 152 feet, and is estimated to be from four to 75 percent of the respective commercial lots. Seventeen of the businesses have less than 30 percent of their land taken, and consist mostly of parking lots and edges of the buildings. Businesses that have part or edges of their buildings taken would be compensated by redesigning or remodeling architecture design.

For two reasons, loss of parking is a serious matter for any suburban business whose clientele is commuter-oriented. First, the reduction of available parking means less potential consumers entering a business. Consumers who prejudge their shopping experience by the availability of parking are likely to go elsewhere. Second, municipalities typically require a minimum amount of parking per commercial type. For example, a restaurant would require more parking than a salon, and a full service restaurant would require more space than a fast food franchise. Therefore, determining whether a business would remain viable after ROW is taken from parking depends on both municipal regulations and public perception. A complicating factor is that shopping plazas experience a turn-over of tenants and each tenant could have unique requirements for availability of parking. Consequently, it would be difficult to determine at this stage of analysis whether a business would remain viable, and the decision to relocate would need to be made at the time that ROW is formally taken.

If a business, due to 50 percent or more of its parking being acquired by TxDOT, is considered by the City to be noncompliant with municipal codes, TxDOT considers the business eligible for relocation benefits. Such benefits would include costs of locating a new space, modifications to that space, and moving expenses. Alternatively, depending on the decision of the business owner, TxDOT may provide a fixed, in-lieu of, payment based on the net earnings of the business (an amount not to exceed \$20,000). TxDOT would issue the business a date to vacate the state-acquired ROW, as well as a deadline to file any claims associated with relocating the business.

The Colonial Savings Office Plaza is composed of a multiple building campus, and the taking consists mostly of parking lots and the edge of one building. The surrounding area is comprised of similar office buildings. The affected businesses could potentially be relocated to any of the six buildings within the same property area. The building affected could also be architecturally redesigned or reconstructed.

The two properties with the largest amount of ROW taken are the Wendy's Restaurant, located on the northeast side of Euless Main Street and SH 121/SH 183 and the Tri-Cities Professional Building, a two-story office building located on the southwest side of Bedford Road and SH 121/SH 183.

The Wendy's Restaurant, built in 1977 on a lot size of approximately 32,228 square feet, would be displaced by the proposed project. The nearest possible relocation site is a vacant lot located approximately 800 feet southeast of the current location. There is also another vacant lot east of the current location.

The two-story Tri-Cities Professional Building houses several different businesses such as medical clinics, insurance offices, etc. The structure was constructed in 1983 on a lot approximately 107,593 square feet. Possible relocation sites of the businesses affected are similar business buildings located just east of Bedford. There is also a vacant lot southeast of the current structure.

A review of the MLS for available commercial and vacant land was conducted in all the impacted cities. **Table VI-9** presents the findings of the survey.

Table VI-9 Available Commercial Floor Space and Land for Businesses						
City	Commercial Floor Space			Land		
	Number	Size (acres)	Price Range (\$K)	Number	Size (acres)	Price Range (\$K)
NRH	19	0.3 - 3.14	120 - 1,181	16	0.21 - 7.49	39 - 1,195
Hurst	7	0.59 - 7.35	399 - 3,950	4	0.84 - 5.0	65 - 1,000
Bedford	5	0.25 - 1.07	1.2 - 1,199	2	0.25 - 10.7	79 - 626
Euless	9	0.4 - 2.69	135 - 750	16	0.16 - 14.14	10 - 1,370

Available Commercial Properties

There are sufficient commercial properties available for the resettlement of the three businesses in NRH, Hurst, and Fort Worth. However, due to the high potential for business relocations necessary within the communities of Bedford and Euless, resettlement within their current host cities may be difficult to achieve for all businesses.

Outcome of Displacements

Due to land use placement and proximity to the existing roadways, certain communities would experience greater specific effects than other communities. For example, Bedford has the greatest number of displacements, while Fort Worth would have none at all.

The loss of residences and businesses could mean immediate reductions in the tax base as properties are converted to new ROW. However, the net loss of tax revenue would be minimal and land owners and businesses would be given the opportunity to relocate within their respective communities. Overall, the tax base would likely increase as a result of project-induced increased access and mobility, prompting new commercial ventures to develop/redevelop along the project corridor sooner than without the proposed improvements.

As noted throughout this section, the proposed project would cause the loss of structures and parking supply. As a correlation to the loss of land available for parking supply, there is a possibility that, at some locations, the configuration of parking supply would also be altered.

Compliance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act

Consistent with U.S. Department of Transportation policy, as mandated by the *Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970* and the *Uniform Relocation Act Amendments of 1987*, TxDOT provides relocation resources to all persons without discrimination. All owners from whom property is needed are entitled to receive just compensation for their land and property. Just compensation is based upon the fair market value of the property. TxDOT also provides, through its Relocation Assistance Program, payment and services to aid in movement to a new location.

Relocation assistance is available to all individuals, families, businesses, farmers, and non-profit organizations displaced as a result of a state highway or other transportation project. This assistance applies to tenants as well as owners occupying the real property needed for the project. Replacement structures must be located in the same type of neighborhood and be equally accessible to public services and places of employment. The TxDOT Relocation Office would also provide assistance to displaced businesses and nonprofit organizations to aid in their satisfactory relocation with a minimum of delay and loss of earnings. The proposed project would proceed to construction only when all displaced families have been provided the opportunity to be relocated to decent, safe, and sanitary housing. The available structures must also be open to persons regardless of race, color, religion, or nationality, and be within the financial means of those individuals affected.

The State's Relocation Assistance Program would be available without discrimination to all residents displaced as a result of the construction of the proposed project. Information regarding the Relocation Assistance Program was made available at the Public Meetings held for the proposed project and will be included at the public hearing to be held in the future. Special relocation considerations would be made to accommodate residents in need of additional assistance.

On most projects, an adequate supply of housing is available for sale and for rent, and the benefits provided are sufficient to enable families to relocate to comparable house. However, there may be projects in certain locations where the supply of available housing is insufficient to provide the necessary housing for those persons being displaced. When housing shortage occurs, TxDOT will solve the problem by the administrative process called Last Resort Housing. If comparable housing is not available, or it is not available within the maximum \$5,250 or \$22,500 payment limits, it must be provided before a family, household, or individual is required to move. In such cases, TxDOT has broad flexibility in providing the required housing and can, if necessary, provide replacement housing payments in excess of the normal \$5,250 and \$22,500 payment limits. This is handled on a case-by-case basis, and it would depend on circumstances beyond current knowledge to determine if Last Resort Housing is an appropriate solution. The distance that family, household, or individual would need to move to be within comparable housing could not be determined until the point where determination is made. As outlined previously, in compliance with the *Uniform Relocation Assistance and Real Property Acquisition Policies Act*, assistance would be provided without discrimination.

A.5 Public Facilities and Services

A.5.1 No-Build Alternative

Implementation of the No-Build Alternative would not require displacement or relocation of any public facilities. However, ultimately 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.

A.5.2 Build Alternative

Implementing the proposed project would affect 10 public facilities: three churches, three school properties, three clinics or hospitals, and a City Hall, as listed in **Table VI-10**. The project would only require the acquisition of land from the majority of the public facilities. This land would be landscaped and/or parking-related. While this would alter the appearance of these public facilities, it is not anticipated to alter the daily functions of the facilities. There would be displacements at two of the 10 facilities. The HEB ISD Administration complex and the First United Methodist Church of Euless would each lose one structure, the church's being a non-essential office structure that would be rebuilt. Though access to the public facilities may change with construction activities and relocation of access points and routes, the project would not affect the essential function of the facilities.

Table VI-10 Summary of Study Area Public Facilities Affected

Description / Name	City	Type	Width Taking (Feet)	Total Area (Sq. Ft.)	Area of Taking (Sq. Ft.)	% Area Taken	Year Built
Tri-Cities Professional Building	Bedford	Business Bldg - Retail, Clinic, Insurance, etc.	152	107,593	68,253	63.4	1983
Parc Place Plaza	Bedford	Clinic/Retirement Homes	63	252,822	18,563	7.3	2000
HEB Administration Complex (West of Central Drive)	Bedford	School	39	276,040	14,144	5.1	1986
Embrace Church (Zion Ministries)	Bedford	Church	36	109,512	16,481	15.0	1996
First United Methodist Church - Bedford	Bedford	Church (Parking Lot)	14	82,328	4,411	5.4	1978
	Bedford	Church (Building)	37	146,797	8,698	5.9	
L.D. Bell High School (HEB ISD)	Bedford	School - Southwest corner of property	59	1,717,832	44,354	2.6	1957 (opened)
	Bedford	School - Southeast corner of property	15	1,717,832	5,235	0.3	
Harris Methodist HEB	Bedford	Hospital	92	150,037	10,523	7.0	N/A; >25 yrs ago
First United Methodist Church of Euless	Euless	Church	75	150,674	30,311	20.1	1985
First Baptist Church of Euless	Euless	Church	40	896,774	28,962	3.2	2000
Euless City Hall	Euless	Government Services	47	749,825	53,760	7.2	1966-1967

NA Data not available at the time of document preparation.

TxDOT would replace sidewalks where they currently exist and give consideration to sidewalks on all bridges crossing SH 121/SH 183. Sidewalks would also be considered for areas that show pedestrian activity but do not currently have sidewalks.

Currently, two elevated pedestrian crossovers exist on SH 121/SH 183, one located east of Cavender Drive to service the children of Hurst's Shady Oaks Elementary School just south of SH 121; and one located east of Ector Drive to service the children of Euless Junior High School, just north of SH 121/SH 183. To address comments received from the public and HEB ISD officials, both of these pedestrian crossovers would be removed. A new pedestrian bridge would be constructed just east of Cavender Drive. It would not extend over the frontage lanes due the amount of ROW that would be required; crossing guards would assist children crossing at these locations. The pedestrian bridge east of Ector Drive would not be replaced; rather, Ector Drive would continue to pass beneath the freeway and be improved with sidewalk to safely accommodate pedestrian traffic.

The Build Alternative would provide increased accessibility to various public facilities in the surrounding area. There are several emergency response agencies, such as police, fire, and ambulances services

within the proposed project corridor. It is not anticipated that the proposed SH 121/SH 183 improvements would adversely impact emergency response times for any of these agencies within any of the adjacent cities. Emergency public service would have a safer and more efficient facility to use after the project is complete. Access to the HEB Hospital complex would be improved in both the eastbound and westbound directions by allowing continuous movement along the frontage roads (i.e., no stopping at traffic signals). 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.

A.6 Children's Environmental Health and Safety Risks

A.6.1 No-Build Alternative

Implementation of the No-Build Alternative would require no ROW acquisition; therefore there would be no areas or lands impacted that routinely accommodate children and no resulting disproportionate affects.

A.6.2 Build Alternative

Executive Order 13045, Protection of Children from Environmental Health Risks and Safety, mandates that federal agencies identify and assess environmental health and safety risks that may disproportionately affect children as a result of the implementation of federal policies, programs, activities, and standards (62 Federal Register, April 23, 1997).

In association to the airport property acquisition for the proposed project, there are no areas or lands impacted that routinely accommodate children such as schools and playgrounds. As detailed above in **Section VI - A.5**, the proposed improvements would impact three areas on two school properties (HEB ISD Administration Complex and L.D. Bell High School). The maintenance building at the HEB ISD Administration Complex does not routinely accommodate children. The areas of ROW acquisition from L.D. Bell High School are located along the school property line and are considered publicly owned, grassy recreation areas. As the impacts are minimal and would not adversely affect the activities, features, and attributes of these areas, a preliminary *de minimis* 4(f) determination was made (see **Section VI - H** and **Appendix G**) indicating no adverse effect. For the above reasons, the project is not anticipated to disproportionately affect children.

A.7 Regional and Community Growth

A.7.1 No-Build Alternative

Implementation of the No-Build Alternative would increase traffic congestion, resulting in reduced accessibility and increased travel time. This would be a burden born 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.

A.7.2 Build Alternative

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. Adjacent and surrounding property values would be favorably affected by improved accessibility and mobility, thereby increasing the tax base and producing benefits that would accrue during the design life of the proposed project. A short-term benefit of the proposed action is employment for some area residents during the construction phase.

Visual Resources and Light Emissions

Views throughout the proposed project corridor are characterized as fully urban. Roadways are typically at-grade with no elevated sections, except at interchanges and on- and off-ramps to the existing freeway. Existing vegetation is characterized as a blend of isolated stands and rows of mature woody vegetation on parcels adjacent to the corridor (primarily as landscaping features of neighborhoods and commercial and industrial areas) and mowed and maintained grasses within the ROW.

Although the corridor is urbanized, impacts would include some visual intrusion with the construction of new overpasses and elevated sections of roadway. Such intrusions would alter existing sight lines and panoramas. Some at-grade and elevated structures would also impact areas where vegetation would be removed for construction. While construction would require the removal of some vegetation, most mature woody vegetation would not be removed as part of the proposed project.

The proposed facility is a highway project where all lighting will face in a downward position eliminating any conflict in illumination to any aircraft and/or airport activity.

Existing Circulation Patterns

Construction of the proposed project would involve the reconstruction of cross street bridges and the closure of some neighborhood access points. At the western end of the project, the following streets would no longer have direct access to the southern frontage road: Weyland Drive, Wondol Court, Wedgeview Drive, Woodway Drive, and Wreyhill Drive (see **Appendix A-24**). A strong majority of the homeowners along Wedgeview and Weyland Drives (84% and 91%, respectively) petitioned TxDOT to have their streets closed cut off from access to the frontage, after the other streets were determined to require closing by TxDOT for engineering reasons. They did not want their streets to incur increased through-traffic and thus an increase in noise and safety concerns. TxDOT accommodated these requests. Residents in this neighborhood would be able to access Airport Freeway via Bedford-Eules Road to the west or Precinct Line Road to the east.

Cul-de-sacs would be constructed at the intersections of Plainview Drive with Hurstview Drive, closing off direct access to Hurstview Drive (see **Appendix A-25**). The reason for the cul-de-sac construction is that the distance between the intersection of Hurstview Drive and the proposed frontage road and the

intersection between Plainview Drive and Hurstview Dr. would only be approximately 60 feet; this distance would not be sufficient for the safe and efficient traffic operations along Hurstview Drive. After construction, Plainview Drive residents on the west side of Hurstview Drive would be able to access Airport Freeway by going west on Plainview Drive, north on Cimarron Trail, east on Brookview Drive, and south on Hurstview Drive (i.e., around the block). Those living east of Hurstview Drive could make a similar around-the-block route using Cavender, Brookview and Hurstview Drives, or if living further east on Plainview Drive, exit the neighbor via Norwood Drive.

A.8 Construction Impacts/Detours

A.8.1 No-Build Alternative

Implementation of the No-Build Alternative would result in no construction impacts, as the area would remain in its present condition and would not require any detours of traffic. The exception to this is when normal maintenance or repair work may occur and temporary detours may be implemented.

A.8.2 Build Alternative

If the Build Alternative were implemented, work on Airport Freeway would be phased in such a manner that would allow the roadway to remain open during construction. Access to businesses and residences would be maintained to the maximum extent possible at all times. Construction of a detour would be required where existing access could not be maintained. All construction related impacts are expected to be temporary in nature.

Indirect temporary environmental impacts may occur as a result of construction activities. Primarily, these impacts would relate to noise resulting from heavy construction equipment, fugitive dust emissions, and potential impacts on water quality from runoff and soil erosion from exposed surfaces. Construction impacts alone are rarely significant. Refer to the air quality, water quality, noise section, and other relevant impact categories for discussions regarding potential construction impacts.

A.9 Utility Relocations, Adjustments and Relocations

A.9.1 No-Build Alternative

Implementation of the No-Build Alternative would not require utility relocation or adjustment.

A.9.2 Build Alternative

The proposed improvements to Airport Freeway would require the relocation of power poles, anchor poles, guy wires, telephone manholes, gas manholes, and traffic signs. The utilities can generally either be adjusted or relocated in the area between the frontage lanes and the ROW lines prior to or during

construction of the proposed project using standard procedures. The adjustment and relocation of any utility would be handled so that no substantial interruptions occur. Plans for relocating utilities would be provided by the appropriate utility company. If the utility is currently located within its own easement, then TxDOT would be responsible for utility relocation.

B. NATURAL RESOURCES

B.1 Description of Natural Region and Vegetation Type

According to "The Natural Regions of Texas" (TPWD, 2001), the majority of the proposed project area lies within the Eastern Cross Timbers natural subregion of the Oak Woods and Prairies region. The Oak Woods and Prairies region is dominated by a mosaic of tall grass prairie and oak woodlands. The far eastern end of the project area lies within the Blackland Prairie natural subregion of the Blackland Prairies region. Typical natural vegetation of the Blackland Prairies region is dominated by tall-grass prairie on uplands and deciduous bottomland woodlands along rivers and creeks.

Based upon "The Vegetation Types of Texas Including Cropland" (TPWD, 1984), the project area is designated as Urban (Type 46). The existing and proposed ROW is heavily urbanized and is dominated by urban landscaping, including mowed and maintained commercial, institutional (e.g., schools, hospitals) and residential landscaping, and TxDOT maintained ROW. The eastern end of the project also has some light industrial land use, with similar landscaping.

Vegetation within the existing and proposed ROW does not differ substantially from that outside of the ROW. The various vegetation types present along the project corridor (existing and proposed ROW) are provided below; descriptions of each vegetation type are provided in the following section.

B.2 Vegetation Description and Impacts

B.2.1 No-Build Alternative

Implementation of the No-Build Alternative would result in no impacts to existing vegetation within the proposed project area.

B.2.2 Build Alternative

The project area was surveyed for vegetation and features in accordance with the "Memorandum of Agreement between Texas Department of Transportation and Texas Parks and Wildlife Department for Finalization of 1998 Memorandum of Understanding, Concerning Habitat Descriptions and Mitigation" ("TxDOT - TPWD MOA").

The majority of the proposed and existing ROW vegetation (greater than 95%) would most closely be characterized as grassland (“Other Native or Introduced Grasses”), based on the physiognomic region descriptions. This includes the existing TxDOT-maintained ROW, as well as bordering grassy areas associated with residential neighborhoods and landscaped commercial, institutional, and business properties. This vegetation was dominated by Bermuda grass (*Cynodon dactylon*), Texas wintergrass (*Stipa leucotricha*), Japanese brome (*Bromus japonicus*), perennial ryegrass (*Lolium perenne*), white tridens (*Tridens albescens*), king ranch bluestem (*Bothriochloa ischaemum*), and Johnson grass (*Sorghum halepense*). Less commonly observed grasses were foxtail bristlegrass (*Setaria italica*), silver bluestem (*Bothriochloa laguroides*), and rescuegrass (*Bromus catharticus*). Predominant forbs included annual ragweed (*Ambrosia artemisiifolia*), sensitive briar (*Mimosa microphylla*), common vetch (*Vicia sativa*), crimson clover (*Trifolium incarnatum*), yellow sweetclover (*Melilotus officinalis*), bur-clover (*Medicago minima*), Canada goldenrod (*Solidago canadensis*), silverleaf nightshade (*Solanum elaeagnifolium*), common pepperweed (*Lepidium densiflorum*), Queen Anne’s lace (*Daucus carota*), wooly plantain (*Plantago patagonica*), and showy evening primrose (*Oenothera speciosa*). Occasional scattered trees included mesquite (*Prosopis glandulosa*), cedar elm (*Ulmus crassifolia*), live oak (*Quercus virginiana*), post oak (*Quercus stellata*), sugarberry (*Celtis laevigata*), Southern red oak (*Quercus falcata*), and loblolly pine (*Pinus taeda*). The post oaks, sugarberries, and pines were typically observed outside of fences of residential yards fronting the ROW. **Appendix C** contains several photos showing typical existing ROW along Airport Freeway (see **Photos 1, 7, 10** and **11**).

On the north side of Airport Freeway, along the frontage roads to SH 360, the vegetation best fits the vegetation description of “Mesquite Shrub/Grassland.” A photo of this vegetation is included in **Appendix C** (see **Photo 13**). Dominant trees included mesquite, black locust (*Robinia pseudoacacia*), and cedar elm. Grasses and forbs were dominated by Bermuda grass, white tridens, dallis grass (*Paspalum dilatatum*), Johnson grass, perennial ryegrass, foxtail bristlegrass, Texas wintergrass, prairie threeawn (*Aristida oligantha*), meadow dropseed (*Sporobolus asper hookeri*), sunflower (*Helianthus annuus*), common cocklebur (*Xanthium strumarium*), wooly plantain, and Queen Anne’s lace. Within the proposed ROW, the scattered trees had a diameter at breast height (DBH) range of two to four inches with an average DBH of approximately three inches, and a height range of 10 to 20 feet.

The “urban landscaping” was characterized as manicured introduced grasses such as Bermuda grass, St. Augustine grass (*Stenotaphrum secundatum*), and perennial ryegrass. Common yard and landscaped trees included post oak, live oak, sugarberry, Southern magnolia (*Magnolia grandiflora*), cedar elm, American sycamore (*Platanus occidentalis*), loblolly pine, and American elm. Common ornamental trees and shrubs included privets (*Ligustrum spp.*), crape-myrtle (*Lagerstroemia spp.*), and Bradford pear (*Pyrus calleryana*). Several photos are included in **Appendix C** showing typical urban landscaping along the project corridor (see **Photos 4** and **11**).

Unusual Vegetation Features / Special Habitat Features

Per the TxDOT - TPWD MOA, the existing and proposed ROW was surveyed for *unusual vegetation features* and *special habitat features*. The only *unusual vegetation features* observed were areas of

unmaintained vegetation (wooded areas) and riparian vegetation. None of these wooded areas matched any vegetation type description presented in “The Vegetation Types of Texas Including Cropland.” Their descriptions are provided below. The project area also contained numerous water bodies, which are considered *special habitat features*.

Unmaintained Vegetation (Wooded Areas) within the Existing ROW

Two unmaintained wooded areas were located near Bear Creek within the existing ROW of the Airport Freeway/DFW International Parkway (Spur 97) interchange (see **Appendix A-19**):

- 4.65-acre unmaintained area on the northeast side of Bear Creek between the creek and the eastern north-bound frontage lanes of DFW International Parkway (Spur 97).
- 3.34-acre unmaintained area on the west side of Bear Creek and south of the Airport Freeway main lanes. An ephemeral stream flows eastward through this wooded tract and drains into Bear Creek.

Trees were dominated by Eastern cottonwood (*Populus freemontii*), post oak, cedar elm, and black willow (*Salix nigra*), green ash (*Fraxinus pennsylvanica*), Eastern red cedar (*Juniperus virginiana*), sugarberry, and American elm (*Ulmus americana*). The shrub layer (3 to 8 feet in height) included Eastern redbud (*Cercis canadensis*), mimosa (*Albizia julibrissin*), red oak saplings, and Chinese privet (*Ligustrum sinense*). Vines were dominated by poison ivy (*Toxicodendron radicans*), Virginia creeper (*Parthenocissus quinquefolia*), and trumpet creeper (*Campsis radicans*). Grasses and forbs included Bermuda grass, ryegrass, Japanese brome, and Johnson grass. Trees had a DBH range of four to 20 inches with an average DBH of approximately 12 inches, and a height range of 30 to 60 feet. Canopy cover in these areas was approximately 95 percent. A total of up to approximately 2.8 acres of woody vegetation may be permanently impacted within these areas during construction of the proposed project.

Unmaintained Vegetation (Wooded Areas) within the Proposed ROW

- Roughly 150 feet west of Sheppard Drive on the south side of the freeway was a 7.5-acre, unmaintained wooded area (see **Appendix A-15**). Within the proposed ROW, trees present were sugarberry, Chinaberry (*Melia azedarach*), green ash, pecan, and Texas mulberry. There was little understory, but that which was present was approximately three to eight feet in height and contained Eastern redbud, chinaberry, and American elm saplings. Dominant vines were poison ivy, Japanese honeysuckle (*Lonicera japonica*), and roundleaf greenbriar (*Smilax rotundifolia*). Grasses and forbs, found primarily along the edges, included dallis grass, giant ragweed (*Ambrosia trifida*), inland sea oats (*Chasmanthium latifolium*), and Johnson grass. The trees had a DBH range of three to 20 inches with an average DBH of approximately 10 inches, and a height range of 40 to 60 feet. Canopy coverage was nearly 95 percent. A total of approximately 0.10 acre would be permanently impacted as a result of the proposed project.

- Approximately 180 feet east of Ector Drive on the south side of Airport Freeway was an approximately 1.1-acre, unmaintained and isolated wooded area dominated by pecan (*Carya illinoensis*), cottonwood, bois d'arc (*Maclura pomifera*), mimosa, and American elm (see **Appendix A-15**). Understory was generally lacking, except for Chinese privet and saplings of mimosa and American elm. Vines were dominated by poison ivy, roundleaf greenbriar, and mustang grapevine (*Vitis mustangensis*). Grasses and forbs, found primarily along the edges, included Johnson grass, giant ragweed, and Canada goldenrod. Within the proposed ROW, trees had a DBH range of four to 28 inches with an average DBH of approximately 9 inches, and a height range of 40 to 60 feet. Canopy coverage within was roughly 95 percent. An ephemeral stream, which ultimately drains into the Trinity River, runs through this wooded tract. The area immediately to the east had been recently cleared as of May 2008. Approximately 0.07 acre of woody vegetation would be permanently impacted by construction of the proposed project.
- At the Airport Freeway/DFW International Parkway interchange, south of the southern frontage road and approximately 300 feet east of Cambridge Road, is a third unmaintained and isolated wooded area, occupying a total of approximately 1.1 acres (see **Appendix A-19**). Within the proposed ROW, trees were dominated by post oak, cedar elm, green ash, Eastern red cedar, mesquite, and black locust. The understory was relatively sparse and consisted primarily of the shrubs Chinese privet and coralberry (*Symphoricarpos orbiculatus*). Vines were dominated by roundleaf greenbriar, Virginia creeper, poison ivy, and mustang grapevine. Grasses and forbs, found primarily along the edges, included sideoats grama (*Bouteloua curtipendula*), Johnson grass, Japanese brome, and Canada goldenrod. Trees had a DBH range of 4 to 12 inches with an average DBH of approximately 6 inches, and a height range of 20 to 40 feet. Canopy coverage within was approximately 95 percent.

Unusual Stands of Vegetation

Within the proposed ROW, there are two post oak groves which stand out as unusual given the highly developed (i.e., urbanized) condition of the project area. These areas are isolated and manicured park-like settings.

- The first was a roughly 1.3-acre post oak grove located approximately 300 feet east of Forest Ridge Drive on the north side of Airport Freeway (see **Appendix A-11**). The groves contained a few sugarberry trees, and grasses were dominated by Bermuda grass, perennial ryegrass, and Texas wintergrass; there was no understory. A photo of this area is included in **Appendix C** (see **Photo 12**). Within the proposed ROW, the trees had a DBH range of two to seven inches with an average DBH of approximately five inches, and they ranged from 25 to 30 feet in height. Canopy coverage within the proposed ROW was approximately 30 percent. A total of 0.07 acre would be impacted as a result of the proposed project, including the removal of three trees greater than 6 inches DBH.
- Roughly, 900 feet east of Reliance Parkway on the north side of the freeway was a second 1.8-acre grove with a few scattered sugarberry trees and no understory (see **Appendix A-14**).

Predominant grasses and forbs included Bermuda grass, perennial ryegrass, and Texas wintergrass. Within the proposed ROW, the trees had a DBH range of three to 16 inches with an average DBH of approximately nine inches, and a height range of 25 to 35 feet. Canopy coverage was approximately 40 to 45 percent. A total of 0.15 acre would be impacted as a result of the proposed project, including the removal of three trees greater than six inches DBH.

Riparian Vegetation

Many of the creeks and streams along SH 121/SH 183 are concrete-lined or have gabion mattresses within the channel bottom, such as the south side of the Unnamed Tributary to Sulphur Branch and both sides of Mesquite Branch and Estelle Creek. Within the project area, riparian vegetation does exist along several of the stream segments that are still in a natural state and are sufficiently vegetated. Vegetation characteristics of those areas are summarized below:

- *Sulphur Branch* - South Side - The proposed ROW on the south side was dominated by Eastern cottonwood, Chinaberry, American elm, bois d'arc, and box elder (*Acer negundo*), with a DBH range of three to 15 inches (average 8 inches) and a tree height range of 20 to 45 feet. Canopy cover was approximately 50 percent. A total of 0.29 acre of woody vegetation would be impacted as a result of the proposed project.
- *Unnamed Tributary to Hurricane Creek* - North Side - the proposed ROW was dominated by the following trees, which ranged from two to five inches DBH (average three inches): black willow, black locust, catalpa, pecan, and sugarberry, as well as bumelia saplings. Tree height ranged from 18 to 22 feet, and canopy cover was approximately 70 percent. Other vegetation present included giant ragweed, rattlepod, and mustang grapevine. A total of 0.06 acre would be removed, including four trees greater than six inches DBH.
- *Bear Creek* - The entire length of Bear Creek was dominated by Eastern cottonwood, cedar elm, black willow, sugarberry, American elm, green ash, and Chinaberry. The DBH range was four to 15 inches (average 10 inches) and tree height ranged from 30 to 60 feet. Canopy cover was nearly 95 percent. Dominant shrubs and vines included Baccharis, mustang grapevine and roundleaf greenbriar. Forbs and grasses included Virginia wildrye, Johnson grass, Bermuda grass, and inland sea oats. A total of 1.68 acres would be permanently removed as a result of the proposed project; up to approximately 0.25 acre would be temporarily impacted by the placement of temporary access roads.

Water Bodies

SH 121/SH 183 crosses nine water bodies:

- Two perennial streams - Hurricane Creek and Bear Creek;
- Five intermittent streams - Mesquite Branch, Valley View Branch, Sulphur Branch, Unnamed Tributary to Sulphur Branch, and Unnamed Tributary to Hurricane Creek; and
- Two ephemeral streams - Unnamed Tributary to Trinity River and Unnamed Tributary to Bear Creek.

Each is identified on the Existing and Proposed ROW Map (**Appendices A-6** through **A-22**). Permanent impacts within the ordinary high water mark are expected to occur within five of these water bodies during culvert and bridge widening and construction. Temporary impacts are anticipated to occur within two of the waters during construction of the SH 360/SH 183 interchange. All waters and their expected impacts are presented in **Table VI-13**.

Estimated Impacts

The No-Build Alternative would have no impacts on existing vegetation within the proposed project area. **Table VI-11** summarizes what the proposed temporary and permanent impacts (in acres) would be to each vegetation/habitat type for the Build (Preferred) Alternative. Temporary impact would be typical disturbance during construction activities. Permanent impact would generally result from the loss of woody or grassy vegetation for the placement of new pavement or bridge supports.

Approximately 330 acres of mowed and maintained grassland within the existing TxDOT ROW would be *temporarily* disturbed, since this acreage would be revegetated after construction. Approximately 51 acres would be *permanently* impacted from the addition of new pavement/lanes. An estimated 1.3 acres of mesquite/shrub grassland within the proposed ROW would be *permanently* impacted; there would be no temporary impacts since this area would be converted to mowed and maintained TxDOT ROW.

There would be impacts to several *unusual vegetation features* and *special habitat features*. Approximately 3.3 acres of unmaintained vegetation (wooded areas) and 0.28 acre of post oak grove would be *permanently* impacted. The project would also result in minimal impacts to several water bodies (i.e., Waters of the U.S.). Approximately 2.03 acres of riparian vegetation along these water bodies would be *permanently* disturbed. Up to 0.25 acre would be *temporarily* impacted at Bear Creek. It is expected that riparian vegetation in some areas would re-establish over time.

Table VI-11 Estimated Vegetation / Habitat Impacts Associated with the Build Alternative				
Affected Vegetation / Habitat Type	Approx. Acres to be Impacted within Existing ROW	Approx. Acres to be Impacted within Proposed ROW	Total Estimated Impacts	
			Temporary	Permanent
Maintained Grassland	377.3	4.03	330	51.3
Mesquite Shrub/Grassland	0	1.3	0	1.3
Unusual Vegetation Features				
Unmaintained Vegetation (Woods)	2.8	0.5	0	3.3
Unusual Stands of Vegetation (Post Oak Groves)	0	0.28	0	0.28
Riparian Vegetation ^a	1.68	0.35	0.25	2.03
Special Habitat Features				
Water Bodies ^b	1.09	0.03	1.02	0.11

Notes:

All numbers are approximate and in acres unless otherwise noted, and are worst-case scenario figures at this time. TxDOT would minimize impacts to vegetation to the maximum extent practicable. As of the August 2007 schematics, existing ROW within the construction limits was 830.56 acres. Total proposed acreage within the construction limits was 913.69 acres.

- ^a Riparian vegetation located entirely within existing ROW and existing channel easements. Impacts are assumed to be 100% permanent at this time; however, vegetative species to be impacted are readily available and would re-establish over time.
- ^b The acreages presented for the water bodies (i.e., Waters of the U.S.) is an estimate and has not been verified by the USACE, the final authority on jurisdictional status.

Mitigation

In accordance with Provision (4)(A)(ii) of the MOA between TxDOT and the TPWD, TxDOT must consider compensatory mitigation for certain habitat categories. Of the vegetation impacts, approximately 2.03 acres of riparian vegetation are considered to be pertinent to the TxDOT-TPWD MOA. Clearing of vegetation within these riparian areas (and throughout the project corridor) would be avoided or minimized, where possible, for the construction of the proposed project and establishment of clear zones. Although impacts to riparian habitat would be minimal, and this habitat is rather unremarkable due to the heavy development in the surrounding areas, compensatory mitigation for the riparian impacts at Bear Creek (i.e., 1.68 acres) is proposed. A copy of the coordination letter to TPWD detailing the proposed mitigation is included in **Appendix F**.

Remaining upstream and downstream riparian areas contain similar composition and structure to the vegetation that would be removed. The disturbance created along these riparian zones should produce seed-bearing forbs and other primary successional plants that would benefit wildlife in the area. Riparian areas within the TxDOT ROW would be stabilized by planting a temporary seed mix and allowing natural riparian vegetative succession to occur.

In accordance with TxDOT standards and policy, and to mitigate for herbaceous vegetation impacts, a mix of native and introduced grasses and forbs would be used to revegetate the ROW. Additionally, disturbed areas would be restored and reseeded according to the TxDOT specifications. This would be

performed in accordance with TxDOT's "Seeding for Erosion Control," Executive Order 13112 on Invasive Species, and the Executive Memorandum on Beneficial Landscaping.

B.3 Threatened and Endangered Species

B.3.1 No-Build Alternative

Implementation of the No-Build Alternative would result in no impacts to existing vegetation or wildlife within the proposed project area.

B.3.2 Build Alternative

Based on the scope of the proposed project, biological field surveys conducted in July and October 2005, March 2007 and May 2008, a May 2008 review of the TPWD Natural Diversity Database (NDD), and a review of the list of State- and Federally-listed threatened and endangered species for Tarrant County (**Table VI-12**), it was concluded that no substantial suitable habitat exists for any State- or Federally-listed threatened or endangered species within the study limits. None of the listed species nor their preferred habitat was observed within the project area. The project would have no effect on any State- or Federally-listed species, its habitat, or designated critical habitat. Should any species be discovered during construction, appropriate measures would be taken to protect them.

Table VI-12 Federal and State Listed Threatened and Endangered Species and Species of Concern in Tarrant County

Species Common & Scientific Name	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	E	Potential migrant. Nests in the Trans-Pecos region of west Texas; nests on high cliffs, often near water where prey species are most common.	N	N	Highly urbanized project area with no suitable habitat (prefers larger waterways/coastlines).
Arctic Peregrine Falcon <i>Falco peregrinus tundrius</i>	DL	T	Potential migrant. Nests in tundra regions; winter inhabitant of coastlines and mountains from Florida to South America. Open areas, usually near water.	N	N	Highly urbanized project area with no suitable habitat (prefers larger waterways/coastlines).
Bald Eagle <i>Haliaeetus leucocephalus</i>	DL	T	Nests and winters near rivers, lakes and along coasts; nests in tall trees or on cliffs near large bodies of water.	N	N	Highly urbanized project area with no suitable nesting trees in project vicinity. Nearest potential temporary habitats are Mountain Creek Lake, Lake Arlington, and Grapevine Lake, all located 7.56 miles from project location.
Henslow's Sparrow <i>Ammodramus henslowii</i>	—	—	Wintering individuals (not flocks) found in weedy fields or cut-over areas with lots of bunch grasses along with vines and brambles; a key component is bare ground for running/walking; likely to occur, but few records within this county.	N	N	Highly urbanized project area; No suitable habitat - fields/areas with lots of bunch grasses and vines/brambles not present.
Interior Least Tern <i>Sterna anitillarum athalassos</i>	LE	E	Nests along sand and gravel bars within braided streams and rivers; also known to nest on man-made structures.	N	N	Highly urbanized project area with no preferred waterbodies; No suitable habitat.
Western Burrowing Owl <i>Anthene cucicularia hypugaea</i>	—	—	Prairies, pastures, agricultural areas, savannas, open areas, vacant lots near human habitation.	Y	N	Only potential area is by DFW International Airport, which is not the preferred large, open habitat for nesting/breeding (e.g., prairie dog towns). However, individuals could potentially winter within project area; project may temporarily disrupt a few individuals for a season, but no adverse effect to the species.
Whooping Crane <i>Grus americana</i>	LE	E	Potential migrant; winters in and around Aransas National Wildlife Refuge and migrates to Canada for breeding.	N	N	Highly urbanized project area; No suitable habitat such as ponded areas, which periodically de-water.
Mammals						
Gray Wolf <i>Canis lupis</i>	LE	E	Extirpated; formerly known throughout the western two-thirds of state in forests, brushlands, or grasslands.	N	N	Highly urbanized project area; No suitable habitat. Extirpated.

Table VI-12 Federal and State Listed Threatened and Endangered Species and Species of Concern in Tarrant County

Species Common & Scientific Name	Federal Status	State Status	Description of Suitable Habitat	Habitat Present	Species Effect	Pertinent Project Information
Plains Spotted Skunk <i>Spilogale putorius interrupta</i>	—	—	Open fields, prairies, croplands, fence rows, farmyards, forest edges, and woodlands; prefers wooded, brushy areas and tallgrass prairie.	N	N	Highly urbanized project area; No suitable brushy woods.
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 prairie.	N	N	Highly urbanized project area; No suitable habitat; Extirpated.
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.	N	N	Preferred substrate not present within waters. Rocky clay substrates most common. Not observed.
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.	N	N	Gravel also preferred; preferred substrates not present. Not observed.
Louisiana Pigtoe <i>Pleurobema riddellii</i>	—	—	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.	N	N	Preferred substrate not present within waters. Rocky clay substrates most common. Not observed.
Pistolgrip <i>Tritogonia verrucosa</i>	—	—	Stable substrate, rock, hard mud, silt, and soft bottoms, often buried deeply; east and central Texas, Red through San Antonio River basins.	N	N	Species prefers medium to large rivers; no suitable habitat, and not observed.
Rock Pocketbook <i>Arcidens confragosus</i>	—	—	Mud, sand, and gravel substrates of medium to large rivers in standing or slow flowing water, may tolerate moderate currents and some reservoirs, east Texas, Red through Guadalupe River basins.		N	No suitable habitat (no rivers of preferred size or substrate). Not observed.
Sandbank Pocketbook <i>Lampsilis satura</i>	—	—	Small to large rivers with moderate flows and swift current on gravel, gravel-sand, and sand bottoms; east Texas, Sulfur south through San Jacinto River basins; Neches River.		N	No suitable habitat; preferred flow and substrate not present. Rocky clay substrates most common. Not observed.
Texas Heelsplitter <i>Potamilus amphichaenus</i>	—	—	Quiet waters in mud or sand and also in reservoirs. Sabine, Neches, and Trinity River basins.		N	No suitable habitat; preferred substrate not present. Rocky clay substrates most common. Not observed.
Reptiles						
Texas Garter Snake <i>Thamnophis sirtalis annectens</i>	—	—	Wet/moist microhabitats are conducive to species occurrence, but species not restricted to them; hibernates underground or in/under surface cover; breeds March-August.	N	N	Highly urbanized area with no wet/moist prairie microhabitats preferred by the species.

Table VI-12 Federal and State Listed Threatened and Endangered Species and Species of Concern in Tarrant County						
Species Common & Scientific Name	Federal Status	State Status	Description of Suitable Habitat	Habitat Present	Species Effect	Pertinent Project Information
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; sandy to rocky soil.	N	N	Highly urbanized area; No suitable habitat.
Timber/Canebrake Rattlesnake <i>Crotalus horridus</i>	—	T	Swamps, floodplains, upland woodlands, riparian zones, abandoned farmland; prefers dense ground cover, (i.e., grapevines or palmetto).	N	N	No suitable habitat - dense ground cover preferred by species not present.
Vascular Plants						
Glen Rose yucca <i>Yucca necopina</i>	—	—	Grasslands on sandy soils; also found in limestone bedrock, clayey soil on top of limestone, and gravelly limestone alluvium. Flowering April-June.	N	N	No suitable habitat - soils not present.

Table Notes:

LE Federally Listed Endangered

DL Federally Delisted

E, T State Endangered/Threatened

"—" Rare or Species of Concern, but no regulatory listing status

*Data Sources: U.S. Fish and Wildlife Service, Texas Parks and Wildlife Department, and site visit/survey of project area. Updated 02-14-08.

NOTE: Species appearing on these lists do not all share the same probability of occurrence. Some species are migrants or wintering residents only, or may be historic or considered extirpated.

B.4 Migratory Birds

B.4.1 No-Build Alternative

Implementation of the No-Build Alternative would result in no impacts to migratory birds, their nests, or their young.

B.4.2 Build Alternative

Several of the bird species in **Table VI-12** are considered migratory. The migration patterns of these species would not be affected by this project. Field reconnaissance identified no nesting habitat within the proposed project limits for these species. The Migratory Bird Treaty Act of 1918 (MBTA) states it is unlawful to kill, capture, collect, possess, buy, sell, trade, or transport any migratory bird, nest, or egg in part or in whole, without a federal permit issued in accordance with the Act's policies and regulations. Evidence of a migratory bird was observed within the project limits. Swallow nests were observed within several culvert structures under SH 121/SH 183 during site reconnaissance activities; no other active bird nests were observed within trees or culverts or under bridges. Measures would be taken prior to bridge and culvert reconstruction that would avoid harm to these species. Implementing the Build Alternative would have no effect on migratory birds, their nests, or their young.

B.5 Farmland Issues

B.5.1 No-Build Alternative

Implementation of the No-Build Alternative would have no impact upon prime farmland and would require no displacement, relocation, or division of farm operations.

B.5.2 Build Alternative

Projects considered exempt under the FPPA include those that require no additional ROW or require ROW that is developed, urbanized, or zoned for urban use. The proposed project would be developed within ROW that is developed and zoned for urban use and therefore is considered exempt under the FPPA.

B.6 Water Quality Issues

B.6.1 No-Build Alternative

The No-Build Alternative would have no impacts on impaired waters, existing water quality, streams, rivers, floodplains, and wetlands.

B.6.2 Build Alternative

An evaluation of the impacts, which would result from implementation of the proposed project and the permitting which would be required, is presented below.

Watershed/Basin Information

Stormwater runoff from this proposed construction would flow into two unnamed tributaries and five creeks which all flow into the Lower West Fork of the Trinity River (from the confluence of Elm Fork Trinity River in Dallas County to the confluence of Village Creek in Tarrant County), segment number 0841 of the Trinity River Basin. This feature, as listed in the TCEQ Water Quality Inventory, is designated for potential contact recreation, general, fish consumption, and aquatic life uses. However, due to standards not being met, contact recreation and fish consumption uses are not supported. This segment is designated as threatened or impaired for elevated PCBs in fish tissue and bacterial counts in the 2004 Clean Water Act Section 303(d) list and the project is within five miles upstream of the threatened or impaired segment. Therefore, coordination with TCEQ is required for total maximum daily loads.

The water quality of wetlands and waters in the State shall be maintained in accordance with all applicable provisions of the Texas Surface Water Quality Standards including the General, Narrative and Numerical Criteria.

Federal Emergency Management Agency Floodplain Information

The hydraulic design practices for this project would be in accordance with current TxDOT design policy 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 highway, stream or other property. Tarrant County and the cities of NRH, Hurst, Bedford, Euless, and Fort Worth, are participants in the National Flood Insurance Program.

According to Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs) (August 1995 and August 2000, Tarrant County maps 48439C0304 J, 48439C0308 H, 48439C0309 J, and 48439C0330 J), the proposed project would cross the Regulated Floodway Zones of Mesquite Branch (referred to as Lorean Branch on the FEMA map), Valley View Branch, Sulphur Branch, Unnamed Tributary to Sulphur Branch, Hurricane Creek, Unnamed Tributary to Hurricane Creek, and Bear Creek. The proposed project would not increase the base flood elevation to a level that would violate the applicable floodplain regulations or ordinances; therefore, no coordination with either the Federal Emergency Management Agency or the local floodplain administrator is required.

Channel Impacts

Airport Freeway within the project limits currently crosses five intermittent streams, two perennial streams, and two ephemeral streams. The waters are listed in **Table VI-13** in order of occurrence from project start to project end (west to east). All but the ephemeral streams are also identified on the USGS topographic map (**Appendices A-34** through **A-35**). All are currently crossed with existing multiple box culverts (MBC), a single box culvert (unnamed tributary to Hurricane Creek), or bridge structures (Bear Creek). Of the perennial and intermittent streams, all but two are concrete- or gabion-lined channels either upstream or downstream; only Hurricane Creek and Bear Creek have natural streambeds both upstream and downstream of the project area (and beyond the standard concrete apron of the existing MBC at Hurricane Creek). The ephemeral streams within the project area have primarily natural streambeds where exposed, except where the Unnamed Tributary to Bear Creek discharges to Bear Creek, which is underlain with rip rap.

As seen in the Proposed Project Layout (**Appendices A-23** through **A-33**), the proposed project would require extending or replacing existing MBCs; approximate proposed temporary and permanent fill impacts are provided in **Table VI-13**. Additional bridge structures, as well as possible widening of the existing bridge structures, would be required along Bear Creek. Temporary impacts would result from the placement of temporary erosion controls such as rock filter dams downstream of the construction areas. In addition, temporary access roads would be required within Bear Creek. TxDOT would make every effort to minimize impacts within each stream by avoiding the use of, or minimizing the amount of,

paving/riprap at culvert ends. All temporary fills would be removed and the affected areas returned to preconstruction contours.

Table VI-13 Estimated Channel Impacts Associated with the Build Alternative		
Water of the U.S.	Estimated Maximum Stream Impacts (in acres)	
	Build Alternative	
	Temporary	Permanent
Mesquite Branch (a.k.a., Lorean Branch)	0.0	0.0
Valley View Branch	0.0	0.008
Sulphur Branch	0.0	0.058
Unnamed Tributary to Sulphur Branch	0.0	0.0
Hurricane Creek	0.0	0.0
Unnamed Tributary to Hurricane Creek	0.0	0.027
Unnamed Tributary to Trinity River	0.0	0.009
Unnamed Tributary to Bear Creek	0.08	0.0
Bear Creek	0.94	0.004

Table Notes:

The jurisdictional status of all waters listed is to be determined by the USACE.

All culverts would be of sufficient size to allow for natural flow conditions.

Where impacts are listed as "0.0," it is either due to the channel being concrete-lined or because the proposed design would have no impact on the existing water body.

Wetlands

Site reconnaissance surveys were performed in July and October 2005, March 2007, and May 2008 within and adjacent to the proposed ROW throughout the length of the project. Survey methods included the following: 1) review of USGS topographic maps, Natural Resources Conservation Service (NRCS) maps, and local county Soil Survey maps; 2) review of historical color, black and white, and infrared aerial photographs; 3) review of the FEMA floodplain maps and National Wetland Inventory Maps; and 4) site reconnaissance. Based upon the results of the surveys, it was determined that the proposed project area does not contain any wetlands or other special aquatic sites as defined in the 1987 *Corp of Engineers Wetland Delineation Manual - Technical Report Y-87-1*.

Permits

Clean Water Act

Nine waterways present within the project area are potentially subject to Section 404 of the Clean Water Act. Expansion and reconstruction of Airport Freeway necessitates the extension or replacement of the existing culverts and bridges, which would result in both *permanent* and *temporary* impacts to jurisdictional waters (refer to **Table VI-13**). The stream impacts for each waterbody (permanent and temporary) would each be covered under a USACE Section 404 Nationwide Permit (NWP) 14 (for Linear Transportation Projects). Preconstruction notification (PCN) under these NWPs would not be required for submittal to the USACE, the regulatory authority for Section 404 waters, since the crossings at each

water body would result in the *permanent* loss of less than 0.1 acre of waters of the U.S., and no special aquatic sites (which include wetlands) would be impacted.

While it is not possible to avoid impacts to the streams to be impacted by the proposed culvert extensions, all impacts would be kept to the minimum amount necessary to complete the project within TxDOT standards and specifications. To the maximum extent practicable, the streams would remain in their natural state (if not already concrete-lined) and would be protected during construction. This practice, combined with the implementation of Best Management Practices (BMPs) would minimize impacts to Waters of the U.S. (see **Table VI-14** for a list of BMPs to be implemented).

TxDOT would not offer mitigation for the estimated permanent impacts to 0.11 acres of jurisdictional waters, comprised of perennial, intermittent, and ephemeral streams. These streams are located within highly developed areas and only possess natural characteristics and vegetation in a few locations. Onsite mitigation for these impacts is not feasible, due to safety concerns, future highway expansion possibilities, maintenance concerns, and a lack of success with similar projects.

Rivers & Harbors Act of 1899 / General Bridge Act of 1946

Per the USACE's list, *Navigable Waters of the United States in the Fort Worth, Albuquerque, and Tulsa Districts Within the State of Texas* (March 1999), the proposed project would not cross any navigable or tidally influenced waterways. Therefore, neither a U.S. Coast Guard Section 9 Permit (i.e., Bridge Permit) nor a USACE Section 10 Permit would be required.

TCEQ Section 401 Best Management Practice Statement

Under Section 401 of the Clean Water Act, the TCEQ is authorized to certify that federally issued permits (e.g., a Section 404 nationwide permit) would meet state water quality standards. Since the proposed project meets the criteria of a nationwide permit, the proposed project would be in compliance with Section 401 by addressing TCEQ water quality certification conditions. Erosion Control, Sedimentation Control, and Post Construction Total Suspended Solids (TSS) Control devices from the TCEQ Section 401 BMPs List in **Table VI-14** would be required. The table below contains the approved BMPs for each category. At least one device from each category would be utilized. Erosion Control devices would be implemented and maintained until construction is complete. Sedimentation Control devices would be maintained and remain in place until completion of the project. Post-Construction TSS Control devices would be implemented upon completion of the project.

Table VI-14 Best Management Practices (BMP) List

Erosion Control	Sedimentation Control	Post Construction TSS
Temporary Vegetation	Sand Bag Berm	Retention/Irrigation
Blankets/Mulch/Matting	Silt Fence	Vegetative Filter Strip
Mulch	Triangular Filter Dike	Constructed Wetlands
Sod	Rock Berm	Wet Basins
Interceptor Swale	Hay Bale Dike	Vegetation Lined Drainage Ditches
Diversions Dikes	Brush Berm	Grassy Swales
Erosion Control Compost	Stone Outlet Sediment Trap	Sand Filter Systems
Mulch Filter Berms/Socks	Sediment Basin	Extended Detention Basins
Compost Filter Berms/Socks	Erosion Control Compost	Erosion Control Compost
	Mulch Filter Berms/Socks	Mulch Filter Berms/Socks
	Compost Filter Berms/Socks	Compost Filter Berms/Socks

Texas Pollutant Discharge Elimination System (TPDES)

Because this project would disturb more than one acre, TxDOT would be required to comply with the TCEQ - Texas Pollutant Discharge Elimination System General Permit for Construction Activity. The project would disturb more than five acres; therefore, a Notice of Intent would be filed to comply with TCEQ stating that TxDOT would have a Storm Water Pollution Prevention Plan (SW3P) in place during construction of proposed project.

Storm Water Pollution Prevention Plan (SW3P)

The SW3P utilizes the temporary control measures as outlined in the Department's manual "Standard Specifications for the Construction of Highways, Streets, and Bridges." Impacts would be minimized by avoiding work by construction equipment directly in the stream channels and/or adjacent areas. No long-term water quality impacts 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 (i.e., silt fence, rock berm, and drainage swales) from the Department's manual "Standard Specifications for the Construction 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 order 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 Department's specifications for "Seeding for Erosion Control."

The contractor would take appropriate measures to prevent, minimize and control the spill of fuels, lubricants, and hazardous materials in the construction staging area. All spills, including those of less than 25 gallons shall be cleaned immediately and any contaminated soil shall be immediately removed from the site and be disposed of properly. Designated areas shall be identified for spoils disposal and materials storage. These areas shall be protected from run-on and run-off. Materials resulting from the destruction of existing roads and structures shall be stored in these designated areas. The use of

construction equipment within the stream channel would be minimized (or not necessary). If work within a watercourse or wetland is unavoidable, heavy equipment shall be placed on mats, if necessary, to protect the substrate from gouging and rutting. All construction equipment and materials used within the stream channel and immediate vicinity would be removed as soon as the work schedule permits and/or when not in use and shall be stored in an area protected from run-on and run-off. All materials being removed and/or disposed of by the contractor would be done so in accordance to state and federal laws and by the approval of the Project Engineer. Any changes to ambient water quality during construction of the proposed project shall be prohibited and may result in additional water quality control measures; mitigation shall occur as soon as possible. The contractor would practice "good housekeeping" measures, as well as, "grade management" techniques to help ensure that proper precautions are in place throughout construction of the proposed project. There are no public water supply intakes within the project limits or adjacent areas. No adverse effects are expected to this resource.

Coastal Issues

Federal activities involving or affecting coastal resources are governed by the Coastal Barriers Resources Act (CBRA), the Coastal Zone Management Act (CZMA), and Executive Order (EO) 13089, Coral Reef Protection. The CRBA prohibits, with some exceptions, federal financial assistance for development within the Coastal Barrier Resource System that contains undeveloped coastal barriers along the Atlantic and Gulf coasts and the Great Lakes. The CMZA and the National Oceanic and Atmospheric Administration (NOAA) implementing regulations (15 CFR Part 930) provide procedures for ensuring that a proposed action is consistent with approved coastal zone management programs. EO 13089 requires federal agencies to ensure any actions that they authorize, fund, or carry out will not degrade the conditions of coral reef ecosystems. These plans/programs are intended to preserve, protect, and enhance designated coastal areas. No specific impact thresholds have been established for this resource category.

No direct or indirect impacts to coastal resources would occur with implementation of the proposed action or no action alternatives as none are present within the project area. The proposed project is not located within the Texas Coastal Zone Boundary or the coastal Barrier Resource System; therefore, the project is not anticipated to adversely affect coastal resources and no mitigation measures are required.

Wild and Scenic Rivers

The Wild and Scenic Rivers Act, as amended, describes those rivers or segments of rivers which are listed, or eligible for listing, in the Wild and Scenic Rivers System. These rivers are free flowing and possess outstanding remarkable scenic, recreational, and geologic, fish and wildlife, historic, cultural, or other similar values (PL 90-542 as amended by PL96-487). The National Park Service (NPS) maintains a Nationwide River Inventory (NRI) of river segments which appear to qualify for inclusion in the National Wild and Scenic River System, but which have not been designated as a Wild and Scenic River or studied under a Congressional-authorized study. The President's 1979 Environmental Message Directive on Wild and Scenic Rivers directs the federal agencies to avoid or mitigate adverse effects on rivers identified in the NRI as having the potential for designation under the Wild and Scenic Rivers Act.

No specific impact thresholds have been established for this resource category. No existing or eligible wild and scenic rivers are located within the project area; therefore, the proposed action and no action alternatives would not result in any direct, indirect, or cumulative impacts to these resources. No mitigation measures are required.

B.7 Natural Resources and Energy Supply

B.7.1 No-Build Alternative

No impacts to natural resources or energy supply are expected with the No-Build Alternative.

B.7.2 Build Alternative

The effects of the project on the energy supply typically relate to the amount of energy required for illumination and the movement of vehicles. The impacts of roadway projects on natural resources are typically related to the basic materials (e.g., gravel, fill dirt, etc.) that are required for construction.

There would be no significant long-term changes in energy consumption as a result of the project. There would be short-term expenditures of fuel during construction activities, but these expenditures would be temporary and would not adversely impact local fuel supplies. Any increased energy expenditures would not be significant and would be accommodated by the fuel and electricity sources available locally. Construction of the proposed project would require the use of natural resources such as gravel, fill dirt, and asphalt. There are adequate supplies of these materials available locally. The Build Alternative would not result in significant, long-term impacts to energy supplies or natural resources.

C. HAZARDOUS MATERIALS

C.1 No-Build Alternative

Implementation of the No-Build Alternative would have no effect on or from hazardous material sites in the proposed project area.

C.2 Build Alternative

A hazardous materials assessment was performed to satisfy one of the requirements for the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) innocent landowner defense: that is, the practices that constitute "all appropriate inquiry into the previous ownership and uses of the property consistent with good commercial or customary practice" as defined in 42 USC 9601(35)(B). The objective of the Hazardous Materials Evaluation was to identify, to the extent feasible pursuant to the processes prescribed in American Society for Testing and Materials (ASTM)

Standard Practice E 1527-2000, "Environmental Site Assessments: Phase I Environmental Site Assessment Process," *recognized environmental conditions* in connection with the project alignment. More specifically, the identification of hazardous materials and/or regulatory facilities was conducted to identify potential environmental concerns that could be a health and safety concern to construction workers.

A limited site assessment based on Phase I Environmental Site Assessment was performed to identify possible hazardous material and/or petroleum product contamination within or up to 500 feet outside the proposed project ROW within the study (construction) limits, as practicable. The assessment was performed in conformance with the scope and limitations of ASTM Practice E 1527-2000. The assessment included: 1) desktop research of existing and historical documentation related to land use, such as topographic maps and aerial photographs; 2) a review of relevant public agency records; and, 3) a visual survey of the area within and adjacent to the proposed project limits. Detailed documentation of the assessment, including limitations and exceptions, is provided in a separate technical document titled *Phase One Environmental Site Assessment*, which is maintained in the TxDOT - Fort Worth District project files.

C.2.1 Visual Survey

The original visual survey (field reconnaissance) was conducted on August 10, 2005. The visual survey confirmed, checked data gaps or deficiencies in, and/or reconciled the information obtained during desktop research and provided additional details, as noted below. A confirmation site reconnaissance visit was conducted on May 3, 2008.

Table VI-15 below provides summary information and specific comments for each site that was recognized as having environmental conditions of potential concern. The location of each site (i.e., regulatory facility) has been noted on the Existing and Proposed ROW Map and the Proposed Project Layout (**Appendices A-23** through **A-33**) and referenced to the tables below by site number.

Table VI-15 Identified Hazardous Material Sites Along the Project Corridor

Site #	Name	Location Information	Regulatory Information	General Gradient ^a	Comments ^b
8-S	Shell (gas station)	1499 Precinct Line Road South of and adjacent to Airport Fwy.	*LPST ID No. 100719 Fac. ID No. 13601 *RCRA ID TXR000003343	Elevation equals frontage road	Active PST/UST Facility. *former Texaco. ROW would be acquired along northern property line. <i>Anticipate demolition. Case Closed.</i>
14-N	QT Station/ Former Exxon gas station RAS #63691	1498 Precinct Line Road North of and adjacent to Airport Fwy.	LPST ID No. 111067 Fac. ID No. 26494 RCRA ID TXD988032264	Up	USTs have been pulled. No proposed ROW appears necessary, therefore, less potential for impact to project. Case Closed. (*Currently a QT Gas Station)
9-S*	Retail Center* Starbucks Coffee First Cash Advance Nextel	1492 Precinct Line Road South of and adjacent to Airport Fwy.	*LPST ID No. 108114 *Fac. ID No. 5725 *RCRA ID TXD988046793	Elevation equals frontage road	*former Chevron USA, Inc. #106139 gas station (1500 Precinct Line Road). Redeveloped with small retail center. ROW would be acquired along northern property line. <i>Anticipate demolition. Case Closed.</i>
20-N	former Exxon RAS #67184 gas station	1524 Brown Trail North of and adjacent to Airport Fwy.	LPST Nos. 92254 & 115374 Fac. I.D. No. 26309 RCRA ID TXD988032520	Up	Tanks have been pulled. Structure remains. Expected to be proposed for demolition. <i>Case Closed.</i>
29-S	Grubbs Nissan & Chrysler-Plymouth	310 Airport Fwy. South side of Airport Fwy.	Fac. Nos. 9751 and 32566 RCRA ID TXD081076465	Elevation equals frontage road	Car dealership. Several buildings/ structures on-site. Northern portion of property/ROW (parking/landscaping) being acquired. Soil contamination is unlikely.
30-S	Vacant/Inactive Shell Oil Products US gas station	1513 Brown Trail South of and adjacent to Airport Fwy.	LPST ID No. 93698 Fac. ID No. 33159	Elevation equals frontage road	Construction activity noted during site visit. Suspect for demo. <i>Case Closed.</i>
31-S	Brown Trail Fina gas station	1512 Brown Trail South of and adjacent to Airport Fwy.	*LPST ID No. 98393 Fac. ID No. 5641 *RCRA ID TXD988045449	Elevation equals frontage road	Active PST/UST facility. *former Chevron USA, Inc. #106186. ROW would be acquired along the northern and western property lines. <i>Case Closed.</i>
35-S	Tetco #416/Texaco gas station	1200 Airport Fwy. South side of Airport Fwy.	LPST ID Nos. 95420 (*Mobil) & 106669 (Tetco) Fac. ID No. 60338 *RCRA ID TXD988038493	Elevation equals frontage road	Active PST/UST facility. *former Mobil Oil Corp. SS 12EC2. ROW would be acquired along the northern and western property lines. Suspect for demolition. <i>Case Closed.</i>
36-S	Retail Center Mexican Inn Cafe former Good Eats Cycle Gear	1200-1424+ Airport Fwy. South side of Airport Fwy. -- Airport Fwy. 1424 Airport Fwy. 1424B Airport Fwy.	TxVCP Nos. 0702* & 1520 *Cimarron Plz Shopping Ctr RCRA ID TXD987999521 (Cost Cutter Cleaners-1220 Airport Fwy. Ste. H) -- -- --	Elevation equals frontage road	Cimarron Plaza. ROW being acquired along northern property line; see below. Restaurant/Proposed for demolition Affected tenant space-demolition A part of the northern portion of the retail center is proposed for demolition. Soil contamination is unlikely.

Table VI-15 Identified Hazardous Material Sites Along the Project Corridor

Site #	Name	Location Information	Regulatory Information	General Gradient ^a	Comments ^b
27-N	Parc Plaza (Multi-story bldgs. & townhomes)	1305 & *1301 Airport Fwy. North side of Airport Fwy.	*Fac. ID No. 9920 (UST)	Up	Townhomes-Assisted Care; Multi-story more extensive care facility. Minimal ROW being acquired along the southern and western property line. Soil contamination unlikely.
48-S	HEB ISD	1848 Central Drive (other physical address possible) South of and adjacent to Airport Fwy.	Fac. ID No. 16909 (USTs)	Elevation equals frontage road	Administration, Central Plant, Maintenance, Bus Barn & Storage, Stadium and Parking. ROW would be acquired along northern property line. One building (central plant) on the northwest corner of the property would be displaced/demolished. Soil contamination is unlikely.
49-S	Tetco #417/Chevron gas station	2100 Airport Fwy.	*LPST ID No. 106218 Fac. ID No. 17675 *RCRA ID No. TXD988038527	Elevation equals frontage road	Active PST/UST facility. *former Mobil Oil Corp. SS 12EC2. ROW would be acquired along north and west portions of property. Facility likely proposed for demolition. Case Closed.
50-S	The Shops of Central Park Starbucks Jason's Deli Pho Noodle House Chili's	~2200-2400 Airport Fwy. South side of Airport Fwy. --Airport Fwy. 2400 Airport Fwy. " "	*RCRA ID TXD981597990 -- -- --	Elevation equals frontage road	Upscale retail center. *Central Park Cleaners (2200 Airport, Ste. 510). ROW would be acquired along northern portion; see below. Building likely affected Reconstruction of building Reconstruction of building Soil contamination is unlikely.
51-N	Market Place One Chevron gas station	2001 Murphy Road/SH 121	Fac. ID No. 70514	Up	Active PST/UST facility. Does not appear that ROW would be acquired. No impact to project expected.
52-N	Murphy Mart Texaco gas station	2000 Murphy Road/SH 121 North of and adjacent to Airport Fwy.	Fac. ID No. 71314	Up	Active PST/UST facility. Does not appear that ROW would be acquired. No impact to project expected.
59-S	Inactive/ Former Jumpin Johns Euless/ Philips 66 gas station	105 W. Park Way South of and adjacent to Airport Fwy.	Fac. ID No. 27367	Elevation equals frontage road	Inactive PST/UST facility. Proposed ROW line (corner clip) extends past the western property line of facility. Canopy may be affected. Based on regulatory data, soil contamination appears unlikely.
60-S	Inactive/Former Aladdin Car Wash	2205 Airport Fwy. South side of Airport Fwy.	LPST ID No. 103488 Fac. ID No. 27362	Elevation equals frontage road	Inactive PST/UST facility (boarded up as of 5/3/08). Open case site - Groundwater impact. Minimal amount of ROW would be acquired along northern property line. Open Case. Soil contamination possible.
66-S	Future Equipment Co., Inc./Case Power & Equipment	2019 Airport Fwy. South side of Airport Fwy.	LPST ID No. 108912 Fac. ID No. 20325 RCRA ID TXD062107933	Elevation equals frontage road	Equipment rental. ROW would be acquired along the northern property line of facility. Office building to be displaced. Case Closed.
69-S	Baillargeon Audi	1701 Airport Fwy. South side of Airport Fwy.	ASTs only Facility ID No. 76135	Elevation equals frontage road	Car dealership. Several buildings/structures on-site. Northern portion of property/ROW (parking/landscaping) being acquired. Soil contamination is unlikely.
62-N	Park Place Motor Cars	3737 Airport Fwy. North side of Airport Fwy.	AST only No. 74751* *referenced to Park Place Mid Cities RCRA ID TXR000006403 (Beck Imports of Texas)	Up	Mercedes Dealership. Southern portion of property affected. ROW would be acquired along southern property line. No impact to project expected. Soil contamination is unlikely.

Table VI-15 Identified Hazardous Material Sites Along the Project Corridor

Site #	Name	Location Information	Regulatory Information	General Gradient ^a	Comments ^b
74-S	Retail Center *Vacant, formerly Burlington Coat Factory Former Grandy's Pancho's Mexican Video City Vacant space	1201 Airport Fwy. South side of Airport Fwy. -- -- -- --	*LPST ID No. 104311 *TxVCP No. 648 (Eules Town Center) -- -- -- --	Elevation equals frontage road	ROW would be acquired along the northern property line. No impact to project expected. Vacant *Restaurant -- -- *northern corner of retail center potentially within proposed ROW. Soil contamination unlikely. <u>The facility is significantly set back from project alignment.</u>
75-S	Cool Zone FINA former Citgo gas station	100 S. Industrial Blvd. South of and adjacent to Airport Fwy.	*LPST ID No. RAS 111078 Fac. ID No. 26492 *RCRA ID TXD988031670	Elevation equals frontage road	*former George's Exxon Eules. ROW would be acquired along the northern property line and at corner clip. Northern portion of canopy within proposed ROW. Case Closed.
76-S	Inactive / former Eules Shell gas station	101 S. Industrial Blvd. South of and adjacent to Airport Fwy.	Fac. ID No. 33144	Elevation equals frontage road	Active PST/UST facility. ROW would be acquired along the northern property line and at corner clip, but does not appear to impact the project. Based on regulatory data, soil contamination appears unlikely.
75-N	Texaco gas station	1010 Airport Fwy. North side of Airport Fwy.	*Fac. I.D. No. 17676 *RCRA ID TXD988038584	Up	Active PST/UST Facility. *former Mobil Oil Corp. ROW would be acquired along the southern property line, and extend beyond the canopy. Based on regulatory data, soil contamination appears unlikely.
89-S	Ector Drive One Shop Store/Texaco gas station	101 S. Ector Drive South of and adjacent to Airport Fwy.	Fac. ID No. 64658	Elevation equals frontage road	Active PST/UST facility. ROW would be acquired along the northern and western property lines. Based on regulatory data, soil contamination appears unlikely.
92-S	National Transmissions	209 Airport Fwy. South side of Airport Fwy.	Fac. ID No. 63942	Elevation equals frontage road	Former used oil UST on-site. ROW would be acquired along the northern property line. Building would be demolished. Soil contamination possible, but unlikely to be a concern to construction workers or to have special disposal requirements.
81-N	Vacant tract	-- Northeast corner of Ector Dr. and Airport Fwy.	Tx IOP No. 417	Up	Maintained and grass-covered. ROW would be acquired along southern property line (and corner clip). A TxIOP listing was referenced to All Group Property (NE Intersection of Hwy. 183 and N. Ector). Listing indicated the property was in the investigation phase. Soil and/or groundwater have been affected by VOC's, SVOCs, metals and petroleum hydrocarbons. However, soil contamination is unlikely.
85a-N	Starbucks (formerly vacant)	NW corner of SH 183 and Eules-N. Main St. North side of Airport Fwy.	--	Up	Suspected site of previous Exxon gas station: RAS# 64109; 211 N. Main St.; LPST ID No. 92939; Fac. ID No. 26293. ROW would be acquired along the southern and eastern property lines (and corner clip). Case Closed.
85b-N NA	Eules Main Chevron gas station	221 N. Main Street North of Airport Fwy.	#60166629 LPST ID No. 116151. Fac. ID No. 5674. RCRA ID TXD988045944	Up	Located north of the vacant lot suspected to be a former Exxon gas station. Minimal ROW would be acquired along the eastern property line. No impact to project expected. <u>Open Case.</u> Soil contamination is unlikely.

Table VI-15 Identified Hazardous Material Sites Along the Project Corridor

Site #	Name	Location Information	Regulatory Information	General Gradient ^a	Comments ^b
97-S	Tetco #738/Main Street Mobil gas station	105 Euless-N. Main Street South of and adjacent to Airport Fwy.	LPST ID No. 107337 Fac. ID No. 17632 RCRA ID TXD988038576	Elevation equals frontage road	<i>Active PST/UST facility. ROW would be acquired along northern and eastern property lines (and corner clip). Demolition anticipated. Open Case. Some degree of soil contamination at the facility is likely.</i>

Table Notes:

Observations and interpretations that are presented in *italics* may be subject to change. This may mean other interests may have acquired the property and may be subject to change or educated assumptions were made based on limited information available.

- a Gradient determinations are based on observations from USGS Topographic Maps. Actual groundwater flow may vary from these general observations due to site-specific conditions. Aggressive dewatering activities, if utilized, may also effect the direction of shallow groundwater flow.
- b Demolition of Structures - All structures requiring partial or complete demolition will require an asbestos survey. This is part of the demolition permit submitted to government entities. Asbestos inspections, specification, notification, license, accreditation, and disposal, as applicable, would be in compliance with federal and state regulations.

NA	<i>Indicates general site area was identified, but specific location or physical address was unknown.</i>			
PST	Petroleum Storage Tank	UST	Underground Storage Tank	
LPST	Leaking Petroleum Storage Tank	RCRA	Resource Conservation and Recovery Act	
TxVCP	Texas Voluntary Cleanup Program	Tx IOP	Texas Innocent Owner/Operator Program	
VOC	Volatile Organic Compound	SVOC	Semi-Volatile Organic Compound	

During any construction project there exists some potential to encounter contaminated soil or water. Should hazardous materials/substances be encountered, the TxDOT Hazardous Materials Section would be notified and steps would be taken to protect personnel and the environment. Any unanticipated hazardous materials encountered during construction would be handled according to the applicable federal, state, and local regulations per TxDOT Standard Specifications.

The contractor would take appropriate measures to prevent, minimize, and control the spill of fuels, lubricants, and hazardous materials in the construction staging area. All spills, including those of less than 25 gallons, shall be cleaned immediately and any contaminated soil shall be immediately removed from the site and disposed of properly. Designated areas shall be identified for spoils disposal and materials storage. These areas shall be protected from run-on and run-off. All materials being removed and/or disposed of by the contractor would be done so in accordance to State and Federal laws and by the approval of the Project Engineer.

D. AIR QUALITY

D.1 No- Build Alternative

Implementation of the No-Build Alternative would not require the widening of, or the adding of capacity of, SH 121/SH 183. This would lead to increased traffic congestion and decreased mobility on SH 121/SH 183, resulting in decreased vehicular speed and increased stop-and-go traffic. Studies have shown that speed affects emission rates. Volatile organic compounds (VOCs) and carbon monoxide (CO)

rates typically drop as speed increases⁴. In addition, the No-Build Alternative would not satisfy the need and purpose of the proposed project, which is to:

- 1) Improve Mobility, Enhance Access, and Reduce Congestion
- 2) Improve Safety and Reduce Accidents

D.2 Build Alternative

The construction limits of the project are located within Tarrant County, which is designated as a moderate eight-hour ozone non-attainment area; therefore, the transportation conformity rules apply. Design year traffic data exceed 140,000 vehicles per day (vpd), therefore a Transportation and Air Quality Analysis (TAQA) is required.

The proposed action is consistent with the area's financially constrained Metropolitan Transportation Plan Mobility 2030 – 2009 Amendment, approved August 31, 2009 and the 2008-2011 Transportation Improvement Program (TIP), as revised, as proposed by the NCTCOG. The U.S. Department of Transportation (FHWA/FTA) found the MTP to conform to the State Implementation Plan on June 12, 2007, and the 2008-2011 TIP was found to conform on October 31, 2007. All projects in the NCTCOG's TIP 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. The appropriate Mobility 2030 – 2009 Amendment, approved August 31, 2009 and Statewide TIP pages are located in **Appendix J**.

The primary pollutants from motor vehicles are volatile organic compounds (VOCs), carbon monoxide (CO), and nitrogen oxides (NO_x). Volatile organic compounds and nitrogen oxides can combine under the right conditions in a series of photochemical reactions to form ozone (O₃). 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 procedures for modeling 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. Therefore, concentrations of ozone for the purpose of comparing the results to National Ambient Air Quality Standards (NAAQS) were modeled by the regional air quality planning agency. This Transportation project is consistent with the regional TIP/MTP, which was determined by FHWA to meet the conformity requirements of the CAA of 1990.

⁴ <http://www.fhwa.dot.gov/environment/aqfactbk/index.htm>

Topography and meteorology of the area in which the project is located would not seriously restrict dispersion of the air pollutants. The traffic data used in the analysis was obtained from the TxDOT Transportation Planning and Programming (TPP) Division. Estimated Time of project Completion (ETC) traffic (2015) is estimated to be 297,800 vpd from Bedford-Eules Road to the SH 121/SH 183 Diverge and 331,550 vpd from the SH 121/SH 183 Diverge to SH 161. The design year traffic (2030) is estimated to be 378,100 vpd from Bedford-Eules Road to the SH 121/SH 183 Diverge and 421,700 vpd from the SH 121/SH 183 Diverge to SH 161.

Carbon monoxide concentrations for the proposed action were modeled using CALINE3/MOBILE6.2. In accordance with the TxDOT Air Quality Guidelines, the model factored in adverse meteorological conditions and sensitive receptors at the ROW line. Local concentrations of carbon monoxide are not expected to exceed national standards at any time. **Table VI-16** summarizes the CO concentrations for the proposed project.

Table VI-16 Projected Carbon Monoxide Concentrations for SH 121/SH 183 (2015-2030)					
Location	Year	One-hour CO (PPM)	One-hour % NAAQS	Eight-hour CO (PPM)	Eight-hour % NAAQS
SH 121/SH 183 From Bedford-Eules Rd. To SH 121/SH 183 Diverge	2015	6.20	17.71	3.80	42.22
	2030	6.50	18.57	3.98	44.22
SH 121/SH 183 From SH 121/SH 183 Diverge To SH 161	2015	5.70	16.29	3.50	38.89
	2030	5.90	16.86	3.62	40.22

* The National Ambient Air Quality Standard (NAAQS) for CO is 35 parts per million (ppm) for one hour and 9 ppm for eight hours. Analysis includes a one-hour background concentration of 3.7 ppm and an eight-hour background concentration of 2.3 ppm.

D.2.1 Congestion Management Process

The CMP is a systematic process for managing traffic congestion. The CMP provides information on transportation system performance; alternative strategies for alleviating congestion; and enhancing the mobility of persons and goods to levels that meet state and local needs. The SH 121/SH 183 project was developed from the NCTCOG operational CMP, which meets all requirements of 23 CFR 500.109. The CMP was adopted by NCTCOG in December 1999, and was amended in 2007.

Operational improvements and travel demand reduction strategies are commitments made by the region at two levels: program level and project level implementation. Program level commitments are inventoried in the regional CMP, which was adopted by NCTCOG; they are consistent with 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) detailing type of strategy, implementing responsibilities, schedules, and expected costs. At the project programming stage, travel demand reduction strategies and commitments would 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 SOV facility implementation and project specific elements.

Committed congestion reductions strategies and operational improvements with the study boundary will consist of signalization and intersection improvements. Individual projects are listed in **Table IV-7, Selected Individual Operational Improvements Projects**, of this Environmental Assessment.

In an effort to reduce congestion and the need for SOV lanes in the region, TxDOT and NCTCOG would continue to promote appropriate congestion reduction strategies through the CMAQ program, the CMP, and the MTP. According to NCTCOG, the congestion reduction strategies considered for this project would help alleviate congestion in the SOV study boundary, but would not eliminate it.

D.2.2 Mobile Source Air Toxics

Air Toxics Background

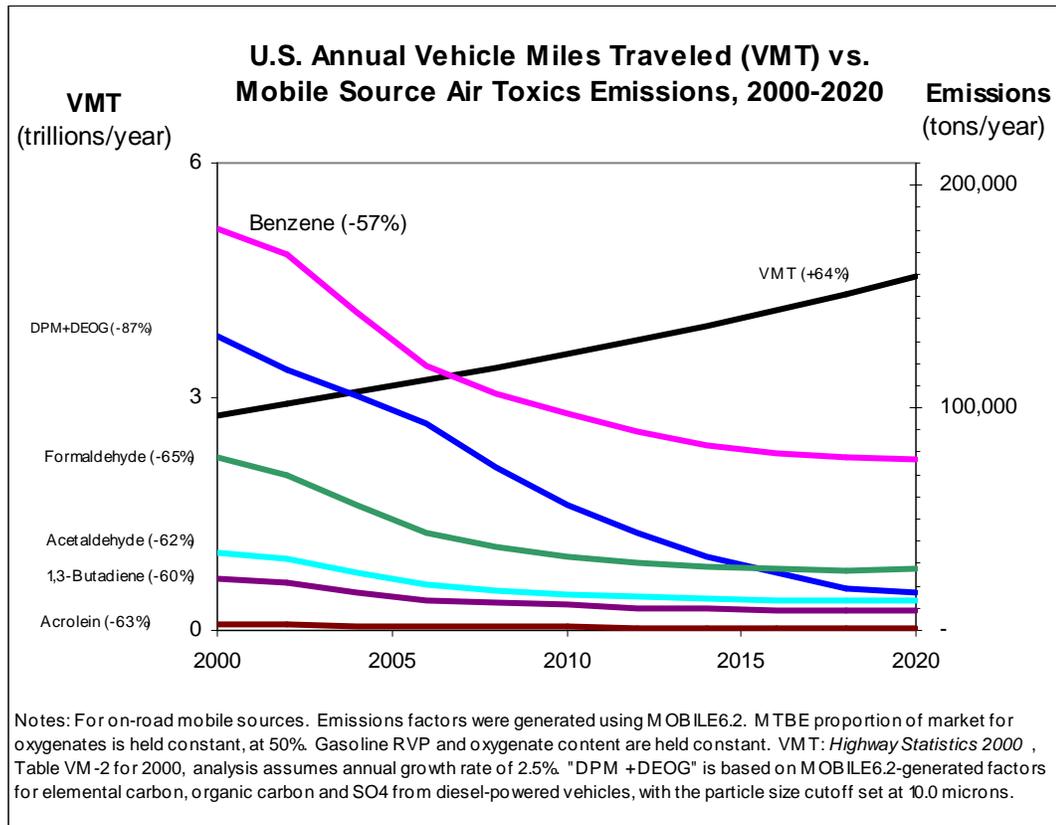
In addition to the criteria, air pollutants for which there are National Ambient Air Quality Standards (NAAQS), EPA also regulates air toxics. Air toxics are pollutants known or suspected to cause cancer or other serious health or environmental effects. Most air toxics originate from human-made sources, including on-road mobile sources (cars, light trucks, motorcycles, and 18-wheelers), non-road mobile sources (e.g., bulldozers, locomotives, aircraft, boats, etc.) area sources (e.g., dry cleaners, gas stations), and stationary/point sources (e.g., electric utilities, petrochemical refining, and other industry).

MSATs are a subset of the 188 air toxics defined by the Clean Air Act. MSATs are compounds emitted from highway vehicles and non-road equipment. Some toxic compounds are present in fuel and are emitted to the air when the fuel evaporates or passes through the engine unburned. Other toxics are emitted from the incomplete combustion of fuels or as secondary combustion products. Metal air toxics also result from engine wear or from impurities in oil or gasoline (see EPA420-R-00-023 [EPA, 2000a] for more details on MSATs).

The EPA is the lead federal agency for administering the Clean Air Act and has certain responsibilities regarding the health effects of MSATs. EPA issued a Final Rule on *Controlling Emissions of Hazardous Air Pollutants from Mobile Sources* (66 FR 17229, March 29, 2001). This rule was issued under the authority in Section 202 of the Clean Air Act. In its rule, EPA examined the impacts of existing and newly promulgated mobile source control programs, including its reformulated gasoline (RFG) program, its national low emission vehicle (NLEV) standards, its Tier 2 motor vehicle emissions standards and gasoline sulfur control requirements, and its proposed heavy duty engine and vehicle standards and on-road diesel fuel sulfur control requirements. Between 2000 and 2020, FHWA projects that even with a 64

percent increase in VMT, these programs will reduce on-road emissions of benzene, formaldehyde, 1,3-butadiene, and acetaldehyde by 57 percent to 65 percent, and will reduce on-road diesel PM emissions by 87 percent, as shown in the following graph (**Figure VI-1**):

Figure VI-1: U.S. Annual VMT vs. MSATs (2000 - 2020)



Source: FHWA 2006

Note: This graph does not include the additional emission reductions associated with the 2007 MSAT rulemaking, as EPA has not yet programmed those revisions into MOBILE6.2.

In an ongoing review of MSATs, the EPA finalized additional rules under authority of CAA Section 202(l) to further reduce MSAT emissions that are not reflected in the above graph. The EPA issued Final Rules on Control of Hazardous Air Pollutants from Mobile Sources (72 FR 8427, February 26, 2007) under Title 40 Code of Federal Regulations Parts 59, 80, 85 and 86. The rule changes are effective on April 27, 2007. As a result of this review, EPA adopted the following new requirements to significantly lower emissions of benzene and the other MSATs by: (1) lowering the benzene content in gasoline; (2) reducing evaporative emissions that permeate through portable fuel containers; and (3) reducing non-methane hydrocarbon (NMHC) exhaust emissions from passenger vehicles operated at cold temperatures (under 75 degrees Fahrenheit).

Beginning in 2011, petroleum refiners must meet an annual average gasoline benzene content standard of 0.62 percent by volume, for both reformulated and conventional gasoline, nationwide. This would be a 38 percent reduction from 2007. EPA standards to reduce NMHC exhaust emissions from new gasoline-fueled passenger vehicles will become effective in phases. Standards for light-duty vehicles and trucks (≤ 6000 pounds [lbs]) become effective during the period of 2010 to 2013, and standards for heavy light-duty trucks (6,000 to 8,000 lbs) and medium-duty passenger vehicles (up to 10,000 lbs) become effective during the period of 2012 to 2015. Evaporative requirements for portable gas containers become effective with containers manufactured in 2009. Evaporative emissions must be limited to 0.3 grams of hydrocarbons per gallon per day.

EPA has also adopted more stringent evaporative emission standards (equivalent to current California standards) for new passenger vehicles. The new standards become effective in 2009 for light vehicles and in 2010 for heavy vehicles. In addition to the reductions from the 2001 rule, the new rules will significantly reduce annual national MSAT emissions. The EPA estimates that emissions in the year 2030, when compared to emissions in the base year prior to the rule, will show a reduction of 330,000 tons of MSATs (including 61,000 tons of benzene), more than one million tons of volatile organic compounds, and more than 19,000 tons of PM_{2.5}.

Sensitive Receptors within Study Area

Dispersion studies have shown that the MSAT emissions from vehicles on a “roadway” (“roadway emissions”) start to drop off at about 100 meters. By 500 meters, most studies have found it very difficult to distinguish roadway emissions from background levels of air toxics in any given area.

Sensitive receptors are defined as schools both public and private, licensed day care facilities, hospitals, and senior citizen care facilities. The Study Team identified and mapped twenty-three (23) sensitive receptors within the SH 121/SH 183 study area, (**Tables VI-17 and VI-18 and E-1 through E-4**). None of these sensitive receptors were within 100 meters (328 feet) of the study area, with all receptors falling within 500 meters (1,640 feet).

Table VI-17 Sensitive Receptors in the SH 121/SH 183 Study Area		
Location	Address	Distance to Centerline
Metroplex Chapel Academy	601 Airport Fwy E., Euless	600 ft (183 m)
Kaner Medical	412 N. Main St. #100, Euless	872 ft (266 m)
Euless Junior High School	306 Airport Fwy, Euless	436 ft (133 m)
Midway Park Elementary	409 N. Ector Dr., Euless	1,417 ft (432 m)
Sheppard Dr. Baptist Church	219 Sheppard Dr. N, Euless	866 ft (264 m)
Trinity High School	500 N. Industrial, Euless	1,417 ft (432 m)
First Baptist Church of Euless	1000 W. Airport Fwy, Euless	393 ft (120 m)
Parc Place Retirement Center	1301 Airport Fwy, Bedford	511 ft (156 m)
Parc Plaza	1305 Airport Fwy, Bedford	488 ft (149 m)
First United Methodist	1245 Bedford Rd., Bedford	433 ft (132 m)
L.D. Bell High School	1601 Brown Trl, Hurst	465 ft (142 m)
Southwest Surgery Center	8251 Bedford Euless Rd. #220, Richland Hills	728 ft (222 m)
Pharmacare	8721 Airport Fwy, Richland Hills	498 ft (152 m)
Mid-Cities Pregnancy Center	5201 Holiday Ln E.	501 ft (153 m)
Texas Bone & Joint Center	8251 Bedford Euless Rd # 210, Richland Hills	764 ft (233 m)
Shady Oaks Elementary School	1400 Cavender Dr, Hurst	531 ft (162 m)
Bedford Family Medicine	1701 Forest Ridge Dr, Bedford	419 ft (128 m)
DFW Aerospace International Medical Clinic	1609 Circle Ln, Bedford	695 ft (212 m)
Mid-Cities Allergy & Asthma Clinic	2305 Central Park Blvd, Bedford	1,049 ft (320 m)
Harris Methodist Hospital HEB	1600 Hospital Pkwy. Bedford	925 ft (282 m)
Early Learning Center	201 Westpark Way, Euless	485 ft (148 m)
Little Tyke Creative Learning	1000 Villa Dr., Euless	1,167 ft (356 m)
First United Methodist Church	106 N. Main St., Euless	593 ft (181 m)

Source: Study Team 2007

Table VI-18 Sensitive Receptors by Distance from Centerline		
Scenario	Number of Receivers within:	
	328 feet (100 meters)	1640 feet (500 meters)
Build	0	23

Source: Study Team 2007

Quantitative MSAT Analysis

In 2006, the FHWA and TxDOT issued new guidance on completing MSAT assessments of highway projects. Quantitative assessments of MSATs can provide some information on the quantity of MSATs emitted from passenger cars, light trucks, and heavy trucks. However, simple quantification of these emissions, coupled with other considerable uncertainties associated with the existing estimates of toxicity of the various MSATs, would not give enough information to reach meaningful conclusions about project-specific health impacts.

The approach used in the analysis of MSATs within the SH 121/SH 183 study area considers the on-road sources for the six priority MSATs (i.e., acetaldehyde, acrolein, benzene, 1,3 butadiene, DPM, and

formaldehyde). This analysis is based on existing or base year (2007) and future volumes of traffic (2015 and 2030) that have been projected by the NCTCOG travel model. An affected transportation network was derived from the 2030 No-Build Scenario compared to the 2030 Build Scenario to determine which roadway links in the model achieve a $\pm 5\%$ volume change. The affected transportation network was then compared to the 2007 and 2015 models in order to extrapolate the baseline and interim year model. Speeds were modeled as average speeds and weighted by both the type of roadway and by the amount of total VMT that occur at that speed.

This analysis uses MOBILE6.2 inputs that are appropriate to the Dallas-Fort Worth Urban Area. These inputs are consistent with those used for other modeling activities in the area (e.g., SIP inventories, conformity analyses). Modeling parameters and more detailed information can be found in the *Mobile Source Air Toxic Analysis - SH 183/SH 121 (Airport Freeway)* Technical Report, which is on file with TxDOT Fort Worth District and the Environmental Affairs Division Office in Austin.

Unavailable Information for Project Specific MSAT Impact Analysis

This EA includes a basic analysis of the likely MSAT emission impacts of this project. However, available technical tools do not enable the prediction of project-specific health impacts resulting from the emission changes associated with the Scenarios addressed in this EA. Due to these limitations, the following discussion is included in accordance with CEQ regulations (40 CFR 1502.22(b)) regarding incomplete or unavailable information:

Information that is Unavailable or Incomplete

Evaluating the environmental and health impacts from MSATs on a proposed highway project would involve several key elements, including emissions modeling, dispersion modeling in order to estimate ambient concentrations resulting from the estimated emissions, exposure modeling in order to estimate human exposure to the estimated concentrations, and then final determination of health impacts based on the estimated exposure. Each of these steps is encumbered by technical shortcomings or uncertain science that prevents a more complete determination of the MSAT health impacts of this project.

1. Emissions:

The EPA tools to estimate MSAT emissions from motor vehicles are not sensitive to key variables determining emissions of MSATs in the context of highway projects. While MOBILE6.2 is used to predict emissions at a regional level, it has limited applicability at the project level. MOBILE6.2 is a trip-based model - emission factors are projected based on a typical trip of 7.5 miles, and on average speeds for this typical trip. This means that MOBILE6.2 does not have the ability to predict emission factors for a specific vehicle operating condition at a specific location at a specific time. Because of this limitation, MOBILE6.2 can only approximate the operating speeds and levels of congestion likely to be present on the largest-scale projects, and cannot adequately capture emissions effects of smaller projects. For particulate matter, the model results are not sensitive to average trip speed, although the other MSAT emission rates do

change with changes in trip speed. Also, the emission rates used in MOBILE 6.2 for both particulate matter and MSATs are based on a limited number of tests of mostly older-technology vehicles. Lastly, in its discussion of PM under the conformity rule, EPA has identified problems with MOBILE6.2 as an obstacle to quantitative analysis.

These deficiencies compromise the capability of MOBILE6.2 to estimate MSAT emissions. MOBILE 6.2 is an adequate tool for projecting emissions trends, and performing relative analyses between alternatives for very large projects, but it is not sensitive enough to capture the effects of travel changes tied to smaller projects or to predict emissions near specific roadside locations. However, MOBILE6.2 is currently the only available tool for use by FHWA/TxDOT and may function adequately for larger scale projects for comparison of alternatives.

2. Dispersion:

The tools to predict how MSATs disperse are also limited. The EPA's current regulatory models, CALINE3 and CAL3QHC, were developed and validated more than a decade ago for the purpose of predicting episodic concentrations of carbon monoxide to determine compliance with the NAAQS. The performance of dispersion models is more accurate for predicting maximum concentrations that can occur at some time at some location within a geographic area. This limitation makes it difficult to predict accurate exposure patterns at specific times at specific highway project locations across an urban area to assess potential health risk. Along with these general limitations of dispersion models, FHWA is also faced with a lack of monitoring data in most areas for use in establishing project-specific MSAT background concentrations..

3. Exposure Levels and Health Effects:

Finally, even if emission levels and concentrations of MSATs could be accurately predicted, shortcomings in current techniques for exposure assessment and risk analysis preclude us from reaching meaningful conclusions about project-specific health impacts. Exposure assessments are difficult because it is difficult to accurately calculate annual concentrations of MSATs near roadways, and to determine the portion of a year that people are actually exposed to those concentrations at a specific location. These difficulties are magnified for 70-year cancer assessments, particularly because unsupported assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emission rates) over a 70-year period. There are also considerable uncertainties associated with the existing estimates of toxicity of the various MSATs, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population. Because of these shortcomings, any calculated difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with calculating the impacts. Consequently, the results of such assessments would not be useful to decision makers, who would need to weigh this information against other project impacts that are better suited for quantitative analysis.

Summary of Existing Credible Scientific Evidence Relevant to Evaluating the Impacts of MSATs

Research into the health impacts of MSATs is ongoing. For different emission types there are a variety of studies that show that some either are statistically associated with adverse health outcomes through epidemiological studies (frequently based on emission levels found in occupational settings) or that animals demonstrate adverse health outcomes when exposed to large doses.

Exposure to toxics has been a focus of a number of EPA efforts. Most notably, the agency conducted the National Air Toxics Assessment (NATA) in 1996 to evaluate modeled estimates of human exposure applicable to the county level. While not intended for use as a measure of or benchmark for local exposure, the modeled estimates in the NATA database best illustrate the levels of various toxics when aggregated to a national or state level.

The EPA is in the process of assessing the risks of various kinds of exposures to these pollutants. The EPA Integrated Risk Information System (IRIS) is a database of human health effects that may result from exposure to various substances found in the environment. The IRIS database is located at <http://www.epa.gov/iris>. The following toxicity information for the six prioritized MSATs was taken from the IRIS database Weight of Evidence Characterization summaries and represents the Agency's most current evaluations of the potential hazards and toxicology of these chemicals or mixtures.

- **Acetaldehyde (B2 Probable Human Carcinogen):** Based on sufficient evidence of carcinogenicity in animals;
- **Acrolein:** Under the Draft Guidelines for Carcinogen Risk Assessment (EPA, 1999b), the potential carcinogenicity of acrolein cannot be determined because the existing data are inadequate for an assessment of human carcinogenic potential for either the oral or inhalation route of exposure. There are no adequate human studies of the carcinogenic potential of acrolein. Collectively, experimental studies provide inadequate evidence that acrolein causes cancer in laboratory animals;
- **Benzene:** Under the Proposed Guidelines for Carcinogen Risk Assessment (EPA, 1996), benzene is characterized as a known human carcinogen for all routes of exposure based upon convincing human evidence as well as supporting evidence from animal studies (EPA, 1979, 1985, 1998; Agency for Toxic Substances and Disease Registry [ATSDR], 1997);
- **1,3 Butadiene:** Under the EPA's Draft Guidelines for Carcinogen Risk Assessment (EPA, 1999b), 1,3-butadiene is characterized as carcinogenic to humans by inhalation. This characterization is supported by the total weight of evidence provided by the following: 1) sufficient evidence from epidemiologic studies of the majority of U.S. workers occupationally exposed to 1,3-butadiene, either to the monomer or to the polymer by inhalation, showing increased lymphohematopoietic cancers and a dose-response relationship for leukemia in polymer workers (EPA, 1999b, Section II.A.2), 2) sufficient evidence in

laboratory animal studies showing that 1,3-butadiene causes tumors at multiple sites in mice and rats by inhalation (EPA, 1999b, Section II.A.3), and 3) numerous studies consistently demonstrating that 1,3-butadiene is metabolized into genotoxic metabolites by experimental animals and humans (EPA, 1999b, Section II.A.4). The specific mechanisms of 1,3-butadiene-induced carcinogenesis are unknown. However, the scientific evidence strongly suggests that the carcinogenic effects are mediated by genotoxic metabolites of 1,3-butadiene (i.e., the monoepoxide, the diepoxide, and the epoxydiol);

- **Diesel Exhaust:** Using the EPA's Draft Guidelines for Carcinogen Risk Assessment (EPA, 1999b), diesel exhaust is likely to be carcinogenic to humans by inhalation from environmental exposures; and
- **Formaldehyde (B1 Probable Human Carcinogen):** The chronic health hazard assessment for formaldehyde is based on limited evidence in humans, and sufficient evidence in animals. Human data include nine studies that show statistically substantial associations between site-specific respiratory neoplasms and exposure to formaldehyde or formaldehyde-containing products. An increased incidence of nasal squamous cell carcinomas was observed in long-term inhalation studies in rats and in mice. The classification is supported by in vitro genotoxicity data and formaldehyde's structural relationships to other carcinogenic aldehydes such as acetaldehyde.

There have been other studies that address MSAT health impacts in proximity to roadways. The Health Effects Institute, a non-profit organization funded by EPA, FHWA, and industry has undertaken a major series of studies to research near-roadway MSAT hot spots, the health implications of the entire mix of mobile source pollutants, and other topics. The final summary of the series is not expected for several years.

Some recent studies have reported that proximity to roadways is related to adverse health outcomes - particularly respiratory problems. Much of this research is not specific to MSATs, instead surveying the full spectrum of both criteria and other pollutants. The FHWA cannot evaluate the validity of these studies, but more importantly, they do not provide information that would be useful to alleviate the uncertainties listed above and enable us to perform a more comprehensive evaluation of the health impacts specific to the project.

Relevance of Unavailable or Incomplete Information

While available tools do allow the reasonable prediction of emission changes between alternatives for larger projects, the amount of MSAT emissions from each of the project alternatives and MSAT concentrations or exposures created by each of the project alternatives cannot be predicted with enough accuracy to be useful in estimating health impacts. Therefore, the relevance of the unavailable or incomplete information is that it is not possible to make a determination of whether any of the alternatives would have “significant adverse impacts on the human environment.”

MSAT Results

The resulting emission inventory for the six priority MSATs was compiled as summarized in **Table VI-19** and **Figure VI-2** for the Base Year (2007), an interim year (2015), and the 2030 design year. This analysis does not include the additional emission reductions associated with the 2007 MSAT rulemaking, as EPA has not yet programmed those revisions into MOBILE6.2. Both the 2015 and 2030 had two scenarios (i.e., alternatives), the No-Build and the Build, for the project.

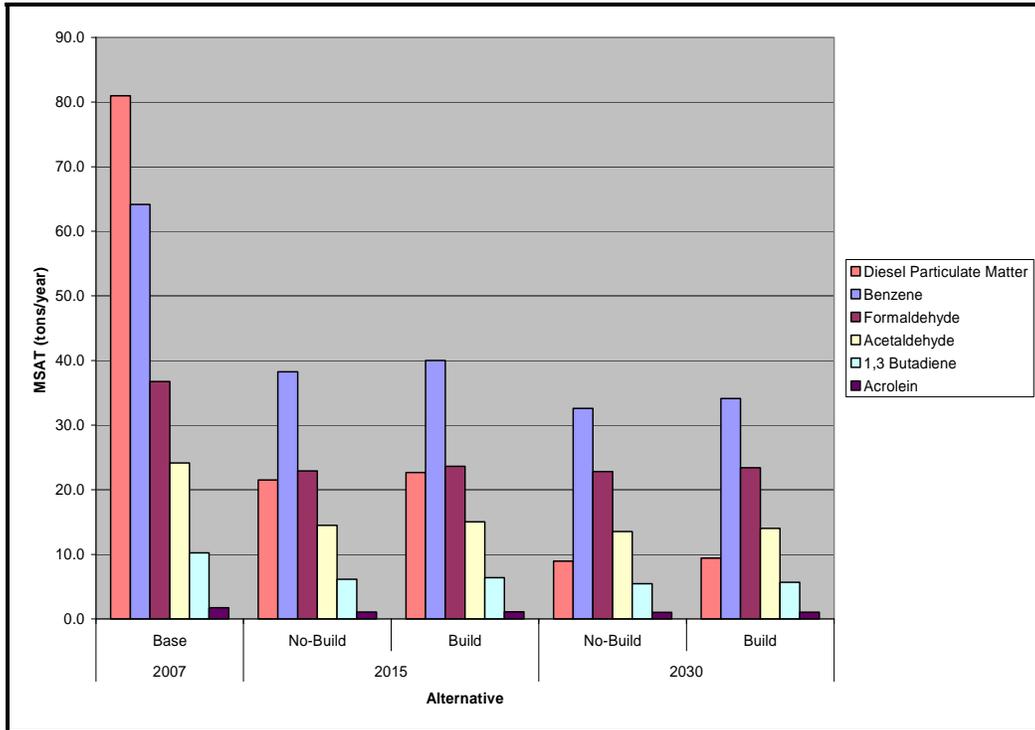
Table VI-19 MSAT Emissions for SH 121/SH 183 by Scenario (tons/year)							
Compound	Year / Scenario					% Difference	
	2007	2015	2015	2030	2030	2007 to 2030	2007 to 2030
	Base	No-Build	Build	No-Build	Build	No-Build	Build
Acetaldehyde	24.1	14.5	15.0	13.5	14.0	-44%	-42%
Acrolein	1.7	1.1	1.1	1.0	1.0	-41%	-40%
Benzene	64.2	38.2	40.0	32.6	34.1	-49%	-47%
Butadiene	10.2	6.1	6.4	5.4	5.7	-47%	-44%
Formaldehyde	36.7	22.9	23.6	22.8	23.4	-38%	-36%
Diesel Particulate Matter	81.0	21.5	22.7	8.9	9.4	-89%	-88%
Total MSAT	217.9	104.3	108.8	84.3	87.7	-61%	-60%
Total VMT (Miles/Year)	9,373,354	12,305,514	12,538,396	16,593,608	17,458,180	77%	86%

Source: Study Team 2008

The analysis indicates a substantial decrease in MSAT emissions can be expected for both the Build and No-Build Scenarios (2030) versus the base year (2007). Emissions of total MSATs are predicted to decrease by approximately 60 percent in 2030 Build Scenario compared with 2007 levels. If emissions are plotted over time, a substantially decreasing level of MSAT can be seen, (**Figure VI-3**) however, overall VMT continues to rise. Differences in total MSAT emissions between the No-Build and Build Scenarios were found. The 2030 Build Scenario is expected to generate a 5 percent increase in VMT as compared to the 2030 No-Build, and a corresponding 4 percent increase in MSATs.

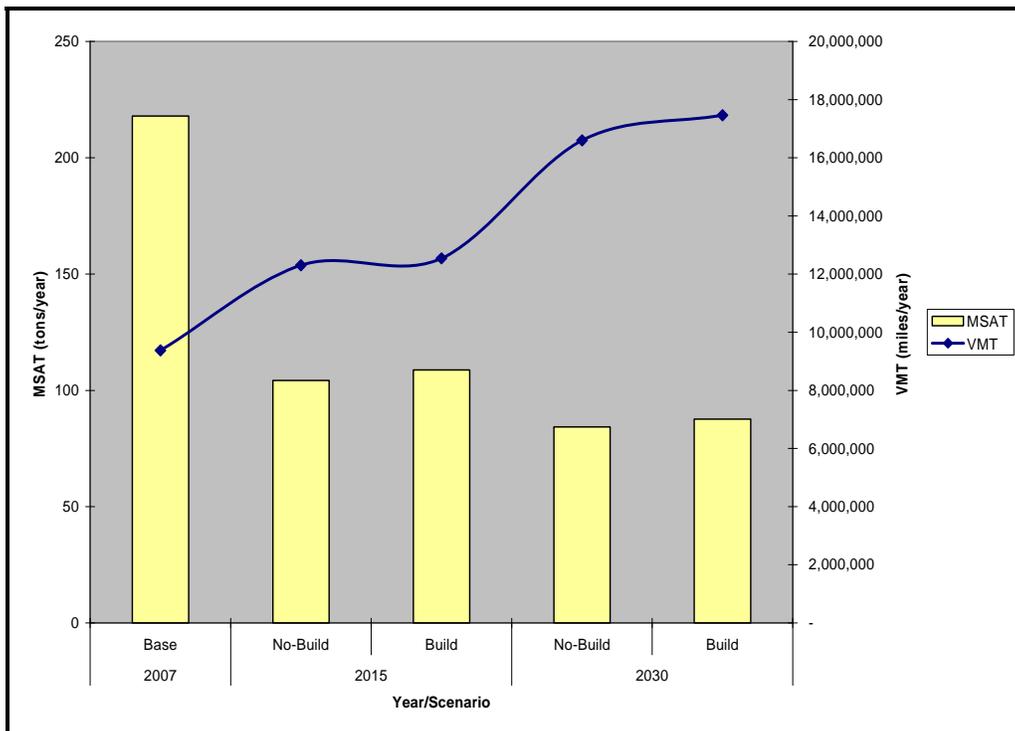
Of the six priority MSAT compounds, benzene and DPM contribute the most to the emissions total in 2007 (see **Table VI-19** and **Figure VI-2**). The amount of DPM emitted in 2007 is higher than the amount of benzene emitted. In future years a substantial decline in benzene is anticipated (47 percent reduction in benzene from 2007 to 2030, Build Scenario), and an even larger reduction in DPM emissions is predicted (about an 88 percent decrease from 2007 to 2030, Build Scenario).

Figure VI-2: Projected Changes in MSAT Emissions by Scenario over Time



Source: Study Team 2008

Figure VI-3: Comparison of MSAT Emissions vs. VMT by Scenario



Source: Study Team 2008

These emission levels are for all the MSATs evaluated and are mostly a reflection of the total VMT. The reasons for these dramatic improvements are two-fold, a change in vehicle fuels, both gasoline and diesel fuel, and a change in emission standards that both light-duty and heavy-duty on-road motor vehicles must meet. The EPA predicts substantial future air emission reductions as the agency's new light-duty and heavy-duty on-road 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 EPA's Tier II Regulatory Impact Analysis (RIA) and EPA's HDDV RIA; Regulatory Impact Analysis (EPA, 2001; EPA, 1999).

NCTCOGs 2030 Demographic Forecast, which was conducted for the 10 counties surrounding the Dallas-Fort Worth urban core, predicts growth of almost 4 million persons between 2000 and 2030, an increase of approximately 80 percent. Increased roadway usage, which will occur either under the No-Build or Build Scenarios, will not necessarily lead to increases in harmful emissions (NO_x, VOCs, PM, or MSATs). Such emissions from vehicles are expected to continue the current dramatic pattern of decrease, even with continuing increases in VMT. Technology is improving at a pace that exceeds the effect of increased VMT.

Subsequent to the completion of this quantitative MSAT analysis, the Dallas-Fort Worth MPO completed work on an amendment to the Mobility 2030 MTP. This amendment revised various projects in the Dallas-Fort Worth planning area thereby resulting in corresponding revisions to the transportation model network. The Dallas-Fort Worth MPO conducted an analysis of the vehicle miles of travel (VMT) associated with the Mobility 2030 MTP and the Mobility 2030 – 2009 Amendment, approved August 31, 2009. This analysis compared the VMT for approximately 90 percent of the affected transportation network links used to conduct the MSAT analysis and determined that the total VMT on these links decreased by approximately 0.89 percent. Based upon this comparison the MSAT emissions and downward trend discussed above are not expected to change substantially as a result of the amendments and are therefore considered consistent with the Mobility 2030 MTP – 2009 Amendment, approved August 31, 2009.

VMT Comparison (Representing approximately 90% of Affected Network Links)	
Network	VMT
Mobility 2030	13,474,770
Mobility 2030 – 2009 Amendment	13,355,343
Difference	-119,427
Percent Change	0.89 %

MSAT Conclusions

The ability to discern differences in MSAT emissions among transportation alternatives is difficult given the uncertainties associated with forecasting travel activity and air emissions 23 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. Substantial decreases in MSAT emissions will be realized from a current base year (2007) through an estimated time of completion for a planned project and its design year some 23 years in the future. Accounting for anticipated increases in VMT and varying degrees of efficiency of vehicle operation, total MSAT emissions were predicted to decline approximately 60 percent from 2007 to 2030. While benzene emissions were predicted to decline more than 47 percent, emissions of DPM were predicted to decline even more (i.e., 88% in the Build scenario).

MSATs 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 MSATs. Diesel exhaust emissions have been falling since the early 1990s with the passage of the Clean Air Act Amendments (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 also has called for dramatic reductions in NO_x emissions, and PM from on-road and off-road diesel engines. MSATs as in relation to SH 121/SH 183 are not expected to increase overall air toxics in the DFW area in the future years investigated.

During the construction phase of this project there can be temporary increases in air pollutant emissions from construction activities, equipment, and related vehicles. The primary construction related emissions are particulate matter (fugitive dust) from site preparation and construction and non-road mobile source air toxics (MSAT) from construction equipment and vehicles. The primary MSAT emission related to construction is diesel particulate matter from diesel powered construction equipment and vehicles.

These emissions are temporary in nature (only occurring during actual construction) and it is not reasonably possible to estimate impacts from these emissions due to limitations of the existing models. However, the potential impacts of particulate matter emissions 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 MSAT emissions will be minimized by measures to encourage use of EPA required cleaner diesel fuels, limits on idling, increasing use of cleaner burning diesel engines, and other emission limitation techniques, as appropriate.

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 substantial impact on air quality in the area.

E. NOISE

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

Sound from highway traffic is generated primarily from a vehicle's tires, engine and exhaust. It is commonly measured in decibels and is expressed as "dB." Sound occurs over a wide range of frequencies. However, not all frequencies are detectable by the human ear; therefore, an adjustment is made to the high and low frequencies to approximate the way an average person hears traffic sounds. This adjustment is called A-weighting and is expressed as "dBA."

Also, because traffic sound levels are never constant due to the changing number, type and speed of vehicles, a single value is used to represent the average or equivalent sound level and is expressed as "Leq." 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 Noise Abatement Criteria (NAC) for various land use activity areas (see **Table VI-20**) that are used as one of two means to determine when a traffic noise impact would occur.

Table VI-20 FHWA Noise Abatement Criteria		
Activity Category	dBA Leq	Description of Land Use Activity Areas
A	57 (exterior)	Lands on which serenity and quiet are of extra-ordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 (exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries and hospitals.
C	72 (exterior)	Developed lands, properties or activities not included in categories A or B above.
D	--	Undeveloped lands.
E	52 (interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals and auditoriums.

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

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

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

Relative Criterion: the predicted noise level substantially exceeds the existing noise level at a receiver even though the predicted noise level does not approach, equal or exceed the NAC. "Substantially exceeds" is defined as more than 10 dBA. For example: a noise impact would occur at a Category B residence if the existing level is 54 dBA and the predicted level is 65 dBA (11 dBA increase).

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

E.1 No-Build Alternative

Under the No Build Alternative, traffic volumes and congestion on area roadways would likely increase. Noise levels would be expected to increase with the associated increase in traffic volumes; however, increased congestion and slower speeds may reduce noise levels. TxDOT does not have a program for providing retrofit noise abatement along existing roadways.

E.2 Build Alternative

The FHWA traffic noise modeling software was used to calculate existing and predicted traffic noise levels. The model primarily considers the number, type and speed of vehicles; highway alignment and grade; cuts, fills and natural berms; surrounding terrain features; and the locations of activity areas likely to be impacted by the associated traffic noise.

Existing and predicted traffic noise levels were modeled at receiver locations (see **Table VI-21** and **Appendices A-23** through **A-33**) 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 VI-21 Traffic Noise Levels (dBA Leq)						
Receiver	NAC Category	NAC Level	Existing 2010	Predicted 2030	Change (+/-)	Noise Impact
R1A-Residential	B	67	68	71	3	YES
R1B-Residential	B	67	67	68	1	YES

Table VI-21 Traffic Noise Levels (dBA Leq)						
Receiver	NAC Category	NAC Level	Existing 2010	Predicted 2030	Change (+/-)	Noise Impact
R1C-Residential	B	67	67	69	2	YES
R1D-Residential	B	67	68	70	2	YES
R2A-Residential	B	67	68	71	3	YES
R2B-Residential	B	67	66	68	2	YES
R2C-Residential	B	67	68	73	5	YES
R2D-Residential	B	67	66	70	4	YES
R3A-Residential	B	67	66	69	3	YES
R3B-Residential	B	67	66	69	3	YES
R4A-Residential	B	67	66	68	2	YES
R5A-Residential	B	67	73	74	1	YES
R5B-Residential	B	67	73	74	1	YES
R6A-Residential	B	67	71	72	1	YES
R6B-Residential	B	67	72	75	3	YES
R6C-Church at Cavender St.	E	52	46	47	1	NO
R7A-Residential	B	67	73	78	5	YES
R7B-Residential	B	67	74	77	3	YES
R7C-Residential	B	67	75	76	1	YES
R8A-Residential	B	67	70	72	2	YES
R8B-Residential	B	67	70	72	2	YES
R9A-Residential	B	67	71	73	2	YES
R9B-Residential	B	67	71	73	2	YES
R10A-Residential	B	67	66	69	3	YES
R10B-Residential	B	67	67	73	6	YES
R10C-Residential	B	67	70	75	5	YES
R10D-Residential	B	67	71	72	1	YES
R10E-Residential	B	67	70	71	1	YES
R11A-Residential	B	67	71	72	1	YES
R11B-Residential	B	67	71	72	1	YES
R11C-Residential	B	67	72	73	1	YES
R12A-Residential	B	67	69	72	3	YES
R12B-Residential	B	67	72	75	3	YES
R12C-Residential	B	67	73	76	3	YES
R12D-Residential	B	67	65	67	2	YES
R13A-Residential	B	67	69	71	2	YES
R13B-Residential	B	67	69	70	1	YES
R13C-Residential	B	67	69	71	2	YES
R13D-Residential	B	67	69	70	1	YES
R14A-Residential*	B	67	66	67	1	YES

Table VI-21 Traffic Noise Levels (dBA Leq)						
Receiver	NAC Category	NAC Level	Existing 2010	Predicted 2030	Change (+/-)	Noise Impact
R14B-Residential*	B	67	67	68	1	YES
R14C-Residential*	B	67	70	71	1	YES
R14D-Residential*	B	67	70	71	1	YES
R14E-Residential*	B	67	69	70	1	YES
R14F-Residential	B	67	70	71	1	YES
R14G-Residential*	B	67	70	71	1	YES
R14H-Apartment	E	52	46	48	2	NO
R15A-Residential	B	67	69	71	2	YES
R15B-Residential	B	67	68	70	2	YES
R15C-Residential	B	67	75	77	2	YES
R15D-Residential	B	67	73	76	3	YES
R15E-Residential	B	67	73	74	1	YES
R15F-Residential	B	67	72	73	1	YES
R15G-Residential*	B	67	67	68	1	YES
R15H-Residential*	B	67	66	67	1	YES
R15I-Church at Fuller St.	E	52	45	46	1	NO
R15J-Residential	B	67	72	73	1	YES
R16A-Library	E	52	42	43	1	NO
R16B-School at Himes St.	E	52	46	49	3	NO
R16C-Church at Himes St.	E	52	42	45	3	NO
R17A-Apartment	E	52	50	52	2	YES
R17B- Residential	B	67	72	74	2	YES
R17C-Residential	B	67	68	70	2	YES
R18-Church at Industrial Blvd.	E	52	45	49	4	NO
R19-Nursing Home	E	52	45	50	5	NO
R20-Church at Bedford Rd.	E	52	44	46	2	NO
R21A-Residential	B	67	69	72	3	YES
R21B-Residential	B	67	72	73	1	YES
R21C-Residential	B	67	74	76	2	YES
R21D-Residential	B	67	73	74	1	YES
R21E-Residential	B	67	68	70	2	YES
R21F-Residential	B	67	70	71	1	YES
R21G-Residential	B	67	71	72	1	YES
R21H-Church at Stonegate Dr.	E	52	45	46	1	NO
R22A-Residential	B	67	73	74	1	YES
R22B-Residential	B	67	69	70	1	YES
R22C-Residential	B	67	70	71	1	YES
R22D-Residential	B	67	69	70	1	YES

Table VI-21 Traffic Noise Levels (dBA Leq)						
Receiver	NAC Category	NAC Level	Existing 2010	Predicted 2030	Change (+/-)	Noise Impact
R22E-Residential	B	67	67	68	1	YES
R22F-Residential	B	67	68	69	1	YES
R22G-Residential	B	67	68	69	1	YES
R22H-Residential	B	67	67	68	1	YES
R22I-Residential	B	67	68	71	3	YES
R22J-Residential	B	67	69	70	1	YES
R22K-Residential	B	67	70	71	1	YES
R22L-Residential	B	67	70	72	2	YES
R22M-Residential	B	67	71	73	2	YES
R22N-Residential	B	67	71	73	2	YES
R23-Apartment	E	52	45	47	2	NO
R24-Apartment	E	52	42	43	1	NO
* A 6 foot tall masonry developer wall is adjacent to these receivers						

As indicated in **Table VI-21**, the proposed project would result in a traffic noise impact 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 measure should reduce the noise level at least five dBA at an impacted receiver; and to be reasonable it should not exceed \$25,000 for each benefited receiver.

Traffic management: Control devices could be used to reduce the speed of the traffic; however, the minor benefit of one dBA 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: Any alteration of the existing alignment would displace existing businesses and residences, require additional ROW and not be cost effective/reasonable.

Buffer zone: There is no undeveloped or unimproved land adjacent to the highway project that could be acquired to preclude future development that could be impacted by highway traffic noise.

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

Noise barriers (see **Table VI-22**) would be feasible and reasonable for the following impacted receivers and, therefore, are proposed for incorporation into the project:

Table VI-22 Noise Barrier Proposal (Preliminary)						
Number of Barrier Segments	Representative Receivers	Total # Benefited	Length (feet)	Height (feet)	Total Cost (\$) ¹	\$/Benefited Receiver*
1	R-1A thru R-4A	17	1,641	Varies (10.0-18.0)	421,224	24,777
4	R-5A thru R-6B	8	1,085	10.0	175,770	21,971
3	R-7A thru R-7C	4	580	9.0	93,960	23,490
2	R-8A thru R-9B	12	970	Varies (12-14.0)	215,640	17,970
1	R-10A thru R-10E	7	960	Varies (9.0-11.0)	167,616	23,945
1	R-11A thru R-11C	10	804	Varies (13.0-17.0)	216,609	21,660
2	R-12A thru R-12D	11	730	10	131,400	11,945
4	R-13A thru R-13D	8	801	Varies (7.0-17.0)	194,394	24,299
3	R-14A thru R-14G ²	16	1,334	Varies (8.0-10.0)	212,679	13,292
3	R-15A thru R-15F, and R15-J	15	1,600	Varies (8.0-13.0)	262,800	17,520
	R17A thru R17C	24	830	12	179,200	7,470
2	R-21A thru R-21G	15	1,236	Varies (11.0-19.0)	374,400	24,960
3	R-22A thru R-22N	43	4,019	Varies (9.0-20.0)	985,230	22,912

1. Based on estimated construction costs of \$18.00 per square foot.

2. These receivers represent a total of 16 residences. The residences are located behind an existing six (6) foot tall masonry developer wall. The noise analysis indicates the existing developer wall does not achieve a 5 dBA reduction in noise levels at the receivers (ranges from 2-5 dBA reduction). Because of this, the proposed noise barrier for R14A to R14G remains in this Noise Barrier Proposal, but with restrictions because TxDOT would not construct a noise barrier adjacent to the existing masonry wall due to maintenance and safety issues.

Noise barriers were determined to be not feasible for the following receivers:

R15G and R15H: these receivers represent a total of seven residences. The residences are located behind an existing six (6) foot tall masonry developer wall. Based on the noise analysis, the existing developer wall achieves a 5 dBA reduction in noise levels at the receivers and provides the same or similar noise abatement as a TxDOT noise barrier.

Any subsequent project design changes may require a re-evaluation 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.

The proposed project will neither increase nor decrease aircraft noise at the DFW International Airport. Therefore, no noise impacts will occur due to airport operations.

Noise associated with the construction of the project is difficult to predict. Heavy machinery, the major source of noise in construction, is constantly moving in unpredictable patterns. However, construction

normally occurs during daylight hours when occasional loud noises are more tolerable. None of the receivers is expected to be exposed to construction noise for a long duration; therefore, any extended disruption of normal activities is not expected. Provisions will be included in the plans and specifications that require the contractor to make every reasonable effort to minimize construction noise through abatement measures such as work-hour controls and proper maintenance of muffler systems.

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

F. AIRWAY/HIGHWAY CLEARANCE

F.1 No-Build Alternative

Under the No-Build alternative, no construction would occur on the existing facility, and no coordination with the Federal Aviation Administration (FAA) would be required.

F.2 Build Alternative

DFW International Airport is immediately adjacent to the proposed facility. 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 the proposed improvements.

G. CULTURAL RESOURCES

NEPA requires consideration of important historic, cultural and natural aspects of our national heritage. Important aspects of our national heritage that may be present in the project corridor have been considered under Section 106 of the National Historic Preservation Act of 1966, as amended. This act requires federal agencies to “take into account” the “effect” that an undertaking will have on “historic properties.” Historic properties are those included in or are eligible for inclusion in the NRHP and may include structures, buildings/districts, objects, cemeteries, and archeological sites. In accordance with the Advisory Council on Historic Preservation regulations pertaining to the protection of historic properties (36 CFR 800), federal agencies are required to locate, evaluate and assess the effects that the undertaking will have on such properties. These steps have been completed under terms of the First Amended Programmatic Agreement for Transportation Undertakings (PA-TU) between TxDOT, the State Historic Preservation Officer (SHPO), FHWA, and the Advisory Council on Historic Preservation. The identification of potential historic properties has been undertaken for structures, buildings/districts, objects, cemeteries, and archeological sites found within the project corridor.

This project also falls under the purview of the Texas Antiquities Code (TAC), because it may involve “lands owned or controlled by the State of Texas or any city county, or local municipality thereof.” As the project will involve state purchase of ROW, or lands belonging to local municipalities and of counties, under jurisdiction of the Texas Antiquity Code, historic properties will also be considered under provisions of the Memorandum of Understanding (MOU) between the SHPO and TxDOT. The Texas Antiquities Code allows for all such properties to be considered as State Archeological Landmarks (SALs), and requires that each be examined in terms of possible “significance.” Significance standards for the code are clearly outlined under Chapter 26 of the THC’s Rules of Practice under Procedure for the TAC and closely follow those of the Secretary of Interior’s Standards and Guidelines.

G.1 Archaeology

The entire length of the SH 121/SH 183 study area has been heavily disturbed over the years due to construction of the freeway itself and the surrounding residential, commercial, and light industrial developments in the cities of North Richland Hills, Hurst, Bedford, Euless, Fort Worth, and Irving. As previously mentioned, the proposed ROW contains numerous utility lines, which cross and/or run parallel to the freeway. Cable boxes and communication towers are also located within the project area. The project is identified on the USGS topographic map (Euless and Hurst Quadrangles) included as **Appendices A-34** and **A-35**.

G.1.1 No-Build Alternative

Implementation of the No-Build Alternative would not impact any archeological properties or State Archeological Landmarks, and no further investigations would be required.

G.1.2 Build Alternative

In June 2005, qualified cultural resource personnel reviewed the Texas Archeological Sites Atlas, which revealed no recorded archeological sites within the existing or proposed ROWs. The Atlas indicated that a segment of Bear Creek within the existing and proposed ROWs had been previously surveyed and that no archeological sites were recorded. As a result of previous highway construction and urban development, and the mapped soil types found along the project alignment, the THC has concurred that the proposed project has no potential to cause effects on archeological properties or State Archeological Landmarks, and that no further consultation is required prior to project construction. A copy of this letter is included in **Appendix F**.

If unanticipated evidence of archaeological deposits is encountered during construction, work in the immediate area would cease and TxDOT archaeological staff would be contacted to initiate accidental discovery procedures under the provisions of the First Amended PA-TU between TxDOT, the THC, FHWA, and the Advisory Council on Historic Preservation.

G.2 Historic Resources

A review of the NRHP, the list of State Archaeological Landmarks, and the list of Recorded Texas Historic Landmarks indicates that no historically significant properties have been previously documented within the area of potential effects (APE). It has been determined in consultation with the SHPO that the APE is limited to 150 feet beyond the edge of the existing or proposed ROW. A reconnaissance survey of the project area identified 168 resources that appear to be at least 50 years of age (constructed before 1963). There are two Official Texas Historic Markers located within the project's APE.

G.2.1 Identification of Historic Properties

Copies of the report detailing the results of the reconnaissance survey effort are on file at the TxDOT Fort Worth District Office and the Environmental Affairs Division Office in Austin. In accordance with the PA-TU, Section 106 coordination, dated September 14, 2007, determined that except for the Old Bedford Road Bridge (Site ID #80), no resources are eligible for listing in the National Register. A copy of the coordination memo documenting these findings is included in **Appendix F**.

Site ID# 80 is the Old Bedford Road Bridge at Sulphur Branch. This 8-foot wide, 14-foot long, reinforced concrete flat-slab bridge was once on the road connecting Dallas and Fort Worth. Constructed circa 1910, the bridge is an early and rare example of its type in Texas. The bridge is located on two parcels of land. The southwest portion is in the backyard of a residence constructed in 1963 while the northeast section shares a lot with a c. 1990 office building surrounded by a parking lot. Old Bedford Road Bridge is thus so thoroughly divorced from its early twentieth century Community Development context that it has lost integrity of setting, feeling, and association. Therefore, it is **not eligible** for the NRHP under *Criterion A*. It does, however, retain integrity of location, design, workmanship, and materials given the age of its pioneering engineering.

Therefore, in accordance with the PA-TU between the FHWA, the SHPO, the Advisory Council on Historic Preservation, and TxDOT and the MOU, TxDOT historians have determined that Site ID# 80 is **eligible** for listing on the NRHP under *Criterion C* at the state level for Engineering.

G.2.2 No- Build Alternative

Under the No-Build alternative, no construction would occur within the existing or proposed ROW; therefore, there would be no effect on historic resources or NRHP-eligible properties.

G.2.3 Build Alternative

The National Historic Preservation Act (NHPA) (36 CFR 800) requires that FHWA/TxDOT show that project planners and engineers have “taken into account” the effects the project may have on National

Register properties and that a reasonable effort has been made to preserve the resource through avoidance or other means to minimize adverse impacts to the property and/or the historic resource.

The criteria for assessing effect are prescribed in 36 CFR 800.5. The law states: “An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property’s location, design, setting, materials, workmanship, feeling, or association.”

Examples of adverse effects on historic properties include, but are not limited to, physical destruction or damage to all or part of the property; change of the character of the property’s use or of physical features within the property’s setting that contribute to its historic significance; and introduction of visual, atmospheric or audible elements that diminish the integrity of the property’s significant historic features.

Site ID #80: Old Bedford Road Bridge

TxDOT proposes to acquire approximately 1.6 acres of the 2.4 acre lot on which an office building and part of the bridge sit. The proposed ROW would be approximately 25 feet from the nearest part of bridge abutments. The proposed Build Alternative would have **no direct effect** on the Old Bedford Road Bridge because the bridge is NRHP-eligible for engineering, and the project would not change the character-defining design, workmanship, or materials of the bridge

Pursuant to Stipulation VI “Undertakings with Potential to Cause Effects” of the PA-TU between the FHWA, the SHPO, the Advisory Council on Historic Preservation, and TxDOT and the MOU, TxDOT historians determined that the proposed action will not adversely affect historic properties and that the proposed undertaking would have no reasonably foreseeable adverse effects that may occur later in time, be farther removed in distance, or be cumulative.

H. SECTION 4(f) PROPERTIES

Section 4(f) of the Department of Transportation Act of 1966 included provisions prohibiting the FHWA and other federal transportation agencies from using land from a significant publicly owned public park, recreation area, wildlife or waterfowl refuge, or any land from an historic site of national, state, or local significance unless: (a) there is no feasible and prudent alternative to the use of land, and (b) the action includes all possible planning to minimize harm to the property resulting from use. This provision is commonly referred to as Section 4(f).

More specifically, Section 4(f) properties include any of the following:

- Publicly owned park or recreation area open to the public (depending on access and use, school recreation facilities might be included)
- Publicly owned wildlife/waterfowl refuge (whether open to the public or not)

- Historic sites of national, state, or local significance (except in unusual circumstances, only historic properties on or eligible for inclusion on the NRHP are protected under Section 4(f)).

H.1 No-Build Alternative

Implementation of the No-Build Alternative would not impact any Section 4(f) properties, and no coordination or further evaluations would be required.

H.2 Build Alternative

Under the Build Alternative, the study area includes the following Section 4(f) property:

- L.D. Bell High School: The proposed project would require the acquisition of approximately 0.68 acres of an open, grassy area along the eastern school property line fronting Brown Trail and the open, grassy area/parking area along the SH 121/SH 183 northern frontage road. The open, grassy areas are considered publicly owned recreation areas that are open to the public. A Section 4(f) Land Use map is included in **Appendix G-1**.

Two HEB ISD meetings were held in 2007 to discuss Section 4(f) mitigation at the school. On August 9, 2007, previous concerns regarding whether the City of Bedford would have set back requirements for the fence were relieved when the City presented TxDOT a memo stating that there would be no such requirements. HEB ISD then agreed to place the proposed fence on school property along the proposed ROW line. The school district asked when TxDOT would provide funding for the district to construct the fence. TxDOT responded that it would be at the time of ROW acquisition, which would not begin until the public hearing is conducted for the proposed project and the environmental document and schematic are approved. HEB ISD understood that the Section 4(f) issue needed to be resolved in order for the document approval and concurred with TxDOT's request to draft a letter of concurrence to be presented to the school board on August 14, 2007 for its signature.

On August 14, 2007, the HEB ISD Board of Trustees called to order its work session with its members, staff, visitors, and TxDOT representatives. During the meeting, TxDOT presented the construction of the fence as mitigation to separate L.D. Bell High School's recreation fields from the proposed improvements to SH 121/SH 183. The HEB ISD board voted unanimously to approve the Letter of Understanding with TxDOT mitigating the Section 4(f) issue at L.D. Bell High School. This letter indicates the ISD's agreement that the project impacts to school property would be minor and would not affect the character, activities, or attributes of the property. Proximity effects would be minor and would not impair the activities, features or attributes of the school recreation fields.

Since the proposed minimal impacts at L.D. Bell High School would not adversely affect the activities, features and attributes of the open recreation area, a Section 4(f) De Minimus determination was received by FHWA. A map showing the proposed ROW taking at L.D. Bell High School and the coordination letter from the HEB ISD indicating a no adverse effect are included in **Appendix G**.

I. SUMMARY OF IMPACTS - DALLAS DISTRICT SH 183 PROJECT (COUNTY LINE TO SH 161)

The following summarizes the findings of the Dallas District SH 183 project between the Tarrant/Dallas County Line and SH 161. The entire assessment can be found in the Dallas District's SH 183 (from 1.2 miles east of SH 360 to 0.66 miles west of Loop 12) EA, under CSJ 0094-03-065. This EA received a FONSI from FHWA on February 10, 2004 and is currently under reevaluation.

- There would be three business displacements classified as follows (and no residential displacements):
 - Retail - Glass Sales and Service
 - Retail - Equipment Sales
 - Retail - Golf Range
- Tompkins Cemetery is located within the existing ROW of SH 183 between the eastbound main lanes and the eastbound exit ramp to Valley View Lane. The project would not require ROW from the cemetery, and access to the cemetery would be maintained. Previous investigations and trenching around the cemetery indicated that there were no other graves outside the chain-link fence surrounding the cemetery. Therefore, no impacts to the cemetery are anticipated.
- HazMat Sites: Three sites were mapped, two with high risk potential (ID Nos. 18 and 191) and one with low risk potential (ID No. 187):
 - 18 - Global Truck & Trailer - UST/LPST - Priority: "Groundwater impact, no apparent threats or impacts to receptor." Status: "Pre-assessment/release determination in progress." Due to ROW acquisition, potential for soil and groundwater contamination.
 - 191 - Murdoch Machine and Engineering - Facility Index Notification System (FINDS), Resource Conservation and Recovery Information System - Large Quantity Generator (RCRIS-LQG), TCEQ industrial hazardous waste listing (IHW; similar to federal RCRA generators), UST - Six recorded violations; One 500-gallon Us removed in 1989; Due to ROW acquisition, potential for soil and groundwater contamination.
 - 187 - Conoco Gas - UST - No violations found; 3 USTs installed in 1996 and in use; Adjacent to the ROW.
- Habitat is being considered for compensatory mitigation at the Post Oak wooded area north of SH 183 at County Line Road (DFW Airport property). The required ROW at this location is 2.5 acres. Possible onsite mitigation of trees is proposed at one or both of the following locations in Dallas and Tarrant County: SH 183/SH 161 interchange and SH 183/DFW International Parkway

interchange. The exact planting locations would be identified at the time that mitigation would be necessary. Mitigation plans would include replacing vegetation on an acre-per-acre basis.

- No noise barriers are proposed in the section from the county line to SH 161.
- There is one water crossing at Estelle Creek, which is a concrete-lined channel. The proposed permanent fill impacts would be 0.13 acres; therefore, it would require an NWP #14 with preconstruction notification (PCN).

VII. INDIRECT IMPACTS ANALYSIS

Sections VII - A-F present a project level analysis of the potential indirect impacts (or effects) related to the proposed improvements. A system level analysis of the potential indirect impacts of the regional toll and managed/HOV system is provided in **Section VII - G**.

The Council on Environmental Quality (CEQ) defines indirect “effects” (synonymous with “impacts”) as:

“... effects, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems. (40 CFR 1508.8)”

Indirect impacts differ from the direct impacts associated with the construction and operation of the proposed project, and are caused by other actions that have an established relationship or connection to the proposed project. These induced actions are those that would not or could not occur except for the implementation of the proposed project.

The National Cooperative Highway Research Program (NCHRP) in *NCHRP Report 466 Desk Reference for Estimating the Indirect Effects of Proposed Transportation Projects* (TRB, 2002) suggests indirect impacts can occur in three broad categories:

1. Encroachment-Alteration Impacts - Alteration of the behavior and functioning of the affected environment caused by project encroachment (e.g., physical, chemical, biological);
2. Induced Growth Impacts - Project-influenced development impacts (i.e., the land use effect); and,
3. Impacts Related to Induced Growth - Impacts related to project-influenced development impacts, (i.e., impacts 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. Indirect impacts are therefore subject to some level of conjecture as to the extent of changes, which might be expected in the project corridor, with and without the project in place.

The indirect impacts analysis was conducted in accordance with the eight-step process suggested in *NCHRP Report 466* for accessing indirect impacts. The stepwise elements of the process are listed below.

1. Scoping, including identification of the location and extent of the Study Area.
2. Identify the Study Area's Direction and Goals.
3. Inventory the Study Area's Notable Features.
4. Identify Impact-Causing Activities of Proposed Action and Alternatives.
5. Identify Potential Indirect Impacts for Analysis.
6. Analyze Indirect Impacts.
7. Evaluate Analysis Results.
8. Assess Consequences and Develop Mitigation.

A. STEP 1: SCOPING

A.1 Approach

According to *NCHRP Report 466*, "Scoping is the key to proper and timely identification and analysis of indirect impacts. Scoping provides the best opportunity to identify potentially significant issues, set appropriate boundaries for the analysis, and identify relevant past, present, and future actions. Scoping also allows for the setting of the environmental baseline for which all effects are compared."

NCHRP Report 466 identifies several variables that can determine the approach and level of detail appropriate to an indirect impacts analysis. **Table VII-1** lists these variables and indicates how they apply to the SH 121/SH 183 project. The result is that the analysis will be mainly qualitative with a moderate level of effort.

Table VII-1 Factors Considered in Determining Methodology and Detail of Analysis		
Project Variables		Implication for Assessment Methodology
Project Type	Roadway	Project Type: Roadway
	Transit	
	Major Intermodal	
Project Scope	Small	Project Scope: Medium
	Medium	
	Large	
Project Scale	Local	Project Scale: Regional
	Regional	
	System Planning	
Stage of Study	Corridor Alternatives	Stage of Study: Design Alternatives
	Alignment Alternatives	
	Design Alternatives	
Project Setting [†]	Degree of Urbanization	Project area very urbanized; growth low; environmental sensitivity minimal
	Level of Growth	
	Degree of Environmental Sensitivity	
Design Features	Level of Access Control	High level of access controls (i.e., widely spaced interchanges) moderate provision of additional capacity
	Degree of Capacity Added	
Project Purpose	Relieve Congestion	Improve Mobility, Enhance Access, and Reduce Congestion on SH 121/SH 183; Improve Safety and Reduce Accidents on SH 121/SH 183
	Serve Existing/Planned Development	
	Promote Regional Economic Development	
Data Available	Level of Quantification	Quantitative data is very limited, patchy in nature, and dated.
	Level of Aggregation	
	Comprehensiveness	
	Currency	

Notes (Preceding Table)

- [†] Note: The level of growth refers to how much new growth can occur in the area, regardless of the Build or No-Build Alternative; it is not to imply that growth will stop or even slow, but that the new space available is reduced throughout the corridor. Though the region will continue to grow, subsequent sections will demonstrate that new growth would be low and steady.
- ^{††} Note: The degree of new capacity refers to the proportional amount of capacity being added. The proposed highway expansion project would add approximately 38 percent new lane capacity.
- ^{†††} Note: Enhancing access was noted as a need for the proposed highway expansion project to fill.

A.2 Geographic Boundaries of the Indirect Impacts Area of Interest (AOI)

Indirect Impacts Area of Interest (AOI) boundaries are generally formed by natural features or major land uses that provide a distinct break of possible influence (i.e., major roadways such as expressways or arterial roadways). Because of the similarity of their respective indirect impacts, it follows that one major roadway’s indirect impacts would be eclipsed by the parallel roadway in sequential order; therefore, nearby major roadways are a reasonable choice for the AOI boundary. Defining the AOI in this manner is one of several acceptable methods identified in the *NCHRP Report 466 Desk Reference for Estimating the Indirect Effects of Proposed Transportation Projects (2002)*.

In keeping with the *NCHRP Report 466*, a two-mile radius AOI around the corridor was proposed, within which individual resources were analyzed on a case-by-case basis to determine their appropriate boundaries of impacts. First, project specific logical termini were established. The proposed SH 121/SH 183 has, as its logical termini, IH 820 (NE Loop 820) to the west and SH 161 (President George Bush Turnpike) at the eastern end. Nevertheless, a similar project on SH 121/SH 183 in the TxDOT Dallas District Office has, the Dallas/Tarrant county line as its western logical terminus. Therefore, there is an approximate 0.78-mile (4143.64 feet) overlap of analysis for this project, and the TxDOT Fort Worth and Dallas District Offices have reached an agreement that Fort Worth will consider the Tarrant/Dallas county line as the eastern functional terminus for their proposed project and its analysis.

Second, an examination of the DFW Metroplex revealed a modified grid roadway network, with several major thoroughfares that could serve as boundaries of impacts. The same examination indicated that the project corridor is highly urbanized and essentially fully developed, as are much of the further out-lying areas. Still, because pockets of undeveloped land, developed land uses that are aging (median age approximately 32 years, approximately 67.5 percent of homes built between 1960 and 1989), and the amount of displacements, indirect impacts that extend into developed areas are very possible.

Therefore, a two-mile buffer was determined to be an appropriate AOI. The two-mile AOI generally follows roadway and highway corridors with existing infrastructure and, as such, creates a logical boundary. The directional boundaries were set as follows:

- **North** - Farm-to-Market Road (FM) 1938/Cheek Sparger Road lies approximately 1.91 miles north of the SH 121/SH 183 corridor.

Between the west side of DFW and the project terminus, impacts to the north side of the AOI would be restricted by FM 1938/Cheek Sparger Road, and the potential influence of SH 121/SH 183 would be difficult to discern from the effects of FM 1938/Cheek Sparger Road. FM 1938/Cheek Sparger Road is an established roadway and has been a major arterial roadway in the project area for more than 40 years. Substantial development has already occurred along FM 1938/Cheek Sparger Road, and there is now almost no open land available for new development.

Between DFW and the Tarrant County Line, trends that occur north of SH 121/SH 183 are independent of the trends that occur elsewhere in the corridor study area. At the east side of the proposed project, development to the north of the AOI would be influenced by W. Walnut Lane. As with FM 1938/Cheek Sparger Road, the potential influence of SH 121/SH 183 would be difficult to discern from the effects of W. Walnut Lane. W. Walnut Lane is a relatively recent facility, and, due to its proximity and access to the airport, will likely become dominated by airport-related land uses.

The Dallas-Fort Worth International Airport (DFWIA), located at the far east end of the project area, casts an imposing presence on the landscape. Due to its dominance, DFWIA qualifies under

the guidance of the *Desk Reference for Estimating Indirect Effects of Proposed Transportation Projects (2002)* in that, like a transit station, it will be able to generate its own indirect impacts of alteration of or encroachment on the affected environment.

- **East** - Beltline Road lies approximately 2.14 miles east of Tarrant/Dallas County Line. Beltline Road is within an urbanized area⁵, and there is almost no raw land within the AOI that is available for development along Beltline Road. Beltline Road is an established roadway and has been a major arterial roadway in the project AOI for many years.
- **South** - A line following the approximate latitude of Mosier Valley Road/SH 10 (West Hurst Boulevard) lies approximately 2.08 miles south of the SH 121/SH 183 corridor. These roadways are, by-and-large, boundaries between areas that are fully developed for residential and industrial land use, and land that is undeveloped. Some of these properties, particularly toward the east end, are treed or held raw and may, at some point, be cleared for additional development.
- **West** - Rufe Snow Drive lies approximately 1.95 miles west of the SH 121/SH 183 corridor and is within an urbanized area. There is almost no raw land that is available for development. However, land use on some of the larger tracts is not nearly at the same density as other urban areas. Rufe Snow Drive is an established roadway and has been a major arterial roadway in the project AOI for many years.

The AOI encompasses approximately 65 square miles (41, acres) and is shown in **Appendix H-1: Indirect Impacts Analysis Area of Interest**.

B. STEP 2: IDENTIFY THE STUDY AREA'S DIRECTION AND GOALS

B.1 Purpose

The focus of this step is assembling information regarding general trends and goals within the study area. The trends and goals in question are independent of the proposed transportation project and typically concern social, economic, ecological, and/or growth-related issues.

Empirical evidence indicates that transportation investments result in major land use changes only in the presence of other factors. These factors include, but are not limited to, supportive local land use policies, local development incentives, availability of developable land, and a good investment climate (a more in-depth discussion of the decision-making process for land development and ultimate home purchase are discussed further in Step 4).

⁵ According to the U.S. Census Bureau, an area is considered urbanized when it has a general population density of at least 1,000 people per square mile of land area that it and other areas together have a minimum residential population of at least 50,000. Urban areas under 50,000 people are called urban clusters. Because urbanization is dependent on human density and not structural density, an area may be fully urbanized and still contain raw land that is available for new development.

An understanding, therefore, of community goals, combined with a thorough knowledge of demographic, economic, social, and ecological trends is essential in understanding the dynamics of project-influenced changes in development location.

B.2 Analysis

The proposed highway expansion project lies within the limits of the Cities of North Richland Hills, Richland Hills, Hurst, Bedford, Euless, and Fort Worth. The indirect impacts AOI also includes portions of the Colleyville, Arlington, and Irving.

All of the local city planners interviewed for this section of the report indicated that there was very little space within their jurisdictions where new development could occur without displacement of existing land uses. As stated, the AOI is predominantly urbanized and land use change is no longer dependent upon a roadway that has been established and functional for several decades. Still, as explained **Section VII - A.2**, because there will be displacement it is likely that the proposed project could introduce land use change to the project AOI; and, no matter how developed an area is, depending on land use and economic trends, it can still experience some land use change. Nevertheless, because there is little undeveloped land directly adjacent to the existing facility that could see new development, and because displacements and replacements would occur, to the extent that SH 121/SH 183 would encourage residential and commercial projects, impacts and effects would be considered redistributive rather than introductory effects. Therefore, existing zoning, future land use plans (FLUPs), and planners for municipalities adjacent the proposed highway expansion project suggest that undeveloped areas within the Indirect Impacts AOI would likely be developed primarily for residential, light industrial, and commercial development (see **Appendices H-2** through **H-11**).

The construction of SH 121/SH 183 originally occurred in the early 1960s. Minor improvements and occasional upgrade projects of interchanges and overpasses have taken place over the years. The most notable of these projects were the interchanges with SH 161 (President George Bush Turnpike), SH 97 (International Parkway, a.k.a. DFWIA access), SH 360, SH 121, and, most recently, IH Loop 820.

As regional population and economic growth increases the demand on the existing transportation infrastructure, the need for the expansion of SH 121/SH 183 has also grown. On a regional scale, Tarrant County is anticipated to see a household population increase of 60 percent between 2000 and 2030. From January 1, 2006 to January 1, 2007, Tarrant County led the region in growth, with 108,200 persons added to the county. Nearby Dallas County is expected to experience growth through the year 2030. Dallas County experienced a 19.7 percent growth rate from 1990 to 2000, and has increased in population by an estimated 198,751 persons from 2000 to 2007 (NCTCOG, 2007). Population forecasts indicate that Dallas County will experience a 26 percent growth rate from 2000 through 2030. The historic population trends and projected growth rates have caused a need for a higher-capacity infrastructure. This substantial population increase is expected to continually impact the growth and development of the indirect impacts AOI.

The North Texas region has experienced rapid growth during the last two decades. First, Dallas and Tarrant Counties were the second and third (respectively) most populated counties in Texas, with Tarrant County ranking sixth in population growth among the most population counties. According to the U.S. Census Bureau, between 2000 and 2007, Tarrant County measured approximately 18.07 percent growth. According to the Texas Water Development Board, between 2000 and 2010, all communities except Bedford and Hurst are anticipated to have growth between 14 and 19 percent; between 2000 and 2030, growth is anticipated to from 15.39 percent in Bedford to 78.28 percent in Fort Worth.

Table VII-2 illustrates 1995 and 2005 land use in the cities that form the indirect impacts AOI. Of the approximate 343,168 acres, in 2005 approximately 25 percent (or one quarter) was developed for residential uses. Another approximately 13 percent was developed for commercial, institutional, and industrial uses. Approximately 114,092 acres (approximately 33 percent) of the land in the Indirect Impacts AOI was vacant. The remaining slightly less than one quarter of the land was used for infrastructure, water, and other.

An additional 1,571 acres (approximately 0.5 percent) was in the development process. Between 1995 and 2005, the amount of vacant land had decreased by approximately five percent; residential land use had declined by approximately seven percent. Commercial and industrial land uses all saw marginal declines of less than 0.5 percent; however, infrastructure land use more than doubled during this 10-year period.

Land Use	1995				2005				Change Between 1995 and 2005 (#)	
	AOI		Nine-county		AOI		Nine-county		AOI	Nine-county
	#	%	#	%	#	%	#	%		
Single Family	93,659	28.1	423,568	13.3	78,517	22.9	482,005	10.5	-16.2	13.8
Multi-Family	8,561	2.6	27,162	0.9	8,329	2.4	27,476	0.6	-2.7	1.2
Other Residential	2,297	0.7	24,270	0.8	1,400	0.4	28,798	0.6	-39.1	18.7
Industrial	16,199	4.9	67,390	2.1	15,027	4.4	68,543	1.5	-7.2	1.7
Commercial	16,655	5.0	57,580	1.8	16,373	4.8	71,674	1.6	-1.7	24.5
Institutional	11,731	3.5	39,144	1.2	11,206	3.3	45,441	1.0	-4.5	16.1
Infrastructure	26,711	8.0	85,731	2.7	67,266	19.6	335,668	7.3	151.8	291.5
Water	6,941	2.1	129,388	4.1	11,009	3.2	165,820	3.6	58.6	28.2
Under Construction	2,574	0.78	10,190	0.3	1,571	0.5	7,343	0.2	-39.0	-27.9
Vacant	128,186	38.4	2,218,935	69.9	114,092	33.3	3,299,528	71.6	-11.0	48.7
Other	20,356	6.1	91,205	2.9	18,378	5.4	74,507	1.6	-9.7	-18.3
Total	333,870	100.0	3,174,563	100.0	343,168	100.0	4,606,803	100.0	79.4	398.0

Source: NCTCOG, www.nctcog.org

Definitions of Land Uses:

Single Family	One family detached unit and duplexes.
Multi-Family	Structures with three or more separate units such as apartments, townhouses and condominiums.
Other Residential	Includes both mobile homes inside mobile home parks and free standing units outside parks. Also includes group quarters or nursing homes, orphanages, college dormitories, jail, military base personnel quarters.
Industrial	Manufacturing plants, warehouses, office showrooms, etc.
Commercial	Includes all office structures and retail buildings, such as department stores, repair shops, supermarkets and restaurants, as well as hotels and motels.
Institutional	Churches, governmental facilities, museums, schools, hospitals, medical clinics, libraries, military bases, are among those uses included.
Infrastructure	All roads, airports (including terminals and runways), railroads, radio and television communication stations, truck terminals, sewage treatment and power plants, power line easements, pump stations, water treatment plants, and water systems etc.
Dedicated Land	Includes all public and private parks, golf courses, cemeteries, tennis courts, swimming pools, amusement parks, sanitary landfills, land applications, and similar waste management facilities. Also includes major flood control structures, levies and flood channels.
Under Construction	Land that has undergone site preparation and construction has begun.
Water	All water bodies.
Vacant	Undeveloped land.
Total acres	All land and water acreage within the city.

All of the undeveloped land in the indirect impacts study area (excluding areas reserved for drainage) would be developed in the future assuming full-implementation of local FLUPs (see **Appendices H-2** through **H-11**).

B.3 Other Growth Indicators

B.3.1 Texas Department of Transportation (TxDOT)

North Tarrant Express Comprehensive Development Agreement (CDA)

The North Tarrant Express CDA is a group of improvements to critical highway corridors in North Tarrant County. These improvements are to:

- IH-820 from IH-35W to the Northeast Interchange, including a new IH-35W interchange
- SH 121/SH 183 (Airport Freeway) from the Northeast Interchange to SH 161
- IH-35W from I-30 to SH 170
- IH-820 from the Northeast Interchange to Randol Mill Road

The CDA is a result of growth in the area and the pressures it places on existing infrastructure. Therefore, the objectives of the CDA are:

- Improve regional mobility and enhance safety
- Address acute and growing congestion in north Tarrant County and the region
- Reflect a high project priority by local governments

The total project would ultimately improve approximately 36.2 miles of highway infrastructure at a total approximate budget of two billion dollars. It would tie into and support system of related highway improvements, including SH 161, SH 114/121, etc. Because of current general nation-wide transportation funding economic conditions, the project would be partially funded through managed lanes, and all managed lanes would be complete electronic toll collection, compatible with all other toll road networks in Texas. However, in addition to installing managed lanes, the project would also add general purpose lanes that do not require tolling.

SH 161 from IH 20 to SH 183

According to the re-evaluation of the Supplemental Final Environmental Impact Statement (SFEIS) and Section 4(f) Statement prepared for State Highway (SH) 161 in Dallas County, Texas (FHWA-TX-EIS-93-01-FS), “Population increases and associated development [in the DFW Metroplex] have resulted in traffic increases that have created congestion in the study area and across the region.” Traffic projections indicate that a north-south facility is warranted in this corridor. Also, since the mid 1990s, there has been widespread agreement by local governments that the extension of SH 161 between IH 20 and SH 183 is needed to improve mobility for western Dallas County. The cities of Grand Prairie and Irving have both placed the SH 161 project in their thoroughfare plans.

Major Arterial Roadway Projects within the AOI

TxDOT and NCTCOG continue to construct roadway improvement projects that would improve the mobility of the DFW region. **Table VII-3** is selected list of the projects on major arterial routes throughout the indirect impacts AOI.

Table VII-3 Major Arterial Roadway Projects within the AOI

County	Street	From Street Name	To Street Name	Lane Counts				
				2007	2009	2015	2025	2030
Dallas	Belt Line Road	Southwestern Blvd./Belt Line Road	SH 183 frontage WB	6	6	6	6	6
Dallas	Belt Line Road	Rock Island Road	IH 30 frontage WB	6	6	6	6	6
Dallas	Belt Line Road	Conflans Road	Rock Island Road	6	6	6	8	8
Dallas	Belt Line Road	Willow Creek Road	Conflans Road	6	6	6	6	6
Dallas	Belt Line Road	South End SH183 Bridge	Willow Creek Road	6	6	6	8	8
Tarrant	Cheek Sparger Rd.	SH 26	Murphy Drive	4	4	4	4	4
Tarrant	Cheek Sparger Rd.	Murphy Drive	Martin Pkwy	2	2	2	4	4
Tarrant	Cheek Sparger Rd.	Martin Pkwy	Heritage Road	4	4	4	6	6
Tarrant	Cheek Sparger Rd.	Heritage Road	SH 121	6	6	6	6	6
Tarrant	Cheek Sparger Rd.	SH 121	FM 157	4	4	4	6	6
Tarrant	FM 157/Collins Street/ Industrial Blvd.	SH 183	Green Oaks Blvd.	6	6	6	6	6
Tarrant	FM 157/Industrial Blvd.	Mid Cities Blvd.	SH 183	4	4	4	4	4
Tarrant	FM 3029/Precinct Line Road	FM 1938/Davis Blvd.	SH 121/SH 183	4	6	6	6	6
Tarrant	Harwood Road	SH 26	Brown Trail	6	6	6	6	6
Tarrant	Harwood Road	Brown Trail	Eules Main	4	4	4	4	4
Tarrant	Harwood Road	Eules Main	SH 360	6	6	6	6	6
Tarrant	Mid Cities Blvd.	Rufe Snow Drive	SH 26	6	6	6	6	6
Tarrant	Mid Cities Blvd.	FM 157	SH 360	6	6	6	6	6
Tarrant	Mosier Valley Road	FM 157	House Anderson	2	2	2	2	2
Tarrant	Precinct Line Road	SH 10	Trammel Davis	2	4	4	4	4
Tarrant	Precinct Line Road	SH 121/SH 183	SH 10	4	4	4	4	4
Tarrant	Trinity Blvd.	IH 820	Norwood Drive	4	4	4	4	4
Tarrant	Trinity Blvd.	Norwood Drive	Bell Spur	4	4	4	6	6
Tarrant	Trinity Blvd.	Bell Spur	Mossier Valley Road	6	6	6	6	6
Tarrant	Trinity Blvd.	Mossier Valley Road	Tarrant County Line	6	6	6	6	6
Tarrant	Watauga Road	US 377	Rufe Snow Drive	4	4	4	4	4

B.3.2 Residential Growth

Residential growth, specifically single-family home construction, was utilized as an indicator of historical growth in the Indirect Impacts AOI. According to the 2000 U.S. Census (the most recent for which reliable data is readily available), approximately 70.9 percent of the homes in Tarrant County were built between 1950 and 1989; 44% were built before 1980. At the time of the census, approximately 26.9 percent of the Tarrant County housing stock for single family detached homes is at least 10 years of age; the median year for new home construction was 1978.

Most of the cities in the Indirect Impacts AOI also exhibited similar trends in home construction. In roughly half of the cities (Arlington, Bedford, Eules, Irving, and North Richland Hills), the bulk of construction in 2000 occurred between 1960 and 1990. This was not the case for some communities. In Colleyville, the major of construction did not begin until 1970, and did not really get going until 1980. In the period from 1970 to 1998, 87.4 percent of Colleyville's single family detached housing stock was constructed. Both Hurst and Fort Worth saw much earlier housing construction, which occurred over a

longer period of time. The majority of construction in Fort Worth began in 1940 and continued through 1989 (75.2 percent). The majority of construction in Hurst began in 1950 and continued through 1989 (87.0 percent).

Research indicates that estimated housing units for Tarrant County housing units increased by 15.8 percent between 2001 and 2006, while Dallas County rose 6.7 percent in the same time period. Municipalities within the indirect impacts area individually exhibited increases in housing unit in the past five years as well. This previous development defined the construction of public facilities and implementation of public services as well as commercial/retail land uses that occurred after the 1990s.

Real Estate Center

Single-family building permit information was collected for Tarrant and Dallas Counties from 1980 to 2006. The number of building permits issued increased over the past 26 years as shown in **Table VII-4**.

Table VII-4 Dallas and Tarrant County Residential Permits								
Year	Dallas County				Tarrant County			
	Number of Dwelling Units		Average Value per Dwelling Unit (\$)		Number of Dwelling Units		Average Value per Dwelling Unit (\$)	
	Units	Percent Change	Value	Percent Change	Units	Percent Change	Value	Percent Change
1980	17,422	-	45,067	-	11,613	-	33,567	-
1990	8,839	-49%	70,600	57%	4,894	-58%	68,767	105%
2000	13,745	56%	99,133	40%	11,685	139%	75,033	9%
2006	15,556	13%	163,933	65%	17,313	48%	98,100	31%
Overall	-	-11%		264%	-	49%		192%

Source: Texas A&M Real Estate Center

Texas Education Agency

According to the Texas Education Agency (TEA), there are five school districts are located within the Indirect Impacts AOI. These school districts exhibited moderate growth over the past five years as shown in **Table VII-5**. None of these schools came within the list of top ten fastest growing school district in the NCTCOG regional area.

Table VII-5 School District Enrollment Totals					
District Name	2000-2001 Enrollment	2005-2006 Enrollment	5-year Growth	% Growth	Share of Regional Growth
Birdville ISD	21,252	22,509	1,257	5.9%	0.91%
Grand Prairie ISD	20,260	23,858	2,598	17.8%	2.60%
Grapevine-Colleyville ISD	13,626	13,911	285	2.1%	0.21%
Hurst-Euless-Bedford ISD	19,268	19,978	710	3.7%	0.51%
Irving ISD	28,959	32,677	3,718	12.8%	2.69%

Source: Texas Education Agency, <http://www.tea.state.tx.us>

B.3.3 2030 NCTCOG Projects

Over \$6 billion dollars in transportation projects are detailed in the proceeding pages of the 2008-2011 TIP. While these projects are individually listed in the TIP, a series of maps was developed and are displayed in **Appendices H-12** through **H-16** in order to more fully communicate the extent of transportation projects and funding in the Dallas-Fort Worth area. **Appendix H-12** shows projects that have been completed between May 2005 and March 2007. **Appendices H-13** through **H-16** depict projects approved for funding in the FY 2008 - 2011 timeframe. **Appendix H-17** is a list of regionally significant local projects.

B.3.4 NCTCOG Development Monitoring

The NCTCOG maintains a development monitoring database that tracks over 8,000 major developments that are either existing, under construction, announced, or in the conceptual stages within the NCTCOG MPA. Major developments are over 100,000 square feet and/or 100 employees. The information in **Table VII-6** summarizes the performance of development, while the information in **Appendix H-18** lists those developments within Dallas and Tarrant County municipalities that are either under construction or announced.

Table VII-6 NCTCOG Development Monitoring for 2007						
	Units	Quarterly Performance				Annual
		First	Second	Third	Fourth	
Retail						
Projects Completed	Sq. Feet	567,000	669,951	1,012,000	2,070,082	4,319,033
Projects Begun	Sq. Feet	627,000	1,369,432	990,000	1,425,462	4,411,894
Projects Announced	Sq. Feet	661,000	1,972,000	1,029,792	993,863	4,656,655
Office						
Projects Completed	Sq. Feet	919,492	958,476	236,428	1,209,149	3,323,545
Projects Begun	Sq. Feet	86,300	86,300	1,636,480	1,306,000	3,115,080
Projects Announced	Sq. Feet	2,054,741	196,000	719,300	1,117,000	4,087,041
Industrial						
Projects Completed	Sq. Feet	1,316,000	2,412,382	859,280	7,935,377	12,523,039
Projects Begun	Sq. Feet	2,730,828	4,990,735	1,783,000	5,157,400	14,661,963
Projects Announced	Sq. Feet	2,178,520	2,960,000	2,985,875	2,517,312	10,641,707
Hotel						
Projects Completed	Rooms	1,007	357	248	407	2,019
Projects Begun	Rooms	136	1,007	383	312	1,838
Projects Announced	Rooms	300	452	351	272	1,375

The information presented below in **Table VII-7** tracks the rate of permit issuance from 1980 to 1995 (tracking ended in 1995).

Table VII-7 Dallas and Tarrant County Non-Residential Permits (1980-1995)								
Year	Dallas County				Tarrant County			
	Number of Permits		Dollar Value of Permits (\$000)		Number of Permits		Dollar Value of Permits (\$000)	
	Units	Percent Change	Value	Percent Change	Units	Percent Change	Value	Percent Change
1980	5,127		936,993		1,798		477,146	
1985	7,360	44%	1,659,973	77%	3,191	77%	501,339	5%
1990	1,444	-80%	331,387	-80%	1,656	-48%	333,299	-34%
1995	1,896	31%	641,132	93%	1,920	16%	394,217	18%
Overall	--	-63%	--	-32%	--	7%	--	-17%

Source: Texas A&M Real Estate Center

As reflected above, the indirect impacts AOI is undergoing a densification toward more intense urbanization. This transition, which is consistent with the goals and objectives of local municipalities, has intensified in recent years and is expected to continue well into the foreseeable future, although it is likely that one of the implications of densification is the conversion of land uses from lower to higher order usage. In some cases, the conversion will mean more commercial and industrial, while in other cases the replacement of older for newer housing stock will mean a complete transformation of established and aging neighborhoods.

C. STEP 3: INVENTORY OF THE STUDY AREA'S NOTABLE FEATURES

This step involves conducting an inventory of notable environmental features, including socioeconomic features, to identify specific environmental issues by which to assess the project. The indirect impact-causing activities of the proposed action and alternatives are then detailed. The outcome is identification of potentially significant indirect impacts for further analysis (it should be noted that indirect impacts to a resource might occur even in the absence of direct impacts (e.g., water quality may not be a direct impact of a transportation project but subsequent development spurred by the transportation improvement may result in impacts to water quality)). Qualitative and quantitative techniques (where and when available), including analysis of GIS data, would then be employed to estimate the magnitude of the potentially significant effects. Finally, strategies that avoid or lessen any effects found to be unacceptable are reported, if warranted.

Notable features that could be indirectly impacted within the study area mirror the list of features evaluated for direct impacts in **Section VI**. For purposes of this indirect impacts analysis, potential impacts have been categorized as either: natural resources impacts, land use impacts, community impacts, or other resources. **Table VII-8** identifies the resources evaluated under each category.

Table VII-8 Notable Features	
Resource Category	Issue/Resource
Natural Resources	<ul style="list-style-type: none"> • Farmlands • Waters of the U.S., including Wetlands • Floodplains • Navigable Waters of the U.S. • Water Quality • Vegetation • Threatened/Endangered Species • Air Quality
Land Use	<ul style="list-style-type: none"> • Land Use and the Regional Toll Revenue Funding Initiative • Section 4(f) Properties • Historic Resources
Community Impacts	<ul style="list-style-type: none"> • Relocations and Displacements • Environmental Justice • Public Facilities and Services • Traffic Operations • Lighting and Visual Impacts • Traffic Noise

D. STEP 4: IDENTIFY IMPACT-CAUSING ACTIVITIES OF THE PROPOSED IMPROVEMENTS

D.1 Overview

The objective of this step is to consider the “cause and effect” relationships between the direct impacts of the proposed action and the notable features or resources in the indirect impacts study area. As noted in *NCHRP Report 466* (Page 54), documented direct impacts “can be viewed as potential catalysts for indirect effects.” Indirect impacts are commonly related to land use changes in cases where a transportation project is constructed that would enhance access, circulation, or travel times, and thereby attract or accelerate new development in an area. Development stimulated by a transportation project that would not or could not occur without the project would be an indirect impact of the proposed project. Generally, it would be reasonable to expect that projects on new locations or larger scale projects (e.g. upgrading an existing facility to a controlled access freeway) would have more potential to cause indirect impacts than smaller scale projects or projects constructed in heavily urbanized areas. As stated in *NCHRP Report 466*, the extent and maturity of existing transportation infrastructure can increase the likelihood of induced development shifts; however, the development influence of a highway infrastructure can diminish with successive improvements because each new improvement brings a successively smaller increase in accessibility (*NCHRP Report 466*, page 62).

The evaluation of whether the proposed project is likely to have indirect land use impacts follows the *NCHRP Report 25-25, Task 22 Forecasting Indirect Land Use Effects of Transportation Projects*. Of the

six land use forecasting tools introduced in the report, the “Planning Judgment” forecasting tool was used as the framework for the analysis. The Planning Judgment method requires the use of an eight-step process. The following summarizes key aspects of the analysis.

As described in the *NCHRP Report 25-25*, the key variables that might contribute to measurable changes in local development patterns in response to a transportation improvement include:

- **Change in accessibility:** Measured in travel time or delay, if available; or ratio of volume/capacity or change in access.
- **Change in property value:** Likelihood of changes in land price that would influence development.
- **Forecasted growth:** Estimated changes in population, employment, and land development for region, city, or sub-area. Forecasted population and employment trends may indicate the demand for land development where access and other public services may be available.
- **Relationship between supply and demand:** The estimates of forecasted growth (i.e., population, employment, and land development) considered in light of how much vacant, buildable land is available within a reasonable sub-area.
- **Other market factors:** Are there things that exist (i.e. favorable market conditions, utilities) that would promote or limit development or possible barriers to service?
- **Public Policy:** Are land use plans closely followed and enforced such that development pressures can be resisted?

The assessment of key variables for indirect impacts should take into consideration two questions: (1) How likely is it that a transportation project will be followed by some noticeable change in the land use that would not have occurred in the absence of the project or is likely to occur sooner than anticipated?; (2) If such changes did occur, would they be consistent with the comprehensive plan of relevant municipalities? The discussion below looks at the above six key variables in relation to the proposed project in addressing these questions.

D.2 Change in Accessibility

Any new access to an area presents a potential for growth and redevelopment of existing land uses, and the degree of new or improved access should correlate with the resulting degree of growth. A substantial improvement to access would include realignment to increase safety and/or mobility, or the construction of access points that previously did not exist. This often occurs during reconstruction work that, as in the goals of the proposed highway expansion project, includes bringing the existing facilities up to modern standards. The SH 121/SH 183 corridor is intersected by numerous major and minor roadways that provide access to adjacent areas. The proposed project would modify several of these access points, but would not introduce new points of access. As such, there is no large continuous area where new development or redevelopment could occur that does not already have complete access. Still,

modifications to freeway access points means improved access (part of the purpose and need of the proposed highway expansion project), and this is likely to cause some development/redevelopment of land uses, potentially sooner than would normally occur without the improvements being made.

D.3 Change in Property Value

The proposed project is accounted for within various local planning documents (comprehensive plans, FLUPs, thoroughfare plans) for the adjacent municipalities. It is an established objective of these city planning documents and policies to guide commercial development along frontage roads paralleling the major highway while protecting areas of residential development. Potential project-induced development/redevelopment is anticipated at points of improved access along the project corridor at major intersections (i.e., Precinct Line Road, Brown Trail, Bedford Road, Central Drive, Murphy Drive/W. Park Way, Industrial Boulevard, Ector Drive, Euless Main Road, SH 360, International Parkway, County Line Road, and SH 161), and along frontage roads. Such land use changes would likely include the redevelopment of already developed areas (i.e., near DFWIA, see **Section VII - D.4** below), as well as the conversion of undeveloped land to commercial and residential uses.

Some changes in property value are anticipated; however, such changes within the Indirect Impacts AOI would be driven primarily by market forces, comprehensive plans, and FLUPs and not likely induced by the proposed project. The proposed project, however, does have the potential to affect how quickly property values may change, but would not be the determining factor. Of further note, detailed studies on the net fiscal impacts due to managed (toll) HOV lanes are not available.

D.4 Forecasted Growth

Municipalities along the corridor are forecasted to experience near 50 percent growth in population and households, with an approximate 54.7 percent growth in jobs. Although the expected growth rate among the affected municipalities is high, the heavily urbanized project AOI serves as a constraining factor for new development. Some project-induced development/redevelopment is anticipated, but as the proposed project is accounted for within local planning documents, it is unlikely that project-induced land use changes would be inconsistent with local land use and zoning plans. There is the potential, however, that the proposed transportation improvements could increase the rate of land development/redevelopment within the Indirect Impacts AOI. For example, the process of land use conversion is likely to be most notable in the eastern portion of the AOI where undeveloped land abutting the project corridor (located within the planning jurisdiction of the DFWIA) is planned for the development of commercial uses such as restaurants, hotels, and office buildings. Based on existing land use, as compared to the DFWIA Future Land Use Map, an estimated 600 acres of mixed-use retail and professional development within the AOI would be converted to multi-use buildings, including retail, office and service commercial properties. It is the consensus of local city planners that the proposed highway expansion project could accelerate plans for development and redevelopment within the vicinity of the project, but that such development and redevelopment would occur regardless of the proposed improvements.

D.5 Relationship between Supply and Demand

According to the NCTCOG 2005 Land Use inventory, approximately 114,092 acres (33%) of the land in the Indirect Impacts AOI was vacant and approximately 1,571 acres (0.5%) was under construction. While there are several vacant parcels throughout the encompassing jurisdictions, they are isolated and individually not large enough to interest a tract housing or business park development. It is estimated that there are approximately 54 acres of vacant land adjacent to the proposed project that could be converted to retail, commercial, and high density residential land uses. Land consolidation could potentially occur, but the possibility of extensive development or redevelopment, without consolidation, would be seriously constrained.

D.6 Other Market Factors

Observers often cite highway construction projects as the primary contributors to urban sprawl. Although it is true that a new road in a new location does expose land to development, the immediate correlation that “new roads equals land use change” is an oversimplification of the complex relationships comprising urban growth. The presence or absence of adequate roadways is one of many factors affecting where development/redevelopment is likely to occur. The following is a list of factors people routinely consider when selecting a new home:

- Price and financing (lot and house; financing is also becoming a heightened concern due to developments in the lending industry and some buyers’ increasing difficulty in acquiring new housing stock homes);
- Structural characteristics (material, lot size, garage size, and number of stories);
- Neighborhood (schools, churches, selection of housing, parks, taxes, crime, distance and travel time to work, ethnic or religious makeup, and other land uses);
- Environment (air quality, noise, open space, local streams and lakes, view; distance and travel time to recreation, service, retail, medical, entertainment, and other community facilities);
- Economy (growth, strength of regional economy, employment centers in vicinity, and other economic factors); and
- Fuel (this is a new concern that is based on time and distance to employment and other public and personal destinations, but, by the recent rapid rise of fuel costs, is unique as has become an independent and amplified lens of travel consideration).

In addition, numerous regulations set by agencies prevent developers from building at will. Factors they must consider include:

- Quality of schools and other public services;
- Cost of providing infrastructure (e.g., utilities);
- Undevelopable land (i.e., slope, floodplains, etc.);
- Land acquisition and development costs and constraints (low land cost, good availability; natural amenities; physical constraints, such as terrain, soils, and floodplains; regulatory constraints,

including regional growth management policies, environmental regulations, and local ordinances);

- Permitting and mitigation;
- Zoning ordinances; and
- Existing infrastructure (transportation, including interregional, arterial, local roadways; water and wastewater; electricity, other utilities).

An examination of the variables listed above shows that housing choices are made for numerous reasons, many of which have nothing to do with transportation. Likewise, where a developer chooses to work has as much to do with the market and regulatory forces with which the developer must coordinate their efforts, as it does with the transportation network. Where land use controls exist in the form of comprehensive plans and zoning ordinances, proposed development would take place through the typical platting process. All of the cities within the AOI have some form of land use controls.

Accordingly, the current consensus is that regional development is primarily driven by regional economics and that the major effect of highways is to distribute the development within a region (FHWA, 2004; Cevero, 2003; Hartgen, 2003a and 2003b). Essentially, this means that a region must have economic vitality in order to grow. Simply constructing a highway will essentially have no effect on growth if the economy of the region is stagnant.

Planning documents exist within the encompassing municipalities of the Indirect Impacts AOI for the continuation of development toward the MTP year 2030. Numerous major arterial roadway projects are scheduled within the AOI (see **Table VII-3**), as are numerous capital improvement projects. Ultimately, the proposed improvements to the SH 121/SH 183 facility are considered in the development plans for local municipalities, and the capacity/mobility improvements are not anticipated to substantially affect future opportunities for development. Certainly, it cannot be said that future land development or redevelopment is contingent upon the proposed highway improvements, even though the project may play a role in facilitating the timing of future changes in land use.

D.7 Public Policy

The tolling of the proposed project managed lanes has been taken into consideration with the development of the *Excess Toll Revenue Sharing: Managed Lane Policy* as a part of the Regional Toll Revenue Funding Initiative (RTRFI). Potential indirect impacts would result from the proposed acceleration and construction of the RTRFI projects; these projects have yet to be identified.

Land use planning for the region reflects the anticipated presence of the proposed improvements to the SH 121/SH 183 facility. The land use planning tools (comprehensive plans, FLUPs, thoroughfare plans) have already taken into consideration potential indirect impacts and exist to regulate and control potential

land use changes that could result from an improved transportation facility. Jurisdictions within the Indirect Impacts AOI have a strong record of land use policy enforcement.

D.8 Conclusions

As discussed above, the proposed SH 121/SH 183 facility improvements should not greatly alter the future land use patterns in the Indirect Impacts AOI, as none of the change indicators (change in accessibility, change in property value, expected growth, the relationship between supply and demand, other market factors, and public policy) suggest that substantial changes are likely to be caused by the proposed project. That is not to say that project-induced land use impacts would not occur. The primary areas expected to experience indirect land use impacts occur along improved points of access (i.e., intersections, frontage roads), which include approximately 54 acres along or near to the proposed project alignment. However, the FLUPs that guide and monitor development, along with other market factors, as well as development constraints within the heavily urbanized AOI, would have greater influence on the location and type of development/redevelopment within the AOI than would the proposed project. The FLUPs for all nine affected municipalities within the AOI are shown in **Appendices H-2 through H-11** (Richland Hills, North Richland Hills, Hurst, Colleyville, Bedford, Euless, Fort Worth, Arlington, and Irving, in consecutive order), as well as the FLUP for the DFWIA. The transportation improvements could potentially influence the rate or pace of land redevelopment/conversion, but it is unlikely that the proposed project would induce changes in the pattern or amount of land use in a manner that would be inconsistent with local and regional land use and zoning documents.

E. STEP 5: IDENTIFY POTENTIALLY SUBSTANTIAL INDIRECT IMPACTS

Step 5 examines the potential for substantial indirect impacts associated with the proposed project. The cause and effect relationships observed for direct impacts were extended to the identification and evaluation of potential indirect impacts in this step. The analysis focuses on encroachment - alteration effects, induced growth effects, and effects related to induced growth. These effects may be associated with a wide variety of environmental resources or issues, as identified in relation to the notable features of the Indirect Impacts AOI in Step 3 of this analysis. The method for evaluating these resources and issues utilized the qualitative inference technique discussed in *NCHRP Report 466* (Page 66) which applies “professional judgment of the possible changes that the proposed project would entail. This approach draws heavily upon the available ecological, economic, demographic, and social information developed during the analysis of direct impacts. All of the resource categories considered in this assessment were prescreened with regard to indirect impacts. The prescreening process described in Figure 7-11 of the *NCHRP 466 Report* (pages 68-69) was used in Step 5 to determine if further analysis was necessary.

E.1 Natural Resources

E.1.1 Farmlands

Since the 1980s, the Indirect Impacts AOI has been a largely developed and urbanized area. A small portion (approximately 135.04 acres) of the AOI crosses the Trinity River floodway and approximately 1,899.52 acres (27.9%) of an open space that is approximately 6,792.32 acres and contains the approximate 1,300-acre River Legacy Parks Trail System lies along the south edge of the AOI. Approximately 177 acres of undeveloped land lies near the DFW International Airport. All of these lands are either protected by various agreements or, as in the case of DFW, are part of a larger land use development master plan. These lands are considered to be dedicated to urban use and are no longer regulated under the FPPA. Further, the approximate 177-acre parcel near the DFW airport has previously been developed, and it too is no longer regulated by FPPA. Based on the current urban classification (the AOI contains no farmland), the proposed highway expansion project would not result in indirect impacts to Prime Farmlands. Accordingly, this resource will not be evaluated in Steps 6-8.

E.1.2 Waters of the U.S. (Including Wetlands)

Waters of the U.S.

Determinations subject to USACE jurisdiction under Section 404 of the CWA and/or Section 10 of the Rivers and Harbors Act, were only performed on those features, which intersected the project limits. Waters of the U.S. (including wetlands), are regulated by the USACE under authority of Section 404 of the CWA. Section 404 of the CWA authorizes the USACE to issue permits for the discharge of dredged or fill material into waters of the U.S. (including wetlands).

Within the project limits, Airport Freeway is intersected by five intermittent streams, two perennial streams, and two ephemeral streams; within the larger indirect impacts AOI, the number of streams increased to 14 (the indirect impacts AOI includes portions of these streams plus a section of the Trinity River). The waters are listed in **Table VII-9**. All but the ephemeral streams are also identified on the USGS topographic map (**Appendices A-34** and **A-35**). All are currently crossed with existing multiple box culverts (MBC), a single box culvert (unnamed tributary to Hurricane Creek), or bridge structures (Bear Creek).

Of the perennial and intermittent streams, all but two are concrete- or gabion-lined channels either upstream or downstream; only Hurricane Creek and Bear Creek have natural streambeds both upstream and downstream of the project area (and beyond the standard concrete apron of the existing MBC at Hurricane Creek). The ephemeral streams within the project area have primarily natural streambeds where exposed, except where the Unnamed Tributary to Bear Creek discharges to Bear Creek, which is underlain with rip rap.

Table VII-9 Estimated Approximate Channel Lengths within the Indirect Impacts AOI	
Water of the U.S.	Approximate Length
Study Area Streams	
Bear Creek	29,725
Big Bear Creek	2,492
Hurricane Creek	14,370
Little Bear Creek	15,218
Mayfair Park Creek	2,003
Mesquite Branch (a.k.a., Lorean Branch)	24,253
Sulphur Branch (West)	24,280
Valley View Branch	18,413
Unnamed Tributary to Bear Creek	6,245
Unnamed Tributaries to Hurricane Creek	7,198
Unnamed Tributary to Sulphur Branch	7,812
Unnamed Tributary to Trinity River	13,888
Additional AOI Streams	
Calloway Branch	32,403
Estelle Creek	15,625
Walker Branch	24,089
West Fork Trinity River	19,712
Unnamed Tributary to Big Fossil Creek	2,128
Unnamed Tributary to Calloway Branch	2,139
Unnamed Tributaries to Estelle Creek	5,056
AOI Lacustrine Features	
Feature	Approximate Area
Trigg Lake	35.90 acre

Table Notes:

The jurisdictional status of all waters listed is to be determined by the USACE. All culverts would be of sufficient size to allow for natural flow conditions. Where impacts are listed as "0.0," it is either due to the channel being concrete-lined or because the proposed design would have no impact on the existing water body.

Although none of them are associated with woody riparian corridors that run the full length of them, each of these stream channels do have segments where there is at least some adjacent vegetation. In total, based on reviews and analyses of GIS data, high level and ground oriented imagery, physical reconnaissance, and inventories of stream channels, the Indirect Impacts AOI contains approximately 55 miles (268,734 linear feet) of streams and waters of the U.S.

Lacustrine Features

The Indirect Impacts AOI also contains a lake feature. **Table VII-9** provides details.

Wetlands

Site reconnaissance surveys were performed in July and October 2005, March 2007, and May 2008 within and adjacent to the proposed ROW throughout the length of the project. Survey methods included the following: 1) review of USGS topographic maps, NRCS maps, and local county Soil Survey maps; 2) review of historical color, black and white, and infrared aerial photographs; 3) review of the FEMA floodplain maps and National Wetland Inventory Maps; and 4) site reconnaissance. Based upon the

results of the surveys, it was determined that the proposed project area does not contain any wetlands or other special aquatic sites as defined in the 1987 *Corp of Engineers Wetland Delineation Manual - Technical Report Y-87-1*.

Conclusion

As discussed in Step 4, indirect land use impacts resulting from the proposed project are expected to be minor and primarily in the form of redevelopment and land use conversion instead of new induced development. Implementation of the proposed project is, however, anticipated to have a greater influence on the rate or pace of redevelopment and conversion within the Indirect Impacts AOI. Waters of the U.S. in the AOI could potentially be impacted by such redevelopment and conversion. As such, these potential impacts are further evaluated in Steps 6-8.

E.1.3 Floodplains

In their natural condition, floodplains serve vital functions including temporary storage of floodwaters, moderation of peak flood flows, maintenance of water quality, groundwater recharge, prevention of erosion, and habitat for wildlife. After a thorough review and analysis of GIS data, FEMA Flood Insurance Rate Maps (FIRMs), high level and ground oriented imagery, physical reconnaissance, and inventories of stream channels, the Indirect Impacts AOI contains approximately 4,700 acres of 100-year floodplains and approximately 1,042-acres of 500-year floodplains.

As a result of past and present agricultural practices and urban development, these floodplains have been affected by land clearing, soil compaction, riparian corridor encroachment, and modifications to the surface water drainage network.

Within the Indirect Impacts AOI, many of the 500-year floodplains have remained relatively free of encroachment; however, approximately 10 to 20 percent of the 100-year floodplains have been seriously encroached upon and approximately five percent have been thoroughly encroached upon. Roughly, two-thirds of the encroachment is in urban areas so that inundation of built land uses would be highly probable in case of a 100-year storm event. In other areas, encroaching land use has been generally compatible with floodplain inundation (i.e. parks and open spaces).

Floodplains within the Indirect Impacts AOI could potentially be impacted by accelerated project-induced redevelopment and conversion, as described in Step 4. As such, these potential impacts are further evaluated in Steps 6-8.

E.1.4 Navigable Waters of the U.S.

The USCG has designated the Trinity River as a navigable waterway in accordance with 33 CFR Section 2.05-25, *Navigable Waters of the United States*. As such, the Trinity River is regulated under the *General*

Bridge Act of 1946, Section 9 of the *Rivers and Harbors Act of 1899*, and Section 10 of the *Rivers and Harbors Act of 1899*. The Trinity River is not crossed by the proposed project and runs only through a small portion of the Indirect Impacts AOI (along the southern border, near the southeast corner of the AOI). As the Trinity River is relatively far removed from the proposed project within the AOI, it is unlikely that project-induced development and/or redevelopment, or the acceleration of such, would affect existing bridge crossings within the AOI. It is further unlikely that the proposed project would induce the construction of any new bridge crossings. Accordingly, further discussion in Steps 6-8 of the indirect analysis is not warranted.

E.1.5 Water Quality

Mesquite Branch (a.k.a., Lorean Branch), Valley View Branch, Sulphur Branch, Hurricane Creek, Bear Creek, Calloway Branch, Walker Branch, Esters Creek, a portion of West Fork Trinity River, an unnamed tributary to Trinity River, an unnamed tributary to Sulphur Branch, an unnamed tributary to Hurricane Creek, an unnamed tributary to Bear Creek, and an unnamed tributary to Big Fossil Creek are all within the Indirect Impacts AOI.

According to the 2006 CWA Section 303(d) list, the West Fork Trinity River below Lake Worth (from a point immediately upstream of the confluence of Village Creek, just south of the Indirect Impacts AOI) to Lake Worth Dam in Tarrant County is listed as a threatened or impaired water for bacteria and PCBs in edible tissue. The West Fork Trinity River through the Indirect Impacts AOI is not listed as a threatened or impaired water.

A four-mile stretch of Estelle Creek (an unclassified water body) running upstream from the confluence with Bear Creek to Valley View Lane in Irving, Dallas County has been listed in the 2006 CWA Section 303(d) list as a threatened or impaired water for bacteria. This stream was first listed in 2006. Also first listed in 2006 on the CWA Section 303(d) list as threatened or impaired is a 10 mile stretch of Bear Creek running upstream from confluence with West Fork Trinity River, to just upstream of SH 183, Dallas County; an eight-mile stretch of Big Bear Creek running upstream from confluence with Little Bear Creek to SH 26 in Tarrant County was similarly first listed for bacteria in 2006.

A trend is noticeable in the listing of streams that enter, flow through, or leave the Indirect Impacts AOI. Neither Estelle nor Bear Creeks were listed on the 2004 CWA Section 303(d) list for threatened or impaired streams. However, on the same 2004 CWA Section 303(d) list, the Lower West Fork Trinity River, from a point immediately upstream of the confluence of the Elm Fork Trinity River in Dallas County to a point immediately upstream of the confluence of Village Creek in Tarrant County, was listed for bacteria and PCBs in edible tissue. In 2000, a longer stretch of the same segment of the Lower West Fork Trinity River was listed for chlordane and bacteria in edible tissue. In 1992 (the first year for which CWA Section 303(d) lists are readily available), the Lower West Fork Trinity River was listed for potential nonpoint source pollution, moderate point source pollution, elevated dissolved oxygen range, algae, and fecal coliform. This indicates that, while some clean-up of the Trinity River system is

providing success, some of the smaller streams are experiencing greater urban pressures, especially in industrializing and commercializing areas of the DFW Metroplex.

Because the proposed highway expansion project is located within five miles upstream of a threatened or impaired segment, additional coordination with TCEQ is required for total maximum daily loads. Water quality in the Indirect Impacts AOI could potentially be impacted by accelerated project-induced redevelopment and conversion, as described in Step 4. As such, these potential impacts are further evaluated in Steps 6-8.

E.1.6 Vegetation

The indirect impacts AOI lies on the boundary of the Blackland Prairie and Oak Woods and Prairies natural regions of Texas. **Section VI - B.2** provides an in depth analysis of the vegetation within the proposed project corridor.

Blackland Prairie

Topography of the Blackland Prairies region is gently rolling to nearly level and well dissected for rapid surface drainage. Elevation varies from 300 to 800 feet above sea level. Average annual rainfall ranges from 30 to 40 inches increasing from west to east. May is the peak rainfall month for the northern end of the region; however, the south-central part has a fairly uniform distribution throughout the year.

The natural vegetation of the region was dominated by tallgrass prairie on uplands. Deciduous bottomland woodland and forest were common along rivers and creeks (Diamond and Smeins 1993). The Blackland Prairie is characterized by a high degree of plant community diversity. This diversity, which is in part represented by four major prairie community types, is attributable to the ecoregion's variety of soil orders and their variation in texture and soil pH (Diamond, Riskind, and Orzell 1987; Diamond and Smeins 1985). Little bluestem (*Schizachyrium scoparium*), and Indiangrass (*Sorghastrum nutans*) are frequently dominants on Blackland Prairie alfisols and vertisols. Big bluestem (*Andropogon gerardii*) is of variable importance on vertisols and is frequently a dominant on Blackland Prairie mollisols. Gamagrass-switchgrass (*Tripsacum dactyloides-Panicum virgatum*) prairies are associated with bottomland sites throughout the region, and are also found on upland sites of the northern main belt vertisols where they are especially associated with gilgai microtopography. Silveanus dropseed- mead's sedge (*Sporobolus silveanus-Carex meadii*) prairies are found over low pH soils of the northern main belt. Little bluestem-brownseed paspalum (*S. scoparium-Paspalum plicatulum*) prairie is associated with Fayette Prairie alfisols. Each community differs further in secondary floras. For example, eastern forb species such as *Liatris pycnostachya* and *Coreopsis grandiflora* are largely limited to the alfisols of the Eastern Marginal prairies, while grasses such as *Bouteloua hirsuta* and *Muhlenbergia reverchonii*, as well as a diversity of species in the genus *Dalea* are generally found on the mollisols of the White Rock Cuesta.

Oak Woods and Prairies

The Oak Woods and Prairies region is gently rolling to hilly with elevation from 300 to 800 feet. Rainfall averages 35 to 45 inches per year with a peak in May or June. Upland soils are light colored, acid sandy loam or sands. Bottomland soils are acid with textures ranging from sandy loams to clays. Oak-hickory forest is interdigitated with tall-grass prairies in this region. The Western and Eastern Cross Timbers are major areas of oak-hickory, with open savannah as well as dense brush of post and blackjack oaks. Peat bogs and marshes are distributed along a line corresponding to surface exposures of the Carrizo Sands formations, running roughly southwest from northern Leon County to Palmetto State Park in Gonzales County. River valleys crossing the region support a forest of hackberries and pecans mixed with oaks on the alluvial soils.

According to Correll and Johnson, even with the wide variation in soils, the climax understory vegetation is rather uniform with the predominant grasses being little bluestem (*Schizachyrium scoparium*), big bluestem (*Andropogon gerardii*), Indian grass (*Sorghastrum nutans*), switchgrass (*Panicum virgatum*), Canada wild-rye (*Elymus canadensis glaucifolius*), side-oats grama (*Bouteloua curtipendula*), hairy grama (*Bouteloua hirsuta*), tall dropseed (*Sporobolus asper*) and Texas wintergrass (*Nassella leucotricha*). Brush species also have invaded the prairie, and weedy annual and perennial grasses have increased in number, including hairy tridens (*Erioneuron pilosum*), Texas grama (*Bouteloua rigidisetia*), red grama (*Bouteloua trifida*), tumble windmill grass (*Chloris verticillata*), tumblegrass (*Schedonnardus paniculatus*), red lovegrass (*Eragrostis secundiflora*) and some perennial weeds.

Due to the fertile soils found within the natural region, the Blackland Prairie and Oak Woods and Prairies have been extensively cultivated. Much of the native vegetation was removed as fields were prepared for cultivation. The Indirect Impacts AOI, like the Blackland Prairie and Oak Woods and Prairies as a whole, has been extensively impacted by agricultural activities. Riparian corridors along study area streams and creeks do contain remnants of native woody species. However, these corridors have been reduced in size over time as a result of agricultural practices and land development. Woody vegetation associated with the riparian corridors still remains, primarily within the floodplains.

Vegetation in the AOI could potentially be impacted by accelerated project-induced redevelopment and conversion, as described in Step 4. As such, these potential impacts are further evaluated in Steps 6-8.

E.1.7 Threatened and Endangered Species

Agricultural activities and urbanization have permanently and irreversibly changed vegetation and wildlife habitat within the Indirect Impacts AOI. The urbanized areas contain vegetation associated with landscaping and some fencerows, but do not represent suitable habitat for many wildlife species. Consequently, only wildlife species that have been able to adapt to the impacts of these human encroachments have survived in the area, and species abundance and diversity has declined and would be expected to decline further as natural habitat is replaced by urban development.

The Indirect Impacts AOI is located within portions of Dallas and Tarrant Counties. **Table VI-12** in **Section VI - B.3** identifies Dallas County and Tarrant County species that are listed on either the State or Federal threatened and endangered species list.

Of the 27 species, 11 are avian and are considered migratory. Although it is possible that these species may migrate through the Indirect Impacts AOI, it is unlikely any of the avian species would stay for an extended period of time. Likely, the only portions of the AOI that would provide suitable habitat for these species are located within the multiple parks and recreation areas; however, these listed avian species would most commonly select more favorable areas containing their preferred habitat away from urbanized areas.

Other State-listed species include the gray wolf, plains spotted skunk, red wolf, alligator snapping turtle, Texas garter snake, Texas horned lizard, and Timber/canebrake rattlesnake. The gray wolf and red wolf are believed to be extirpated in Texas and their preferred habitat of brushy and forested areas or grasslands is not found in the North Texas region.

Four reptiles are state listed within the counties located in the Indirect Impacts AOI. The alligator snapping turtle prefers deep water habitats and the perennial streams in the Indirect Impacts AOI may contain the species preferred habitat. The Texas horned lizard prefers rocky or sandy soils and within the Indirect Impacts AOI; the soils are primarily clays. The Timber/canebrake rattlesnake is found within riparian corridors with dense vegetation away from urbanized areas. The riparian corridors within the AOI do contain areas of dense vegetation, and thus may afford appropriate habitat for the Timber/canebrake snake; however, the species is typically found in the eastern third of the state.

Portions of the Indirect Impacts AOI still contain potential, fragmented habitat for the Plains spotted skunk. It is unlikely that this species would inhabit the AOI due to the level of urbanization. Also, the Trinity River Basin is found in the AOI, which has historically provided habitat for aquatic mollusks. The fawnsfoot mussel, Louisiana pigtoe mussel, and the Texas heelsplitter mussel may be found within the indirect impacts AOI. The greatest threat to freshwater mussels is a decline in water quality. As mentioned in the previous section, the proposed highway expansion project is not anticipated to adversely impact water quality. The Texas garter snake can be found in a wide variety of habitats, although they prefer moist or wet areas.

Endangered species and their habitats within the Indirect Impacts AOI potentially could be impacted by accelerated project-induced redevelopment and conversion, as described in Step 4. Although the proposed highway expansion project is needed to keep pace with traffic demand resulting from growth and development trends, it is also likely to result in a degree of land use transition or conversion as needs, and opportunities to fill needs, occur. Potential impacts to endangered species and their habitats in the AOI are further evaluated in Steps 6-8.

E.1.8 Air Quality

The proposed project is located in Tarrant County, which is part of the EPA's designated eight-hour, nine-county nonattainment area for the ground-level ozone. The proposed highway expansion project would result in some redistribution of traffic within the Indirect Impacts AOI as drivers who do not elect or can only on occasional basis afford to pay the toll, seek non-tolled alternatives via other area roadways. Congestion along the frontage roads and within the project area may increase under the toll scenario as traffic redistribution is expected to occur. Redistribution of traffic could result in indirect air quality impacts. As such, these potential impacts are further evaluated in Steps 6-8.

E.2 Land Use

E.2.1 Land Use and the Regional Toll Revenue Funding Initiative

Based on the indirect land use impacts analysis completed in Step 4 utilizing *NCHRP Report 25-25, Task 22*, the proposed improvements are not anticipated to substantially alter future land use patterns within the Indirect Impacts AOI. Areas where project-induced land use changes, primarily in the form of redevelopment and land use conversion, could possibly occur are surrounding points of increased access (i.e., intersections and frontage roads); no new points of access would be introduced by the proposed project. The proposed improvements are anticipated, however, to have a greater influence on the rate of redevelopment and conversion, potentially accelerating the pace at which such changes could occur. Future development and/or redevelopment patterns in the AOI would be regulated by the comprehensive plans and FLUPs of the affected municipalities, and would likely continue as planned if the project were delayed or cancelled. These local planning documents account for the project improvements; and the affected municipalities all have a strong commitment to upholding, implementing, and enforcing their land use plans and zoning controls. Even with the possible acceleration of redevelopment and conversion, it is unlikely that the proposed project would induce substantial changes to the pattern or amount of land use within the AOI in a manner inconsistent with local planning documents and policies. Positive project induced indirect impacts are anticipated in relation to the Regional Toll Revenue Funding Initiative (RTRFI). Based on the RTRFI *Excess Toll Revenue Sharing: Managed Lane Policy*, shared revenues resulting from the excess managed lane tolls would enable other unfunded transportation projects and initiatives to be funded more quickly (see **Appendices B-5** through **B-6**). As such, the indirect impacts to land use, in relation to the RTRFI, are further evaluated in Steps 6-8.

E.2.2 Section 4(f) Properties

Section 4(f) properties found within the indirect impacts AOI include publicly-owned parks and recreation areas

Potential indirect impacts to Section 4(f) properties would be driven by changes in land use resulting from improved transportation systems in the area. Although project-induced redevelopment and land use conversion is anticipated to be minor (around areas of improved access), such land use changes are expected to occur sooner in time than without the implementation of the proposed improvements. Therefore, section 4(f) properties within the Indirect Impacts AOI could potentially be impacted by accelerated project-induced redevelopment and conversion, as described in Step 4. As such, these potential impacts are further evaluated in Steps 6-8.

L.D. Bell High School

As stated earlier, one Section 4(f) property (L.D. Bell High School) would be directly impacted. In total, approximately 0.68 acre would be taken, but the Hurst-Eules-Bedford (HEB) Independent School District (ISD) has approved a Letter of Understanding with TxDOT indicating no adverse effect, and a Section 4(f) *De Minimis* determination has been obtained from FHWA. The land on which public institutions such as schools are located is not typically “available” in the marketplace for development and/or redevelopment. Further, publicly accessed recreation facilities on the L.D. Bell High School grounds are subject to local zoning guidelines and policies, as well as Section 4(f) regulations that work to restrict, unless unavoidable, development and/or redevelopment on these properties. Thus, project-induced land use change is not anticipated to affect L.D. Bell High School. For these reasons, additional discussion of L.D. Bell High School in Steps 6-8 is not necessary.

E.2.3 Historic Resources

The AOI for historic resources is smaller than the previously defined Indirect Impacts AOI, and is defined as all intersecting parcels located within 150-feet of the proposed project ROW. Historic resources in the study area are sites listed or eligible for listing on the NRHP. The only site that qualifies for consideration of historic resources in the study area is the Old Bedford Road Bridge, designated as Site ID#80, located at Sulphur Branch. The bridge, formerly a part of the road connecting Dallas and Fort Worth, is eight-feet wide, fourteen-feet long, and made of reinforced concrete slab. The bridge was constructed circa 1910 and is located on two parcels of land. The southwest portion is in the backyard of a residence constructed in 1963 while the northeast section shares a lot with an office building (circa 1990) surrounded by a parking lot.

As previously established, Old Bedford Road Bridge no longer functions as an active transportation route and has become isolated from the early twentieth century Community Development context for which it was originally constructed, having lost its integrity of setting, feeling, and association. Pursuant to Stipulation VI “Undertakings with Potential to Cause Effects” of the PA-TU between the FHWA, the SHPO, the Advisory Council on Historic Preservation, and TxDOT and the MOU, TxDOT historians determined that the proposed action would not adversely affect historic properties and that the proposed undertaking would have no reasonably foreseeable adverse impacts that may occur later in time and/or be farther removed in distance. As no project-induced adverse indirect impacts are anticipated, further discussion in Steps 6-8 is not warranted.

E.3 Community Impacts

Transportation investments can have major influences on society and have the potential to impose economic and social consequences. Community impact assessment is a process to evaluate the impact of a transportation action on a community and its quality of life. The term “community impacts” encompasses a broad range of potential effects and issues of importance to people, such as relocations and displacements, public facilities and services, traffic operations, traffic noise, lighting and visual impacts, and environmental justice impacts.

Due to the extent of urbanization already present in the Indirect Impacts AOI, project-induced developments would likely be minor (i.e. infill in nature), whereas project-induced redevelopments and land use conversions would be more likely to occur. Even though, as established in Step 4, redevelopment and conversion of the AOI is anticipated in the absence of the proposed project, it is expected that such changes could potentially occur at an increased rate under the Build Alternative. With respect to relocations and displacements, project-induced indirect impacts would be driven by redevelopment or changes in land use (i.e., conversion of existing residential or commercial development to another use would require the relocation/displacement of the original occupant). Furthermore, other issues such as environmental justice, public facilities and services, traffic operations, lighting and visual signage, and traffic noise could also potentially be impacted by accelerated project-induced redevelopment and conversion. As such, the potential effects to all of the above issues relating to community impacts are further evaluated in Steps 6-8.

F. STEPS 6-8: ANALYZE INDIRECT IMPACTS, EVALUATE ANALYSIS RESULTS, AND ASSESS CONSEQUENCES/DEVELOP MITIGATION

The purpose of Steps 6-8 is to achieve the following objectives:

- To assess the substantiality of the effects identified for the issues/resources identified in Step 5 by determining magnitude, probability of occurrence, timing and duration, and degree to which the effect can be controlled or mitigated (Step 6 *NCHRP Report 466* page 71).
- To reconsider key assumptions used in the indirect impacts analysis and evaluate the extent to which uncertainty associated with these assumptions may affect the results of the analysis. As indicated in *NCHRP Report 466* (Page 92), “[t]here is inherent uncertainty in estimating indirect impacts.” With this challenge in mind, Step 7 explores how sensitive the process of identifying indirect impacts is to the assumptions that served as a guide to defining the cause-effect relationships associated with potential project-induced land use changes.
- To assess the consequences of the analyzed indirect impacts and develop strategies to address unacceptable indirect impacts (Step 8 *NCHRP Report 466* page 94). Step 8 is addressed by comparing indirect impacts to the relevant goals and notable features and developing a

mitigation strategy to address any unacceptable indirect impact; or considering mitigation and determining reasons why mitigation is not practicable.

F.1 Natural Resources

F.1.1 Waters of the U.S.

Changes in land use and related effects on waters of the U.S. would occur regardless of project construction. Such changes include the development and/or redevelopment and corresponding excavation of various land use types; or an increase in storm water flow, which could encroach upon and/or affect aquatic resources by changing vegetation/wildlife habitat or hydrology and therefore, potentially the size, functions, or value of the resources. With construction of the Build Alternative, these impacts could be accelerated as redevelopment occurs. However, without the project, these impacts could still occur because of natural growth and/or transformation of land uses, resulting from the aging of land use types, community change, and/or other market factors, all of which have been accounted for by the affected municipalities within local planning documents and policies. Furthermore, the proposed project would not create any new points of access; therefore, project-induced land use change is expected to be minor and isolated to those areas of improved access (i.e., intersections and along frontage roads). Accordingly, indirect impacts to floodplains are not anticipated to be substantial. Therefore, the requirement for mitigation of environmental impacts would be limited to mitigating only the direct impacts associated with this proposed project; mitigation for indirect impacts would not be required.

F.1.2 Floodplains

With construction of the proposed project, impacts to floodplains could be accelerated as project-induced redevelopment and land conversion occurs. However, changes in land use and related effects on floodplains are likely to occur regardless of project construction. Currently, urban development within the 100-year floodplain is subject to local government ordinances and municipality guidelines, which function to help constrain development within the 100-year floodplain. That being said, encroachment under current standards would require mitigation, which in turn, could lead to excavation. Such efforts could change the size, functions, or values of the resources. The natural growth of the area and/or transformation of land uses that would result from aging land uses, community change, and/or other market factors would be the primary stimulators for development and/or redevelopment, which have been accounted for by the affected municipalities within local planning documents and policies. Furthermore, the places where land use change could potentially occur within the AOI would likely be limited to areas surrounding improved access, as no new points of access are generated from the proposed improvements. For all of the above reasons, project-induced indirect impacts to floodplains are not anticipated to be substantial. Therefore, the requirement for mitigation of environmental impacts would be limited to mitigating only the direct impacts associated with this proposed project; mitigation for indirect impacts would not be required.

F.1.3 Water Quality

Future increases in storm water runoff levels, non-point source pollution, and effects to groundwater associated with projected regional and local development are anticipated regardless of project construction; however, the proposed project is anticipated to increase the pace that such impacts could occur. The network of future roadways and subdivision streets, as planned for in the local planning documents of the affected municipalities, in conjunction with the proposed project, would contribute to increased runoff as impermeable surface areas increase. The density and type of future development within the Indirect Impacts AOI would contribute to the overall changes in runoff. However, as such impacts are expected even in the absence of the proposed project and the minor amount of land use conversion would likely remain isolated to areas of improved access, the indirect impacts to water quality resulting from the proposed project are not anticipated to be substantial. Accordingly, the requirement for mitigation of environmental impacts would be limited to mitigating only the direct impacts associated with this proposed project; mitigation for indirect impacts would not be required.

F.1.4 Vegetation

The proposed project is primarily anticipated to accelerate the pace of redevelopment and land use conversion. The proposed project could indirectly affect undeveloped land by the clearing of grassland and potential wildlife habitat through fragmentation. These areas of potential land use change would likely be constrained around improved points of access. However, such redevelopments, as well as some new developments, are expected to occur regardless of the proposed project's construction, resulting in the same clearing of vegetation and habitat fragmentation as with the proposed project. In absence of the proposed project, these encroachment impacts would result from land use transformation in response to aging land uses, community change, and/or other market forces, which have been accounted for within the local planning documents of the affected municipalities. As such, project-induced indirect impacts to vegetation are not anticipated to be substantial. Therefore, the requirement for mitigation of environmental impacts would be limited to mitigating only the direct impacts associated with this proposed project; mitigation for indirect impacts would not be required.

F.1.5 Threatened and Endangered Species

Changes in land use and related effects on threatened and endangered species and their habitats in the Indirect Impacts AOI would occur regardless of project construction. Such changes (redevelopment, as well as some new developments) are accounted for with local planning documents of the local municipalities and would primarily be in response to both social and economic forces. Any new development and associated roadway construction could result in the clearing of grassland, as well as the fragmentation of habitat. This would place additional stress on surviving habitat and would decrease the ability for the species to survive. Such encroachment impacts resulting from project-induced redevelopment and land conversion could be accelerated under the proposed improvements and would likely be limited to areas of improved access. The network of future roadways and subdivision streets, in

conjunction with the proposed project, would also contribute to resource stress, as would the density of future development. However, as encroachment is expected to occur even in the absence of the proposed project, the indirect impacts to threatened and endangered species resulting from the proposed project are not anticipated to be substantial. Accordingly, the requirement for mitigation of environmental impacts would be limited to mitigating only the direct impacts associated with this proposed project; mitigation for indirect impacts would not be required.

F.1.6 Air Quality

The primary pollutants from motor vehicles are volatile organic compounds (VOCs), carbon monoxide (CO), and nitrogen oxides (NOx). As stated in **Section VI - D**, the proposed project's design year traffic exceeds 140,000 vpd; therefore, a Transportation and Air Quality Analysis (TAQA) is required. In addition to motor vehicle emissions, the proposed project has the potential to accelerate the conversion and redevelopment of land uses in the project study area, which could result in increased air emissions from commercial, industrial, and transportation facilities.

Volatile organic compounds and nitrogen oxides can combine under the right conditions in a series of photochemical reactions to form ozone (O₃). 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 procedures for modeling 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. Therefore, concentrations of ozone for the purpose of comparing the results to NAAQS were modeled by the NCTCOG, the regional air quality planning agency.

The proposed project is in Tarrant County, which is part of the EPA designated 9-county non-attainment area for the 8-hour standard for the pollutant ozone. The 9-county non-attainment area has an attainment date of June 15, 2010. The proposed project is consistent with the 2030 MTP that was found to conform to the ozone SIP for DFW. The SIP is required by the CAA Amendment to improve regional air quality for ozone. It should be noted that the ozone non-attainment SIP and two future 10-year ozone maintenance plan SIPs would require measures to prevent degradation of air quality associated with any increase in urbanization. The 10-year ozone maintenance SIPs would be developed once attainment is achieved in 2010.

Even though the number of daily exceedances of the federal standards for ozone has decreased within the past decade, the DFW region remains in non-attainment for ozone. Although there have been year-to-year fluctuations, the ozone trend continues to show improvement. The trend of improving air quality in the DFW region is attributable in part to the effective integration of highway and alternative modes of

transportation, cleaner fuels, improved emission control technologies, and NCTCOG's regional clean air initiatives.

Carbon monoxide concentrations for the proposed action were modeled using CALINE3/MOBILE6.2. In accordance with the TxDOT Air Quality Guidelines, the model included various factors such as adverse meteorological conditions, traffic volumes, seasonal variations of weather, and sensitive receptors at the ROW line. As concluded in **Section VI - D: Air Quality**, projected local concentrations of carbon monoxide from the proposed project are less than 13% of the one-hour and 31% of the 8-hour NAAQS. Carbon monoxide emissions are not expected to exceed national standards at any time. In addition, as vehicles become more efficient and emissions are reduced, carbon monoxide emissions would be expected to decrease over time.

Off-road emissions from construction equipment may temporarily degrade air quality through dust and exhaust gases. However, since the 1990 CAA Amendment, EPA has issued 14 regulations to control air pollutants from off-road mobile sources. For example, the 2004 Nonroad Diesel Engines rule is based on a systems approach involving a combination of engine modifications, reduced sulfur content in diesel fuel, and exhaust controls.

Measures to control fugitive dust would be considered and incorporated into the final design and construction specifications as considered necessary by the project engineer. The construction of the proposed project would improve current traffic conditions due to increased mobility.

On March 29, 2001, the EPA issued a Final Rule on Controlling Emissions of Hazardous Air Pollutants from Mobile Sources, 66 FR 17229. This rule was issued under the authority in Section 202 of the CAA. In its rule, EPA examined the impacts of existing and newly promulgated mobile source control programs, including its RFG program, its NLEV standards, its Tier 2 motor vehicle emissions standards and gasoline sulfur control requirements, and its proposed heavy duty engine and vehicle standards and on-highway diesel fuel sulfur control requirements. Between 2000 and 2020, FHWA projects that even with a 64 percent increase in VMT, these programs will reduce on-highway emissions of benzene, formaldehyde, 1,3-butadiene, acrolein, and acetaldehyde between 57 percent and 65 percent, and will reduce on-highway diesel particulate matter and diesel organic gas emissions by 87 percent, as shown in **Figure VI-1**.

On February 26, 2007, the EPA finalized additional rules under the authority of CAA Section 202(1) to further reduce MSAT emissions. The EPA issued Final Rules on Control of Hazardous Air Pollutants from Mobile Sources (72 FR 8427) under Title 40 CFR Parts 59, 80, 85, and 86. EPA adopted the following new requirements to significantly lower emissions of benzene and other MSATs by: 1) lowering the benzene content in gasoline; 2) reducing NMHC exhaust emissions from passenger vehicles operated at cold temperatures (under 75 degrees); and 3) reducing evaporative emissions that permeate through portable fuel containers.

No change in air quality attainment status is expected to occur as a result of the proposed project. Because the project has additional non-tolled lanes relative to the existing roadway, indirect air quality impacts due to traffic redistribution onto collectors and minor arterials are not anticipated. Similarly, no change in attainment is expected to occur as a result of the No-Build Alternative.

Based on population trends, traffic and on-road emissions within the existing roadway network are expected to increase within these areas. However, on a regional basis, EPA vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions that, in almost all cases, will cause region-wide criteria pollutants including carbon monoxide, particulate matter, and MSAT levels to be significantly lower than today.

Mandatory federal and state air emissions regulations are enforced by the EPA and TCEQ to ensure that growth and development do not prevent regional compliance with the ozone standard or threaten the maintenance of the other air quality standards such as the NAAQS for carbon monoxide; therefore, no change in air quality attainment status is expected to occur as a result of conversion and redevelopment of land uses in the project study area.

F.2 Land Use

F.2.1 Land Use and Regional Toll Revenue Funding Initiative Projects

Indirect impacts would result through the Regional Toll Revenue Funding Initiative (RTRFI). The initiative's *Excess Toll Revenue Sharing: Managed Lane Policy* (see **Appendices B-5** through **B-6**) allows for excess revenue generated from an individual managed lane toll project to remain in the counties in which that revenue-generating project is located. Excess revenue is returned to the project's funding partners in proportion to their shares, to be used as funding for future transportation projects which could include roadway, transit, bicycle, intersection improvement, ITS, regional/innovative, and park-and-ride projects. The transition in funding structure also means that necessary large cost projects that would otherwise be built through programs such as gas tax revenue-sharing can be accelerated as managed lane projects, while lesser priority (albeit of similar local importance) projects can be brought forward and funded on a more timely basis.

By redistributing transportation funding from major projects, the RTRFI may allow for more projects and/or the acceleration of projects to be built within communities. While the planning and prioritization of such projects is typically governed by the transportation authority (with informational assistance from the MPO), input would be gained from local municipalities affected by the proposed improvements. Regarding the excess toll revenue generated from managed lanes, local governments and transportation authorities would have the right to invest in a Comprehensive Development Agreement (CDA) project as a means to fund a facility and generate local revenue. Since some of the projects initiated or accelerated by the RTRFI may require the acquisition of additional ROW, it would be possible for these projects to so impact their adjacent land uses that conversion would be probable. For example, the improvement of

mobility, access, and possible visibility generated from transportation improvements could prompt the developer of a large strip center to acquire and combine individual parcels of land in order to accommodate the new planned establishment, which in turn could lead to an increase in tax base and property value. It is important to anticipate such potential indirect impacts associated with the proposed project in relation to the RTRFI; a task assumed by local municipalities and incorporated within local planning documents, zoning regulations, and city codes. Ultimately, any project stemming from the RTRFI would be subject to individual environmental analysis to assess potential direct, indirect, and cumulative impacts associated with that specific project.

Substantial adverse indirect impacts to land use are not anticipated, as the indirect impacts felt from the RTRFI are anticipated to primarily be positive in nature. Accordingly, the requirement for mitigation of environmental impacts would be limited to mitigating only the direct impacts associated with this proposed project; mitigation for indirect impacts would not be required.

F.2.2 Section 4(f)

Many cities continually review the locations, functions, and levels of usage of public parks and other community resources to make sure that they function in ways useful to the community. For example, a predominantly middle-aged population whose children have left home may not require a park devoted to jungle gyms and adventure playgrounds. If redevelopment transition progresses to more commercial land uses, neighborhood parks and community resources may not be needed in certain locations and the city may determine a greater need for them elsewhere. As previously established, land use change such as this could potentially be accelerated under the Build Alternative, but such changes and related effects would likely occur regardless of project construction in response to aging land uses, community change, and other market factors. In addition, any land use change occurring as a result of the proposed project would likely be isolated to increased points of access and consistent with local planning documents and policies. Furthermore, development/redevelopment or land use take of publicly-owned parks/recreation facilities is typically avoided when possible unless a project has eminent domain authority (e.g., power transmission lines). However, if such impacts are unavoidable, the implicating project, if transportation in nature, would be subject to Section 4(f) regulations; and if development/redevelopment in nature, would be subject to municipal plans, codes, and regulations. For the above reasons, no substantial indirect impacts to Section 4(f) properties are anticipated. Therefore, the requirement for mitigation of environmental impacts would be limited to mitigating only the direct impacts associated with this proposed project; mitigation for indirect impacts would not be required.

F.3 Community

F.3.1 Relocations and Displacements

It is possible that project-induced development and/or redevelopment could result in relocation and displacement impacts within the Indirect Impacts AOI. Such anticipated indirect impacts stem from the

acceleration of development, and more likely, redevelopment and conversion of land use types. However, such changes in land use are likely to be limited to areas of improved access, as no new access is gained from the proposed improvements, and would eventually occur even in absence of the proposed project due to the social and economic forces generated from continued growth and development within the AOI. Land owners and businesses would have the opportunity to relocate within their respective communities. Any immediate loss in the tax base due to ROW acquisition would be minor and likely counter acted as new places of business and/or residence (e.g., mixed-use), prompted by project-induced increased access and mobility, develop and redevelop at an accelerated pace along the project corridor. Furthermore, all relocations and displacements would be held in compliance with the *Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970* and the *Uniform Relocation Act Amendments of 1987*. Accordingly, substantial project-induced relocation and displacement impacts are not anticipated. Therefore, the requirement for mitigation of environmental impacts would be limited to mitigating only the direct impacts associated with this proposed project; mitigation for indirect impacts would not be required.

F.3.2 Environmental Justice

Except for economic impacts, the environmental justice community, as a subset of the larger study area community, would experience indirect impacts that mirror those of the general population. Impacts relating to the economic impacts of tolling on environmental justice populations are considered a direct impact and have been addressed elsewhere in this document.

Indirect impacts pertaining to air quality, access to public facilities and services, traffic operations and traffic noise, all of which are addressed within Steps 5-8 of this analysis, would be experienced by the environmental justice population to the same extent and in the same manner (whether positive or negative) as experienced by the general population. The proposed highway expansion project would not result in disproportionately high and adverse indirect impacts on environmental justice populations. Therefore, the requirement for mitigation of environmental impacts would be limited to mitigating only the direct impacts associated with this proposed project; mitigation for indirect impacts would not be required.

F.3.3 Public Facilities and Services

Changes in land use could result in the need for changes to public facilities and services. New development or changes in demographics could raise or lower the need for providing fire stations, police stations, hospitals or triage centers, walk-in and out-patient clinics, schools, community centers, etc. It is a general practice of regional and local community leaders, city planners, social services administrators, and other entities to keep current on land use changes so that they can adequately serve their changing communities and regions.

For the most part, determining the need and location for additional services depends greatly on response time. Congested roadway facilities have a direct correlation to increased response times; therefore, unless there are intervening conditions (i.e., inclement weather, roadway flooding, sudden unavoidable obstacles such as downed trees and power lines, and geological events), improved roadways usually facilitate quicker response times and expedite access to needed services.

The potential for adverse indirect impacts to the 48 public facilities located within the indirect impacts AOI (listed in **Table VII-11** and including 19 fire facilities, 4 government buildings/city hall, 12 hospitals/medical offices, 4 police facilities, and 9 post offices) is unlikely as transportation improvements are typically intended to decrease congestion and improve mobility and access. There is the potential that motorists (including emergency vehicles) using the proposed improved frontage roads, due to lower posted speed limits, congestion, and traffic signals, could experience longer travel times compared to motorists using the SH 121/SH 183 managed and general purpose lanes. However, even with delays to motorists, it is in the very nature of frontage roads to aid the continued flow of traffic through a corridor by serving as supplemental roadways. Furthermore, such delays along frontage roads are anticipated even in absence of the proposed improvements, as continued impedance of traffic operations along frontage roads is likely due to continued growth. Accordingly, the proposed project is not anticipated to substantially impact in a negative manner overall traffic flow through the AOI; and in turn, substantial indirect impacts to public facilities and services are not anticipated. Therefore, the requirement for mitigation of environmental impacts would be limited to mitigating only the direct impacts associated with this proposed project; mitigation for indirect impacts would not be required.

Table VII-11 Public Facilities Located within the Indirect Impacts AOI

Type	Name	Address	City
Fire Stations and Facilities	Main Fire Station	1816 Bedford Road	Bedford
	#2 Fire Station	3940 Martin Drive	Bedford
	#3 Fire Station	541 Bedford Road	Bedford
	Bedford EMS Center	1816 Bedford Road	Bedford
	#2 Fire Station	Cheek Sparger at Heritage Avenue	Colleyville
	#2 Fire Station	1515 Westpark Way	Euless
	#3 Fire Station	202 S. Main	Euless
	Fire Administration Center	201 N. Ector	Euless
	#27 Fire Station (Ft. Worth)	200 Holder Drive	Hurst
	#33 Fire Station	14650 Statler Blvd.	Fort Worth
	Main Fire Station	2100 Precinct Line Road	Hurst
	#2 Fire Station	433 Precinct Line Road	Hurst
	#6 Fire Station	2601 Esters Road	Irving
	#7 Fire Station	3303 Walnut Hill Lane	Irving
	#1 Fire Station	8001 Shadywood Lane	NRH
	#2 Fire Station	4001 Rufe Snow Drive	NRH
	#3 Fire Station	5328 Davis Boulevard	NRH
	Fire Administration	7202 Dick Fisher Drive, North	NRH
Fire Maintenance	6110 Dick Fisher Drive, West	NRH	
City Halls and Community Facilities	North Richland Hills City Hall	7202 Dick Fisher Drive, North	NRH
	North Richland Hills Recreation Center	6720 N.E. Loop 820	NRH
	NRH ₂ O Family Water Park	9001 Boulevard 26	NRH
	Richland Tennis Center	7111 N.E. Loop 820	NRH
	Dan Echols Senior Adult Center	6801 Glenview Drive	NRH
	Hurst City Hall	1505 Precinct Line Road	Hurst
	Bedford City Hall	2000 Forest Ridge Drive	Bedford
	Euless City Hall	201 North Ector Drive	Euless
Hospitals/ Medical Offices	Cook Children’s Medical Center	Precinct Line Road at Mid-Cities Boulevard	Bedford
	Northeast Community Hosp. & Phys. Behav. Medicine	SH 121/SH 183 at Bedford Road	Bedford
	Harris Methodist HEB Rehab. Cntr. and Seniors’ Cntr.	Westpark Way at Tibbets Drive	Bedford
	Harris HEB Hospital	Tibbets Drive at Hospital Parkway	Bedford
	Harris HEB MRI Clinic	Tibbets Drive at Hospital Parkway	Bedford
	Edwards Cancer Center	Tibbets Drive at Hospital Parkway	Bedford
	Neurology Specialists of North Texas	Tibbets Drive at Hospital Parkway	Bedford
	HEB Surgical Center	Tibbets Drive at Hospital Parkway	Bedford
	Physician’s Offices	Tibbets Drive at Hospital Parkway	Bedford
	HEB Home Care	East Pipeline Road at Brown Trail	Bedford
	American Lebanese Syrian Associated Charities	Story Road West at North Beltline Road	Irving
	St. Jude’s Children’s Hospital	Story Road West at North Beltline Road	Irving
	Medical Center at Calloway Creek	Boulevard 26 at IH 820	NRH
	Texas Pediatric Surgery Center	Booth Calloway Road at Rogan Drive	NRH
Senior Health Center	Booth Calloway Road at Rogan Drive	NRH	
North Hills Hospital	4401 Booth Calloway Road	NRH	

Table VII-11 Public Facilities Located within the Indirect Impacts AOI

Type	Name	Address	City
Police Stations	Bedford Police Department	2121 L. Don Dodson Drive	Bedford
	Eules Police Department	1102 W. Eules Blvd. (Hwy. 10)	Eules
	Hurst Police Department	1501 Precinct Line Road	Hurst
	NRH Police Department	7301 N.E. Loop 820	NRL
Post Offices	General Post Office	2124 L Don Dodson Drive	Bedford
	General Post Office	1300 Harwood Road	Bedford
	General Post Office	210 N Ector Drive	Eules
	Amon Carter Boulevard Post Office	4400 Amon Carter Boulevard	Fort Worth
	General Post Office	777 Cannon Drive	Hurst
	General Post Office	825 Precinct Line Road	Hurst
	General Post Office	3201 Diana Drive Ste A	NRL
	General Post Office	6651 Watauga Road Ste 103	NRL
General Post Office	6051 Davis Boulevard	Richland Hills	

Source: NCTCOG, www.nctcog.org

F.3.4 Traffic Operations

Traffic redistribution within the Indirect Impacts AOI is a potential project-induced indirect impact. However, as the proposed project is anticipated to primarily accelerate the pace of redevelopment and conversion, traffic redistribution could occur even in absence of the proposed project as other regional and municipality planned projects are implemented. Furthermore, traffic redistribution would be expected to occur in proportion to the functional class of the roadway system, meaning that larger arterials could carry more traffic than smaller collector streets. As previously described, traffic operations on frontage roads could potentially worsen under the Build Alternative, but such changes are expected to occur in response to continued growth no matter if the proposed project is implemented or not. Substantial indirect impacts to traffic operations are not anticipated. Accordingly, the requirement for mitigation of environmental impacts would be limited to mitigating only the direct impacts associated with this proposed project; mitigation for indirect impacts would not be required.

F.3.5 Lighting and Visual

As established in Step 4 of this analysis, the proposed highway expansion project is anticipated to affect land use within the Indirect Impacts AOI by stimulating minor changes in development and/or redevelopment, but primarily by accelerating the pace of redevelopment and land use conversion. Since some new or redeveloped commercial activities may cause the use of more intense lighting and prominent signage, indirect impacts to neighboring land uses could potentially occur due to the proposed highway expansion project. However, development and/or redevelopment within the AOI is expected and accounted for by the affected municipalities, regardless of the proposed project, in response to aging land uses, community change, and/or other market forces. Furthermore, any modifications to lighting and visual aspects would be subject to policies and codes implemented by the local municipalities. Thus,

project-induced indirect impacts to lighting and visual aspects are not anticipated to be substantial. Accordingly, the requirement for mitigation of environmental impacts would be limited to mitigating only the direct impacts associated with this proposed project; mitigation for indirect impacts would not be required.

F.3.6 Traffic Noise

An analysis was conducted to determine the potential impacts the proposed highway expansion project would have on noise levels within the SH 121/SH 183 traffic analysis study area. The SH 121/SH 183 traffic analysis study area was developed on the basis of the principle of diminishing effect, whereby impacts progress outward at a diminishing rate from their initial impact until they are no longer perceptible or until similar impacts from a nearby facility overtake them. Because noise is an impact that diminishes and/or is overtaken within a relatively short distance from the location of initial impact, the AOI is coincidental with that of the noise analysis in **Section VI - E**. Noise effects were based on the amount of change (increase) in noise levels that would result from the redistribution of traffic onto principal and minor arterials within this traffic analysis study area.

Results of the analysis indicate that the average traffic noise resulting from traffic redistribution within the traffic analysis study area would increase by approximately two 2 dBA. According to FHWA's Noise Policy/Guidance, a noise level change of 3 dBA is barely perceptible to the human ear. Because the average traffic noise level change (increase) within the project area would be less than 3 dBA, there would be no associated, perceptible indirect impacts from traffic noise resulting from traffic redistribution. Accordingly, the requirement for mitigation of environmental impacts would be limited to mitigating only the direct impacts associated with this proposed project; mitigation for indirect impacts would not be required.

F.4 Evaluation of Analysis Results

A key aspect of the indirect impacts assessment is to reconsider key assumptions used in this analysis and evaluate the extent to which uncertainty associated with them may affect the results of the analysis. As indicated in *NCHRP Report 466* (Page 92), “[t]here is inherent uncertainty in estimating indirect effects.” This step explores how sensitive the process of identifying indirect impacts is to the assumptions that served as a guide to defining the cause-effect relationships associated with project-induced land use changes. As noted above in Step 4, basic assumptions guiding this indirect impacts analysis included the following: future land use development and/or redevelopment would occur in accordance with future planning documents and policies on the regional level and for the municipalities of the Indirect Impacts AOI (Cities of North Richland Hills, Richland Hills, Hurst, Bedford Euless, Fort Worth, Colleyville, Arlington, and Irving); and redevelopment and land use conversion would likely be the primary form of project-induced land use change, which could occur at a project-induced increased rate, but that would eventually occur regardless of the proposed project's implementation. These guiding principles were

substantiated by local planning officials and are in agreement with the goals and objectives highlighted by the planning departments of the affected municipalities.

G. INDIRECT IMPACTS OF THE REGIONAL TOLL AND MANAGED/HOV SYSTEM

As stated earlier, over \$6 billion dollars in transportation projects are detailed in the proceeding pages of the 2008-2011 TIP. While these projects are individually listed in the TIP, a series of maps were developed and are displayed in **Appendices H-12** through **H-16** in order to more fully communicate the extent of transportation projects and funding in the Dallas-Fort Worth area. **Appendix H-12** shows projects that have been completed between May 2005 and March 2007. **Appendices H-13** through **H-16** are depictions of projects approved for funding in the FY 2008-FY 2011 timeframe. **Appendix H-17** is a list of regionally significant local projects.

The current regional network for roadways, priced facilities (i.e., toll, HOV/managed), and passenger rail is expected to increase by 2030. **Appendices H-19** through **H-21**, obtained from the 2030 MTP, show the proposed roadway, priced facilities, and passenger rail for the region in 2030. For the roadways system, the 2007 transportation network for DFW (calculated in main lane lane-miles) consists of 4,397 lane-miles. Of the total system, 434 of the lane-miles are tolled (approximately 11 percent). The anticipated 2030 transportation network for DFW would consist of approximately 8,569 main lane lane-miles, of which 30 percent (approximately 2,542 lane-miles) would be tolled. **Table VII-12** lists the priced facilities included in the 2030 MTP and when they are expected to be open to traffic. These projects include the construction of new location toll roads, the addition of managed HOV lanes, and the expansion of existing toll facilities. **Appendices H-22** through **H-24** show the priced facility system listed in **Table VII-12** for the projected years of 2015, 2025, and 2030.

Table VII-12 Future Toll Road and Managed HOV Lane Projects

Roadway	Location	Responsible Agency	Work Planned
Open to Traffic by 2015			
Dallas North Tollway	Parker Road to Royal Lane	NTTA	Expand existing toll road
IH 30 - Dallas County	SH 161 to IH 35E	TxDOT-Dallas	Add managed HOV lanes
IH 30 - Tarrant County	Cooper Street to Ballpark Way	TxDOT-Fort Worth	Add managed HOV lanes
IH 35E	IH 635 to Loop 12	TxDOT-Dallas	Add managed HOV lanes
IH 35E - "Northern Link"	FM 407 to PGBT	TxDOT-Dallas	Add managed HOV lanes
IH 35W	SH 170 to IH 30	TxDOT-Fort Worth	Add managed HOV lanes
IH 635	Luna Road to US 75	TxDOT-Dallas	Add managed HOV lanes
IH 820	SH 121/SH 183 to SH 121/SH 10	TxDOT-Fort Worth	Add managed HOV lanes
Loop 9	US 287/Outer Loop to IH 20/SH 190	TxDOT-Dallas	New toll road
Loop 12	IH 35E to SH 183	TxDOT-Dallas	Add managed HOV lanes
President George Bush Turnpike	IH 35E to SH 78	NTTA	Expand existing toll road
President George Bush Turnpike (Eastern Extension)	SH 78 to IH 30	NTTA	New toll road
SH 114	SH 121 (West) to International Parkway	TxDOT-Fort Worth	Add managed HOV lanes
SH 121	IH 820 to Minnis Road	TxDOT-Fort Worth	Add managed HOV lanes
SH 121	SH 183 to IH 820	TxDOT-Fort Worth	Add managed HOV lanes
SH 121	IH 30 to US 67	NTTA	New toll road
SH 121 - Collin County	US 75 to Hillcrest Road	TxDOT-Dallas	New toll road
SH 161	SH 183 to IH 20	TxDOT-Dallas	New toll road
SH 161/SH 360 Toll Connector	SH 161 to Sublett Road (SH 360)	TxDOT-Dallas & TxDOT-Fort Worth	New toll road
SH 170	SH 114 to US 81/US 287	NTTA	New toll road
SH 183	SH 121 to SH 161	TxDOT-Fort Worth	Add managed HOV lanes
SH 360 (toll road)	Sublett Road to US 287	NTTA	New toll road
Trinity Parkway	IH 35E to IH 45/US 175	NTTA	New toll road
US 75 - Collin/Dallas County	SH 121 (South) to Exchange Parkway	TxDOT-Dallas	Add managed HOV lanes
US 75 - North Collin County	SH 121 (North) to SH 121 (South)	TxDOT-Dallas	Add managed HOV lanes
Open to Traffic by 2025			
Dallas North Tollway	FM 121 to US 380	NTTA	New toll road
IH 20/US 287	IH 820 to Sublett Road (US 287)	TxDOT-Fort Worth	Add managed HOV lanes
IH 30	IH 35E to Bobtown Road	TxDOT-Dallas	Add managed HOV lanes
IH 30 - Tarrant County	IH 820 to Cooper Street	TxDOT-Fort Worth	Add managed HOV lanes
IH 30 - Tarrant County	Ballpark Way to SH 161	TxDOT-Fort Worth	Add managed HOV lanes
IH 35	Outer Loop (FM 156) to IH 35E/IH 35W	TxDOT-Dallas	Add managed HOV lanes
IH 35E	SH 183 to IH 20	TxDOT-Dallas	Add managed HOV lanes
IH 35E "Northern Link"	FM 2181 to FM 407	TxDOT-Dallas	Add managed HOV lanes
IH 35E "Northern Link"	PGBT to IH 635	TxDOT-Dallas	Add managed HOV lanes
IH 35W	IH 35/IH 35E to SH 170	TxDOT-Dallas	Add managed HOV lanes
IH 635	US 75 to IH 30	TxDOT-Dallas	Add managed HOV lanes
IH 820/US 287	US 287 to IH 820 (US 287)	TxDOT-Fort Worth	Add managed HOV lanes
Loop 12	SH 183 to Spur 408	TxDOT-Dallas	Add managed HOV lanes
Outer Loop (Eastern Subregion)	IH 20/Loop 9 to IH 30	TxDOT-Dallas	New toll road
Outer Loop (Eastern Subregion)	US 75 to IH 35	TxDOT-Dallas	New toll road
President George Bush Turnpike	Belt Line Road to IH 635	NTTA	Expand existing toll road
SH 114 - Dallas County	SH 121 to SH 183	TxDOT-Dallas	Add managed HOV lanes
SH 170	SH 199/Outer Loop to US 67	NTTA	New toll road
SH 183	SH 161 to IH 35E	TxDOT-Dallas	Add managed HOV lanes
SH 190	IH 30/PGBT to IH 20/Loop 9	NTTA	New toll road
SH 360	Outer Loop to FM 2258	TxDOT-Dallas	New toll road
SH 360 (toll road)	US 287 to Outer Loop/Loop 9	NTTA	New toll road
US 67	IH 35E to FM 1382	TxDOT-Dallas	Add managed HOV lanes

Table VII-12 Future Toll Road and Managed HOV Lane Projects

Roadway	Location	Responsible Agency	Work Planned
US 67 - Dallas/Ellis County	FM 1382 to Loop 9	TxDOT-Dallas	Add managed HOV lanes
US 80	IH 30 to Belt Line Road	TxDOT-Dallas	Add managed HOV lanes
Open to Traffic by 2030			
IH 635	US 80 to IH 20	TxDOT-Dallas	Add managed HOV lanes
Outer Loop (Eastern Subregion)	IH 30 to US 75	TxDOT-Dallas	New toll road
Outer Loop (Western Subregion)	SH 199 to US 287/Loop 9	TxDOT-Fort Worth	New toll road

The expanding roadway network, including priced facilities, would cause indirect impacts and/or cumulative impacts to the region. Because of the regional nature of these impacts, the proposed impacts would be better discussed at the regional level. The discussion of the expansion of the priced facility component of the system is discussed in the cumulative impacts section.

VIII. CUMULATIVE IMPACTS ANALYSIS

Sections VIII - A through E present a project level analysis of the potential cumulative impacts (or effects) related to the proposed improvements. A system level analysis of the potential cumulative impacts of the regional toll and managed/HOV system is provided in **Section VIII - F**.

A. INTRODUCTION AND METHODOLOGY

CEQ regulations (40 C.F.R. § 1508.7) define cumulative impacts (i.e., effects) as:

“The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions” (40 CFR 1508.7).

The purpose of a cumulative impacts analysis is to view the direct and indirect impacts of the proposed project within the larger context of past, present, and future activities that are independent of the proposed project, but which are likely to affect the same resources in the future. This approach allows the decision maker to evaluate the incremental impacts of the proposed Build Alternative in light of the overall health and abundance of selected resources. The evaluation process for each resource considered may be expressed in shorthand form as follows:

$$\frac{\text{BASELINE CONDITION}}{\text{(historical and current)}} + \frac{\text{FUTURE EFFECTS}}{\text{(expected projects)}} + \frac{\text{PROJECT IMPACTS}}{\text{(direct and indirect)}} = \text{CUMULATIVE IMPACTS}$$

The eight-step approach as described in TxDOT’s *Guidance on Preparing Indirect and Cumulative Impact Analyses* (December 2006), was utilized to assess the potential cumulative impacts of the past, present, and reasonably foreseeable actions to the resources in the project area.

- 1) Identify the resources to consider in the analysis.
- 2) Define the study area for each affected resource. Cumulative impacts are considered within spatial and temporal boundaries. Each resource has its own resource study area (RSA) to best assess the impacts to that individual resource. Each RSA was defined by professionals experienced in the study and analysis of each resource.
- 3) Describe the current health and historical context for each resource. The examination of the current health and historical context of each resource is necessary to establish a baseline for determining the effects of the proposed action and other reasonably foreseeable actions on the resource.
- 4) Identify direct and indirect impacts that may contribute to a cumulative impact. The analysis of cumulative impacts must look at the impacts of the proposed action in combination with the impacts of other past, present, or reasonably foreseeable actions within the RSAs. Identification of the direct and indirect impacts of the proposed action will also assist in determining the project’s contribution to the cumulative impact on the resource.

- 5) Identify other reasonably foreseeable action that may affect the resources.
- 6) Assess potential cumulative impacts to the resources.
- 7) Report the results.
- 8) Assess and discuss mitigation issues for all adverse impacts.

Steps 1 through 6 will be applied to each resource. Once each resource is analyzed, Steps 7 and 8 will follow and address all identified resources.

The goal of the cumulative impacts analysis is to determine whether the proposed action’s direct and indirect impacts, considered with other reasonably foreseeable actions, would result in substantial degradation of a resource that would not result from the proposed action considered alone. TxDOT’s *Guidance on Preparing Indirect and Cumulative Impact Analyses* (December 2006) states: “If a project would not cause direct or indirect impacts on a resource, it would not contribute to a cumulative impact on the resource. The cumulative impacts analysis should focus only on: 1) those resources substantially impacted by the project; and 2) resources currently in poor or declining health or at risk even if project impacts are relatively small (less than significant).”

All of the resource categories considered in this environmental assessment were initial candidates for analysis with regard to cumulative impacts. As documented in **Sections VI** and **VII** in this document, it was determined that the proposed action would not have considerable direct or indirect impacts on the following resources or in the study area: Farmlands, Waters of the U.S., including Wetlands, Floodplains, Navigable Waters of the U.S., Water Quality, Threatened/Endangered Species, Relocations and Displacements, Migratory Bird Species, or Items of a Special Nature (which include Airway-Highway Clearance, Coastal Zone Management Plan, Essential Fish Habitat, and Wild and Scenic Rivers). These were the first and second stages of impacts elimination.

Cumulative impacts are analyzed in terms of the specific resource being affected. **Table VIII-1** lists the resources that passed the first level of screening and were further considered for inclusion in this analysis:

Table VIII -1 Resources for Cumulative Impacts Analysis	
Regulatory	<ul style="list-style-type: none"> ➤ Air Quality (Resource) <ul style="list-style-type: none"> ○ Eight-Hour Ozone Standard ○ Carbon Monoxide ○ MSAT
Social, Economic, and Community	<ul style="list-style-type: none"> ➤ Land Use ➤ Historic Resources ➤ Section 4(f) Resources ➤ Air Quality ➤ Environmental Justice ➤ Community Cohesion and Public Facilities and Services ➤ Traffic Operations ➤ Traffic Noise ➤ Lighting and Visual Impact ➤ Habitat

Cumulative impacts were evaluated using the following factors: the historical context of each resource, current condition and trend, future land use and zoning plans, and the pertinent regulations and standards associated with each resource. These factors capture the influences that have shaped and are shaping the amount and quality of each resource, and which would continue to shape the resources into the future. Implicit in the approach to predicting the future condition of resources are several key assumptions:

- 1) All reasonably foreseeable actions would be completed as currently planned.
- 2) The relationships between the resources, ecosystems, and human communities that have been identified from historical experience would continue into the future.
- 3) The sponsors of government and private projects would comply with relevant federal, state, and local laws designed to protect each resource. Regulatory agencies would perform their duties in accordance with legal requirements and internal guidelines.

Of particular importance is the assumption concerning compliance with relevant environmental laws designed to ensure the sustainability of resources. Over the past several decades federal, state, and local lawmaking bodies have enacted statutes, regulations, and ordinances designed to preserve and enhance the abundance and quality of natural resources by requiring project sponsors to avoid, minimize, and mitigate the environmental impacts of their projects or actions. However, the underlying principal of a cumulative impacts analysis is that impacts from conceivably completely unrelated projects may join with the impacts of the proposed project to cause long term effects for or against the identified resource. Therefore, the proper focus of a cumulative impacts analysis is the “net effects” on each resource that remain after full compliance with the regulatory requirements of the proposed project are satisfactorily addressed at all levels. However, this does not require a full knowledge of any effect that may develop over time, but is limited to the inclusion of reasonably foreseeable effects (“reasonably foreseeable effects” is further described below). Projects that are candidates for causing reasonably foreseeable effects include local or regional transportation projects (i.e., associated with Mobility 2030 – Amended 2009, approved August 31, 2009), statewide transportation projects, and commercial and residential re/development.

Case law is very specific on the definition of a reasonably foreseeable effect. In *Clairton Sportmen’s Club v. Pennsylvania Turnpike Commission*, 882 F. Supp 455 (W.D. Pa 1995), the courts determined that a reasonably foreseeable effect must have three qualities.

- 1) The project has been Federally approved;
- 2) There is funding pending before any agency for the project; and
- 3) There is evidence of active preparation to make a decision on alternatives to the project.

The resources or environmental issues related to the proposed project with the potential for cumulative impacts are listed in **Table VIII-2**. As recommended by the CEQ guidance, specific indicators of each resource’s condition have been identified and are shown in **Table VIII-2**. The use of indicators of a resource’s health, abundance, and/or integrity are helpful tools in formulating quantitative or qualitative metrics for characterizing cumulative impacts to resources. These indicators are also key aspects of each

resource that have already been evaluated in terms of the project’s direct and indirect impacts, and facilitate greater consistency and objectivity in the analysis of cumulative impacts.

Table VIII-2 also lists the resource study area (RSA) defined for each resource or issue evaluated for cumulative impacts. The objective of setting resource study areas is to identify reference areas for each resource or issue as far away from the project area as the direct and indirect impacts of the project are expected to be felt. The size of the geographic area necessary to sustain the long-term vitality of a given resource can be a function of the nature of each resource as defined on a case-by-case basis after considering the unique aspects of a particular proposed project (CEQ, 1997b, Page 15). Some of the topics considered for cumulative impacts should be considered “issues” rather than resources. That is, some issues of interest do not lend themselves to a more traditional assessment of an amount and condition of a particular resource, as compared to the amount and condition of the same resource within a larger frame of reference. Nevertheless, for all resources and issues considered, the cumulative impacts analysis considered a larger “frame of reference” so as to allow the expected impacts of SH 121/SH 183 to be viewed within a larger context for each resource or issue. The description of these “frames of reference” or RSAs and the rationale for choosing them are discussed in Step 2 of the cumulative impacts analysis below, and shown in **Appendices I-1A** and **I-1B**.

Table VIII-2 Resource Indicators and Resource Study Areas for the Cumulative Impacts Analysis		
	Indicators of Resource Condition and Potential Impacts	Resource Study Area (RSA)
Air Quality	Eight-hour Ozone Standard: ability of the region to meet this air quality standard	Nine-county nonattainment area for the DFW Metropolitan Area (Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Tarrant and Rockwall Counties)
	Carbon Monoxide: carbon monoxide concentrations modeled along the ROW under worst meteorological conditions	Project ROW line plus ROW lines for all major corridors that intersect the SH 121/SH 183 corridor
	MSAT: trend of emissions over time	Plus or minus 5 or greater percent affected transportation network
Community	Land Use, Section 4(f) Resources, Air Quality, Community Cohesion and Public Facilities and Services, Traffic Operations, Traffic Noise, Lighting, and Visual Impacts, Habitat	Unless qualified, approximately two-mile radius around the SH 121/SH 183 corridor
	Historic Resources	As per guidance from TxDOT on August 15, 2008, and in accordance with the PA-TU, Section 106 coordination, dated September 14, 2007, the RSA for historic resources is coincidental with the 150-foot Area of Potential Effect (APE). Therefore, for the discussion on historical the geographic RSA includes only the following site: Site ID#80, Old Bedford Road Bridge, and all associated land
	Environmental Justice	Project Level Analysis: adjacent census tracts and TSZ populations utilizing NCTCOG origin/destination select link analysis for SH 121/SH 183

B. STEPS 1-6: AIR QUALITY

Mobility 2030 – 2009 Amendment, approved August 31, 2009 is the current MTP for the Dallas-Fort Worth area. Mobility 2030 – 2009 Amendment, approved August 31, 2009 is the defining vision for transportation systems and services in the DFW Metropolitan Area. Further, it is committed to ensuring that the region's transportation efforts are consistent with its air quality objectives by supporting local initiatives for town centers, mixed use growth centers, transit oriented development, infill Brownfield development, and pedestrian-oriented projects. It has objectives to complement real investments with investments in park-and-ride, bicycle, and pedestrian facilities, and to reduce the growth in VMT per person.

The plan was approved in January 2007 by the RTC, and the recommendations contained within Mobility 2030 – Amended 2009, approved August 31, 2009 received a favorable air quality conformity determination by the U.S. Department of Transportation (USDOT) in June 2007.

Mobility 2030 – Amended 2009, approved August 31, 2009 is a comprehensive, multi-modal blueprint for transportation systems and services aimed at meeting the mobility and financial needs of the DFW area. It outlines the expenditure of nearly \$71 billion of federal, state, and local funds expected to be available for transportation improvements through the year 2030. It also recognizes the heightened awareness of the growing concerns for improved air quality, public acceptance of major transportation facilities, and the need for adequate financial resources. Implementation of Mobility 2030 – Amended 2009, approved August 31, 2009 could substantially reduce volatile organic compounds (VOCs) and nitrogen oxides (NO_x) emissions in the region.

B.1 Step 1 (Air Quality): Resource Identification

B.1.1 Ozone (O₃) and Carbon Monoxide (CO)

In order to protect human health and the environment, the Clean Air Act (CAA) of 1970 mandated the establishment of the National Ambient Air Quality Standards (NAAQS) and regulations to reduce ozone (O₃) and carbon monoxide (CO) air pollutants. When the pollutant level within an area exceeds the NAAQS, EPA designates the area as “non-attainment” for the pollutant.

B.1.2 Mobile Source Air Toxics (MSATs)

In addition to NAAQS, EPA also regulates MSATs. Most air toxics originate from human-made sources, including on-road mobile sources, non-road mobile sources (e.g., airplanes), area sources (e.g., dry cleaners), and stationary sources (e.g., factories or refineries). **Section VI - D.2.2** provides a full discussion (including results and conclusions) on MSATs for the proposed highway expansion project.

B.2 Step 2 (Air Quality): Resource Study Area (RSA)

On the regional level air quality impacts from mobile sources are evaluated and managed primarily through the NCTCOG, in coordination with the EPA, TCEQ, TxDOT, and FHWA. As shown in **Table VIII-2**, three RSAs were used for the determination of the cumulative impacts on air quality. The air quality RSAs are discussed as follows:

B.2.1 Ozone (O₃)

The RSA for evaluating the ozone NAAQS was designated as the DFW 8-hour ozone nonattainment area, which includes Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, and Tarrant Counties (see **Appendix I-1A**).

Analyses for other motor vehicle pollutants such as VOCs, NO_x (both precursors to ground-level ozone), ozone, and particulate matter (PM) concentrations are regional in nature, and, accordingly, concentrations of these pollutants for the purpose of comparing the results with the NAAQS are modeled by the TCEQ or by the regional air quality planning agency for the SIP with oversight provided by TCEQ.

B.2.2 Carbon Monoxide (CO)

The RSA for CO was based on the ROW line, which would represent the locations with highest potential CO concentrations. Because Airport Freeway traffic projections indicate traffic numbers above 140,000 vpd, a TAQA for CO was conducted.

B.2.3 MSAT

The MSAT RSA is an affected transportation network that includes the project network links and other transportation model links. The affected transportation network was derived from the 2030 No-Build Scenario compared to the 2030 Build Scenario to determine which roadway links in the NCTCOG MPA transportation model achieved a ±5 percent volume change. These links were then compared to the 2007 and 2015 model in order to extrapolate a baseline traffic network. The application was adopted as the basis to determine the affected transportation network RSA located within the NCTCOG MPA.

The temporal boundaries for the cumulative impacts analysis are the years 1990 to 2030. The early date was established because the CAA as amended in 1990 (CAAA) authorized the EPA to designate areas in “non-attainment” or failing to meet established NAAQS. Present actions are those actions that have occurred between 2008 and 2011. These dates were chosen to correlate with the FY 2008-2011 TIP. The year 2030 was chosen to correlate with NCTCOG’s Mobility 2030 – Amended 2009, approved August 31, 2009.

B.3 Step 3 (Air Quality): Resource Current Health Trend and Historical Context

B.3.1 Current Health Trend

According to NCTCOG, the DFW metropolitan area has been one of the fastest growing areas in the United States, and it is expected to continue to grow. Growth often results in an increase of development, increase in vehicles, and an increase in VMT. Traffic congestion has become one of the greatest challenges in the DFW metropolitan area, as on-road mobile sources (such as cars and trucks) contribute to air pollution. This challenge is evidenced as the DFW metropolitan area was ranked the ninth most congested area in the nation⁶. The construction limits of the project are located within Tarrant County, which is designated as a moderate eight-hour ozone non-attainment area; therefore, the transportation conformity rules apply. Design year traffic data exceed 140,000 vpd, therefore a TAQA is required.

Throughout recent decades, multiple regional and local initiatives have been planned and implemented in an effort to reduce air pollution from mobile sources. Several of these initiatives specific to the area's transportation system included increased capacity highways and roadways (through construction of additional travel lanes and bottleneck improvements), construction of high-occupancy vehicle lanes, and the promotion of alternative transportation (e.g., hike and bike trails, bus, and light rail).

National Ambient Air Quality Standards (NAAQS)

Currently, the project is located within an attainment area for CO and in a non-attainment area for ozone. Ozone is formed in the presence of light, NO_x, and VOCs. Nitrogen oxides are usually a by-product of high-temperature combustion; common sources are cars and power plants. VOCs include organic chemicals that vaporize easily, such as gasoline. The NCTCOG and the RTC have developed a broad range of air quality programs that focus on reducing ozone-causing emissions. In order to reduce ozone and come into compliance with NAAQS, the formulation of a SIP is required for all nonattainment areas. NCTCOG works in cooperation with federal, state, and local partners to ensure that all air quality requirements are met.

NCTCOG's air quality strategies seek to reduce emissions in a variety of ways, from energy and fuel efficiency to advancing clean technologies to encouraging changes in daily behavior. Such strategies are being implemented throughout the region to reduce emissions from different types of sources; however, many of the programs implemented through NCTCOG target transportation-related emissions due to the fact that on-road mobile sources (such as cars and trucks) account for nearly one-half of all ozone precursor emissions in North Central Texas.

Although no NAAQS for MSATs exist, EPA has certain responsibilities regarding the health effects of MSATs. The EPA controls emissions of air pollutants through one of two major strategies: NAAQS or regulatory controls that result in specific emission reductions. Both strategies provide for increased

⁶ Traffic Engineering, Third Edition. Roger P. Roess, Elana S. Prassas, and William R. McShane

protection of human health and the environment. For MSATs, in order to more quickly implement emission reductions, the EPA has focused efforts on nationwide regulatory controls.

B.3.2 Historic Context

Ozone (O₃)

As previously explained, under the CAAA, the EPA was authorized to designate areas in “non-attainment.” In July 1997, the EPA announced a new NAAQS for ground-level ozone. The EPA phased out and replaced the previous one-hour standard (for which the DFW area (Collin, Dallas, Denton, and Tarrant counties) was initially designated in non-attainment in 1991) with an eight-hour standard to protect public health against longer exposure to this air pollutant. The eight-hour standard is much more stringent and more difficult to attain. Under the one-hour standard, any hourly average of 125 ppb or higher of ozone at any regional air monitor is an exceedance. Under the eight-hour standard, any eight-hour average of 75 ppb or higher of ozone is an exceedance.

In April 2004, the EPA designated nine counties in North Central Texas (Collin, Dallas, Denton, Ellis, Kaufman, Johnson, Parker, Rockwall, and Tarrant counties), in which DFW is located, as a “moderate” non-attainment for the eight-hour ozone in accordance with the NAAQS; the designation became effective on June 15, 2004. The CAAA specifies that the maximum period that a moderate non-attainment area has to reach attainment is six years from the effective date of designation. Therefore, the DFW region must reach attainment by June 15, 2010.

Although there have been year-to-year fluctuations in ozone concentrations, these concentrations demonstrate a reduction over time, which indicates improvements to air quality over time. The ozone trend continues to show improvement as the number of daily exceedance of the federal standards for ozone has decreased within the past decade. This trend of air quality improvement in the DFW region is attributable in part to the effective integration of highway and alternative modes of transportation, cleaner fuels, improved emission control technologies, and NCTCOG’s regional clean air initiatives.

Carbon Monoxide (CO)

According to EPA studies, approximately 95 percent of the CO in typical U.S. cities results from mobile sources⁷. Air quality monitors measure concentrations of CO throughout the country. EPA, state, tribal and local agencies use that data to ensure that CO remains at levels that protects public health and the environment. Nationally, average CO concentrations have decreased substantially over the years.

Mobile Source Air Toxics (MSATs)

On March 29, 2001, the EPA issued a Final Rule on Controlling Emissions of Hazardous Air Pollutants from Mobile Sources, 66 FR 17229. This rule was issued under the authority in Section 202 of the CAA. In its rule, EPA examined the impacts of existing and newly promulgated mobile source control

⁷ <http://www.epa.gov/otaq/inventory/overview/pollutants/carbonmon.htm>

programs, including its RFG program, its NLEV standards, its Tier 2 motor vehicle emissions standards and gasoline sulfur control requirements, and its proposed heavy duty engine and vehicle standards and on-highway diesel fuel sulfur control requirements. Between 2000 and 2020, FHWA projects that even with a 64 percent increase in VMT, these programs will reduce on-highway emissions of benzene, formaldehyde, 1,3-butadiene, acrolein, and acetaldehyde between 57 percent and 65 percent, and will reduce on-highway diesel particulate matter and diesel organic gas emissions by 87 percent, as shown in **Figure VI-1**.

On February 26, 2007, the EPA finalized additional rules under the authority of CAA Section 202(1) to further reduce MSAT emissions. The EPA issued Final Rules on Control of Hazardous Air Pollutants from Mobile Sources (72 FR 8427) under Title 40 CFR Parts 59, 80, 85, and 86. EPA adopted the following new requirements to significantly lower emissions of benzene and other MSATs by: 1) lowering the benzene content in gasoline; 2) reducing NMHC exhaust emissions from passenger vehicles operated at cold temperatures (under 75 degrees); and 3) reducing evaporative emissions that permeate through portable fuel containers.

B.4 Step 4 (Air Quality): Direct and Indirect Impacts

B.4.1 Direct Impacts

The proposed action is consistent with the area's financially constrained Metropolitan Transportation Plan Mobility 2030 – 2009 Amendment, approved August 31, 2009 and the 2008-2011 Transportation Improvement Program (TIP), as revised, as proposed by the NCTCOG. The U.S. Department of Transportation (FHWA/FTA) found the MTP to conform to the State Implementation Plan on June 12, 2007, and the 2008-2011 TIP was found to conform on October 31, 2007. All projects in the NCTCOG's TIP 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. The appropriate MTP and Statewide TIP pages are located in **Appendix J**.

The primary pollutants from motor vehicles are volatile organic compounds (VOCs), carbon monoxide (CO), and nitrogen oxides (NO_x). Volatile organic compounds and nitrogen oxides can combine under the right conditions in a series of photochemical reactions to form ozone (O₃). 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 procedures for modeling 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. Therefore, concentrations of ozone for the purpose of comparing the results to the NAAQS were modeled by the regional air quality planning agency.

A Traffic Air Quality Analysis (TAQA) is an analysis to determine potential effects of CO emissions related to a proposed transportation project. **Section VI - D** provides a description of the TAQA; however, **Table VIII-3** provides the data that was developed through the TAQA.

Carbon monoxide concentrations for the proposed action were modeled using CALINE3/MOBILE6.2. Models factored in adverse meteorological conditions and sensitive receptors at the ROW line in accordance with the TxDOT Air Quality Guidelines. Local concentrations of carbon monoxide are not expected to exceed national standards at any time. **Table VIII-3** summarizes the CO concentrations for the proposed project.

Location	Year	One-hour CO (PPM)	One-hour % NAAQS	Eight-hour CO (PPM)	Eight-hour % NAAQS
SH 121/SH 183 From Bedford-Eules Rd. To SH 121/SH 183 Diverge	2015	6.20	17.71	3.80	42.22
	2030	6.50	18.57	3.98	44.22
SH 121/SH 183 From SH 121/SH 183 Diverge To SH 161	2015	5.70	16.29	3.50	38.89
	2030	5.90	16.86	3.62	40.22

* The National Ambient Air Quality Standard (NAAQS) for CO is 35 parts per million (ppm) for one hour and 9 ppm for eight hours. Analysis includes a one-hour background concentration of 3.7 ppm and an eight-hour background concentration of 2.3 ppm.

Modeling results under the worst case conditions indicate that CO concentrations would not exceed the NAAQS for the toll scenario either in 2015 or 2030.

As previously explained, in addition to the criteria, air pollutants for which there are NAAQS, EPA also regulates air toxics. Most air toxics originate from human-made sources, including on-road mobile sources, non-road mobile sources (e.g., airplanes), area sources (e.g., dry cleaners) and stationary sources (e.g., factories or refineries). MSATs are a subset of the 188 air toxics defined by the CAAA. The MSATs are compounds emitted from highway vehicles and non-road equipment. Some toxic compounds are present in fuel and are emitted to the air when the fuel evaporates or passes through the engine unburned. Other toxics are emitted from the incomplete combustion of fuels or as secondary combustion products. Metal air toxics also result from engine wear or from impurities in oil or gasoline.

On March 29, 2001, the EPA issued a Final Rule on Controlling Emissions of Hazardous Air Pollutants from Mobile Sources, 66 FR 17229. This rule was issued under the authority in Section 202 of the CAA. In its rule, EPA examined the impacts of existing and newly promulgated mobile source control programs, including its RFG program, its NLEV standards, its Tier 2 motor vehicle emissions standards and gasoline sulfur control requirements, and its proposed heavy duty engine and vehicle standards and on-highway diesel fuel sulfur control requirements. Between 2000 and 2020, FHWA projects that even

with a 64 percent increase in VMT, these programs will reduce on-highway emissions of benzene, formaldehyde, 1,3-butadiene, acrolein, and acetaldehyde between 57 percent and 65 percent, and will reduce on-highway diesel particulate matter and diesel organic gas emissions by 87 percent, as shown in **Figure VI-1**.

On February 26, 2007, the EPA finalized additional rules under the authority of CAA Section 202(1) to further reduce MSAT emissions. The EPA issued Final Rules on Control of Hazardous Air Pollutants from Mobile Sources (72 FR 8427) under Title 40 CFR Parts 59, 80, 85, and 86. EPA adopted the following new requirements to significantly lower emissions of benzene and other MSATs by: 1) lowering the benzene content in gasoline; 2) reducing NMHC exhaust emissions from passenger vehicles operated at cold temperatures (under 75 degrees); and 3) reducing evaporative emissions that permeate through portable fuel containers.

The resulting emission inventory for the six priority MSATs (acetaldehyde, acrolein, benzene, butadiene, formaldehyde, and diesel particulate matter) was compiled as summarized in **Table VIII-4** and **Figure VIII-1** for the Base Year (2007), an interim year (2015), and the 2030 design year. Both the 2015 and 2030 had two scenarios (i.e., alternatives), the No-Build and the Build, for the project. This analysis does not include the additional emission reductions associated with the 2007 MSAT rulemaking, as EPA has not yet programmed those revisions into MOBILE6.2.

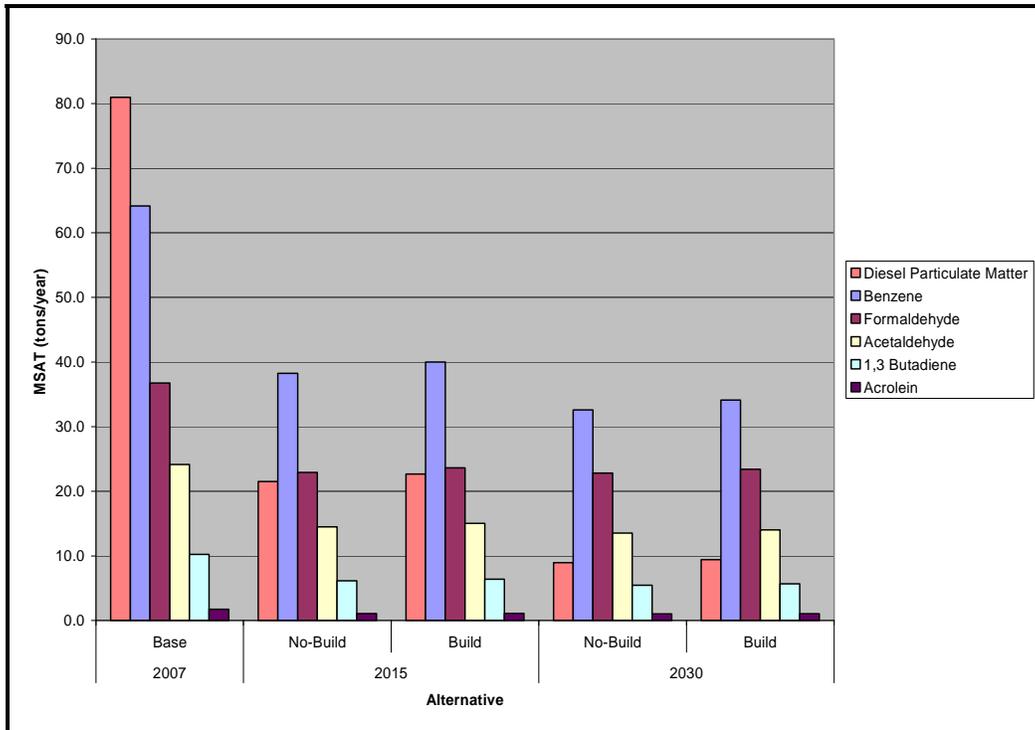
Table VIII-4 MSAT Emissions for SH 121/SH 183 by Scenario (tons/year)							
Compound	Year / Scenario					% Difference	
	2007	2015	2015	2030	2030	2007 to 2030	2007 to 2030
	Base	No-Build	Build	No-Build	Build	No-Build	Build
Acetaldehyde	24.1	14.5	15.0	13.5	14.0	-44%	-42%
Acrolein	1.7	1.1	1.1	1.0	1.0	-41%	-40%
Benzene	64.2	38.2	40.0	32.6	34.1	-49%	-47%
Butadiene	10.2	6.1	6.4	5.4	5.7	-47%	-44%
Formaldehyde	36.7	22.9	23.6	22.8	23.4	-38%	-36%
Diesel Particulate Matter	81.0	21.5	22.7	8.9	9.4	-89%	-88%
Total MSAT	217.9	104.3	108.8	84.3	87.7	-61%	-60%
Total VMT (Miles/Year)	9,373,354	12,305,514	12,538,396	16,593,608	17,458,180	77%	86%

Source: Study Team 2008

The analysis indicates a substantial decrease in MSAT emissions can be expected for both the Build and No-Build Scenarios (2030) versus the base year (2007). Emissions of total MSATs are predicted to decrease by approximately 60 percent in 2030 Build Scenario compared with 2007 levels. If emissions are plotted over time, a substantially decreasing level of MSAT can be seen, (**Figure VIII-2**) however, overall VMT continues to rise. Differences in total MSAT emissions between the No-Build and Build Scenarios were found. The 2030 Build Scenario is expected to generate a 5 percent increase in VMT as compared to the 2030 No-Build, and a corresponding 4 percent increase in MSATs.

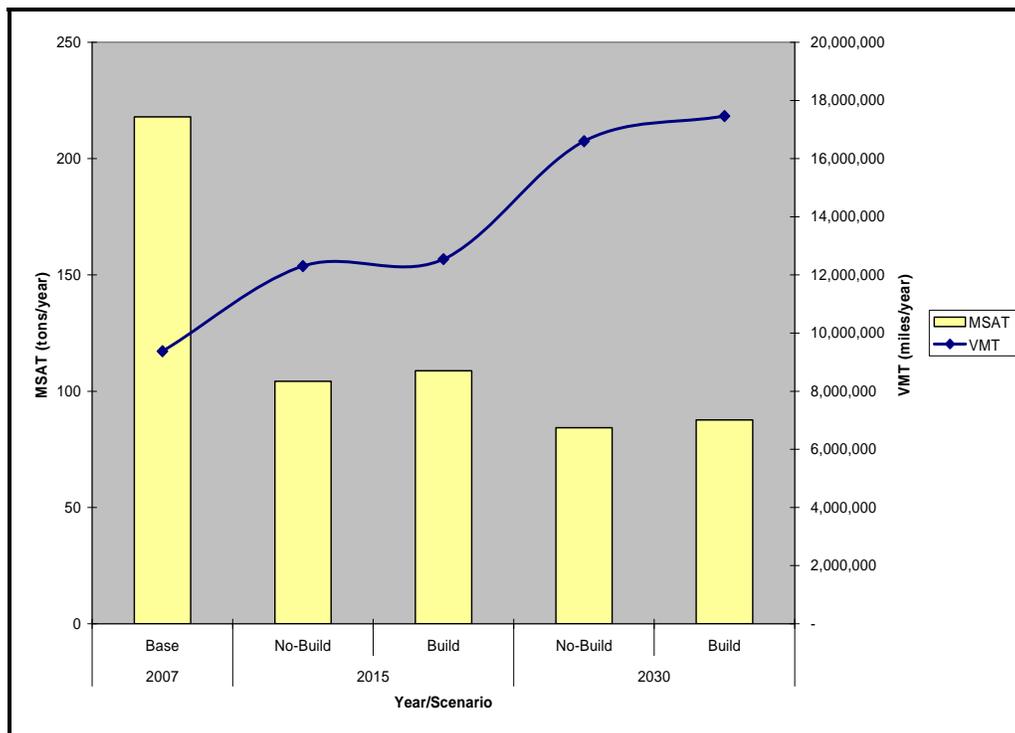
Of the six priority MSAT compounds, benzene and DPM contribute the most to the emissions total in 2007 (see **Table VIII-4** and **Figure VIII-1**). The amount of DPM emitted in 2007 is higher than the amount of benzene emitted. In future years a substantial decline in benzene is anticipated (47 percent reduction in benzene from 2007 to 2030, Build Scenario), and an even larger reduction in DPM emissions is predicted (about an 88 percent decrease from 2007 to 2030, Build Scenario).

Figure VIII-1: Projected Changes in MSAT Emissions by Scenario over Time



Source: Study Team 2008

Figure VIII-2: Comparison of MSAT Emissions vs. VMT by Scenario



Source: Study Team 2008

These emission levels are for all the MSATs evaluated and are mostly a reflection of the total VMT. The reasons for these dramatic improvements are two-fold, a change in vehicle fuels, both gasoline and diesel fuel, and a change in emission standards that both light-duty and heavy-duty on-road motor vehicles must meet. The EPA predicts substantial future air emission reductions as the agency’s new light-duty and heavy-duty on-road 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 EPA’s Tier II Regulatory Impact Analysis (RIA) and EPA’s HDDV RIA; Regulatory Impact Analysis (EPA, 2001; EPA, 1999; TCEQ, 1997).

Increased roadway usage, which will occur either under the No-Build or Build Scenarios, will not necessarily lead to increases in harmful emissions (NOx, VOCs, CO, or MSATs). Such emissions from vehicles are expected to continue the current dramatic pattern of decrease, even with continuing increases in VMT. Technology is improving at a pace that exceeds the effect of increased VMT.

B.4.2 Indirect Impacts

There are mandatory federal and state air emissions regulations, enforced by the EPA and TCEQ, to ensure that growth and development do not prevent regional compliance with the ozone standard or

threaten the maintenance of the other air quality standards such as the NAAQS for carbon monoxide; therefore, no change in air quality attainment status is expected to occur as a result of conversion and redevelopment of land uses in the Indirect Impacts AOI.

Indirect air quality impacts from MSATs are unquantifiable due to existing limitations to determining pollutant emissions, dispersion, and impacts to human health. Emissions would likely be lower than present levels in future years as a result of the EPA's national control regulations (i.e., new light-duty and heavy duty on road fuel and vehicle rules; and the use of low sulfur diesel fuel). Even with an increase in VMT and possible temporary emission increases related to construction activities, the EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions of on road emissions, including CO, MSATs, and the ozone precursors VOC and NOx.

B.5 Step 5 (Air Quality): Reasonably Foreseeable Effects

The states where the nonattainment areas are located are required to submit a SIP to the EPA. The SIP document is a collection of regulations that explain how the State would reduce emissions and help meet ozone standards. Nine counties are currently designated nonattainment for ground level for ozone in the DFW area, including: Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Tarrant, and Rockwall Counties. The long-range financially constrained plan known as Mobility 2030 – Amended 2009, approved August 31, 2009 is required to be in conformity with the SIP for air quality. Any future widening of the facility would be required to be consistent with the MTP and TIP documents, and therefore meet conformity with the SIP.

Future construction of roadway projects potentially could worsen the condition of the air quality in the RSA. The most likely projects that would do this would be major freeway projects, such as the SH 161 completion project. This project would be a toll project and NCTCOG, through their Complete Performance Reports for the proposed project, has found that some motorists are likely to use frontage roads to avoid paying tolls. The SH 161 project found that the potential acceleration of land use changes associated with the Regional Toll Revenue Funding Initiative (RTRFI) projects may result in an increase of on-road mobile sources (e.g., cars), new area sources (e.g., dry cleaners), and new point sources (e.g., refineries).

Major land development projects could also have air quality impacts. For example, the expansion of DFWIA land development operations is likely to attract motorists to the area that otherwise may not have traveled there. These motorists may be associated with new employment in the Free Trade Zone, Southgate Plaza, Passport Park, or the Bear Creek Office Park or they may be visitors to those businesses. Fort Worth's strategic plan to develop growth centers near the airport would also contribute to increased destination travels in the RSA. Bedford, likewise, has produced a future land use plan that would increase the Floor Area Ration (FAR) for commercial development along the corridor.

According to the SH 161 re-evaluation of FEIS, the RTRFI is a strong justification for the construction a project as a managed (toll) facility. Managed toll facilities would involve state or federal funding and any RTRFI project that would be regionally significant would be required to be consistent with the conforming MTP/TIP.

In sum, reasonably foreseeable actions that may affect air quality include all transportation projects that are included in the MTP Mobility 2030 – 2009 Amendment, approved August 31, 2009 and future growth and urbanization. A graphic of Mobility 2030 – 2009 Amendment, approved August 31, 2009 Funded Roadway Projects is located at Appendix H-19. MTP projects that are located in the general vicinity of the proposed project are listed in Appendix H-17 – Regionally Significant Local Projects. Planned developments in the surrounding cities along the proposed project are discussed in Section VIII - C.5.1.

B.6 Step 6 (Air Quality): Cumulative Impacts Assessment

The cumulative impact on air quality from the proposed project 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 proposed project and the other reasonably foreseeable transportation projects were consistent with the MTP and the TIP and have been determined to conform to the ozone non-attainment SIP.

The DFW region is expected to continue to experience substantial population growth, urbanization, and economic development. The cumulative impact of reasonably foreseeable future growth and urbanization on air quality would be minimized by enforcement of federal and state regulations, by the EPA and TCEQ, which are mandated to ensure that such growth and urbanization would not prevent compliance with the ozone standard or threaten the maintenance of the other air quality standards, along with regulated entities in compliance with regulations.

Throughout the region, EPA's vehicle and fuel regulations, coupled with fleet turnover, will, over time, cause substantial reductions of on-road emissions including CO, MSAT and the ozone precursors (VOC and NO_x). Modeling results under the worst case conditions indicate that CO concentrations would not exceed the NAAQS for the toll scenario either in 2015 or 2030. A quantitative MSAT analysis indicates that by 2030, although VMT increases, MSAT emissions would decrease by 60 percent when compared to 2007.

The future network of roadways and subdivision streets within the RSA is expected to accommodate increased traffic volumes. In addition, overall emissions would likely decrease due to improving fuel and vehicle technology and vehicle turnover in the future years. This is expected for the criteria pollutants including O₃, CO, and MSATs. However, while reduced congestion and improved technology would assist in air quality enhancements, transportation conformity requirements concerning ozone may still be required for some future roadway network projects.

C. STEPS 1-6: COMMUNITY

C.1 Step 1 (Community): Resource Identification

The proposed highway expansion project would directly impact communities within Tarrant and Dallas counties, which are in the NCTCOG MPA.

C.1.1 Land Use

There are various tools that can be applied in land use control. Many communities use zoning ordinances to program the growth of their cities, while others rely on covenants and deeds that developers create. Strategic, long range, and comprehensive plans outline a future for the community, and in many cases, a city will maintain an active “Future Land Use Plan.” The proposed project is consistent with the plans of all communities along the SH 121/SH 183 corridor.

NCTCOG has developed four scenarios for growth in the DFW region.

Rail Scenario

Redistributed population and employment growth occurring between 2010 and 2030, while maintaining the regional control total. Growth was taken from rural areas of the region and added primarily to rail oriented zones.

Infill Scenario

Redistributed population and employment growth occurring between 2010 and 2030, while maintaining the regional control total. Growth was taken from rural areas of the region and added primarily to infill areas along existing freeways/tollways.

Rail with County Control Totals (RCCT) Scenario

Redistributed population and employment growth occurring between 2010 and 2030, while maintaining the regional control total and county control totals. Growth was taken from rural areas of the region and added primarily to rail oriented zones.

Regional Transportation Council Alternative Scenario

Will redistribute population and employment growth occurring between 2010 and 2030, while maintaining the regional control total. Based on policies included in the Alternative Future Policy Program. Redistribution of growth will focus on increasing densities in rail-oriented and infill zones.

In addition to these scenarios, two additional external scenarios were developed that reflect local planning efforts; and which mutually support regional growth and additional transportation planning initiatives.

Forward Dallas! Scenario

Redistributed population and employment growth based on the final alternative demographic dataset created during the *Forward Dallas!* Comprehensive Plan process.

Forward Dallas! is based on a land use model that includes all the initiatives in the Policy Plan. The Action Plan is what the City aims to implement in 2006 and 2007. The following are the plans included in the Action Plan for 2006-2007:

Development Code Changes Program Plan

In order to achieve development envisioned by Dallas residents, the City must quickly update three key provisions in its zoning code -urban design standards for walkability, a parking overlay and four mixed-use zoning districts that fit within the current zoning code. While the City could review its entire repertoire of zoning tools, this would be a daunting task given the code hasn't been updated in more than 20 years. In order to realize the goals of *Forward Dallas!*, new tools should be written and adopted so future development in targeted areas reflects the ideals expressed in the Building Blocks and Vision.

Southern Sector Agile Port Area Plan

The City envisions having an Area Plan within a year for the Agile Port Industrial Area. Most importantly, the land must be secured for industrial use and considered as an Agile Port center. The City will work with freight companies to both demonstrate the potential value of this property as an industrial district and to build support for the industrial zoning designation.

South Dallas/Fair Park Area Plan

In addition to major investments planned for the area by DART, the State, City and community action groups, there are three major planning initiatives in the area that will affect the neighborhood dramatically.

- The 277-acre Fair Park National Historic Landmark. The focus of this plan is to make Fair Park a year-round destination for tourists and Dallas residents.
- The Trinity River Corridor Plan includes several small Area Plans.
- The DART Southeast Corridor extension will include three new stations in the South Dallas neighborhood.

Stemmons Corridor - Southwestern Medical District Area Plan

The goal is to develop this Campus District into a full-service area, with a full complement of uses. Envisioned activities include medical, design, office and continuing manufacturing uses, services for employees and residents, such as restaurants, shops and entertainment, temporary and permanent

housing, retail, and amenities such as wider sidewalks between tree-lined streets, a pedestrian-friendly environment, shopping and entertainment districts, parks, trails and open space.

Downtown Streetcar Study

A downtown circulator - in this case a streetcar - will help connect the various Downtown districts and improve linkages to Downtown light rail stations and give local residents a way to move around town without a car. A streetcar will also foster economic development in areas it serves that are currently underutilized.

Trinity River Corridor Plan

The Trinity River Corridor, offering Dallas areas of natural beauty and untapped potential, runs through the heart of the city. Proposed improvements along the Trinity River Corridor will impact Downtown, the Southern Sector and residents throughout Dallas. Imperative to achieving these goals is a coordinated implementation program to foster conditions that will encourage redevelopment and new development. This implementation plan outlines the overall approach to achieving the Vision for the Trinity River Corridor, balancing economic, land use, transportation, infrastructure and design objectives.

University of North Texas Campus Area Plan

The Southern Sector will be home to Dallas' first four-year university, the University of North Texas. A campus master plan has been created for the Houston School Road site but very little work has been done to plan development around the campus. Campus populations - faculty, staff and students - drive the need for nearby retail and service businesses. And start-up companies, frequently begun by former students or university staff, often locate near campuses. This off-campus economic activity often provides well-paying jobs and spurs the need for housing.

Westmoreland DART Station Area Plan

The plan is to transform this neighborhood into a walkable community, using sustainable development practices. Obsolete or under-utilized industrial land can become commercial land use. Commercial property is separated from the neighborhood and schools by both a major road and the DART line thus making it appealing for redevelopment. Potentially, residential, retail and office space could be located on these redevelopment parcels near the DART station. A retail/office complex has also been proposed for the site southwest of the Illinois-Westmoreland intersection. Finally, DART owns excess land at the station and is eager to become a partner in this future TOD. An urban village concept would see bustling commercial, residential and employment activity within a compact, architecturally diverse and engaging space.

Targeted Thoroughfare Plan Update

These updates are based on Context Sensitive Design (CSD) standards. Managing and planning for the city's transportation systems is a major responsibility of forwardDallas! The Transportation Element of the Policy Plan incorporates the "livable streets" principles of CSD, which goes beyond

traditional thoroughfare planning to be more inclusive and address the long-term land use goals. CSD ultimately ties together land use and thoroughfare planning to ensure that street design responds to the character of the neighborhoods that the street passes through. The transportation element of the plan establishes a framework for incrementally updating the Thoroughfare Plan in relation to the changing contexts and conditions of neighborhoods.

Vision North Texas Scenario

Redistributed population and employment growth occurring between 2000 and 2030, while maintaining the regional control total. Growth was distributed based on overall participant feedback.

Vision North Texas is a private-public partnership, headed by Charter Sponsors the Urban Land Institute, the North Central Texas Council of Governments, and the University of Texas at Arlington. Vision North Texas is supported by the generous contributions of numerous private and public-sector sponsors.

http://www.visionnorthtexas.org/VNT_Overview.html Vision North Texas is increasing public awareness about important regional land use issues that affect mobility, air quality, water supply and other economic and environmental resources. In addition, it serves as a forum for discussion, education, research and decisions about public and private sector actions to address these concerns. It is addressing these concerns through a partnership of the private, public, non-profit and academic sectors. The points discussed below are identified as Action Items that Vision North Texas is anticipating to 2050.

Vision North Texas - Now to 2050

- **More people.** Last year, 6.4 million people lived in North Texas. State projections suggest North Texas is likely to have 12 million residents by 2050, but the population could be as high as 24.3 million.
- **Water needs.** By 2050, our region's demand for water will more than double - we will need almost 3 million acre-feet of water, compared to the 1.4 million acre-feet we used in 2000.
- **Bigger in Texas.** At almost 12,800 square miles, the 16-county North Texas region is larger than nine states, including Hawaii and Massachusetts.
- **New energy choices.** North Texas could meet all of its electricity demands for the next 15 years through energy efficiency, onsite renewable energy and expanded demand response initiatives.
- **Carbon generation.** In 2002, North Texas was responsible for as much carbon emission into the
- **Savings to taxpayers.** Different development patterns mean lower costs for roads, sewers, and other infrastructure. One VNT scenario requires \$15B less in public spending for transportation.
- **Less paving.** One VNT scenario would require 3.5 square miles less paving for the region's transportation system - an area the size of University Park
- **Affordable housing.** North Texas is more affordable than the nation's larger regions - New York, Los Angeles and Chicago. But wages aren't keeping pace with increasing home prices. The average salary for a North Texas police officer in 2007 was about 80% of the salary needed to afford the region's median-priced home.
- **Strong employment base.** North Texas had 2.97 million employed civilian workers in January 2008 -

atmosphere as the entire state of New Mexico.

- **Healthy communities.** Sprawling development patterns - where people tend to walk less - contribute to obesity. Dallas County residents are 3% less likely to be obese than the U.S. average; Parker County residents are 4% more likely to be obese.

more than any other region of Texas and 27% of all workers in the state.

- **People want change.** Stakeholders at Vision North Texas workshops support regional efforts that change ‘business as usual’ practices. Participant support for regional investment based on a preferred regional scenario ranges from 83% to 96% at Vision North Texas events held in the past three years.

C.1.2 Historic Resources

Historic resources include historic buildings, structures, objects or districts that meet specific criteria for “significance.” The identification and preservation of significant historic resources are regulated at the federal level by the Department of the Interior (DOI) under Section 106 of the National Historic Preservation Act (NHPA) [16 USC 470(f)]. Regulations implementing the policies of Section 106 are found in 36 CFR Part 800: *Protection of Historic Properties* as well as 36 CFR Parts 60 and 63, which address the National Register of Historic Places (NRHP). Other agencies, agreements and understandings, and programs that are involved in the protection of the nation’s historic resources include the Advisory Council on Historic Preservation, the First Amended Programmatic Agreement for Transportation Undertakings (PA-TU) between TxDOT, the State Historic Preservation Officer (SHPO), FHWA, and the Advisory Council on Historic Preservation, the MOU between the SHPO and TxDOT, the Texas Antiquities Code (TAC), and the THC.

C.1.3 Section 4(f) Resources

Section 4(f) of the Department of Transportation Act of 1966 included provisions prohibiting the FHWA and other federal transportation agencies from using land from a significant publicly owned public park, recreation area, wildlife or waterfowl refuge, or any land from an historic site of national, state, or local significance unless: (a) there is no feasible and prudent alternative to the use of land, and (b) the action includes all possible planning to minimize harm to the property resulting from use. This provision is commonly referred to as Section 4(f).

More specifically, Section 4(f) properties include any of the following:

- Publicly owned park or recreation area open to the public (depending on access and use, school recreation facilities might be included);
- Publicly owned wildlife/waterfowl refuge (whether open to the public or not); and
- Historic sites of national, state, or local significance (except in unusual circumstances, only historic properties on or eligible for inclusion on the NRHP are protected under Section 4(f)).

The Section 4(f) property subject to cumulative impact evaluation is L.D. Bell High School; specifically the open, grassy area along the eastern property line fronting Brown Trail and the open, grassy

area/parking area along the SH 121/SH 183 westbound frontage road (totaling approximately 0.68 acre). The open, grassy areas are considered publicly owned recreation areas that are open to the public.

C.1.4 Air Quality

As previously explained, the EPA has developed and is continually improving a variety of regulations that are progressively tightening to improve air quality.

C.1.5 Environmental Justice

The Civil Rights Restoration Act of 1987 and the Executive Order 12898, signed on February 11, 1994, requires all federal agencies to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies and activities on minority (Black, Hispanic, Asian, or American Indian and Alaskan Native) and low-income (means a household income at or below the 2008 Department of Health and Human Services poverty guideline of \$21,200 for family of four) persons and populations. Meanwhile, Executive Order 13166, entitled "Improving Access to Services for Persons with Limited English Proficiency," mandates that federal agencies examine the services they provide and develop and implement a system by which LEP persons can meaningfully access those services consistent with, and without unduly burdening, the fundamental mission of the agency.

Analysis will also look at the economic impacts of tolling to EJ persons and populations.

C.1.6 Community Cohesion and Public Facilities and Services

Community cohesion is a qualitative measure of how well members of a community interact with each other. These members are residents, businesses, and community services. Periodically, the conditions and use of public facilities can be used as a reflection of the cohesive properties of the community.

C.1.7 Traffic Operations

Traffic operations pertain to the smooth functioning of roadways and other transportation networks, and is often referred to as level of service (LOS), a qualitative evaluation of the movement of traffic.

C.1.8 Traffic Noise

Traffic noise is a quantitative element of roadway planning and design whose impacts are often a matter of perception. Analysis is accomplished in accordance with TxDOT's (FHWA approved) *Guidelines for Analysis and Abatement of Highway Traffic Noise*.

C.1.9 Lighting and Visual Impacts

These two elements of roadway construction can have noteworthy intrusive individual impacts to existing land uses, particularly when the proposed project is in an environment where the intrusion has not been previously experienced. In urban areas, light and visual pollution have much less impact because they are known elements.

C.1.10 Habitat

Habitat refers to the natural provisions for wildlife. Habitat consists of food, water, cover, and space (or movement). All species of plants and animals need a proper combination of these elements to survive and reproduce. Without habitat, a species cannot survive.

C.2 Step 2 (Community): Resource Study Area

Unless otherwise stated, the RSA for the community resources is an area within an approximate two-mile radius of the SH 121/SH 183 corridor. The boundaries are as follows (see **Appendix I-1B**):

- North: A line coincidental with Watauga Road/Mid-Cities Boulevard./Cheek Sparger Road/Southwest Construction Road/Valley View Lane (north to Belt Line Road).
- East: Belt Line Road
- South: Baker Boulevard/West Hurst Boulevard (to the point it turns northeast to join East Hurst Boulevard)/a line consistent with Mosier Valley Road/to Trinity River Boulevard (south to Belt Line Road)
- West: Rufe Snow Road

This RSA is consistent with guidance in *NCHRP Report 466: Desk Reference for Estimating the Indirect Effects of Proposed Transportation Projects* (2002), wherein it states that “Development effects are most often found up to one mile around a freeway interchange, up to two to five miles from major frontage roads that feed interchanges, and up to one-half mile around a transit station.”

As previously outlined in **Table VIII-2**, the RSAs for historic resources and environmental justice populations differ from that established above. For historic resources, the RSA is defined as the 150-foot Area of Potential Effect (APE), as established in guidance from TxDOT on August 15, 2008, and in accordance with the PA-TU, Section 106 coordination, dated September 14, 2007. The project level RSA for environmental justice populations consists of adjacent census tracts and TSZ populations predicted to utilize the SH 121/SH 183 facility in 2030 per the NCTCOG origin/destination select link analysis.

L.D. Bell High School was the only Section 4(f) property determined to have direct impacts and no Section 4(f) properties had indirect impacts. As such, cumulative impacts were assessed for L.D. Bell High School only.

The temporal boundaries for the cumulative impacts analysis are the years 1950 to 2030. The early date was established because it is the period when land development first began in earnest in the RSA and such concepts as managed lanes (tolling) were first considered as revenue generators (though not as congestion control mechanisms). The year 2030 was chosen to correlate with NCTCOG's Mobility 2030 – Amended 2009, approved August 31, 2009.

C.3 Step 3 (Community): Resource Current Health Trend and Historical Context

According to the U.S. Census Bureau 2005 American Community Survey, the total population of the community RSA is comprised of approximately 227,200 persons.

C.3.1 Land Use

Current Health Trend

SH 121/SH 183 is located in one of the fastest growing counties in Texas. In 2005, at 12.1 percent growth over the previous five years, Tarrant County was among the top 30 fastest growing counties in the state, and among the fastest growing areas of the nation. Between 1990 and 2000, the Dallas/Fort Worth Consolidated Metropolitan Statistical Area (CMSA) grew from approximately 3.9 million to approximately 5.2 million. This represents a growth of approximately 25.6 percent, making the region the fourth fastest growing region in the state. Euless, Fort Worth and North Richland Hills all grew by more than eight percent between 2000 and 2003, while Bedford and Hurst grew three percent and 2.5 percent, respectively. Between 1970 and 2000, Fort Worth-Arlington grew by approximately 52.9 percent; decennial growth between 1960 and 2000 has been steady between approximately 23.6 percent and 37.4 percent. This growth is led by the creation of employment. For example, the 2025 RTP estimated that between 2000 and 2025, the population would increase by approximately 60 percent. At the same time, employment would increase by approximately 58 percent.

Between 1970 and 1984, land along the corridor developed rapidly. The growth was attributed to a variety of market forces. First, convenient access to undeveloped land was provided by the completion of SH 121/SH 183. Second, relatively low land values for extensive tracts of land made it possible for developers to consolidate parcels that enabled tract development. By 1995, the corridor was fully urbanized, with occasional small pockets of land left available for land use conversion.

One of the more noticeable changes along the corridor since 1970 was the closure and redevelopment of the Amon G. Carter International Airport in 1974. Following the opening of the present DFW International Airport, Amon G. Carter was closed with some of the land redeveloped for commercial. SH 121/SH 183 now overlies the north end of the main runway.

Such population and economic growth, as described above, necessitates improvements to transportation outlets and other forms of infrastructure, ultimately leading to redevelopment and the conversion of

various land use types. Although the region is expected to continue growing, there is little vacant land available for development. Additionally, the RSA wholly or partially contains nine cities, all of which have built to their boundaries. Thus, any new growth into these areas is densification and not new sprawl. Consequently, supporting growth will come through redevelopment and conversion of existing land use.

Historical Context

When settlement began in the area now known as Tarrant County, agriculture was the dominant economic engine. All of the cities within the RSA were at one time linked directly to agricultural activities. Although it has lost much of its influence to commercial, industrial, and institutional land uses, agriculture remains an important aspect of the regional economy and a force that has left a dominant imprint on the landscape. Today, many of the linkages that form the network of major highways in the Dallas/Ft. Worth Metroplex were formed out of cattle drive trails (i.e., Interstate 35 was the Chisholm Trail and Shawnee Trail).

In 1873, Ft. Worth incorporated; in 1914, Irving incorporated. Still, as recently as 1942, there was very little human settlement between the two centers, and this consisted of linear hamlet development along roadways. This type of rural land settlement persisted until the late 1950's. However, partially from concerns over annexation, and to capitalize on economic trends, between 1951 and 1953, the four cities that lie roughly between Fort Worth and Irving along the SH 121/SH 183 project corridor were incorporated (see **Table VIII-5**); the other cities in the RSA (Arlington, Colleyville, Richland Hills) incorporated in 1876, 1956, and c. 1942, respectively. Incorporation allowed pockets of rapid development that formed near transportation nodes.

City	Date
Fort Worth	1873
Irving	1914
Hurst	1951
North Richland Hills	1953
Bedford	1953
Eules	1953
Arlington	1876
Colleyville	1956
Richland Hills	c. 1942

Source: Handbook of Texas Online

The DFW Metroplex has witnessed several major projects within the SH 121/SH 183 corridor. These projects have helped shape the futures of cities located in the RSA. **Table VIII-6** provides a partial list of these projects.

Facility	City	Date
Tarrant County Jr. College	North Richland Hills	1967
Municipal Complex/Expansion Project	North Richland Hills	1960/87
American Airlines Relocation	Euless	1957
Bell Aircraft (Helicopters)	Hurst	1951
Tarrant County Junior College	Hurst	1968
Northeast Mall	Hurst	1972
Dallas Cowboys Stadium	Irving	1971
The University of Dallas in Irving	Irving	1956
Las Colinas Urban Center	Irving	1973
Midway Airport*	Fort Worth	1946

* Midway Airport became DFW International Airport, intermittently named: Greater Ft. Worth Int'l Airport; Amon G. Carter Field; Greater Southwest Int'l Airport; DFW Regional Airport.

C.3.2 Historic Resources

Current Health Trend

Based on the NRHP eligibility recommendations of the reconnaissance-level survey report, the APE (as established in **Table VIII-2**) contains one historic-age resource that is eligible for inclusion in the NRHP: Site ID#80, Old Bedford Road Bridge (southwest of SH 121/183 and Bedford Road intersection). However, the bridge does not sit on land that is NRHP eligible, nor is adjoining land NRHP eligible.

Historical Context

This concrete flat-slab bridge constructed ca. 1910 is located southwest of the intersection of Bedford Road and SH 121/183 in Bedford, Texas. The bridge is approximately eight feet wide and fourteen feet long. When constructed, the bridge was a part of the original Bedford Road connecting Fort Worth and Dallas. In addition, the old road also led into Bedford's business community, which included cotton and gristmills. Dave Michaels, writing for the Dallas Morning News, states that the bridge "appears to be one of the oldest examples of concrete slab bridges in Texas, according to research done by the Texas Department of Transportation," and that TxDOT had reported that the Old Bedford Road Bridge was one of only three concrete-slab bridges constructed before 1910. Based on information gathered for the development of the historic context, the Old Bedford Road Bridge is associated with early community development in Bedford. In addition, according to information from TxDOT, the bridge is one of a very few extant concrete-slab bridges built in the early twentieth century.

As described in **Section VI - G.2**, in accordance with Stipulation VI "Undertakings with Potential to Cause Effects" of the PA-TU between the FHWA, the SHPO, the Advisory Council on Historic Preservation, and TxDOT and the MOU, TxDOT historians determined the proposed improvements to

have no adverse direct impacts to the Old Bedford Road Bridge, nor would there be any reasonably foreseeable adverse indirect or cumulative impacts to this NRHP eligible resource.

C.3.3 Section 4(f) Resources

Current Health Trend

Hurst-Eules-Bedford Independent School District (HEB ISD) officials determined that the school outdoor recreation fields are primarily used for structured physical education classes, marching band practice, athletic practice, and recreation for students. However, the school outdoor recreation fields are also used by the general public for recreational purposes (walk-on activity) primarily during non-school hours (evenings and weekends). HEB ISD officials described the track, soccer fields, and open space as the facilities most often used by non-school members. In association with these recreation areas, approximately 0.68 acre of an open, grassy area near the SH 121/SH 183 westbound frontage road would be impacted by the proposed project, for which a *de minimis* impact determination was made by FHWA.

Historical Context

L.D. Bell High School, opened in 1957 (post construction of Airport Freeway), is located north of and adjacent to the westbound frontage road of SH 121/SH 183. The school property is bounded on the east by Brown Trail Road and on the west by a commercial office park. L.D. Bell High School outdoor recreation fields, located in the southern part of the school property, consists of soccer fields, baseball fields, a running track that encloses a practice field, a parking lot at the running track, and a vacant undeveloped parcel of land located west of a small creek (Valley View Branch). The L.D. Bell High School property is owned and administered by the HEB ISD and consists of 57.2 acres.

C.3.4 Air Quality

Current Health Trend

As previously stated, according to NCTCOG, the DFW metropolitan area since the 2000 U.S. Census has been one of the fastest growing areas in the United States, and it is expected to continue to grow at similar rates. Growth often results in an increase of development, increase in vehicles, and an increase in VMT. Traffic congestion has become one of the greatest challenges in the DFW metropolitan area, as on-road mobile sources (such as cars and trucks) contribute to air pollution. This challenge is evidenced as the DFW metropolitan area was ranked the ninth most congested area in the nation.

Historical Context

Throughout recent decades, multiple regional and local initiatives have been planned and implemented in an effort to reduce air pollution from mobile sources. Several of these initiatives specific to the area's transportation system included increased capacity highways and roadways (through construction of additional travel lanes and bottleneck improvements), construction of high-occupancy vehicle lanes, and the promotion of alternative transportation (e.g., hike and bike trails, bus, and light rail).

C.3.5 Environmental Justice (EJ)

Current Health Trend

As described in **Section VI - A.1.2**, census block groups with relatively high racial minority (25% or more) and below poverty level (9% or more) percentages were designated as containing EJ populations. A list of these block groups is provided below and can be seen in relation to their encompassing census tracts and cities in **Table VI-1**.

<u>Racial Minority Percentages >25%</u>	<u>Percent Below Poverty Level >9%</u>
• CT 1132.19 - BG4 (NRH)	• CT 1132.19 - BG 4 (NRH)
• CT 1135.15 - BG1 (Hurst)	• CT 1132.13 - BG 1 (NRH)
• CT 1165.08 - BG 1 (Fort Worth)	• CT 1136.13 - BG 1 (Hurst)
• CT 1165.08 - BG 2 (Fort Worth)	• CT 1135.09 - BG 3 (Eules)
• CT 1135.11 - BG 1 (Eules)	• CT 1135.09 - BG 4 (Eules)
• CT 1135.09 - BG 3 (Eules)	• CT 1135.13 - BG 1 (Eules)
• CT 1135.14 - BG 1 (Eules)	• CT 1135.14 - BG 1 (Eules)
• CT 1136.13 - BG 3 (Eules)	• CT 1135.14 - BG 2 (Eules)

Three of these minority and/or low-income communities lie within new ROW and would require displacements. Two are located in Eules (CT 1135.09 - BG 3 and CT 1135.14 - BG 1) and one in Hurst (CT 1136.13 - BG 3).

Historical Context

The Civil Rights Restoration Act of 1987 and the Executive Order 12898, signed on February 11, 1994, requires all Federal agencies to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of its policies, programs, and activities on minority and low-income populations. The thresholds used to identify areas with high concentrations of low-income populations in the study area was set based on the definitions of low-income established by the Department of Health and Human Services. For 2008, the accepted poverty level is \$21,200 for a household/family of four persons. According to the CEQ, a minority is any individual or group of individuals “Who are members of one or more of the following population groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic” (Environmental Justice Guidance under the National Environmental Policy Act (December 10, 1997)). The CEQ also provides guidance for the definition a minority population:

Minority populations should be identified where either: (a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis. In identifying minority communities, agencies may

consider as a community either a group of individuals living in geographic proximity to one another, or a geographically dispersed/transient set of individuals (such as migrant workers or Native American), where either type of group experiences common conditions of environmental exposure or effect. The selection of the appropriate unit of geographic analysis may be a governing body's jurisdiction, a neighborhood, census tract, or other similar unit that is to be chosen so as to not artificially dilute or inflate the affected minority population. A minority population also exists if there is more than one minority group present and the minority percentage, as calculated by aggregating all minority persons, meets one of the above-stated thresholds.

C.3.6 Community Cohesion and Public Facilities and Services

Current Health Trend - Community Cohesion

Community cohesion is a measure of how well members of a community interact with each other. Members of the community include residents, businesses, public service organizations, and people or organizations that provide assistance to community members.

Reconnaissance for the purpose of qualifying community cohesion was conducted on March 17 and 18, 2007. The area was overall characterized as having positive, but not strong cohesiveness. As reference, strong residential cohesion would be evident in measures where people were actively helping each other such as a backyard cleanup campaign, block parties, community bake sales, etc. In commercial land use, strong cohesion would be shown through sponsorship of local events and efforts.

Residential cohesion was evident in the RSA. First, most communities, particularly North Richland Hills, appeared very stable with very little real estate for sale. This community also had several streets that participated in neighborhood crime watch programs.

In addition to residential cohesion, businesses and institutions were active in communities. For example, several businesses supported little league teams, and indoor signs and memorabilia indicated one business as supporting the local high school. The HEB ISD had permitted a car and motorcycle training/testing program to use their parking lot.

Several communities have become involved in cohesion-building programs. For example, North Richland Hills has created the Neighborhood Initiative Program, a program going into its third year of helping people in need. The goal of the program is to help maintain quality of life.

The program is geared to the elderly, mentally and physically challenged, and the single parents of North Richland Hills. This is a volunteer-run program that achieves its aims through donated time, materials, and funding. Typical volunteer projects include minor home repairs (i.e., replacing rotted wood on homes or garages, painting, yard work, mowing yards, and trimming trees). Businesses and various charities are actively involved.

The City of Hurst runs the Volunteers in Action (VIA) program. Since 1979, the VIA program has provided assistance to various City Departments, providing short-term assistance for programs that are short of funding, or alleviating workloads for salaried employees.

Finally, there was evidence of people coming together for caring and celebration. Signs were posted for St. Patrick Day festivities, the Eules Arbor Daze festival was posted, a local food bank and the Goodwill clothing drop box were actively taking donations, and an Easter egg hunt was being advertised.

However, there was evidence that cohesion was lacking in other ways. For example, parks had relatively little or no activity and there was little sign of children playing in the neighborhoods; this was in spite of the fact that field reconnaissance was conducted on pleasant Saturday and Sunday afternoons. The realm of possible explanations for this phenomenon is nearly endless. For example, this may have been a one-time event, brought on by numerous forces including any type of special activity that children in the community may attend. However, it could also mean that there is a poor perception of safety for children, and this could improve if the proposed highway expansion project is able to instill confidence in parents that cut-through traffic is curbed.

Quality of Life

Each year, CNNMoney.com compiles and publishes an index of “Best Places to Live” markers (**Table VIII-7**). The index is a break-down of many of the elements that determine Quality of Life (i.e., Job Growth, (2000-2006), Median Home Price, Average Property Tax). In many ways, for 2006, the communities within the RSA and the study corridor performed reasonably well against the average of top ten places in America, though none placed within the top ten. Victims of both personal and property crime were well below the “Best Places Average (BPA),” while commute times were similar; in some cases the proportion of those who walk or bike to work exceeded the BPA. There were generally more movie theatres, restaurants, and bars in the RSA communities, and similar amounts of museums and libraries. Weather conditions were not dissimilar from the BPA. In terms of health care, numbers typically were at or near the BPA.

THIS PAGE INTENTIONALLY LEFT BLANK

Table VIII -7 CNNMoney “Best Places to Live” Index								
	Richland Hills	North Richland Hills	Hurst	Fort Worth	Euless	Bedford	Irving	Best Places Average
Financial								
Median Family Income (per year)	\$55,053	\$73,980	\$68,393	\$50,664	\$64,097	\$80,316	\$57,690	\$90,316
Family Purchasing Power (Annual, Cost-of-Living Adjusted)	\$60,102	\$80,764	\$74,665	\$55,310	\$69,975	\$87,681	\$62,980	\$82,867
Sales Tax	8.30%	8.30%	8.30%	8.30%	8.30%	8.30%	8.30%	6.74%
Auto Insurance Premiums (State Average)	\$1,950	\$1,950	\$1,950	\$1,950	\$1,950	\$1,950	\$1,950	\$2,121
Job Growth (2000-2006)	4.20%	12.10%	6.07%	10.27%	9.19%	5.40%	-2.06%	13.41%
Housing								
Median Home Price	\$130,366	\$232,000	\$182,443	\$163,183	\$183,485	\$192,310	\$228,455	\$359,352
Average Property Tax	\$2,647	\$3,223	\$3,118	\$2,758	\$2,647	\$2,960	\$3,715	\$3,585
Education								
Colleges, Universities, Professional Schools within 30 minutes	19	20	20	21	19	19	20	29
Junior Colleges, Technology Institutes within 30 minutes	21	22	24	25	24	24	24	18
Test Scores (Reading) - % Above/Below State Avg.	0.80%	7.80%	7.10%	-2.90%	7.70%	11.40%	-0.90%	20.10%
Test Scores (Math) - % Above/Below State Avg.	2.00%	15.00%	-15.00%	-3.00%	14.00%	24.00%	-3.00%	24.80%
% Students Attending Public/Private Schools	100.0/0.0	89.0/11.0	97.9/2.1	90.5/9.5	99.0/1.0	94.5/5.5	94.6/5.4	91.1/8.9
Quality of Life								
Air Quality Index (% Days AQI Ranked Good)	68.20%	68.20%	68.20%	76.40%	68.20%	68.20%	71.20%	77%
Personal Crime Incidents (per 1,000)	2	2	4	7	3	5	5	13
Property Crime Incidents (per 1,000)	32	33	53	62	36	36	48	206
Median Commute Time (Mins.)	21	23	22	21	22	22	21	23
% Population with Commute of 45 Minutes or Longer	10.10%	14.90%	14.10%	12.80%	11.10%	12.50%	10.60%	15.60%
% Population Walk or Bike to Work	1.7%	1.8%	2.9%	2.7%	2.6%	1.3%	2.8%	2.7%
Leisure and Culture								
Movie Theaters (Within 15 Miles)	35	41	45	72	63	43	86	30
Restaurants (Within 15 Miles)	3,262	3,714	3,837	6,639	5,513	3,942	7,224	2,899
Bars (Within 15 Miles)	289	302	320	553	471	327	514	287
Libraries (Within 15 Miles)	61	66	67	122	88	66	100	71
Museums (Within 15 Miles)	7	8	8	8	8	8	8	11
Ski Resorts (Within 100 Miles)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	17
Arts Funding (Dollars per Person of State Funds Spent on the Arts)	0	0	0	0	0	0	0	1

Table VIII -7 CNNMoney “Best Places to Live” Index								
	Richland Hills	North Richland Hills	Hurst	Fort Worth	Eules	Bedford	Irving	Best Places Average
Weather								
Annual Precipitation (Inches)	34	35	35	34	35	35	35	40
Area Clear Days	37	37	37	37	37	37	37	28
High Temperature in July (°F)	95.7°	95.5°	95.4°	96.6°	95.4°	95.4°	95.4°	86.1°
Low Temperature in January (°F)	31.4°	30.8°	34.0°	31.4°	34.0°	34.0°	34.0°	24.0°
Health								
Has Health Plan (% of Residents)	80.20%	80.20%	80.20%	84.00%	80.20%	80.20%	78.80%	90.50%
Body Mass Index	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00
Diabetes Rates	9.50	9.50	9.50	6.60	9.50	9.50	11.40	0.09
Hypertension Rates	31.40	31.40	31.40	22.90	31.40	31.40	32.70	0.31
Elder Care Facilities ⁸	84	85	92	84	92	96	112	107
Meet the Neighbors								
Median Age	39.50	34.60	37.40	31.20	32.20	36.60	30.90	36.80
Completed at Least Some College (% of Residents)	54.30%	66.50%	63.70%	54.30%	66.80%	73.20%	58.80%	72.40%
Married	51.60%	59.40%	58.70%	46.70%	50.70%	53.10%	47.40%	60.80%
Divorced	14.00%	11.20%	12.00%	11.70%	14.40%	13.40%	11.60%	8.00%
Racial Diversity Index (100 is National Average; Higher Numbers Indicate Greater Diversity)	36.8	37.2	45.1	168.4	95.9	41.8	148.9	59.2
Amount Spent on Vacations (Domestic and Foreign)	\$6,943	\$7,650	\$7,152	\$6,955	\$6,748	\$7,571	\$7,077	\$8,250

Source: CNNMoney.com

⁸ Elder-care services refer to skilled nursing and assisted living facilities. Data from Total Living Choices.

Historical Context - Community Cohesion

Historical trends in community cohesion are difficult to measure. Consequently, it is considered a given that cohesion has fluctuated over time, with periods of building and faltering as neighborhoods changed.

Current Health Trend - Public Facilities and Services

The RSA is a heavily urbanized area. Therefore, the supply of public facilities and services provides for a wide range of public needs. Known facilities and services include medical, dental, chiropractic, financial, hospitality, retail, automotive, pharmaceutical, entertainment and leisure, health and recreation, education, religion, veterinarian, postal, museum, emergency, and senior’s care.

City parks serve important functions for Community Resources. In many ways, they become places where members of the community gather and socialize. City parks are multi-use facilities that cater to many needs from casual recreation to organized events. Within a one-mile radius of the proposed project are several public park facilities (see **Table VIII-8**). Facilities within a two-mile radius are discussed in the Indirect Impacts section of this EA.

Table VIII-8 Public Parks within One Mile of the SH 121/SH 183 Corridor

Facility Name	City	Amenities																				
		Restrooms	Picnic	Hike/Bike	Nature Area	Exercise Area	Adventure Play	Playgrounds	Softball	Soccer	Volleyball	Basketball Court	Tennis	Swimming Pool	Concessions	Fountains	Fishing Pier	Greenhouse	Golf	Pro Shop	Restaurant	Conference Center
Stormie Jones	Bedford	✓	✓	✓		✓				✓	✓					✓						
Bedford Trails	Bedford			✓	✓			✓								✓						
Boys Ranch Park	Bedford	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓					✓					
Mayfair	Hurst	✓		✓		✓		✓	✓	✓	✓	✓										
Smith-Barfield	Hurst	✓	✓	✓				✓	✓			✓										
Valentine	Hurst	✓		✓		✓		✓	✓	✓	✓	✓										
Windmill	Hurst				✓			✓														
Norich	NRH		✓				✓	✓														
West	Euless	✓	✓		✓			✓	✓	✓												
Wilshire	Euless	✓	✓	✓				✓						✓			✓					
Softball World at Texas Star	Euless							✓	✓											✓		
Texas Star Golf Course	Euless																	✓	✓	✓	✓	✓
Kiddie Carr	Euless		✓								✓						✓					
J.A. Carr	Euless	✓	✓	✓				✓		✓												
The Parks at Texas Star	Euless	✓	✓	✓		✓		✓	✓						✓							
Blessing Branch	Euless		✓					✓														
Midway	Euless	✓	✓					✓	✓			✓	✓									

Historical Context - Public Facilities and Services

It is generally a recognized fact that communities evolve over time, providing more for their residents as time and needs progress. Cities build parks and recreation facilities as their resources enable them, and as trends dictate desire. Periodically, some facilities close as their need is out-lived, and programs change as interests wax and wane. This is also true for the greater service sectors which include churches, health and recreation, education, medical, dental, financial, hospitality, retail, and senior's care. Consequently, it is considered a given that the range of public facilities and services have shifted over time.

C.3.7 Traffic Operations

Current Health Trend

Due to the rapid population growth that the DFW region experienced, traffic operations in the NCTCOG MPA experienced a decline in service levels during the 1990s. In response to the demands on the transportation system associated with high population growth rates, the NCTCOG, in cooperation with TxDOT and local transit agencies, have worked cooperatively together to maximize the use of the existing transportation network and transportation funding. In recent years, the region has utilized innovative financing tools and has promoted the use of managed/HOV facilities to increase ridership and decrease the demand on the regional transportation system.

Historical Context

Tolling in the DFW Metroplex began in the 1950s with the construction and operation of the Dallas-Fort Worth Turnpike. In 1953, the State legislature created the Texas Turnpike Authority (TTA), which raised the funding to build the project. Constructed in 1955-1956, the Dallas-Fort Worth Turnpike was a 30-mile toll highway that connected downtown Dallas and downtown Fort Worth. On September 1, 1997, the North Texas Toll Authority (NTTA) was created to finance, construct and oversee turnpike projects in North Texas. At that time, the TTA's assets and liabilities in North Texas were transferred to NTTA. Today, the NTTA operates almost 51 miles of toll roads in North Texas and has over 700 employees.

C.3.8 Traffic Noise

Current Health Trend and Historical Context

In urban areas, whether it is honking horns, sirens, unmuffled engines, trucks bouncing through intersections, or any of the other vehicle-related sounds, traffic is typically the main cause of noise. As stated earlier, the DFW metropolitan area has been one of the fastest growing areas in the United States, and it is expected to continue to grow. Growth often results in increases of development, vehicles, and VMTs. The more that VMTs add up, the noisier our cities are bound to become. In fact, in the DFW region, traffic counts have more than doubled between 1995 and 1999. As projected population growth and its associated land use development increases and expands, the transportation demand is expected to keep pace and this will also keep traffic noise the primary source of noise in the project area.

C.3.9 Lighting and Visual Impacts

Current Health Trend and Historical Context

Views throughout the proposed project corridor are characterized as fully urban. Roadways are typically at-grade with no elevated sections, except at interchanges and on- and off-ramps to the existing freeway. Existing vegetation is characterized as a blend of isolated stands and rows of mature woody vegetation on parcels adjacent to the corridor (primarily as landscaping features of neighborhoods and commercial and industrial areas) and mowed and maintained grasses within the ROW.

The RSA is in an urban region where lighting and visual impacts are experienced on a daily and hour-by-hour basis. These impacts are a recognized fact of urban life and will continue to be felt as the region grows.

C.3.10 Habitat

The Habitat Resource RSA includes riparian areas along the following water bodies:

- Bear Creek between Bear Creek Golf Course, north of SH 121/SH 183, and County Line Road, south of SH 121/SH 183; and
- Mesquite Branch between East Pleasantview Drive, north of SH 121/SH 183, to SH 121/SH 183.

Habitat resource RSA boundaries were determined based on substantial breaks in suitable vegetation caused by alterations in land use.

In accordance with the “*Memorandum of Agreement between Texas Department of Transportation and Texas Parks and Wildlife Department for Finalization of 1998 Memorandum of Understanding, Concerning Habitat Descriptions and Mitigation*” (“TxDOT - TPWD MOA”), the project area was surveyed for vegetation and features. The survey determined that more than 95 percent of the proposed and existing ROW vegetation would most closely be characterized as mowed and maintained grasses. This habitat is of limited value; therefore, it is not included in the Habitat Resource RSA.

Current Health Trend

While both of the RSA channels had well-established riparian vegetation, Bear Creek was particularly noted for its mature vegetation. Tree heights ranged between 30 and 60 feet with an average DBH of 10 inches and a canopy cover of 95 percent.

Historical Context

Agricultural practices over the years cleared much of the natural vegetation. As farms/ranches converted native vegetation to crop and rangeland, much of the habitat was lost and wildlife was similarly impacted. Subsequent to farming and ranching, urban development has cleared much of the natural vegetation the agriculture left behind.

C.4 Step 4 (Community): Direct and Indirect Impacts

C.4.1 Land Use

Direct Impacts

The EA determined that the proposed project would require approximately 83.128 acres of ROW, and would displace residential, commercial, professional, institutional, industrial, and miscellaneous land uses.

As previously stated, of the five adjacent cities along the SH 121/SH 183 Project Area (Irving not included since the construction limits stop at the Tarrant/Dallas County line), Bedford would be the greatest impacted with the displacement of approximately 52 multi-family units, 34 single family residences, and nine businesses. Bedford would have two multi-family complexes impacted. First, Colonial Village at Willow Creek Apartment complex located along the north side of the freeway would potentially lose three buildings: the rental office, Building #5 and #6, and the pool. Building #5 consists of 24 one-bedroom units and Building #6 consists of 28 one-bedroom units, which would account for the 52 multi-family units stated previously and be a maximum of 104 persons. A one-bedroom apartment in this complex rents from between \$599 to \$679 per unit. The Timber Creek Apartment complex located along the south side of the roadway just east of Dana Kay Road is the second complex. This project would not take any residential units from this complex but would take approximately 46 feet of entrance roadway. Hurst would have the second greatest number of impacted properties: approximately 20 multi-family units, 47 single family residences, and five businesses. Euless would potentially have the following displacements: 32 multi-family units, 24 single family residences, 12 businesses, and one church structure. North Richland Hills displacements would include 20 single family residences and one business. Fort Worth would have no residential or business property displacements. ROW consisting of parking and/or land (with or without landscaping) would also be required from three religious facilities, a medical professional center, the Euless City Hall campus, and one high school; the HEB ISD Administration Complex would lose land and one structure would be displaced. No farms or rural residential properties would be affected.

Indirect Impacts

A common effect of infrastructure construction and improvement is that it spurs population and economic growth through the development/redevelopment of land. Although this is a very frequent result, particularly with new location roadways, it remains an indirect impact because it requires one of several precursor events or conditions to occur. For example the cost and availability of real estate, suitability of the structure to specific and general needs, local neighborhood conditions, environmental constraints or benefits, and regulatory issues are all precursors that suggest the rate at which land will be converted from one use to another when a roadway is built or upgraded. Therefore, while a roadway project may increase the desirability of land, it may not outweigh all other factors and conditions of development.

Though land use densities may change (i.e., single family to multi-family residential), it is not expected that the completion of the proposed SH 121/SH 183 project would substantially change land use types. Land use conversion has progressed to the point that remaining conversion would occur with or without the completion of the proposed project. However, due to modifications in access to SH 121/SH 183, it is possible that up to approximately 54 acres of vacant land could be converted to retail, commercial, and high-density residential land uses. It is estimated, based solely upon evaluation of the current vacant tracts (no known specific development projects), that this type of development would be infill-related. It is more likely that the proposed project would affect the rate or pace of redevelopment and land use conversion, which ultimately would occur with or without the proposed improvements in response to aging land uses, community change, and other market forces.

C.4.2 Land Use - ROW Requirements, Relocations, and Displacements

Direct and Indirect Impacts

As ROW acquisition is anticipated to be fairly uniform throughout the corridor, most areas would experience similar effects. Because of land use placement and proximity to the existing roadway, certain communities would experience greater specific effects than other communities. For example, Hurst would have the greatest number of displacements, while Fort Worth would have none at all.

Direct impacts would occur to neighborhoods, commercial areas, institutional facilities, and public use areas. As previously stated, the project would require approximately 83 acres of ROW acquisition. Such acquisition would affect approximately 156 business properties and 131 residential properties through their potential full or partial impact. As summarized in **Section VI - A.4**, 128 single family housing units and 104 multi-family housing units would be displaced, as well as 23 commercial and two professional structures.

The Build Alternative would require the acquisition of approximately 83 acres of additional ROW, thereby impacting approximately 324 properties through their potential reduction of land, displacement of a portion of their structures, or complete displacement. See **Table VI-8** for proposed displaced properties. One hundred twenty-eight single family homes, 104 multi-family units, and 29 commercial/professional properties are anticipated to be displaced; approximately 87 parcels (residential, commercial, and professional) comprising approximately 22.93 acres are currently projected for early acquisition⁹. Parcels obtained through advance purchase are identified on the **Proposed Project Layout** maps in **Appendix A (A24, A25 and A26)**. **Appendix D** provides a discussion on the advance purchase process and lists information about each parcel purchased at the time of submittal of this environmental assessment.

Accelerated redevelopment and land use conversion resulting from project-induced increased access and mobility could result in overall higher property values in the project area and an increased tax base. This

⁹ No farms or rural residential properties would be affected or displaced.

increased tax base could produce new retail opportunities along the project corridor, but could also potentially force some low-income populations to be priced out. As the indirect impacts resulting from the proposed project are not anticipated to reach beyond points of enhanced access, land owners and businesses could relocate within nearby communities outside these areas of increased access, where the tax base would not likely be raised as a potential effect of the proposed improvements.

C.4.3 Historic Resources

Direct Impacts

The proposed ROW is approximately 25 feet north of the furthest north-extending element of the Old Bedford Road Bridge structure, there would be no work directly associated with it, and the area of the bridge would not be used for any type of staging or storage location. TxDOT historians determined that there would be no direct impacts to the bridge. Proximity effects would be minor and would not impair the activities, features or attributes of the bridge. Individual project coordination with the SHPO would not be required (see **Section VI - G.2**).

Indirect Impacts

As explained in **Section VI - G.2**, the proposed highway expansion project would not change or diminish any of the original character-defining design, workmanship, materials, or engineering of the Old Bedford Road Bridge. Consultation with TxDOT historians revealed no reasonably foreseeable adverse indirect impacts (occurring later in time and/or farther removed in distance) to the Old Bedford Road Bridge.

C.4.4 Section 4(f) Resources

Direct Impacts

The proposed project would require the acquisition of approximately 0.68 acre of L.D. Bell High School recreation fields. These fields are open, grassy areas along the eastern property line fronting Brown Trail and the open, grassy area/parking area along the SH 121/SH 183 westbound frontage road. These open, grassy areas are considered publicly owned recreation areas that are open to the public. The construction of a fence separating L.D. Bell High School's recreation fields from the proposed improvements to SH 121/SH 183 was proposed as mitigation by TxDOT. It was voted by the HEB ISD board to unanimously approve the Letter of Understanding with TxDOT mitigating the Section 4(f) issue at L.D. Bell High School. This letter indicates the ISD's agreement that the project impacts to school property would be minor and would not affect the character, activities, or attributes of the property. Proximity effects would be minor and would not impair the activities, features or attributes of the school recreation fields. Due to the minimal impact to the Section 4(f) property, a *de minimis* impact determination was received by FHWA. A *de minimis* determination was considered appropriate given that the transportation use of the Section 4(f) resource would not adversely affect the activities, features, and attributes that qualify the resource for protection under Section 4(f).

Indirect Impacts

Project-induced land use change is not anticipated to affect L.D. Bell High School, as the land on which public institutions are located is not typically “available” in the marketplace for development and/or redevelopment. The publicly-owned recreation facilities on the school grounds are subject to local zoning guidelines and policies, as well as Section 4(f) regulations that work to restrict, unless unavoidable, development and/or redevelopment on these properties. In relation to all other Section 4(f) resources within the Indirect Impacts AOI, development/redevelopment or land use take of publicly-owned parks/recreation facilities is avoided when possible unless a project has imminent domain authority (e.g., power transmission lines). If such impacts are unavoidable, the implicating project, if transportation in nature, would be subject to Section 4(f) regulations; and if development/redevelopment in nature, would be subject to municipal plans, codes, and regulations. For the above reasons, no substantial indirect impacts to Section 4(f) properties are anticipated.

C.4.5 Air Quality

Direct Impacts

The proposed project is located in Tarrant County, which is part of the EPA’s designated nine-county nonattainment area for the 8-hour standard for the pollutant ozone; therefore, the transportation conformity rules apply. The proposed project is consistent with the area’s financially constrained long-range Mobility 2030 – Amended 2009, approved August 31, 2009 and the 2008-2011 TIP. The Traffic Air Quality Analysis (TAQA) for the proposed project determined that the project would not cause or contribute to any new localized carbon monoxide (CO) violations or increase the frequency and severity of any existing CO violations. The quantitative MSAT analysis for the proposed project indicated that by 2030, MSAT emissions related to the proposed project would substantially decrease when compared to 2007, even with the projected VMT increases. (see Section VI-D Air Quality and Section VIII B.4.1 Air Quality Direct Impacts)

Indirect Impacts

Mandatory federal and state air emission regulations are enforced by the EPA and TCEQ to ensure that growth and development do not prevent regional compliance with the ozone standard or threaten the maintenance of other air quality standards such as the NAAQS for carbon monoxide; therefore, no change in air quality attainment status is expected as a result of project-induced land conversion and redevelopment. Because the non-tolled mainlanes and frontage roads of the proposed project would be expanded, indirect air quality impacts due to traffic redistribution onto collectors and minor arterials are not anticipated. Off-road emissions from construction equipment may temporarily degrade air quality through dust and exhaust gases. The EPA has issued regulations to control air pollutants from off-road mobile sources. Indirect air quality impacts from MSATs are unquantifiable due to existing limitations to determining pollutant emissions, dispersion, and impacts to human health. Emissions would likely be lower than present levels in future years as a result of the EPA’s national control regulations (i.e., new light-duty and heavy-duty on road fuel and vehicle rules; use of low sulfur diesel fuel). Even with an increase in VMT and possible temporary emission increases related to construction activities, the

EPA's vehicle and fuel regulations, coupled with fleet turnover, would over time cause substantial reductions of on road emissions, including CO, MSATs, and the ozone precursors VOC and NOx. (also see **Section VIII B.4.2 Air Quality Indirect Impacts**).

C.4.6 Environmental Justice

Direct Impacts

Based on the EJ analysis in the previous step, it is apparent that, because of the proposed highway expansion project (including a managed lane funding concept), no EJ populations would experience disproportionately high and adverse human health or environmental effects; that the proposed highway expansion project complies with the Executive Order 12898. Although there are EJ persons in the RSA, the impacts do not directly or indirectly target them or their areas of residence, work, leisure, etc.; and, the project impacts would not be isolated within a limited number of census tracts, but would be distributed among all users of the SH 121/SH 183 facility. Still, there is a potential for EJ persons to be directly impacted by toll rates, collection methodology, and other elements of a user pay system of project funding.

Managed (Toll) Lanes:

TxDOT traditionally funds projects based on priority and when funds become available. Due to funding shortfalls, it is unlikely that many of the major freeway reconstruction and widening projects could take place within the foreseeable future (2030) without seeking alternate funding methods. In the proposed SH 121/SH 183 project, a managed (toll) lane facility is being proposed for the 2030 Build Alternative. The proposed project would be expected to be done by a private partner to reconstruct and widen this facility to accommodate three general purpose lanes (non-tolled) in each direction between IH 820 and SH 360, two frontage road lanes (non-tolled) in each direction and three managed (toll) facility lanes in each direction. There would be four general purpose lanes (non-tolled) in each direction between SH 360 and SH 161. A managed (toll) lane is a lane that would have some type of cost associated with using it.

The RTC, which governs transportation in the DFW area, has established a policy for managed (toll) lanes, which seeks to guarantee riders of the managed (toll) lane facility a minimum speed of operation. This is accomplished through a form of dynamic pricing which is dependent on user demand. Consequently, the pricing structure varies between on and off-peak use; as explained, a possible 4.5 cent range in cost per mile (the implications of cost by proportion of household income are explained in **Section VI - A.1.2**).

Access and Non-Toll Alternatives:

Because the proposed highway expansion project would incorporate both managed and general purpose lanes, access to the main lanes of SH 121/SH 183 would not be limited to any subpopulation or demographic segment; all users of the facility would have equal access to main lane travel. Additionally, the frontage roads, which would provide a consistent minimum of four lanes (two in each direction),

would offer a guaranteed non-toll alternative for motorists who do not elect to, or can only on occasional basis, afford to travel the managed lanes of SH 121/SH 183. Furthermore, the frontage roads would remain as single-direction continuous roads; therefore, no detours would be necessary to maintain parallel travel with the SH 121/SH 183 main lanes.

Toll gantries are anticipated to be constructed at existing major intersections. Eastbound gantries would be constructed at Bedford-Eules Road, Brown Trail, W. Eules Boulevard (SH 10), Amon Carter Boulevard, and SB International Parkway (Spur 97) to EB SH 183. Westbound gantries would be constructed at SB International Parkway (Spur 97) to EB SH 183, Amon Carter Boulevard, Industrial Boulevard (FM 157), and SB SH 121 to WB SH 183. Because the toll collection system for the SH 121/SH 183 managed (toll) lanes would operate under a fully electronic format and vehicles would not have to stop to pay a toll, but would pass through electronic readers and be assessed a toll charge, motorist accessing the managed lanes would experience no additional travel times in waiting for access; this would also substantially reduce access queuing lines, thereby assisting to reduce along the frontage roads at access queuing areas only.

The difference in travel times between the managed and general purpose main lanes and the general purpose frontage roads would be the highest during peak periods of travel when traffic congestion within the SH 121/SH 183 project limits would be the greatest. However, over the long term, the entire corridor would benefit from the proposed project as a result of improved mobility and reduced traffic congestion whether motorist use the main lanes or frontage roads.

Examples of indirect impacts that could potentially occur or may have already occurred as a result of the SH 121/SH 183 would be the influx of businesses that depend on proximity to freeways with frontage roads, and increased business patronage due to improved access from highway improvements.

Method of Toll Charge Collections

This discussion pertains to how the toll is collected and what that could mean to low-income persons. First, toll collection system for the SH 121/SH 183 managed (toll) lanes would be interoperable with other toll facilities in the state. This would necessitate a credit/debit card or cash account with a minimum balance sufficient enough to cover incurred toll charges. This electronic system would be implemented in one of two ways: via a prepaid credit/debit card toll account or a cash toll account.

Either of these collection methods is likely to prevent low-income users from taking advantage of the managed lanes. First, for low-income persons, acquiring a credit card could prove unattainable. In most cases, credit card companies do not offer cards to people without bank accounts, and banks often decline people who cannot begin with and maintain a minimum opening balance. Second, even if the person would use the debit card option s/he would still be confronted with the bank's minimum opening balance policy. Third, although there are no financial institution policies to hinder a low-income person's acquisition of a cash toll account, there are other upfront barriers. In all cases, the user must provide, at a

minimum, \$40 to serve as the first deposit. However, for the cash account, the initial \$40 fee is only for the deposit on the account and there is an additional \$25 fee to act as the deposit for the toll collection tag. These start-up fees would not be the only complications for a low-income person using the electronic toll collection process. In either case, when the reserve of tolling fees drops to \$10 an automatic charge of \$40 is applied to the account. For credit/debit card holders this is of little consequence, because it is done electronically. For people in the cash account system it would require a physical deposit. This could require various special trips or, at a minimum, the issuance of a check (again, this would require a bank account). However, most important to a low-income person is the budgeting of disposable income. Although it does not appear to be great, a \$40 dollar deposit once per month could mean the postponement of essentials such as meals, clothing, or medications.

An additional processing fee (i.e., billing and processing of periodic billing statements) would be charged to those vehicles without a toll tag who utilize the video tolling system. However, these fees are minor as the fee for 2008 was only an additional \$1 applied to each monthly invoice for both TxTag and NTTA TollTag users.

Project Level Analysis:

As discussed in **Section VI - A.1.2**, an O&D analysis was performed to help in assessing “user impacts” of the proposed project on low-income and minority populations by comparing the origins and intensity of trips based on socio-economic characteristics at the TSZ level for the 2030 Build main lanes, 2030 Build managed lanes, and the 2030 No Build scenario. Of the total 1,542 EJ TSZs within the study area, 1,488 EJ TSZs are anticipated to utilize the proposed SH 121/SH 183 main lanes with at least one trip per day, accounting for 15 percent of main lane total trips (14,765 trips per day). Of the total 1,542 EJ TSZs, 959 EJ TSZs are anticipated to utilize the proposed SH 121/SH 183 managed lanes with at least one trip per day, accounting for 17 percent of managed lane total trips (4,319 trips per day). For the 2030 No Build, 1,481 EJ TSZs are anticipated to utilize the existing facility, accounting for 20 percent of total trips (15,072 trips per day on the existing facility). Similar percentages of EJ TSZ users were yielded from all three of the scenarios described (2030 Build main lanes, 2030 Build managed lanes, and 2030 No Build). Furthermore, there is no substantial difference in the percentage of EJ TSZ trips between the main lanes and managed lanes of the proposed SH 121/SH 183 facility. The majority of all trips, however, would originate from non-EJ TSZs.

Although there would be an economic impact to any motorist utilizing the proposed project managed lanes, for low-income populations, the economic impact would be higher than for non low-income users because the cost of paying tolls would represent a higher percentage of their household income. In addition, low-income populations unable to utilize the proposed managed lanes would likely experience slower travel times during peak travel hours on the non tolled general purpose main lanes and frontage roads.

Prozzi et al. (2006) identified six general features of user-pay facilities and their correspondent elements (**Table VIII-9**), and found that the impacts to EJ populations are not universal to all types of populations

for all types of facility. In fact, the range of impacts can be from no impact to extreme impact, depending on such variables as demographic characteristics, corridor alternatives (including non-auto mode), and toll pricing structure¹⁰.

Table VIII -9 Toll Road Features Relevant for Environmental Justice Analysis	
Features	Elements
Type of facility	<ul style="list-style-type: none"> • Toll roads with adjacent frontage roads as “free” alternatives
Demographic characteristics of the commuter population	<ul style="list-style-type: none"> • High percentage of low-income/minority travelers • and low percentage of high-income travelers
Demographic characteristics of the neighborhood adjacent to the facility	<ul style="list-style-type: none"> • Facility to divide low-income • African American neighborhood
Corridor alternatives, including non-auto mode	<ul style="list-style-type: none"> • No non-toll road available • Non-toll roads available as “frontage roads” • Low frequency of public transit service
Access control	<ul style="list-style-type: none"> • Limited access to local minority neighborhoods • Improved access to sensitive places (i.e., hospitals)
Toll pricing structure	<ul style="list-style-type: none"> • Flat rate • Dynamic rate • Differential rate (e.g., low-income commuters pay less than high-income commuters)

Source: *Guidebook for Identifying, Measuring and Mitigating Environmental Justice Impacts of Toll Roads* (2006), University of Texas.

Prozzi et al. also identified four types of mitigation measures for disproportionate impacts to high and medium concentrations of EJ populations: “1) avoid or minimize impacts by reducing the degree or magnitude of the implemented action, 2) mitigate or eliminate the impact by repairing, rehabilitating, or restoring the impacted environment or community resource, 3) reduce or eliminate the impact over time by long-term preservation and maintenance operations, and 4) compensate for the impact incurred. **Appendix I-5** includes a table listing specific actions to mitigate or offset the burdens imposed by managed (toll) lane projects on EJ communities. In addition, the RTC offers the following mitigation efforts for EJ populations. First, as explained, the RTC guarantees minimum speeds that would roughly equate to quicker commute times. Second, users could carpool, vanpool, or use transit; toll charges are waived for transit providers. As an incentive for such congestion reducing efforts, HOV users are afforded reduced rates.

The scope and intensity of direct impacts to EJ persons will be mitigated by the proposed design of the facility (i.e., managed and general purpose lanes flowing adjacent each other on the freeway main lanes). The benefits associated with the proposed highway expansion project (including managed-lanes), through capacity improvements to the existing SH 121/SH 183 facility, would include the provision of mobility and relief of traffic congestion for all motorists using the facility. By reducing congestion on main lanes,

¹⁰ Prozzi, Jolanda et al. “Guidebook for Identifying, Measuring and Mitigating Environmental Justice Impacts of Toll Roads.” *TxDOT Project 0-5208-P2: Evaluation of Environmental Justice Aspects of the Tolling of Existing Non-Toll and Toll Roads*. Texas Department of Transportation, Sept. 2006.

it would also assist in reducing concentrations of air pollutants. Regardless of these benefits, non-toll alternatives (i.e., general purpose lanes) would be available to all travelers, including low-income populations, adjacent the managed lanes within the freeway environment and via frontage roads and local arterials. As stated above, the use of some of these alternative non-toll routes may result in a difference in travel times due to a lower speed limit and signalization; however, over the long term, the entire corridor and users would benefit from the proposed highway expansion project as a result of improved system linkage and mobility in the area.

Indirect Impacts

For EJ populations, the primary indirect impact of this project is the continued development and completion of the regional toll system and subsequent economic impacts, which are discussed in the regional toll and managed/HOV system section (**Section VIII - F.2**) of the cumulative impacts assessment.

Changes in land use from conversion and redevelopment would likely affect land uses universally along the project corridor. In addition, indirect impacts pertaining to air quality, access to public facilities and services, traffic operations, and traffic noise would be experienced by the environmental justice population to the same extent and in the same manner (whether positive or negative) as experienced by the general population. For these reasons, with regard to indirect impacts, the proposed highway expansion project would not result in disproportionately high and adverse effects to minority and low-income populations.

C.4.7 Community Cohesion and Public Facilities and Services

Direct Impacts - Community Cohesion

Direct impacts to community cohesion would occur if the new ROW makes it difficult for people to participate within their community. However, because the community has coexisted with SH 121/SH 183, most residents and businesses have built cohesion regardless of the corridor's presence, and the expansion project is not likely to cause direct impacts to other elements of cohesion.

Direct Impacts - Public Facilities and Services

Implementing the proposed project would have direct impacts to public facilities and services. The project would require the acquisition of land from three churches. This land is landscaped and/or parking-related. Therefore, there is no direct impact on the worship experience that church-goers would receive, though access to the facilities may change with construction activities and relocation of access points and routes; the First United Methodist Church of Bedford would lose one non-essential office structure that would be rebuilt. Similarly, one high school will lose a small part of its surrounding green space; however, because the loss does not include classroom or playing field space, the student and operating capacities of the facility are not expected to decline.

Two other acquisitions of note include the Euless City Hall complex and the HEB ISD Administration Complex. First, the Euless City Hall complex would lose some of its landscaped area. While this would alter the appearance of the facilities of the complex, it is not anticipated to alter the daily functions of the facilities. Also, the HEB ISD would lose one structure. The proposed project would not displace any other public facilities including schools, hospitals, or police or fire stations.

As discussed in **Section VI - A.5**, there are two elevated pedestrian crossovers on SH 121/SH 183 which would be removed during project construction. The bridge just east of Cavender Drive would be replaced with a new pedestrian bridge. The pedestrian bridge east of Ector Drive would not be replaced; rather, Ector Drive would continue to pass beneath the freeway and be improved with sidewalks to safely accommodate pedestrian traffic. Lack of the pedestrian bridge east of Ector Drive would not negatively impact services provided to the community.

Indirect Impacts - Community Cohesion and Public Facilities and Services

The proposed project would enable safer interaction between communities and would better allow residents to access cohesion-building public facilities and services by providing increased accessibility to various public facilities in the surrounding area. It is not anticipated that emergency response agencies' response times would be adversely impacted by the proposed project within any of the adjacent cities. Although increased congestion is anticipated on the frontage roads due to overall growth, speed reduction, and traffic signals, intelligent transportation systems and signal optimization could be used to meliorate such congestion issues. Ultimately, emergency public services are anticipated to have an overall safer and more efficient roadway facility to use after the project is complete.

C.4.8 Traffic Operations

Direct Impacts

The direct impact of the proposed highway expansion project to traffic operations would pertain mostly to congestion relief and traffic redistribution. The region will continue to grow and see increasing levels of congestion on its main routes, including SH 121/SH 183, particularly during already very congested morning and afternoon commutes.

In the current MTP Mobility 2030 – Amended 2009, approved August 31, 2009, there are no proposed capacity improvements providing additional lanes along the following regional significant local streets crossing the SH 121/SH 183 corridor: Precinct Line Road (FM 3029) and FM 157/Industrial Boulevard. Hurstview Drive, Norwood Drive, Brown Trail, Bedford Road, Forest Ridge Drive, Central Drive, Murphy Drive/Westpark Way, Ector Drive, Euless Main Street, American Boulevard/Bear Creek Parkway and Amon Carter Boulevard have not been listed as regional significant roadways in Mobility 2030 – 2009 Amendment, approved August 31, 2009 and no capacity improvements providing additional lanes along these facilities are anticipated. The number of lanes that currently exist along these local streets near the SH 121/SH 183 corridor is not expected to change at this time.

Proposed improvements to increase intersection capacity by providing additional exclusive or shared turn lanes were implemented where feasible. Signal optimization and intelligent transportation systems could be used to address this issue and reduce intersection congestion, but all associated analysis would be outside the parameters of this environmental assessment and would need separate assessment. However, these improvements will not eliminate the congestion resulting from the increased traffic volumes and lack of capacity on the local street networks.

Based on the Year 2030 build analysis the following intersections will operate at a LOS E or F: Precinct Line Road (FM 3029), Hurstview Drive, Norwood Drive, Brown Trail, Bedford Road, Forest Ridge Drive, Central Drive, Industrial Boulevard (FM 157), North Euless Main Street and Amon Carter Boulevard. The Murphy Drive/Westpark Way, Ector Drive, and American Boulevard/Bear Creek Parkway intersections will experience a LOS C or better. Since the proposed SH 121/SH 183 improvements do not include any added capacity improvements to the local street networks beyond the frontage road intersection, all eastbound and westbound SH 121/SH 183 Frontage Road traffic, except the Murphy Drive/Westpark Way, Ector Drive, and American Boulevard/Bear Creek Parkway intersections, will experience an undesirable LOS E and F in the design year 2030. Based on the design year 2030 traffic volumes along this corridor, added capacity to the local street network most likely provides only marginal improvements at the intersections and is beyond the scope of the project.

Indirect Impacts

Traffic redistribution is the only reasonably foreseeable indirect impact of the proposed highway expansion project to traffic operation, and would be proportional to the functional roadway classification, that is, larger arterials would carry more of the redistributed traffic than local collector streets. This would also reduce the potential of avoiding congestion by short-cutting through neighborhoods. Overall, the redistribution of traffic is evenly dispersed along the local transportation network.

C.4.9 Traffic Noise

Direct Impacts

The proposed highway expansion project was analyzed for noise impacts and whether barriers would be reasonably feasible as an effective mitigation technique. The traffic noise analysis, performed for this assessment, was based on the traffic projections and accomplished in accordance with TxDOT's (FHWA approved) *Guidelines for Analysis and Abatement of Highway Traffic Noise*.

The analysis indicated that the proposed highway expansion project would negatively impact 68 noise receivers for noise impacts. The full report of the analysis is provided in **Section VI - E**. Overall, the receivers would experience an average increase of approximately 2 dBA.

Future land use and zoning maps obtained from the Cities of Bedford, Euless, Fort Worth, Hurst, and Irving currently indicate that, where possible and in keeping with the visions for their communities, the developed and undeveloped land directly adjacent to the proposed project would be re/developed for more

noise compatible (non-residential) land uses (in some areas the desired urban land use mix includes high density residential adjacent the freeway corridor).

Indirect Impacts

A quantitative analysis was conducted to determine the potential indirect impacts the proposed highway expansion project would have on noise levels within the SH 121/SH 183 community RSA. The RSA is approximately 56.9 square miles (36,415.99 acres) and is roughly bound by Cheek Sparger Road on the north, Belt Line Road on the east, Loop 12 on the east and IH 20 on the south (see **Appendix I-1B**). Noise effects were based on the estimated amount of change (increase) in noise levels that would result from the redistribution of traffic onto principal and minor arterials within this RSA.

Results of the analysis for direct impacts indicated that overall, the 68 noise receivers would experience an average increase of approximately 2 dBA. According to FHWA's Noise Policy/Guidance, a noise level change of 3 DBA is barely perceptible to the human ear. The average traffic noise level within the project area is projected to increase by approximately 2 dBA, which is below the 3 dBA threshold of perception for noise. Therefore, there would be no perceptible indirect impacts from noise.

C.4.10 Lighting and Visual

Direct Impacts

Although the corridor is urbanized, impacts would include some visual intrusion with the construction of new overpasses and elevated sections of roadway. Such intrusions would alter existing sight lines and panoramas. Some at-grade and elevated structures would also impact areas where vegetation would be removed for construction. While construction would require the removal of some vegetation, most mature woody vegetation would not be removed as part of the proposed project.

The toll gantries are an additional visual element associated with the proposed highway expansion project. The gantries would include various components of video enforcement equipment such as cameras, lighting, and an interface with the electronic toll transponders. Although additional lighting would be incorporated as part of the violation enforcement system, these additional lighting components would add minimal lighting in comparison to the overhead lighting structures that would be constructed for any tolled or non-tolled highway facility. The gantry lighting design, although not complete at this time, would be designed to minimize glare and ambient lighting.

Indirect Impacts

It is possible that project-induced development and/or redevelopment would result in the use of new or more intense lighting and new or more prominent signage. However, it is predicted that the proposed project would primarily accelerate already anticipated development and/or redevelopment within the AOI, as accounted for within the local planning documents of affected municipalities in response to aging land uses, community change, and/or other market forces. Thus, no substantial indirect impacts are expected

as alterations to the lighting and visual landscape are anticipated regardless of the proposed project's implementation.

C.4.11 Habitat

Direct Impacts

Expansion of SH 121/SH 183 is a major investment project of regional importance, and will increase mobility for users of this important regional transportation link. The project includes widening of the ROW. Direct effects include both temporary and permanent impacts. Permanent impact would generally result from the loss of woody or grassy vegetation for the placement of new pavement or bridge/ramp supports.

Temporary impacts would be typical disturbance during construction activities. The contractor would use all appropriate BMPs to control and mitigate effects to stream channels and would monitor control methods to ensure prevention of spills and other inadvertent water quality disturbances. However, some mowing and removal of shrub vegetation would be required to enable construction of bridge and ramp structures. It is anticipated that these species would re-establish themselves.

There would be impacts to several unusual vegetation features and special habitat features. Approximately 3.4 acres of unmaintained vegetation (wooded areas) and 0.28 acres of post oak grove would be permanently impacted. The project would also result in minimal impacts to several water bodies (i.e., Waters of the U.S.). Approximately 2.03 acres of riparian vegetation along these water bodies would be *permanently* disturbed, and 0.25 acres would be *temporarily* disturbed.

Indirect Impacts

The loss of vegetation may have several long-term indirect impacts as a result of potential future development. Although no specific future development projects along the corridor are known of at this time, it is anticipated that several vacant tracts would be developed in the near future as market conditions allow. If so, then it is estimated that approximately 54 acres of grassland and unmaintained and scattered woody vegetation adjacent to SH 121/SH 183 could be converted to retail, commercial, or high-density residential uses.

C.5 Step 5 (Community): Reasonably Foreseeable Effects

C.5.1 Land Use

As previously described, SH 121/SH 183 lies within a heavily urbanized area, where an estimated 54 acres remain available for new development. No land remains for extensive development without clearing existing land uses. The common land uses are residential, commercial, institutional, professional, and recreational. Land use re/development is likely to occur for the foreseeable future within a one half to mile radius of the project. Therefore, for the purpose of discussing reasonably

foreseeable effects in land use, the RSA is trimmed to include only those areas within the first band of major arterial roadway network beyond the project limits.

Because this is not a new location facility, reasonably foreseeable effects do not suggest a sudden burst of land use conversion. Instead, a more incremental process of conversion is anticipated. This is likely to occur in one of several ways. Structures that are no longer useful are replaced. Structures are converted from one use to another. Structures are expanded or remodeled. Larger parcels of developed or undeveloped land are subdivided and converted.

This type of land use conversion process is problematic for prediction of reasonably foreseeable effects. Although any type of development project requires permitting and other bureaucratic processes, smaller, incremental projects in existing built-up areas are often not included in growth projections. Further, in many cases, these conversions occur without long-term planning. As well, they are not driven by a combination of the speculative real estate market and contemporary needs. Therefore, following the strict guidance of what constitutes a reasonably foreseeable effect would discount the possibility of including a variety of changing land uses.

The proposed project is anticipated to make movement easier and more efficient for users of the facility; efficiency is likely to increase demand. In time, the RSA may experience investment because of increases of ease and efficiency. The average median year for single family residential construction in the project corridor is 1977, and the majority of homes in the corridor were built between 1980 and 1989. Therefore, most redevelopment is likely to be highway-related (i.e., gas stations, convenience stores, franchise restaurants, small-scale retail, hotel/motel).

The proposed project area is almost completely developed with land uses such as retail/commercial, industrial and residential. There is limited stock of land along or near the proposed project alignment that is undeveloped or planned for immediate development. The following details the planned developments in the surrounding six cities along the project corridor.

- *North Richland Hills (NRH)* - In 2004, an NRH average new house value was \$183,873. Most new subdivisions are located along Davis Boulevard and North Tarrant Parkway. As of May 4, 2006, there were 1,007 single family residential (SFR) units under construction ranging in size from 1,500 sq ft to 3,500 sq ft and in price from \$140,000 to \$700,000, with an additional 541 SFR units being planned (source: <http://www.nrhupclose.com/residential.aspx>).
- *Hurst* - Hurst City Council has made a strategic priority to develop and implement an Action Plan for Community Corridor Redevelopment. One of the three corridors identified is within the project area and is known as Bedford-Eules Road from Precinct Line Road (FM 3029) to Brown Trail. This corridor is envisioned as a municipal road with pedestrian improvements in concert with a specific building and shopping center redevelopment to encourage pedestrian and transit oriented buildings nearer to the street with a mix of uses and shared parking.

Most of the new development in Hurst is north of Airport Freeway, but there are substantial pockets of activities elsewhere. As of May 4, 2006, there was one multi-unit retirement housing complex planned and 607 planned to be developed as SFR homes in the price range of \$140,000 to \$300,000 and ranging in size from 1,800 sq ft to 3,500 sq ft.

(source: <http://ci.hurst.tx.us/development/devprocts/residential.htm>).

- *Bedford* - Bedford has reached the limits of its corporate boundaries, and has no extra territorial jurisdiction (ETJ) as it is bound by Colleyville to the north, Hurst to the west, and Euless to the east and south; there is very little expansion land available for growth; however, though no specific plans were available for comment, the City has adopted a future land use plan that would improve its range of services and land uses in the downtown.
- *Euless* - In Euless, on the southwest and southeast corners of the intersection of SH 121 and Glade Road, there are two large projects being planned: an 800,000 sq ft building and the 400,000 sq ft Vineyard Village anchored by Lowe's. Numerous developments are also being planned at the DFW International Airport.
- *DFWIA* - In 2007, the DFW International Airport released its Strategic Plan. One of the strategic imperatives identified in the plan was to "Encourag[e] related non-core business developments that are consistent with the Board's adopted policies." This would be accomplished, in part, by completing a land use plan for Airport property within Euless and Irving. The draft land use plan calls for approximately 600 acres of mixed use retail and professional development (see **Appendix H-11**). The project would draw from a regional population base and would have employment opportunities for roughly 50,000 workers.
- *Dallas County* - SH 183 in Dallas County will undergo a similar transformation that SH 121/SH 183 would experience with the proposed project. The two projects would meet at the Dallas/Tarrant County line.

Summary of Impacts from Dallas District SH 183 Project (County Line to SH 161)

- The following summarizes the findings of the Dallas District SH 183 project between the Tarrant/Dallas Count Line and SH 161. The entire assessment can be found in the Dallas District's SH 183 (from 1.2 miles east of SH 360 to 0.66 miles west of Loop 12) EA, under CSJ 0094-03-065. This EA has received a FONSI from FHWA and is currently under reevaluation.
- There would be three business displacements classified as follows (and no residential displacements):
 - Retail - Glass Sales and Service
 - Retail - Equipment Sales

- Retail - Golf Range
- Tompkins Cemetery is located within the existing ROW of SH 183 between the eastbound main lanes and the eastbound exit ramp to Valley View Lane. The project would not require ROW from the cemetery, and access to the cemetery would be maintained. Previous investigations and trenching around the cemetery indicated that there were no other graves outside the chain-link fence surrounding the cemetery. Therefore, no impacts to the cemetery are anticipated.
- HazMat Sites: Three sites were mapped, two with high risk potential (ID Nos. 18 and 191) and one with low risk potential (ID No. 187):
 - 18 - Global Truck & Trailer - UST/LPST - due to ROW acquisition, potential for soil and groundwater contamination.
 - 191 - Murdoch Machine and Engineering - FINDS, RCRIS-LQG, IHW, UST - due to ROW acquisition, potential for soil and groundwater contamination.
 - 187 - Conoco Gas - UST - No violations found; 3 USTs installed in 1996 and in use; Adjacent to the ROW
- Habitat is being considered for compensatory mitigation at the Post Oak wooded area north of SH 183 at County Line Road (DFW Airport property). The required ROW at this location is 2.5 acres. Possible onsite mitigation of trees is proposed at one or both of the following locations in Dallas and Tarrant County: SH 183/SH 161 interchange and SH 183/DFW International Parkway interchange. The exact planting locations would be identified at the time that mitigation would be necessary. Mitigation plans would include replacing vegetation on an acre-per-acre basis.
- No noise barriers are proposed in the section from the county line to SH 161.
- There is one water crossing at Estelle Creek, which is a concrete-lined channel. The proposed permanent fill impacts are 0.13 acres; therefore, it would require an NWP #14 with preconstruction notification (PCN)

Regional Projects

As previously stated, the TxDOT Fort Worth District is working to develop the North Tarrant Express project. The North Tarrant Express is a group of improvements to critical highway corridors in North Tarrant County (see segment map - **Figure VIII-3, Table VIII-10**, and segment descriptions below):

- IH-820 from IH-35W to the Northeast Interchange, including a new IH-35W interchange
- SH 121/SH 183 (Airport Freeway) from the Northeast Interchange to SH 161
- IH-35W from IH-30 to SH 170
- IH-820 from the Northeast Interchange to Randol Mill Road

Project Description

- Includes mobility improvements on potentially six Segments along IH-820, SH 121/183 and IH-35W with accelerated development of Segment 1;
- Adds tolled managed “express” lanes and additional general purpose lanes (see Segment Description table);

- Total potential project - 36.2 miles at approximately \$2 billion (with accelerated development of 6.4 miles);
- General description and location (see attached table and map)

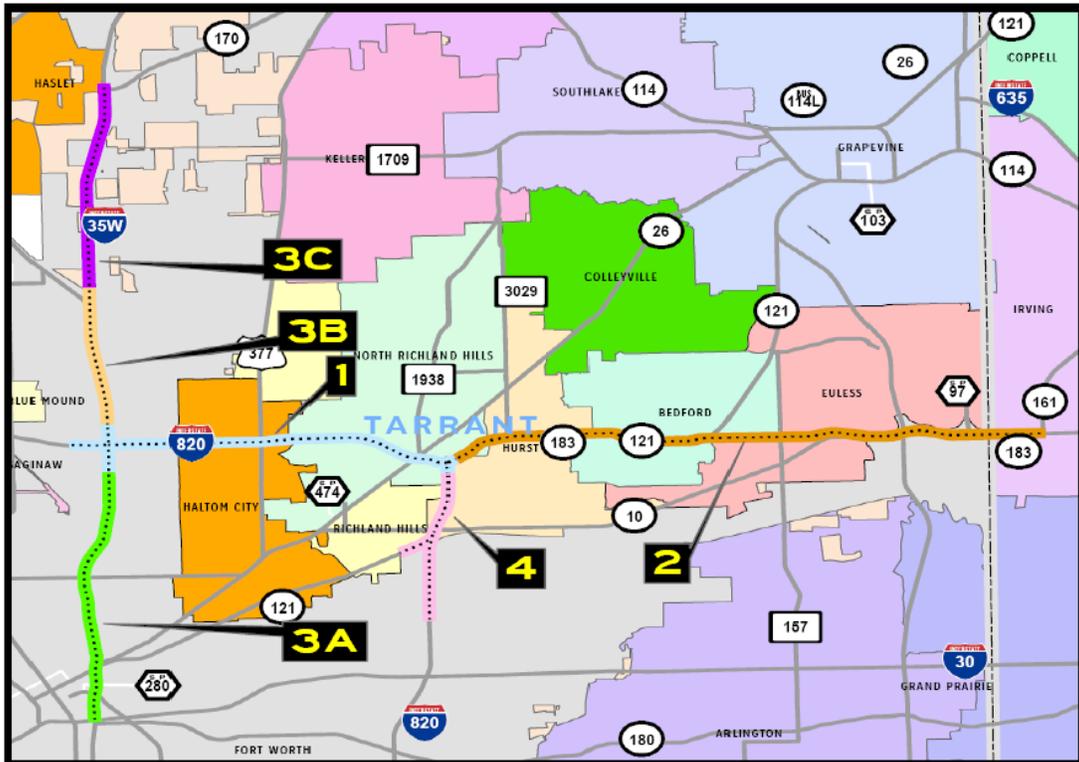
Key Project Elements

- Improves regional mobility and enhances safety
- Addresses acute and growing congestion in north Tarrant County and the region
- Reflects a high priority project by local governments
- Substantial dedication of resources from NCTCOG
- Will tie into and support system of related highway improvements, including SH 161, SH 114/SH 121, etc.
- Managed lanes will be a complete electronic toll collection, compatible with all other toll road networks in Texas.

Overview

The North Tarrant Express is dedicated to improving mobility along North Interstate 35W, Northeast Interstate 820 and SH 121/183 Airport Freeway through a regionally supported managed lane system. This corridor is important to the future of North Tarrant County - the fastest growing area in North Texas.

Figure VIII-3: North Tarrant Express Segment Map



Source: NTE Website: http://www.dot.state.tx.us/local_information/fort_worth_district/north_tarrant_express/default.htm

Table VIII-10 North Tarrant Express Segment Descriptions

Seg*	Roadway and Limits	Existing Configuration General Purpose Lanes (each dir.)	Configuration As Proposed in Regional Mobility 2030 - 2009 Amendment Plan**		Approx. Length of Segment (Miles)
			General Purpose Lanes (each dir.)	Tolled Managed Lanes (each dir.)	
1	IH-820 from IH-35W to Northeast Interchange including a new IH-35W interchange	2	3	2	6.4
2	SH 183 from the IH-820 Northeast Interchange to SH 161	3	3	3	11.3
3A	IH-35W from IH-820 to IH-30	2 - 3	4	2	6.5
3B	IH-35W from IH-820 to U.S. 81/287	2	4	2 - 3	3.3
3C	IH-35W from U.S. 81/287 to SH 170	2	3	2	5.0
4	IH-820 from the Northeast Interchange to Randol Mill Road	2 - 4	5 (SH 121N to SH 21S)	1 (SH 121N to SH 21S)	3.7

* Segments identified by number do not denote priority or sequence.

** All segments will include one-way frontage roads at identified locations and connections to all existing and proposed improvements.

Project Descriptions

- Segment 1: IH 820 Northeast Corridor Study (IH 35W to SH 26)

Project Description:

The Fort Worth District is currently planning improvements for IH 820 (Northeast Loop) from IH 35W to SH 121/SH 183. The existing highway includes two general purpose lanes each direction. Proposed improvements are planned to include three general purpose lanes in each direction with two managed lanes in each direction for a total of ten lanes with frontage roads for future traffic volumes.

The preliminary design concepts and alternatives for the corridor are being reevaluated to include additional managed lanes in the median of the proposed general purpose lanes. The layouts are currently being updated to include three general purpose and two managed lanes each direction. A managed lane facility is one that increases freeway efficiency by packaging various operational and design actions. Lane management operations may be adjusted at any time to better match regional goals. This includes evaluating opportunities for congestion management through a combination of three variables: hours of operation, auto occupancy, and value/toll pricing.

The Preferred Alternative provides a unique configuration that provides a choice split between general purpose freeway lanes, and managed lanes with frontage roads. General purpose lanes and managed lanes offer motorists a choice between higher service levels and greater accessibility in a corridor that is facing increasing congestion.

The Preferred Alternative has been developed in close cooperation with local elected officials at the city and county level, city staffs, regional planners and civic groups to provide input to TxDOT. A series of meetings at progressive stages of design development were utilized to give opportunity for input into creating the Preferred Alternative. Access locations to the managed and general purpose lanes are shown in the access chart.

- Segment 2: SH 183 from the IH-820 Northeast Interchange to SH 161

Project Description:

Subject of this EA.

- Segment 3A: IH 35W Study from IH-820 to IH-30

Project Description:

The Fort Worth District is currently planning improvements for IH 35W from Spur 280 (Downtown Fort Worth) to Meacham Boulevard (IH 820 Interchange) in Tarrant County. The existing freeway includes two to three general purpose lanes each direction. Preliminary planning indicates that four general purpose lanes in each direction, along with two managed lanes in each direction in the median are warranted for future traffic volumes. The managed lane facility will allow longer trips to have predictable travel times through the corridor, as it connects to other planned managed lane facilities both along IH 35W to the north to SH 114, and also along IH 820/SH 183 to the east to SH 161.

A managed lane facility is one that increases freeway efficiency by packaging various operational and design actions. Lane management operations may be adjusted at any time to better match regional goals. This includes evaluating opportunities for congestion management through a combination of three variables: hours of operation, auto occupancy, and value/toll pricing. In addition, further studies will evaluate if additional managed/toll lanes within the system could generate revenues to accelerate construction of this project.

The proposed number of general purpose lanes and managed lane access locations throughout the corridor are currently being refined through preliminary design efforts.

- Segment 3B: IH-35W from IH-820 to US 81/287

Project Description:

Improvements include eight general purpose lanes (plus auxiliary lanes), four concurrent HOV/managed lanes, and four continuous frontage road lanes (plus auxiliary lanes near ramp locations and cross streets). HOV/managed lane access points are planned at US 81/US 287 and Basswood Boulevard, and direct connector ramps are planned to/from the IH 820 HOV/managed lanes east of IH 35W. In addition, an auxiliary lane in each direction is planned between the HOV/managed lane direct connectors and the access ramps to/from Basswood Boulevard.

- Segment 3C: IH-35W from US 81/287 to SH 170

Project Description:

The project involves the widening of IH-35W to six general purpose lanes (plus auxiliary lanes), four concurrent HOV/managed lanes, and four lanes of continuous frontage roads (plus auxiliary lanes near ramp locations and cross streets). The project will also involve the construction of an interchange at North Tarrant Parkway in North Fort Worth, and HOV/managed lane access points are planned at SH 170 and Golden Triangle Boulevard.

- Segment 4: IH 820 East Corridor (North interchange at SH 121 to Randol Mill Road)

Project Description:

The IH 820 improvement project is designed to expand East Interstate Highway 820 (IH 820) in Tarrant County, TX, from the north interchange at State Highway 121 (SH 121) south to Randol Mill Road within the cities of Richland Hills, Hurst, and Fort Worth.

IH 820 is an eight-lane freeway with frontage roads between the north interchange at SH 121 and the south interchange at SH 121. From the south interchange to Randol Mill Road, the freeway has four lanes with no frontage roads.

The proposed project would include reconstruction of the south interchange with SH 121. IH 820 would be widened and upgraded to 8/10 lanes with auxiliary lanes supplementing the freeway where needed. Continuous frontage roads and a reversible high occupancy vehicle (HOV) lane would be provided from the north interchange at SH 121 to Trinity Boulevard.

The planned ROW width for the project would vary from 350 to 400 feet, with greater widths at crossroads and interchange connections. The project would require about 50 acres of additional ROW. In addition, vertical retaining walls are proposed at many locations to reduce residential and business displacements.

Purpose and Need for Project:

The proposed improvements to IH 820 are needed to safely accommodate existing and projected traffic in this area of Tarrant County and to maintain access to various businesses and other developments along the highway.

As Tarrant County grows, so too traffic volumes will grow. IH 820 is already experiencing congestion because of the high number of vehicles using this roadway. Additional lanes and a reversible HOV lane will increase the capacity of the freeway. The NTE would contribute to reduced congestion.

C.5.2 Historic Resources

There are no known projects within the Historic Resource RSA that would result in reasonably foreseeable impacts to the Old Bedford Road Bridge. Ultimately, reasonable and foreseeable impacts evaluated by TxDOT Historians within the historic resources RSA were determined to be “no effect.”

C.5.3 Section 4(f) Resources

Under FHWA regulations, the “use” of a Section 4(f) resource occurs when land is permanently acquired for a transportation project. Thus, all reasonably foreseeable development projects were eliminated from the evaluation of reasonably foreseeable impacts. There are no planned transportation projects within the RSA that would result in reasonably foreseeable impacts to L.D. Bell High School.

C.5.4 Air Quality

As previously discussed, the states where the nonattainment areas are located are required to submit a SIP to the EPA. The SIP document is a collection of regulations that explain how the State would reduce emissions and help meet ozone standards. Major projects, either expansions of existing or construction of new facilities, can impact air quality, particularly if they are in areas where they could encourage new development.

The earlier discussion on air quality included projects that could introduce impacts to air quality in this community RSA. They include the construction of the SH 161 completion project, expansion of the DFWIA land use development operations, and growth centers of Fort Worth. There was also discussion on what the other communities were proposing in their future land use plans. Although it is very likely that excess toll revenues from SH 121/SH 183 would enable early funding of RTRFI projects, because they do not fit the accepted requirements to be classified “reasonably foreseeable” they cannot be included in this discussion.

C.5.5 Environmental Justice (EJ)

Impacts and Development of Managed (Toll) Lane System

Reasonably foreseeable impacts to EJ populations stem from the completion of the 2030 regional toll and managed/HOV system. **Section VII - G** describes this regional network of priced facilities and **Table VII - 12** lists the priced facilities included in the 2030 MTP and when they are anticipated to be open for traffic. A more detailed discussion of the anticipated impacts to environmental justice populations associated with the regional toll and managed/HOV system is located in **Section VIII - F.2**.

C.5.6 Community Cohesion and Public Facilities and Services

As previously established, the RSA is heavily urbanized. Reasonably foreseeable transportation projects, as described in **Section VII - C.5.1**, involve the expansion and/or improvement of existing roadways and are not new location projects. The established communities surrounding these reasonably foreseeable projects have adapted to and established their cohesiveness within the presence of the existing roadways. It is, therefore, unlikely that the expansion or improvement of these roadways would result in the derision of such an established community.

The proposed project area is almost completely developed with land uses such as retail/commercial, industrial, and residential. There is limited stock of land along or near the proposed project alignment that is undeveloped or planned for immediate development; and of the limited developments planned, the majority are retail, commercial, and mixed-use. Reasonably foreseeable effects to public facilities and services are unlikely due to the implementation of municipal planning and zoning policies. Any conversion of land use from public facility use to retail, mixed-use, residential, etc. would require a change in zoning. It is reasonable to anticipate that the municipal process officiating development and redevelopment would preclude such actions from occurring without an extensive vetting process in which city codes, policies, and regulations would guide such transition.

C.5.7 Traffic Operations

Numerous added capacity projects within the NCTCOG MPA were identified in NCTCOG's Mobility 2030 – Amended 2009, approved August 31, 2009. It is anticipated that these projects would come online as they are scheduled. It is also anticipated that they would receive the proper environmental scrutiny and assessment they are due.

C.5.8 Traffic Noise

The highway traffic noise associated with the proposed Toll Project and all other noise sources associated with past, present, and reasonably foreseeable future effects given qualitative analysis to determine their likely cumulative impacts on the communities in the RSA. The results indicated that highway traffic is, and would continue to be, the primary/dominant source of noise. The direct and indirect impacts due to highway traffic noise have been addressed in previous sections of this reevaluation. No other sources of noise associated with any other past, present, or future effects are expected to substantially impact the overall noise environment, either positively or negatively.

C.5.9 Lighting and Visual

The RSA is undergoing a steady transition toward more intense urbanization. This transition will entail many types of development such as additional transportation projects associated with Mobility 2030 –

Amended 2009, approved August 31, 2009, and other forms of typical land use development (commercial, residential, industrial, etc.). Each form of future development would involve varying degrees of lighting and visual elements.

C.5.10 Habitat

Past and present projects in the RSA have already removed much of the natural ecosystem and replaced it with mowed and maintained grasses.

According to the DFW International Airport Commercial Land Use Plan (**Appendix H-11**), a large block of land (approximately 320 acres) bound by SH 360 to the west, International Parkway to the east, SH 121/SH 183 to the south, and Bear Creek to the north is planned for corporate campus style development. Such development would be characterized as low density, one- to four-story executive or corporate head office development set in a park-like environment. Although such development would retain some existing vegetation, the development plan indicates that approximately 0.6 linear mile of riparian corridor would be removed for landscaping and the construction of structures, amenities, and parking facilities. This riparian habitat is of higher quality than that to be impacted by the proposed project, as it is previously undisturbed and unfragmented. The impact would result in a maintained environment that would reduce existing habitat and associated species.

C.6 Step 6 (Community): Cumulative Impact Assessment

C.6.1 Land Use

Construction of the proposed project is likely to have the cumulative impact of encouraging densification of land use (and may also encourage very small parcel type conversion). As such, the most likely type of conversion would be away from lower density residential and commercial, to multi family residential and highway-related development. Where residential is most likely to occur, the trend has a good probability of being medium to high-density multi-family.

Although land use conversion could occur at various locations along the SH 121/SH 183 corridor, intensive development without extensive real estate consolidation is limited to the area between SH 360 and SH 161. According to DFWIA's recently released Commercial Land Use Plan, long range planning calls for the extension of S. 20th Avenue, north of SH 183 and west of International Parkway, to connect to Amon Carter Boulevard, south of SH 183. The same plan calls for County Line Road, east of International Parkway, to connect with S. Rental Car Drive, north of SH 183. Other roads are planned to provide circulation within this area. Most of these new roads are internal circulation roads, which would remain unnamed, or would be named after land use development occurs. However, the land use plan also calls for the continuation of its loop road system with the construction of West and North Airfield Drives.

The DFWIA Commercial Land Use Plan anticipates a variety of land use conversion projects to populate its currently undeveloped land. New uses would consist of commercial retail, freeway commercial, corporate campus, office, mixed use, light industrial, and open space; preservation of the airport's natural resources and environment is important enough that approximately 1,499.3 acres (22%) of the airport's undeveloped land will remain as some type of open, park-like space.

In the same area are other moderately-sized parcels that could develop individually or through consolidation with adjoining parcels. For example, along Valley View Lane, north of SH 183, are several vacant parcels with access to both Valley View Lane and SH 161. South of SH 183 along Valley View Lane is undeveloped lands that could develop into residential, commercial, or institutional land uses. The single largest tract is at the southeast corner of the interchange of SH 360 and SH 183; this is the remaining land of the former Amon G. Carter Airport. It is a large vacant tract surrounded by commercial and institutional land uses.

The trend of land use conversion that occurred between 1970 and 1984 has slowed considerably and is now a process of in-filling what land remains.

C.6.2 Historic Resources

Pursuant to Stipulation VI "Undertakings with Potential to Cause Effects" of the PA-TU between the FHWA, the SHPO, the Advisory Council on Historic Preservation, and TxDOT and the MOU, TxDOT historians determined that the proposed action, having no direct impacts or indirect impacts to Old Bedford Road Bridge, would not result in any reasonably foreseeable adverse cumulative impacts to this NRHP eligible resource.

C.6.3 Section 4(f) Resources

Minimal impacts (0.68 acre) to the recreation grounds of L.D. Bell High School would result from the proposed project improvements; a *de minimis* impact determination was received following FHWA coordination. Project-induced land use change is not anticipated to impact the high school, as any land use change to the publicly-available recreation facilities would be subject to local zoning guidelines, planning policies, city codes, and Section 4(f) regulations. Reasonably foreseeable transportation projects are also not anticipated to result in impacts to L.D. Bell High School. For all of the above reasons, cumulative impacts to the Section 4(f) property are not anticipated.

C.6.4 Air Quality

The cumulative impact on air quality from the proposed project 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 proposed project and the other reasonably

foreseeable transportation projects were consistent with the MTP and the TIP and have been determined to conform to the ozone non-attainment SIP.

The DFW region is expected to continue to experience substantial population growth, urbanization, and economic development. The cumulative impact of reasonably foreseeable future growth and urbanization on air quality would be minimized by enforcement of federal and state regulations, by the EPA and TCEQ, which are mandated to ensure that such growth and urbanization would not prevent compliance with the ozone standard or threaten the maintenance of the other air quality standards, along with regulated entities in compliance with regulations.

Overall, the cumulative impact to the DFW region from MSATs, VOCs (including CO), and NO_x would be a gradual decline in levels. New automotive technologies for internal combustion engines, cleaner burning fuels, government regulations, ride-sharing and other programs to reduce reliance on the automobile are projected to decrease airborne pollutant levels. This will not be a near-term process, but will cause MSAT, VOC, and NO_x levels to be significantly lower than they are today.

C.6.5 Environmental Justice (EJ)

Historically, TxDOT has financed highway projects on a “pay-as-you-go” basis, using motor fuel taxes and other revenue deposited in the State highway fund. However, population increases and traffic demand have outpaced the efficiency of this traditional finance mechanism. As funding mechanisms evolve, the trend towards utilization of toll facilities in this region would through time create “user impacts” as access to highway systems becomes an issue to the economically disadvantaged.

Toll Rates and Low-Income Populations

Using 2010 dollars and following the business terms for setting toll rates established by the RTC, it is estimated that the user fee for SH 121/SH 183 would be approximately 14.5 cents per mile. Initially, there would be a set toll of an average of 14.5 cents per mile for the entire day. After some evaluation has been completed, a set of peak and off-peak tolls are likely to be established to better optimize the facility operations. The maximum average toll rate is the average of the maximum peak-hour toll rate (17 cents per mile) and the maximum off-peak toll rate (12.5 cents per mile). An investment-grade traffic and revenue study is under development to determine a more detailed, appropriate pricing structure. Toll rates for SH 121/SH 183 would be determined prior to the facility opening as a toll facility.

Potential impacts from the toll network are illustrated using the same scenarios presented in the Variable Toll/Pricing subheading of **Section A.1.2**. These scenarios, described below, assume that the average household would make 250 round trips per year¹¹ utilizing a 14-mile region-wide average commute distance, as determined by the NCTCOG’s TransCAD model.

¹¹ Average number of work trips per year based on tolling industry observations provided by the North Texas Tollway Authority (NTTA).

- Off-Peak Scenario: Assuming a 12.5-cents-per-mile toll rate, the annual cost to drive 14 miles of toll road would be approximately \$875 per year. Households with an annual household income equal to the median household income of Tarrant County (\$46,179) would spend 1.9 percent of their annual household income on tolls. However, households with incomes at or below the poverty level of \$21,200 (for a family of four) would spend at least 4.1 percent of their annual household income on tolls, or at least 2.2 percent more than the median Tarrant County household.
- Average Toll Rate Scenario: If an average toll rate of 14.5 cents per mile is used, the annual cost would be approximately \$1,015 per year. Households with an annual household income equal to the median household income of Tarrant County would spend just over two percent (2.2%) of their annual household income on tolls. Households with incomes at or below the poverty level would spend at least 4.8 percent of their annual household income on tolls, or at least 2.6 percent more than that of the median Tarrant County household.
- Peak-Hour Scenario: Assuming a 17-cents-per-mile toll rate during peak travel times, the annual cost would be approximately \$1,190 per year. Households with an annual household income equal to the median household income of Tarrant County would spend 2.6 percent of their annual household income on tolls. Households with incomes at or below the poverty level would spend at least 5.6 percent of their annual household income on tolls, or at least 3 percent more than the median Tarrant County household.

As acknowledged, the economic impact of tolling would be higher for low-income residents since the cost of paying tolls would represent a higher percentage of household income than for non-low-income households. Previous sections have explained the various impacts associated with tolling and EJ communities.

The anticipated increase of tolled main lanes in the regional transportation network from 11 to 30 percent (between 2007 and 2030) is indicative of an emerging regional tolling network. Of the anticipated lane-miles accounted for in the 2030 network, the proposed tolling of SH 121/SH 183 would contribute approximately 45 tolled lane-miles. It is reasonable to assume that there would be a cumulative impact on EJ populations upon build-out of the regional toll system; given the layout and orientation of the 2030 proposed 419-mile toll system, it is possible that many drivers would routinely travel some length of a tolled facility and not the entire system during the course of normal daily activities. The emerging tolling network may create a net loss of free main lane access for those who do not elect or can only on occasional basis afford to travel on tolled facilities. However, the overall added capacity that the ongoing and future transportation improvements would provide would help relieve traffic congestion for all motorists of the regional transportation network whether they use main lanes, frontage roads, or the tolled network. The regional toll and managed/HOV system is further discussed in **Section VIII - F**.

The proposed highway expansion project is not expected to adversely affect transit usage. Per RTC policy, should DART vehicles utilize SH 121/SH 183, no toll charges would be applied to DART. As stated previously, transit vehicles would be exempt from toll charges along SH 121/SH 183. Over the long-term, as the toll network develops, the increased user costs may make transit a more competitive option.

C.6.6 Community Cohesion and Public Facilities and Services

It is not anticipated that the proposed expansion project would directly or indirectly impact community cohesion in such a manner as to eliminate the current cohesiveness established by communities surrounding the existing SH 121/SH 183 facility. This is also true for reasonably foreseeable projects that are planned to expand the existing roadway instead of creating new roadway, eliminating the possibility that the improvements would result in community separation. As such, cumulative impacts to community cohesion are not anticipated.

Some direct impacts to public facilities and services would occur as a result of the proposed project, but are primarily in the form of land use take that would not impact the everyday functions of the facilities themselves. One structure would be removed from the HEB ISD Administration Complex, and two pedestrian bridges would be impacted, one to be re-built, and the other to be replaced with sidewalk improvements. In respect to indirect impacts, it is anticipated that overall, residents would have better access to cohesion-building public facilities and services and emergency public services would have a safer and more efficient facility to use as a result of the proposed project.

C.6.7 Traffic Operations

In terms of traffic operations, the effects of the proposed highway expansion project would generally be realized as direct and indirect impacts. The only cumulative impacts would stem from implementation of the Regional Toll Revenue Funding Initiative projects (should they occur); and these impacts would be anticipated as positive in nature (e.g., overall improved mobility). Adverse cumulative impacts to traffic operations are not anticipated on the proposed project main lanes. However, with increases in traffic and no additional lanes proposed for the frontage road system within this corridor, traffic operations at the following intersections will operate at a LOS E or F: Precinct Line Road (FM 3029), Hurstview Drive, Norwood Drive, Brown Trail, Bedford Road, Forest Ridge Drive, Central Drive, Industrial Boulevard (FM 157), North Eules Main Street and Amon Carter Boulevard. This would occur, however, regardless of the implementation of the proposed project due to increased traffic volumes associated with the growing population of the region and no plans for added capacity along the local street networks.

C.6.8 Traffic Noise

The traffic noise associated with the proposed highway expansion project and all other noise sources associated with past, present, and reasonably foreseeable future actions were analyzed to determine their

likely cumulative impacts on the communities in the RSA. The results indicated that highway traffic is, and would continue to be, the primary/dominant source of noise. As discussed in previous sections, there would be no direct or indirect impacts associated with the proposed highway expansion project, and no other reasonable and foreseeable effects are expected to substantially affect the overall noise environment; therefore, no cumulative impacts to the community due to traffic noise are anticipated.

C.6.9 Lighting and Visual

The lighting and visual impacts associated with the proposed highway expansion project and other identified development types (transportation, commercial, residential, industrial etc.) were considered to determine their likely cumulative impacts on the communities in the RSA. The direct impacts due to lighting and visual impacts have been addressed previously. It was determined that lighting and visual effects would not be an indirect impact of the proposed highway expansion project; thus, would not substantially affect the overall lighting and visual element of the community.

C.6.10 Habitat

The direct and indirect impacts when added to the past, present, and reasonably foreseeable future actions would result in the loss of vegetation cover types and wildlife habitat in the RSA. The major impact to vegetation and wildlife habitat would not result from the conversion to ROW. Most of the land within the RSA currently consists of urbanized land. Although conversion of existing land use would go from one type of urban use to another and one type of landscaping to another, species adapted to existing vegetation may be displaced by new species.

As previously stated, wildlife populations rely on available habitat for their existence. Therefore, the conversion of vegetation and wildlife habitat would result in a corresponding effect to wildlife populations reliant on those habitats, especially in riparian zones. In addition to the direct loss of vegetation and wildlife habitat, indirect and cumulative impacts would also result from future habitat fragmentation associated with future development. Based on the acreage of impact associated with it, the DFWIA Commercial Land Development Plan is anticipated to have broader impacts on riparian habitat than the proposed SH 121/SH 183 project. As such, and combined with the relatively small amount of direct and indirect impacts to riparian habitat from the proposed improvement, substantial cumulative impacts to riparian habitat are not anticipated.

D. STEP 7 (AIR QUALITY AND COMMUNITY): RESULTS

Table VIII-11 summarizes the existing resource conditions and potential impacts.

THIS PAGE INTENTIONALLY LEFT BLANK

Table VIII-11 Existing Resource Conditions and Potential Direct, Indirect, and Cumulative Impacts

Resource Category	Indicator of Resource/Issue Condition	Direct Impacts + Indirect Impacts + Other Actions = Cumulative Impacts			
		Direct Impacts	Indirect Impacts	Other Actions	Cumulative Impacts
Air Quality	NAAQS (including Ozone and CO)	The Air Quality Control Region (nine-county DFW area) is currently in non-attainment for the eight-hour ozone standard. The region is in attainment for all NAAQS criteria pollutants, including carbon monoxide. The proposed project would not cause or contribute to any new localized carbon monoxide (CO) violations or increase the frequency and severity of any existing CO violations. The proposed project was included in the TIP and is consistent with the MTP, which were found to conform to the SIP.	Mandatory federal and state air emissions regulations are enforced by the EPA and TCEQ to ensure that growth and development do not prevent regional compliance with the ozone standard or threaten the maintenance of the other air quality standards such as the NAAQS for carbon monoxide; therefore, no change in air quality attainment status is expected to occur as a result of project-induced conversion and redevelopment. Furthermore, because the project has additional non-tolled lanes relative to the existing roadway, indirect air quality impacts due to traffic redistribution onto collectors and minor arterials are not anticipated.	Regardless of the proposed highway expansion project, other forms of development (i.e., transportation projects, commercial and residential development, etc.) could have an effect on air quality, as on-road emission sources may increase. In order to reduce ozone, the SIP is implemented to reduce emissions of the ozone precursors, VOC and NOx. It is anticipated that new area sources and/or industry/manufacturing point sources would meet necessary federal and Texas CAAA provisions to prevent air quality degradation. Therefore, no change in attainment status is expected.	Improvement in the regional transportation system and facilities should serve to reduce congestion on a regional scale. The proposed highway expansion project and the other reasonably foreseeable transportation projects were included in the MTP and the TIP and have been determined to conform to the ozone nonattainment SIP. The DFW region is expected to continue to experience substantial population growth, urbanization, and economic development. The cumulative impact of reasonably foreseeable future growth and urbanization on air quality would be minimized by enforcement (by the EPA and TCEQ) of federal and state regulations, which are mandated to ensure that such growth and urbanization would not prevent compliance with the ozone standard or threaten the maintenance of the other air quality standards, along with regulated entities in compliance with regulations. Throughout the region, EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions of on-road emissions. In almost all cases, lower emissions will cause MSATs, VOC, and NOx levels to be significantly lower than they are today.
	MSAT	The quantitative MSAT analysis (Section VI - D.2.2) for the proposed project indicates that by 2030, MSAT emissions related to the proposed project would substantially decrease when compared to 2007, even with the projected VMT increases. Regardless of the alternative chosen, emissions would likely be lower than present levels in the future year as a result of EPA's national control programs that are projected to reduce MSAT emissions by 57 to 87 percent between 2000 and 2020, and even more than these reductions when factoring in the recently approved 2007 MSAT rule. 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.	Off-road emissions from construction equipment may temporarily degrade air quality through dust and exhaust gases. However, since the 1990 CAA Amendment, EPA has issued 14 regulations to control air pollutants from off-road mobile sources. Indirect air quality impacts from MSATs are unquantifiable due to existing limitations to determining pollutant emissions, dispersion, and impacts to human health. Emissions would likely be lower than present levels in future years as a result of the EPA's national control regulations (i.e., new light-duty and heavy-duty on road fuel and vehicle rules; use of low sulfur diesel fuel). Even with an increase in VMT and possible temporary emission increases related to construction activities, the EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions of on road emissions, including MSATs.	Land use changes associated with other transportation and development/redevelopment projects may result in an increase of on-road mobile, new area, and new point sources. MSAT emissions could potentially increase at those other transportation project locations. However, the cumulative impact of reasonably foreseeable future growth and urbanization on air quality would be minimized by enforcement of federal and state regulations by the EPA and TCEQ.	
Community	Land Use	The EA determined that the proposed project would require approximately 83.128 acres of ROW, and would displace residential, commercial, professional, institutional, industrial, and miscellaneous land uses. Of the five adjacent cities along the SH 121/SH 183 Project Area, Bedford would be the greatest impacted with the displacement of approximately 52 multi-family units, 34 single family residences, and 10 businesses. Bedford would have two multi-family complexes impacted. Hurst would have the second greatest number of impacted properties: approximately 20 multi-family units, 47 single family residences, and five businesses. Euless would potentially have the following displacements: 32 multi-family units, 24 single family residences, 12 businesses, and one church structure. North Richland Hills displacements would include 20 single family residences and one business. Fort Worth would have no residential or business property displacements	As determined in the <i>NCHRP Report 25-25, Task 22</i> indirect land use impacts analysis, minor project induced land use changes, primarily in the form of redevelopment and land use conversion, are anticipated to occur at increased points of access. The proposed project is anticipated to accelerate such redevelopment and conversion, the majority of which is expected to be in the form of density change (i.e., single family to multi-family residential land use types). Land use conversion has progressed to the point that remaining conversion would occur with or without the completion of the proposed project. However, it is possible that coincidental development of several vacant parcels would occur, and several undeveloped parcels would also develop. It is estimated, based solely upon evaluation of the current vacant tracts (no known specific development projects), that up to approximately 54 acres of vacant land could be converted to retail, commercial, and high-density residential land uses.	The proposed project area is almost completely developed with land uses such as retail/commercial, industrial and residential. There is a limited stock of land (54 acres) along or near the proposed project alignment that is undeveloped or planned for immediate development. No land remains for extensive development without clearing existing development. Reasonably foreseeable effects suggest an incremental process of land use conversion (i.e., replacement of no-longer useful structures; expansion or remodeling).	Construction of the proposed project is likely to have the cumulative impact of encouraging densification of land use (and may also encourage very small parcel type conversion), but it is unlikely to drive conversion. Project-induced land use change would likely be at increased points of access. In general, conversion would be away from lower density residential and commercial, to multi family residential and highway-related development. Where residential is most likely to occur, the trend has a good probability of being medium to high-density multi-family.
	Historic Resources (Old Bedford Road Bridge)	No construction activity would occur at or around the Old Bedford Road Bridge. TxDOT historians determined no direct impacts associated with the proposed project.	There would be no change to the original character-defining design, workmanship, materials, or engineering of the Old Bedford Road Bridge. TxDOT historians determined no reasonably foreseeable adverse indirect impacts to Old Bedford Road Bridge.	No reasonably foreseeable effects were determined by TxDOT Historians.	Pursuant to Stipulation VI "Undertakings with Potential to Cause Effects" of the PA-TU between the FHWA, the SHPO, the Advisory Council on Historic Preservation, and TxDOT and the MOU, TxDOT historians determined that the proposed action will not adversely affect historic properties and that the proposed undertaking would have no reasonably foreseeable adverse effects that may occur later in time, be farther removed in distance, or be cumulative.

Table VIII-11 Existing Resource Conditions and Potential Direct, Indirect, and Cumulative Impacts

Resource Category	Indicator of Resource/Issue Condition	Direct Impacts + Indirect Impacts + Other Actions = Cumulative Impacts			
		Direct Impacts	Indirect Impacts	Other Actions	Cumulative Impacts
Community	Section 4(f) Resources (L.D. Bell High School)	Impacts would occur to approximately 0.68 acre of an open, grassy area of L.D. Bell High School. Due to the limited impacts, a <i>de minimis</i> determination was sought and received; no Section 4(f) evaluation is required.	The land on which public institutions such as schools are located is not typically “available” in the marketplace for development and/or redevelopment. Further, publicly accessed recreation facilities on the L.D. Bell High School grounds are subject to local zoning guidelines and policies, as well as Section 4(f) regulations that work to restrict, unless unavoidable, development and/or redevelopment on these properties. Thus, project-induced land use change is not anticipated to affect L.D. Bell High School.	No reasonably foreseeable effects are anticipated to L.D. Bell High School	Minimal impacts (0.68 acre) to the recreation grounds of L.D. Bell High School would result from the proposed project improvements; a <i>de minimis</i> impact determination was received following FHWA coordination. Project-induced land use change is not anticipated to impact the high school, as any land use change to the publicly-available recreation facilities would be subject to local zoning guidelines, planning policies, city codes, and Section 4(f) regulations. Reasonably foreseeable transportation projects are also not anticipated to result in impacts to L.D. Bell High School. For all of the above reasons, cumulative impacts to the Section 4(f) property are not anticipated.
	Air Quality	<p>The proposed project would not cause or contribute to any new localized carbon monoxide (CO) violations or increase the frequency and severity of any existing CO violations. The proposed project was included in the TIP and is consistent with the MTP, which were found to conform to the SIP.</p> <p>The quantitative MSAT analysis for the proposed project indicates that by 2030, MSAT emissions related to the proposed project would substantially decrease when compared to 2007, even with the projected VMT increases.</p>	<p>Mandatory federal and state air emissions regulations are enforced by the EPA and TCEQ to ensure that growth and development do not prevent regional compliance with the ozone standard or threaten the maintenance of the other air quality standards such as the NAAQS for carbon monoxide; therefore, no change in air quality attainment status is expected to occur as a result of project-induced conversion and redevelopment. Furthermore, because the project has additional non-tolled lanes relative to the existing roadway, indirect air quality impacts due to traffic redistribution onto collectors and minor arterials are not anticipated.</p> <p>Off-road emissions from construction equipment may temporarily degrade air quality through dust and exhaust gases. However, since the 1990 CAA Amendment, EPA has issued 14 regulations to control air pollutants from off-road mobile sources. Indirect air quality impacts from MSATs are unquantifiable due to existing limitations to determining pollutant emissions, dispersion, and impacts to human health. Emissions would likely be lower than present levels in future years as a result of the EPA’s national control regulations (i.e., new light-duty and heavy-duty on road fuel and vehicle rules; use of low sulfur diesel fuel). Even with an increase in VMT and possible temporary emission increases related to construction activities, the EPA’s vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions of on road emissions, including MSATs.</p>	<p>Regardless of the proposed highway expansion project, other forms of development (i.e., transportation projects, commercial and residential development, etc.) could have an effect on air quality, as on-road emission sources may increase. In order to reduce ozone, the SIP is implemented to reduce emissions of the ozone precursors, VOC and NOx. It is anticipated that new area sources and/or industry/manufacturing point sources would meet necessary federal and Texas CAAA provisions to prevent air quality degradation. Therefore, no change in attainment status is expected.</p> <p>Land use changes associated with other transportation and development/redevelopment projects may result in an increase of on-road mobile, new area, and new point sources. MSAT emissions could potentially increase at those other transportation project locations. However, the cumulative impact of reasonably foreseeable future growth and urbanization on air quality would be minimized by enforcement of federal and state regulations by the EPA and TCEQ.</p>	<p>Improvement in the regional transportation system and facilities should serve to reduce congestion on a regional scale. The proposed highway expansion project and the other reasonably foreseeable transportation projects were included in the MTP and the TIP and have been determined to conform to the ozone nonattainment SIP. The DFW region is expected to continue to experience substantial population growth, urbanization, and economic development. The cumulative impact of reasonably foreseeable future growth and urbanization on air quality would be minimized by enforcement (by the EPA and TCEQ) of federal and state regulations which are mandated to ensure that such growth and urbanization would not prevent compliance with the ozone standard or threaten the maintenance of the other air quality standards, along with regulated entities in compliance with regulations. Throughout the region, EPA’s vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions of on-road emissions. In almost all cases, lower emissions will cause MSATs, VOC, and NO_x levels to be significantly lower than they are today.</p>

Table VIII-11 Existing Resource Conditions and Potential Direct, Indirect, and Cumulative Impacts

Resource Category	Indicator of Resource/Issue Condition	Direct Impacts + Indirect Impacts + Other Actions = Cumulative Impacts			
		Direct Impacts	Indirect Impacts	Other Actions	Cumulative Impacts
Community	Environmental Justice	<p>SH 121/SH 183 users, including low-income individuals, would be positively affected because of capacity and mobility improvements on the non-tolled main lanes.</p> <p>Anticipated project ROW acquisition would not have disproportionate impacts on any minority and/or low-income populations or businesses as ROW acquisition would be distributed evenly throughout the project corridor.</p> <p>Users, including low-income populations, who use the non-tolled main lanes and frontage roads, would experience a difference in travel time during peak travel periods, compared to users on the managed (toll) HOV facility.</p> <p>Low-income users who use the managed (toll) HOV facility would pay a greater portion of household income on tolls, compared to non low-income users. In regard to the methods of toll collection, low-income households may be impacted by the banking and toll authority policies controlling the acquisition of a toll tag, and may have difficulty complying with the deposits associated with maintaining an active account. An additional processing fee (i.e., billing and processing of periodic billing statements) would be charged to those vehicles without a toll tag who utilize the video tolling system. However, these fees are minor as the fee for 2008 was only an additional \$1 applied to each monthly invoice for both TxTag and NTTA TollTag users.</p>	<p>For EJ populations, the primary indirect impact of this project is the continued development and completion of the regional toll system and subsequent economic impacts. Low-income populations who utilize managed (toll) HOV lanes would pay a greater portion of household income to tolls, compared to non low-income users; there would also likely be a difference in travel time associated with utilizing non-tolled lanes compared to managed (toll) facilities within the 2030 regional toll facility.</p> <p>Changes in land use from conversion and redevelopment would likely affect land uses universally along the project corridor. In addition, indirect impacts pertaining to air quality, access to public facilities and services, traffic operations, and traffic noise would be experienced by the environmental justice population to the same extent and in the same manner (whether positive or negative) as experienced by the general population. For these reasons, with regard to indirect impacts, the proposed highway expansion project would not result in disproportionately high and adverse human health or environmental effects on minority and low-income populations.</p>	<p>Reasonably foreseeable impacts to EJ populations would result from the continued development and completion of the region's toll network. On a regional level, trips for future proposed toll facilities in the Build scenario would experience an increase of 110 percent from the current toll road facilities. Environmental justice TSZs trips would increase 134 percent. Because of the increase in trips generated by environmental justice populations, these populations would receive cumulative impacts by the regional increase in toll facilities because low-income populations would use a greater amount of their income for toll road and managed lane usage.</p> <p>The addition of lane miles associated with the continued development of the regional toll network would help increase mobility and relieve traffic congestion for all motorists, including environmental justice populations.</p>	<p>The economic impact of the highway expansion project would be higher for low-income residents since the cost of using managed lanes would represent a higher percentage of household income than for non-low-income households. Non-toll alternatives would be available to all travelers, including low-income populations, via frontage roads and local arterials. The use of these alternative non-toll routes may result in a difference in time travel due to a lower speed limit and signalization. The percentage of tolled lanes in the regional transportation network will increase from 11 percent in 2007 to 30 percent in 2030. This increase is indicative of an emerging tolling network. The emerging tolling network may create a net loss of non-toll main lane access for those who do not elect or can only on occasional basis afford to travel on tolled facilities. However, the overall added capacity that the on-going and future transportation improvements provide would help relieve traffic congestion for all motorists of the regional transportation network whether they use main lanes, frontage roads, or the tolled network.</p>
	Community Cohesion and Public Facilities and Services	<p>Communities within the heavily urbanized project corridor have coexisted with SH 121/SH 183. Most residents and businesses have built cohesion regardless of the corridor's presence. The proposed expansion project is not likely to cause direct impacts to elements of cohesion.</p> <p>Direct impacts are anticipated to the surrounding land of several public facilities, including three churches, a school, and a city hall complex. There would be no direct impacts, however, to the everyday functions of these facilities (i.e., worship, teaching, daily business). The HEB ISD Administration Complex would lose one structure. The First Methodist Church in Euless would lose an administration office building. The proposed project would not displace any other public facilities including schools, hospitals, or police or fire stations. Two elevated pedestrian crossovers on SH 121/SH 183 would be removed during project construction, of which one would be replaced and one would not be replaced. The location for which the pedestrian bridge would not be replaced would be improved with sidewalks to safely accommodate pedestrian traffic.</p>	<p>The proposed project would enable safer interaction between communities and would better allow residents to access cohesion-building public facilities and services by providing increased accessibility to various public facilities in the surrounding area. It is not anticipated that emergency response agencies' response times would be adversely impacted by the proposed project within any of the adjacent cities. Although increased congestion is anticipated on the frontage roads due to overall growth, speed reduction, and traffic signals, intelligent transportation systems and signal optimization could be used to meliorate such congestion issues. Overall, emergency public services would have a safer and more efficient facility to use after the project is complete.</p>	<p>The RSA is heavily urbanized. The reasonably foreseeable projects within the RSA are predominantly expansion, and not new location projects. The established communities surrounding these reasonably foreseeable projects have adapted to and established their cohesiveness within the presence of the existing roadways. It is unlikely that the expansion or improvement of these roadways would result in a derivation from the already established cohesiveness among such communities. In addition, reasonably foreseeable effects to public facilities and services are unlikely due to the implementation of municipal planning and zoning policies. Any conversion of land use from public facility use to retail, mixed-use, residential, etc. would require a change in zoning. It is reasonable to anticipate that the municipal process officiating development and redevelopment would preclude such actions from occurring without an extensive vetting process in which city codes, policies, and regulations would guide such transition.</p>	<p>It is not anticipated that the proposed expansion project would directly or indirectly impact community cohesion in such a manner as to eliminate the current cohesiveness established by communities surrounding the existing SH 121/SH 183 facility. This is also true for reasonably foreseeable projects that are planned to expand existing roadway instead of creating new roadway, eliminating the possibility that the improvements would result in community separation. As such, cumulative impacts to community cohesion are not anticipated. Some direct impacts to public facilities and services would occur as a result of the proposed project, but are primarily in the form of land use take that would not impact the everyday functions of the facilities themselves. One structure would be removed from the HEB ISD Administration Complex, and two pedestrian bridges would be impacted, one to be re-built, and the other to be replaced with sidewalk improvements. In respect to indirect impacts, it is anticipated that overall, residents would have better access to cohesion-building public facilities and services and emergency public services would have a safer and more efficient facility to use as a result of the proposed project.</p>
	Traffic Operations	<p>The construction of the highway expansion project would have overall positive implications - improved mobility and congestion reduction in Tarrant County. Traffic operations on frontage roads, already restrained by slower speed limits and traffic signals, would likely degrade regardless of the proposed project due to continued population growth.</p>	<p>As the proposed project is anticipated to primarily accelerate the pace of redevelopment and conversion, traffic redistribution could occur even in absence of the proposed project as other regional and municipality planned projects are implemented. This is also the case with frontage road traffic operations, which are likely to degrade regardless of the proposed project's implementation. In addition, traffic redistribution would likely occur in proportion to the functional</p>	<p>The implementation of projects derived from Mobility 2030 – Amended 2009 projects (with special focus on those projects located within the Community RSA) are anticipated to have overall positive implications - improved mobility and congestion reduction in the NCTCOG MPA. As these projects come online, they would receive the proper environmental scrutiny and</p>	<p>Overall the proposed project is anticipated to improve mobility and reduce congestion. No adverse indirect impacts would result from project-induced traffic redistribution, and frontage road traffic operating conditions would remain consistent with what is anticipated regardless of the proposed project. The implementation of projects derived from Mobility 2030 – Amended 2009 projects (with special focus on those projects</p>

Table VIII-11 Existing Resource Conditions and Potential Direct, Indirect, and Cumulative Impacts

Resource Category	Indicator of Resource/Issue Condition	Direct Impacts + Indirect Impacts + Other Actions = Cumulative Impacts			
		Direct Impacts	Indirect Impacts	Other Actions	Cumulative Impacts
			class of the roadway system. No substantial indirect impacts to traffic operations are anticipated.	assessment.	located within the Community RSA) are anticipated to have overall positive implications - improved mobility and congestion reduction in the NCTCOG MPA
Community	Traffic Noise	The analysis indicated that the proposed highway expansion project would negatively impact 68 noise receivers. Overall, the 68 receivers would experience an average increase of approximately 2 dBA.	The average traffic noise level within the project area is projected to increase by approximately 2 dBA, which is below the 3 dBA threshold of perception for noise; thus there would be no perceptible indirect impacts from noise.	No other reasonably foreseeable effects are expected to substantially affect the overall noise environment. Highway traffic is, and would continue to be, the primary/dominant source of noise.	It was determined there would be no direct or indirect effects associated with the proposed highway expansion project, and no other reasonable and foreseeable actions are expected to substantially affect the overall noise environment; therefore, no cumulative impacts to the community due to traffic noise are anticipated.
	Lighting and Visual	Some visual intrusion would occur with the construction of new overpasses, elevated sections of roadway, and toll gantries. Although additional lighting would be incorporated as part of the violation enforcement system (cameras, etc.) set up at toll gantries, these additional lighting components would add minimal lighting in comparison to the overhead lighting structures currently planned for the roadway.	It is predicted that the proposed project would primarily accelerate already anticipated redevelopment and conversion within the AOI, as accounted for within the local planning documents of affected municipalities in response to aging land uses, community change, and/or other market forces. Thus, no substantial indirect impacts are expected as alterations to the lighting and visual landscape are anticipated regardless of the proposed project's implementation.	The RSA is undergoing a rapid transition toward more intense urbanization. This transition will entail many types of development such as projects associated with Mobility 2030 – Amended 2009 (specifically those located within the Community RSA), and other forms of typical land use development (commercial, residential, industrial, etc.). Each form of future development would involve varying degrees of lighting and visual elements.	Visual and lighting intrusion resulting from the proposed project is not anticipated to be substantial. In addition, no substantial indirect impacts are expected to the lighting and visual landscape, as development would occur regardless of the proposed project's implementation. This is due to the necessary continued development of reasonably foreseeable projects in response to increasing population growth and demand. For all of the above reasons, no cumulative impacts to the community are anticipated.
	Habitat	Direct impacts to habitat result from the widening of ROW and include both temporary and permanent impacts. Temporary impacts would be typical disturbance during construction activities, such as the mowing and removal of shrub vegetation anticipated to re-establish following construction. Permanent impacts would occur to 3.4 acres of unmaintained vegetation (wooded areas) and 0.28 acres of post oak grove. Minimal impacts would occur to water bodies; approximately 2.03 acres of riparian vegetation along the water bodies would be permanently disturbed and 0.25 acre temporarily disturbed.	Although no specific future development projects along the corridor are known of at this time, it is anticipated that several vacant tracts would be developed in the near future as market conditions allow. If so, then it is estimated that approximately 54 acres of grassland and unmaintained and scattered woody vegetation adjacent to SH 121/SH 183 could be converted to retail, commercial, or high-density residential uses.	Past and present projects in the RSA have already removed much of the natural ecosystem and replaced it with mowed and maintained grasses. As a part of the DFWIA Commercial Land Use Plan, approximately 320 acres are planned for corporate campus style development for which approximately 0.6 linear mile of riparian corridor would be removed.	The direct and indirect impacts when added to the past, present, and reasonably foreseeable future actions would result in the loss of vegetation cover types and wildlife habitat in the RSA. Impacts include the conversion of vegetation and wildlife habitat, as well as potential fragmentation associated with future accelerated project-induced development and other reasonably foreseeable developments. Based on the acreage of impact associated with it, the DFWIA Commercial Land Use Plan is anticipated to have broader impacts on riparian habitat than the proposed SH 121/SH 183 project. As such, and combined with the relatively small amount of direct and indirect impacts to riparian habitat from the proposed improvements, substantial cumulative impacts to riparian habitat are not anticipated.

Any cumulative impacts on the resources analyzed are a result of the steady urbanization of the area. The past and reasonably foreseeable effects in the area have impacted and would continue to impact the resources considered in this study as a result of prosperous economic growth and development patterns adopted by the municipalities. The proposed action's contribution to the cumulative impacts on the resources studied is negligible. It is well documented that the area has been steadily developing without regard to the potential of improvements to SH 121/SH 183. The majority of large parcels of land that are undeveloped or not subject to development plans are in the northern part of the county. The development of those parcels is unlikely to be influenced by the proposed action.

Some beneficial cumulative impacts may include the addition of infrastructure improvements constructed to support the increased development and commerce associated with the potential Regional Toll Revenue Funding Initiative (RTRFI) projects and economic growth in the immediate area. The future added capacity associated with potential RTRFI projects would provide mobility and relieve traffic congestion for all motorists using the systems; and all projects would comply with all applicable federal, state, and local requirements including the NEPA process.

Another benefit could come through localized air quality improvements. The presence of managed lanes with assurances of minimum speeds during peak periods is likely to attract motorists out of congested lanes. When vehicles idle in congested conditions they produce emissions that are not able to dissipate; this is not the case when vehicles maintain a minimum speed. Therefore, freer moving traffic in both types of lanes would amount to less localized concentrations of vehicle emissions.

The modifications proposed for the transportation network would improve the current traffic conditions within the NCTCOG MPA to a level greater than what currently exists and accommodate future traffic growth along the transportation network. As acknowledged in this document, low-income households would spend a higher proportion of household income to use the managed lanes when compared to the average non-low-income household. Those who do not use the managed lanes would experience some decline in LOS. However, when considering the totality of the effects of this project, there are overall benefits provided for the entire community, including low-income and minority populations.

E. STEP 8 (AIR QUALITY AND COMMUNITY): MITIGATION

Consideration of potential mitigation measures, as specified in 40 CFR 1508.20, for this project included:

- Avoiding the impact altogether by not taking a certain action or parts of an action;
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation;
- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and
- Compensating for the impact by replacing or providing substitute resources or environments.

Step 8 of this cumulative impacts analysis provides a general discussion of potential mitigation measures for those resources carried through this process.

The magnitude and significance of negative cumulative impacts are expected to be limited and controllable. Efforts have been made to avoid and minimize project effects to all resources during the alternative alignment development phase of the project. Mitigation measures would be implemented where practicable. When project alternatives were developed, several environmental issues were considered that influenced the location of the proposed alignment including the potential for involvement with Section 4(f) and 6(f) resources, avoiding and minimizing the filling of wetlands and floodplains, and sensitive biological communities. Other factors affecting the proposed project were also studied including compatibility with local land use plans/policies, housing and business displacements, socioeconomic issues, and community interests. The alternatives evaluation process was based on the philosophy of avoidance first, minimization second and mitigation last. Project-specific commitments and conditions of approval, including resource agency permitting, compliance, and monitoring requirements, are stated in **Section VI** of this EA. Mitigation monitoring would be conducted by TxDOT and other appropriate federal, state, and local agencies to ensure compliance with agreed upon mitigation measures.

Mitigation of the rapid development occurring within the project study area would rest with the municipal governments, and to a lesser extent, the county governments. NCTCOG would continue to work with these agencies in the planning process to identify transportation challenges and explore and develop appropriate mitigation strategies. Such strategies include programs and projects to promote higher-density, mixed-use land development that would minimize land use impacts and promote alternative modes of transportation (i.e., mass transit, pedestrian walkways, and bicycle paths). Additional mitigation efforts would include the implementation of discounted transit fares and tolls, HOV discounts on toll roads and managed lanes, and community level congestion management. Ultimately, the responsibility of transportation providers such as TxDOT, local and regional transit agencies, and the local governments would be to implement a transportation system to complement the land use or development controls implemented.

E.1 Air Quality

E.1.1 Mitigation: Regulatory Controls

The evaluation for direct and indirect impacts and cumulative impacts from the proposed highway expansion project did not result in the identification of any negative impacts for which specific mitigation actions are necessary and required. In an effort to reduce congestion, TxDOT and NCTCOG would continue to promote appropriate congestion reduction strategies through the CMAQ program, the CMP, and the MTP. Overall, current federal, state, and local regulatory controls as well as local plans and projects have had, and will continue to have a beneficial impact on overall regional air quality.

The CAAA provides the framework for federal, state, tribal, and local rules and regulations to protect air quality. The CAAA required the EPA to establish NAAQS for pollutants considered harmful to public health and the environment. In Texas, the TCEQ has the legal authority to implement, maintain, and enforce the NAAQS. The TCEQ establishes the level of quality to be maintained in the state's air and to control the quality of the state's air by preparing and developing a general comprehensive plan. Authorization in the Texas Clean Air Act (TCAA) allows the TCEQ to do the following: collect information and develop an inventory of emissions; conduct research and investigations; prescribe monitoring requirements; institute enforcement; formulate rules; establish air quality control regions; encourage cooperation with citizens' groups and other agencies and political subdivisions of the state as well as with industries and the federal government; and to establish and operate a system of permits for construction or modification of facilities. Local governments having some of the same powers as the TCEQ can make recommendations to the commission concerning any action of the TCEQ that may affect their territorial jurisdiction, and can execute cooperative agreements with the TCEQ or other local governments. In addition, a city or town may enact and enforce ordinances for the control and abatement of air pollution not inconsistent with the provisions of the TCAA or the rules or orders of the TCEQ.

The CAAA also requires states with areas that fail to meet the NAAQS for criteria pollutants to develop a SIP. The SIP describes how the state would reduce and maintain air pollution emissions to comply with the federal standards. Important components of a SIP include emission inventories, motor vehicle emission budgets, control strategies, and an attainment demonstration. The TCEQ develops the Texas SIP for submittal to the EPA. One SIP is created for each state, but portions of the plan are specifically written to address each of the nonattainment areas. These regulatory controls, as well as other local transportation and development initiatives implemented throughout the DFW metropolitan area by local governments (and others) provide the framework for growth throughout the area consistent with air quality goals. As part of this framework, all regionally significant projects (including the proposed project) are evaluated at the regional level by the NCTCOG for conformity with the SIP.

EPA set two national health protection standards for CO: a one-hour standard of 35 ppm and an eight-hour standard of 9 ppm. Across the nation, air quality stations measure the levels of CO and other pollutants in the air. These measurements are compared to the standards. Areas that have CO levels that are too high must develop and carry out plans to reduce CO emissions. Currently, the proposed Toll Project is located within an area that is in attainment for CO.

The EPA national health protection standard for ozone is the 8-hour standard of 75 ppb. Currently, the Toll Project is part of the nine county nonattainment area for ozone and the transportation conformity rule applies (the existing nine-county nonattainment area was based on the previous 8-hour ozone standard of 80 ppb (1997)). The NCTCOG and RTC have developed a broad range of air quality programs that focus on major sources of ozone-causing emissions. In order to reduce ozone and come into compliance with NAAQS, the formulation of a SIP is required for all nonattainment areas. NCTCOG works in cooperation with federal, state, and local partners to ensure all air quality requirements are met. NCTCOG's air quality strategies seek to reduce emissions in a variety of ways, from energy and fuel

efficiency to advancing clean technologies to encouraging changes in daily behavior. Such strategies are being implemented throughout the region to reduce emissions from different types of sources; however, many of the programs implemented through NCTCOG target transportation-related emissions due to the fact that on-road mobile sources (such as cars and trucks) account for nearly one-half of all ozone precursor pollution in North Central Texas. Although national air quality has improved over the last 20 years, many challenges remain in protecting public health and the environment.

In addition to the criteria air pollutants for which there are NAAQS, EPA also regulates MSATs for which health based standards or NAAQS have not been developed. MSATs, a subset of the 188 air toxics defined by the CAA, are compounds emitted from highway vehicles and non-road equipment. In an effort to control MSAT emissions the EPA utilizes regulatory controls that result in specific emission reductions. This strategy provides for increased protection of human health.

On March 29, 2001, EPA issued a Final Rule on Controlling Emissions of Hazardous Air Pollutants from Mobile Sources, (66 FR 17229, March 29, 2001). This rule was issued under the authority in § 202 of the CAA. In its rule, EPA examined the impacts of existing and newly promulgated mobile source control programs, including its RFG program, its NLEV standards, its Tier 2 motor vehicle emissions standards and gasoline sulfur control requirements, and its proposed heavy duty engine and vehicle standards and on-highway diesel fuel sulfur control requirements. Between 2000 and 2020, FHWA projects that even with an increase in VMT, these programs are expected to reduce on-highway MSAT emissions.

On February 26, 2007 the EPA finalized additional rules under authority of CAA Section 202(l) to further reduce MSAT emissions. The EPA issued Final Rules on Control of Hazardous Air Pollutants from Mobile Sources (72 FR 8427) under Title 40 C.F.R. Parts 59, 80, 85 and 86. EPA adopted the following new requirements to significantly lower emissions of benzene and the other MSATs by: 1) lowering the benzene content in gasoline; 2) reducing NMHC exhaust emissions from passenger vehicles operated at cold temperatures (under 75 degrees); and 3) reducing evaporative emissions that permeate through portable fuel containers.

No adverse cumulative impacts were identified with respect to MSATs as a result of the analysis and therefore no mitigation opportunities are identified/discussed.

E.2 Community

E.2.1 Land Use

Land use conversion or re/development is not considered a negative cumulative impact; therefore, no mitigation is offered, though governments should continue to do whatever they can to improve the general quality of land use conversion.

E.2.2 Historic Resources

Since TxDOT is not directly impacting (or taking) the Old Bedford Road Bridge, mitigation for this resource is not required.

E.2.3 Section 4(f) Resources

TxDOT would take approximately 0.68 acre from the L.D. Bell High School. Mitigation for this taking would involve TxDOT providing fencing improvements for the school's field area along the SH 121/ SH 123 westbound frontage road.

E.2.4 Air Quality

The evaluation for direct and indirect impacts and cumulative impacts from the proposed highway expansion project did not result in the identification of any negative impacts for which specific mitigation actions are necessary and required. In an effort to reduce congestion, TxDOT and NCTCOG would continue to promote appropriate congestion reduction strategies through the CMAQ program, the CMP, and the MTP. Overall, current federal, state, and local regulatory controls as well as local plans and projects have had, and will continue to have a beneficial impact on overall regional air quality.

Further discussion on regulatory matters is presented in the previous air quality sections.

E.2.5 Environmental Justice

EO 12898 was intended to ensure that Federal departments and agencies identify and address disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations. It reinforced Title VI of the Civil Rights Act of 1964, and reminded all government agencies receiving Federal funding that they are required to address discrimination as well as the consequences of their decisions or actions toward minority and/or low-income communities.

Subsequent to EO 12898, US DOT Order 5610.2 was published in the Federal Register in 1997. It describes the process for incorporating environmental justice principles into all Department of Transportation programs, policies, and activities. The following year, FHWA Order 6640.23 was issued, establishing policies and procedures for the FHWA to use in complying with EO 12898 and US DOT Order 5610.2.

The proposed highway expansion project would not result in disproportionately high and adverse human health or environmental effects on minority populations and low-income populations; therefore, according to EO 12898 regulation, mitigation associated with environmental justice is not currently proposed. There are, however, a number of possible mitigation measures that may be considered to minimize

adverse impacts on low-income populations from tolled managed HOV lanes. Some of these measures would require cooperation between or among various governmental entities or agencies and do not constitute current commitments, but possible solutions that may be developed and implemented after appropriate study and consideration. Possible mitigation measures may include but are not limited to:

- Improvements to non-tolled roadway facilities and alternative transportation modes
- Increased public transit access through improved headways and/or routes
- Increased efforts to promote ridesharing and vanpooling
- Improvements in transportation systems management, through measures such as improved signal timing, additional left/right turn bays, and additional bus bays
- Funding of alternative transportation infrastructure (rail transit, bicycle and pedestrian facilities, etc.)
- Funding of non-toll projects within the current transportation plan which would add capacity to non-tolled general purpose lanes
- Provide free HOV use of managed lanes for 3+ vehicle occupancy

These are measures that would contribute to facilitating travel for low-income persons who are unable to afford traveling on tolled managed lane facilities. Additionally, the current RTC managed lane policy (RTC Modified - September 13, 2007) states that HOVs of two or more occupants may receive a reduced rate or incentives during the peak period (see **Appendices B-1** through **B-4**).

E.2.6 Community Cohesion and Public Facilities and Services

Although cumulative impacts to community cohesion are not anticipated, it is expected that municipalities would continue to sponsor and promote community outreach programs and other community building activities. Furthermore, such community building activities are often goals and objectives established within local planning documents and implemented as such. Cumulative impacts to public facilities and services would be subject to municipal planning and zoning policies, ordinances, and codes, as these are facilities unlikely to be redeveloped in response to the proposed project or any other foreseeable projects.

E.2.7 Traffic Operations

Improvements in regional mobility are not typically considered negative cumulative impacts; therefore, no mitigation is offered, though governments should continue to do whatever they can to improve mobility conditions and improved traffic operations. This is particularly the case along the frontage road system where traffic operations are anticipated to degrade. Transportation system management strategies could be implemented along the frontage road system to improve the flow of traffic; they include traffic signal timing improvements, signing improvements, intersection geometric improvements, and removal of freeway and arterial bottlenecks.

E.2.8 Traffic Noise

Because the average traffic noise level change (increase) due to highway expansion project within communities/municipalities adjacent to SH 121/SH 183 would be well below 3 dBA Leq, there would be no associated, perceptible indirect or cumulative impacts and no mitigation would be warranted.

E.2.9 Lighting and Visual

Changes in lighting are often in association with projects that improve safety for motorists. Therefore, no mitigation is offered. Visual impacts can be mitigated by designing overpasses and other standing structures thematically in the vein of local aesthetic conditions. For example, the Arizona Department of Transportation has for years designed their standing structures in a desert motif.

E.2.10 Habitat

In accordance with Provision (4)(A)(ii) of the MOA between TxDOT and the TPWD, TxDOT must consider compensatory mitigation for certain habitat categories. Of the vegetation impacts, approximately permanent riparian vegetation impacts are considered to be pertinent to the TxDOT-TPWD MOA. Clearing of vegetation within these riparian areas (and throughout the project corridor) would be avoided or minimized, where possible, for the construction of the proposed project and establishment of clear zones. Although impacts to riparian habitat would be minimal, and this habitat is rather unremarkable due to the heavy development in the surrounding areas, compensatory mitigation for the impacts at Bear Creek is proposed.

Remaining upstream and downstream riparian areas contain similar composition and structure to the vegetation that would be removed. The disturbance created along these riparian zones should produce seed-bearing forbs and other primary successional plants that would benefit wildlife in the area. Riparian areas within the TxDOT ROW would be stabilized by planting a temporary seed mix and allowing natural riparian vegetative succession to occur.

In accordance with TxDOT standards and policy, and to mitigate for herbaceous vegetation impacts, a mix of native and introduced grasses and forbs would be used to re-vegetate the ROW. Additionally, disturbed areas would be restored and reseeded according to the TxDOT specifications. This would be performed in accordance with TxDOT's "Seeding for Erosion Control," Executive Order 13112 on Invasive Species, and the Executive Memorandum on Beneficial Landscaping.

F. Cumulative Impacts of the Regional Toll and Managed/HOV System

The indirect impact section identified the need to study the impacts from the regional toll and managed/HOV lane network as it expands for the 2030 proposed transportation system. Each cumulative resource is studied from a regional perspective and addresses the impacts the proposed priced facility

network would have on each resource. Because of the accessibility of data resources supplied by the NCTCOG, the RSA for the regional study is the MPA.

F.1 Land Use

Metropolitan areas have come under intense pressure to respond to federal mandates to link planning of land use, transportation, and environmental quality from persons concerned about managing the side effects of growth such as sprawl, congestion, housing affordability, and loss of open space. The planning models used by MPOs were not designed to address these questions, creating a gap in the ability of planners to systematically assess these issues.

The relationships between land use, transportation, and the environment are at the heart of growth management. The emerging concern that construction of new suburban highways induces additional travel, vehicle emissions, and land development, making it implausible to “build our way out” of congestion has reshaped the policy context for metropolitan transportation planning. Recognizing the effects of transportation on land use and the environment, the CAA and the Intermodal Surface Transportation Efficiency Act (ISTEA) mandated the MPOs integrate metropolitan land use and transportation planning. Later, the Transportation Equity Act for the 21st Century (TEA-21) succeeded the ISTEA to refine this process.

Because of the direct link between land use, transportation, and air quality, beginning with Mobility 2025 RTP in 2005, NCTCOG has been promoting sustainable development in transportation. NCTCOG has defined sustainable development as:

- Land use and transportation practices that promote economic development while using limited resources in an efficient manner.
- Transportation decision making based on impacts on land use, congestion, VMT, and the viability of alternative transportation modes.
- Planning efforts which seek to balance access, finance, mobility, affordability, community cohesion, and environmental quality.

A regional plan for the relationship between sustainable land use and transportation, while important to solving mobility issues, like a single color on an artist’s pallet, will only serve as part of whatever strategic plan is ultimately implemented, and to work effectively must be blended with other elements. A regional plan is costly to implement, only municipalities can implement the land use controls necessary, and no government can dictate where people will live, work, and play, or the place and nature of land use development.

The essence of sustainable development is the wise use of scarce resources so that future generations may enjoy them. At the regional level, the key to maintaining sustainable patterns of development is to allow cities the option to present a variety of land use, zoning, mobility, and service packages to the

development market and residents. This can be accomplished by providing planning support for a diverse range of mobility options such as rail, automobiles, bicycling, transit, and walking.

The DFW MPA is forecasted to grow to almost 8.5 million people and 5.3 million jobs by the year 2030, producing nearly a 63 percent increase in population and a 64 percent increase in employment. If not planned for and implemented in a responsible way, this type of rapid growth would have negative impacts on the region. If development continues to grow away from the urban core, the VMT would substantially rise per household, per person, and per employee. Higher densities, mixed-land uses, and increased transportation alternatives, which are characteristics of the urban core, reduce overall VMT. This leads to lower emissions of VOC and NO_x, improving air quality. NCTCOG's analysis of travel patterns showed that mixing land uses has a similar beneficial impact on travel as density. There are five types that categorize all land in the DFW MPA: employment dominant, employment leaning, mixed, household leaning, and household dominant. The localized mixing and integration of land uses occur at a variety of densities in urban, suburban, and rural settings in the region.

The MTP land development policies were created by combining regional expectations with local city plans, including anticipated population growth and land use. NCTCOG relies on the information provided by cities as a basis for their land development policies. By understanding the cities' expectations, NCTCOG is better able to educate the public and municipalities on the best alternatives for regional land development. NCTCOG conducted a series of demographic sensitivity analyses scenarios to quantitatively assess the potential impacts of alternative growth scenarios on the region between 2010 and 2030. Historically, the DFW area has grown outward with new developments turning rural areas into suburban cities. Within the alternative growth scenarios presented by NCTCOG, households and employment locations were redistributed throughout the region to simulate alternative market assumptions; however the control numbers for population and employment remained the same. **Table VIII-12** presents the statistics produced through the analysis of each scenario. Brief descriptions of each scenario are:

- Rail Scenario: NCTCOG redistributed population and employment growth occurring between 2010 and 2030, while maintaining the population and employment control totals for the region. Growth was taken from rural areas of the region and added primarily to passenger rail station areas.
- Infill Scenario: NCTCOG redistributed population and employment growth occurring between 2010 and 2030, while maintaining the population and employment control totals for the region. Growth was taken from rural areas of the region and added primarily to infill areas along existing freeways/tollways.
- Rail with County Control Totals (RCCT) Scenario: NCTCOG redistributed population and employment growth occurring between 2010 and 2030, while maintaining the population and employment control totals for the region and each individual county. Growth was taken from rural areas of the region and added primarily to passenger rail-oriented areas.

- Vision North Texas (VNT) Scenario: NCTCOG redistributed population and employment growth occurring between 2010 and 2030, while maintaining the population and employment control totals for the region. Growth was distributed based on overall VNT participant feedback.
- *Forward Dallas!* Scenario: Created for the City of Dallas, NCTCOG redistributed population and employment growth occurring between 2010 and 2030 based on the final alternative demographic dataset created during the *Forward Dallas!* Comprehensive Plan process.

Data of Interest	Rail Scenario	Infill Scenario	RCCT Scenario	VNT Scenario	Forward Dallas!
MPA Average of Trip Length	- 8%	+ 3%	- 0.01%	- 10.85%	- 2.9%
MPA Rail Transit Boardings	+ 52%	+ 9%	+ 8%	+ 11.13%	+ 7.4%
MPA Non-Rail Transit Boardings	+ 29%	+ 11%	+ 5%	+ 15.98%	+ 11%
MPA Vehicle Miles Traveled (VMT)	- 6%	- 5%	- 1.2%	- 9.43%	- 2.2%
MPA Vehicle Hours Traveled	- 9%	- 7%	- 1.7%	- 14.31%	- 5.7%
Total Vehicle Hours of Delay	- 24.0%	- 19.0%	- 4.0%	- 32.5%	- 14.5%
Lane Miles Needs	- 13.0%	- 10.0%	- 13.3%	- 30.90%	- 32.1%
Financial Needs (billions)	- \$9.5	- \$6.7	- \$2.9	- \$15.6	- \$7.0
Roadway Pavement Needs	- 8.3 sq. mi.	- 6.5 sq. mi.	- 0.7 sq. mi.	- 19.8 sq. mi.	- 1.6 sq. mi.
NO _x Emissions	- 4.1%	- 3.9%	- 1.2%	- 8.47%	- 2.4%
VOC Emissions	- 5.3%	- 5.2%	- 1.5%	- 11.02%	- 3.0%

The results of the analysis show a strong correlation between passenger rail and VNT scenarios, both reducing the greatest amount of ozone emissions and the amount of MPA VMT and hours of delay.

Mobility 2030 – Amended 2009, approved August 31, 2009 does not pick, favor, or choose any regional land use scenario. This data is provided by NCTCOG as an educational guide for the cities and municipalities that comprise the Dallas/Fort Worth metropolitan area. The alternative growth scenarios area presented as suggested alternatives the municipalities could incorporate into their land use policies in order to improve regional transportation and environmental issues. Because NCTCOG has no power to control regional growth and land development, the MTP provides these alternatives as guidance to city planers and developers as the most efficient way to grow. By presenting these options, NCTCOG's transportation goals are better served.

The Mobility 2030 – Amended 2009, approved August 31, 2009 does not utilize any of these alternative growth scenarios as a basis for development since these regional scenarios cannot be realistically implemented. The proposed roadway system (include priced facilities) developed by the MTP is based on projected growth and land use changes that are predicted to occur in the future. The MTP growth model takes each municipality's land use growth projections as a basis for the Mobility 2030 – Amended 2009, approved August 31, 2009. Each municipality has its own method of addressing development within their boundaries depending on the growth they are experiencing. This growth includes mixed use, redevelopment, new development, industrial, commercial, high density, low density, transit oriented, rural growth, etc. The Mobility 2030 – Amended 2009, approved August 31, 2009 was modeled using each cities growth projections and combining them with future growth patterns extrapolated from existing

patterns for the region. These patterns do not follow, support, or conform to any regional scenarios presented in the Mobility 2030 – Amended 2009, approved August 31, 2009 and the scenarios are used only as a guide for future consideration for growth and land use development.

While the aforementioned scenarios are academic and more suited as indicators of growth potential rather than models for how to handle the growth, at the scale of the DFW Metropolitan Area, particularly in the less developed but growing areas of Tarrant County, the cumulative impact of regional growth is likely to be further densification of existing fully developed areas, as well as new development of areas previously used for agricultural land and open space. Planned roadway improvements along with improvements to existing transportation facilities would improve the perceived accessibility of these areas. Though, as previously explained, roadways cannot generate growth unless there are the economic forces to drive it, the presence of roadways would make development more convenient and this would ultimately result in residential development, followed by commercial and industrial uses.

Many communities tout “Rural Character” as a desirable quality and a primary objective of the strategies within their comprehensive plans. Nonetheless, rural character is also one of the first casualties of urbanization, particularly if the urbanization approaches annual growth rates beyond seven to eight percent. Without regulatory mechanisms in place (including land use controls, site plan/development controls, and off-system roadway access restrictions) to offset or contain growth, cumulative impacts from the expansion of the urban freeway system would include a diminishment of rural character for communities in the DFW region that enjoy a present level of urban calm.

The RTC is an independent transportation policy body of the MPO and is comprised of elected officials representing the region’s counties and municipalities as well as the region’s transportation providers (DART, TxDOT, NTTA, etc.). The RTC is responsible for overseeing the Mobility 2030 – Amended 2009, approved August 31, 2009 as it relates to transportation and creates policies for regional transportation including toll policies, managed lane policies, CDA policies, and other transportation related issues.

The RTC has taken a proactive approach to improving regional traffic congestion and air quality through its Sustainable Development Policy adopted in 2001. The RTC established basic policy directions that serve as strategies to meet finance constraints, diversify mobility, and improved air quality. The objectives of these practices are to:

- Respond to local initiatives for town centers, mixed-use growth centers, transit-oriented developments, infill/brownfield developments, and pedestrian-oriented projects.
- Complement rail investments with coordinated investments in park-and-ride, bicycle, and pedestrian facilities.
- Reduce the growth in VMT per person.

Although the Mobility 2030 – Amended 2009, approved August 31, 2009 and the RTC states these practices should be followed, the local municipalities have direct jurisdiction over land use and public agencies such as DART, TxDOT, and NTTA have jurisdiction over the regional transportation system. These agencies and municipalities would need to work with the NCTCOG and the RTC to implement these sustainable development policies. These policies represent an important new trend in local development patterns that are based on an increased desire for a greater variety of transportation options, mixed-use developments, and unique communities with a sense of place. This trend contributes to the region's increasing emphasis on sustainable development and the ability to attain federal air quality attainment. This sustainable land use is one tool the NCTCOG uses to reduce the need for new infrastructure (utilities, transportation, emergency response, government facilities, water, etc.). Without sustainable land use, the additional cost of new infrastructure items would increase beyond the current cost.

Sustainable land use is only one part of the solution. The cost of implementation of a full sustainable land use plan is expensive and only municipalities have the power in the state of Texas to affect and implement land use zoning, codes, and enforcement. Furthermore, no government entity has the authority or power to force developers or people where to develop or live.

The current future roadway facility outlined in the Mobility 2030 – Amended 2009, approved August 31, 2009 is in support of the predicted land use changes and growth in the region. To meet the demand of the expansive growth and changes to land use from development, the 2030 transportation network would supply the transportation portion of infrastructure requirements for the expanding growth and development. Current and future predicted available funds from the federal government for transportation will not meet the demands for the transportation infrastructure needed to support the predicted land use changes. Toll roads and managed lanes are the methods that the MTP employs to ensure the transportation demands from future growth are met based on limited transportation funds.

The development of a managed lane/toll system is consistent with the land use policies discussed in the MTP. One component of the managed lane system is planned access to high density development areas. As more mixed-use development centers are planned in the region, managed lane facilities would continue to connect to these centers, allowing HOV and transit vehicles access to the transportation system. This would help remove SOV users from the main lanes and increase mobility, efficiency and reliability on all traffic facilities.

The proposed 2030 priced facility network may affect land use within the MPA boundaries by helping to enhance land development opportunities. However, priced facility network is only one factor in creating favorable land development conditions; other prerequisites for growth in the region include demand for new development, favorable local and regional economic conditions, adequate utilities, and supportive local land development regulations and policies.

F.2 Environmental Justice

Mobility 2030 – Amended 2009, approved August 31, 2009 presents a system of transportation improvements needed to maintain mobility in the DFW area over the next 20 plus years and serves as a guide for the expenditure of state and federal funds for the region. Its development was coordinated among local governments, transit authorities, TxDOT, FHWA, and FTA. The plan is based on regional transportation needs through the process of forecasting future travel demand, evaluating system scenarios, and selecting those options which best meet the mobility needs of the region. It also serves as a guide for the implementation of multi-modal transportation improvements, policies, and programs through the year 2030.

As part of the development of Mobility 2030 – Amended 2009, approved August 31, 2009, the current MTP, the NCTCOG conducted an environmental justice study for the existing transportation facilities compared to the 2030 proposed transportation system in the MTP. NCTCOG concluded that the Mobility 2030 – Amended 2009, approved August 31, 2009 transportation improvements and recommendations for the NCTCOG region would not cause adverse impacts to environmental justice populations. However, it did not account for the impact of tolls on environmental justice populations.

To further analyze the effects of roadway improvements in the NCTCOG region, a regional study was performed comparing the regional Build and No Build scenarios, in which all road improvements in the Mobility 2030 – Amended 2009, approved August 31, 2009 plan, including toll roads, were considered. The regional no build scenario utilized the existing roadway network in 2009 with 2030 population demographics. The regional build scenario used the proposed MTP roadway network in 2030 with 2030 population demographics.

Regional traffic analysis performance reports and regional origin-destination studies were conducted for the NCTCOG's MPA transportation network for the regional build and no build regional toll/managed lane scenarios. The analysis was conducted to investigate the possible cumulative impacts from the construction of toll roads and managed lanes to environmental justice populations and to determine if there would be disproportionately high and adverse cumulative impacts to these populations.

F.2.1 Traffic Analysis Performance Reports

Traffic analysis performance reports were developed for the regional build and no build scenarios for the entire MPA transportation network. The average daily vehicle trips for both scenarios are 24,912,520.

A comparison of the average loaded speed per roadway classification is shown in **Table VIII-13**. Average loaded speed, based on the NCTCOG's performance reports, is defined as "the average speed on roadways with traffic on the road; it is the volume-weighted average of loaded speed." The average loaded speed is the average speed a vehicle is traveling along a specific roadway classification during traffic. This is calculated using the miles traveled divided by the time it took to travel a fixed distance. This calculation illustrates the usage of the roadway system by roadway classification. The results show

that the regional build scenario would result in an increase in roadway speed for all roadway classifications.

Roadway Classification	Build Scenario			No Build Scenario			Percent Change		
	AM	PM	Daily	AM	PM	Daily	AM	PM	Daily
Freeways (includes toll roads)	52.88	54.16	57.11	38.92	44.49	50.10	26.40%	17.85%	12.27%
Major Arterials	27.14	28.83	31.82	20.69	22.00	26.52	23.77%	23.69%	16.66%
Minor Arterials	24.01	25.55	27.38	20.45	22.09	25.21	14.83%	13.54%	7.93%
Collectors	20.14	21.62	23.00	17.54	18.93	21.22	12.91%	12.44%	7.74%
Frontage Roads	25.65	27.48	29.61	19.63	21.22	24.67	23.47%	22.78%	16.68%
HOV Lanes (includes managed lanes)	49.73	51.78	52.81	44.37	47.72	50.37	10.78%	7.84%	4.62%

Source: NCTCOG TransCAD® data for 2030 regional build and no build scenarios (April 2008 Performance Reports)

In addition, an evaluation of the regional no build scenario versus the regional build scenario was conducted for the MPA using LOS per lane mile by roadway classification. The results are shown in **Table VIII-14** and **Table VIII-15**. The regional no build scenario shows an increase in roadway miles in LOS F for all roadway classifications with the exception of HOV/managed lanes.

Table VIII-14 Levels of Service (LOS) for the Traffic Study Area (2030)						
Roadway Classification	Build Scenario			No Build Scenario		
	Lane-Miles	LOS	LOS Percentage	Lane-Miles	LOS	LOS Percentage
Freeways (includes toll roads)	7,602	A-B-C (3,826 lane-miles)	50%	4,486	A-B-C (890 lane-miles)	20%
		D-E (2,264 lane-miles)	30%		D-E (1,220 lane-miles)	27%
		F (1,512 lane-miles)	20%		F (2,376 lane-miles)	53%
Major Arterials	8,739	A-B-C (4,793 lane-miles)	55%	4,085	A-B-C (1,120 lane-miles)	17%
		D-E (1,848 lane-miles)	21%		D-E (640 lane-miles)	16%
		F (2,098 lane-miles)	24%		F (2,325 lane-miles)	57%
Minor Arterials	7,568	A-B-C (5,407 lane-miles)	71%	9,282	A-B-C (3,654 lane-miles)	39%
		D-E (829 lane-miles)	11%		D-E (1,574 lane-miles)	17%
		F (1,332 lane-miles)	18%		F (4,054 lane-miles)	44%
Collectors	9,007	A-B-C (6,992 lane-miles)	78%	8,217	A-B-C (4,568 lane-miles)	56%
		D-E (724 lane-miles)	8%		D-E (914 lane-miles)	11%
		F (1,291 lane-miles)	14%		F (2,735 lane-miles)	33%
Frontage Roads	4,152	A-B-C (3,182 lane-miles)	76%	2,622	A-B-C (1,254 lane-miles)	48%
		D-E (402 lane-miles)	10%		D-E (375 lane-miles)	14%
		F (568 lane-miles)	14%		F (993 lane-miles)	38%
HOV Lanes (includes managed lanes)	898	A-B-C (612 lane-miles)	68%	182	A-B-C (76 lane-miles)	42%
		D-E (190 lane-miles)	21%		D-E (45 lane-miles)	25%
		F (96 lane-miles)	11%		F (61 lane-miles)	33%

Source: NCTCOG TransCAD® data for 2030 regional build and no build scenarios (April 2008 Performance Reports)

Table VIII-15 Levels of Service (LOS) Visual and Technical Descriptions		
LOS	Flow Conditions	Technical Description
A		Highest quality of service. Traffic flows freely with little or no restrictions on speed or maneuverability. No Delays
B		Traffic is stable and flows freely. The ability to maneuver in traffic is only slightly restricted. No Delays
C		Few restrictions on speed. Freedom to maneuver is restricted. Drivers must be more careful in making lane changes. Minimal Delays
D		Speeds decline slightly and density increases. Freedom to maneuver is noticeably limited. Minimal Delays
E		Vehicles are closely spaced, with little room to maneuver. Driver comfort is poor. Significant Delay
F		Very congested traffic with traffic jams, especially in areas where vehicles have to merge. Considerable Delays

Source: California Department of Transportation (Caltrans), 2003

F.2.2 Regional Origin-Destination Study

An origin-destination study was conducted by NCTCOG for the MPA toll road/managed lane network for environmental justice populations. The assumptions and limitations of origin-destination studies are discussed in **Section VI - A.1.2. Appendices I-3 and I-4** show the basis of the NCTCOG analysis and the identified TSZs that contain environmental justice populations (i.e., TSZs that contain greater than 50 percent minority and low-income populations) and the existing and future toll roads and managed lanes used in the origin-destination analysis. The figure shows the majority of environmental justice communities within IH 635 and IH 820 loops in Dallas and Fort Worth and in the southern section of the MPA.

The entire MPA was evaluated for the existing and future toll network. The total TSZs that comprise the origin-destination study area within the MPA is 4,813. A total of 1,542 these are considered environmental justice TSZs.

For the regional no build scenario, 4,720 TSZs are anticipated to regularly utilize the existing toll roads in the MPA in 2030 (originating at least one trip per day); this represents 98.1 percent of the totally TSZs in the MPA. Under the regional no build scenario, 1,530 environmental justice TSZs are anticipated to regularly utilize the existing toll facilities (originating at least one trip per day); this represents 99.2 percent of the environmental justice TSZs in the MPA. Data analysis indicates that from the 246,462 total trips which originated from all of the TSZs that would utilize the existing toll facilities in the MPA, approximately 14.8 percent (36,400 trips) of the total trips originated from environmental justice TSZs.

The Build scenario is anticipated to contain 4,770 TSZs that would regularly utilize the future toll facilities in the MPA in 2030 (originating at least one trip per day); this represents 99.1 percent of the total TSZs in the MPA. From the total environmental justice TSZs identified in the MPA, 1,541 are anticipated to regularly utilize the proposed toll facilities in 2030 (originating at least one trip per day) for the Build scenario; this represents 99.9 percent of the total TSZs in the MPA. Data analysis indicates that from the 516,988 total trips which originated from TSZs that would utilize the future proposed toll roads, approximately 16.4 percent (85,011 trips) originate from environmental justice TSZs.

Table VIII-16 outlines the origin-destination results for the MPA study area. The analysis was divided into three networks, the No Build scenario that is the existing toll facilities in 2009, the Build scenario that is the future toll facilities that would be built, and the total toll network which is the existing network plus the future network that would be built.

Table VIII-16 Origin-Destination Results		
	2030 No Build Scenario (existing toll facilities)	2030 Build Scenario (future toll facilities)
Total TSZs in the MPA	4,813	4,813
Total environmental justice TSZs in the MPA	1,542	1,542
TSZs utilizing toll facilities	4,720 (98.1%)	4,770 (99.1%)
Environmental justice TSZs utilizing toll facilities	1,530 (99.2%)	1,541 (99.9%)
Trips from TSZs utilizing toll facilities	246,462	516,988
Trips from environmental justice TSZs utilizing toll facilities	36,400 (14.8% of total trips)	85,011 (16.4% of total trips)

Source: NCTCOG TransCAD® data for 2030 regional build and no build scenarios (April 2008 Origin-Destination data)

F.2.3 Results and Conclusions

The O&D results show an increase in usage for toll roads from the 2030 No Build scenario and the 2030 Build scenario for the NCTCOG MPA region. Both the Build and No Build scenarios showed trips generated from the majority of the TSZs in the MPA (98.1 to 99.1 percent), including the majority of environmental justice TSZs (99.2 to 99.9 percent).

Trips for future proposed toll facilities in the Build scenario would experience an increase of 110 percent from the current toll road facilities. Environmental justice TSZs trips would increase 134 percent. Because of the increase in trips generated by environmental justice populations, these populations would

receive cumulative impacts by the regional increase in toll facilities because low-income populations would use a greater amount of their income for toll road and managed lane usage. As shown in **Appendices I-3** and **I-4**, existing toll roads and managed lanes are not adjacent to the majority of environmental justice TSZs, but future proposed toll roads and managed lane facilities would be built nearer environmental justice populations.

Results from the performance reports conducted for the MPA showed an increased in roadway speed and an improvement in LOS for the majority of the roadway classifications in the Build scenario in comparison to the No Build scenario. The Build scenario for the MPA would create a cumulative improvement for roadway conditions throughout the NCTCOG region by increasing roadway speed and improving the LOS on the roadway network.

Although environmental justice populations would see an increase in spending for toll facilities, the entire MPA region would also see an increase in spending and usage as the toll road and managed lane system expands. The majority of environmental justice populations were identified by the NCTCOG travel demand model to potentially make trips along existing and future toll facilities. In addition, for populations (including environmental justice populations) who would opt to use non-toll options, the Build scenario for 2030 (which includes all proposed toll facilities and managed lanes) would provide a roadway network that would operate at better traffic conditions (greater speeds and an improved LOS) than the No Build scenario and would provide an increased benefit for these users over the No Build scenario.

Based on the previous discussion and analysis, the Build scenario for the NCTCOG MPA would not cause disproportionately high and adverse cumulative impacts on any minority or low-income populations as per Executive Order 12898 regarding environmental justice.

As discussed, the analysis does not show any disproportionately high and adverse impacts to environmental justice populations; therefore, no project-specific mitigation measures are appropriate for cumulative impacts in this document. However, NCTCOG will continue its efforts to work with all communities in the planning process to identify transportation challenges and explore and develop the appropriate strategies to respond to the issues. Examples include programs and projects to improve availability and accessibility to alternate transportation options including discounted transit fares and tolls, HOV discounts on toll roads and managed lanes, better accessibility to regional transportation systems, and community level congestion management. Specific strategies and projects will be developed through discussions with local governments and community representatives.

F.3 Air Quality

The NCTCOG serves as the MPO for the Dallas-Fort Worth area. It serves a 16-county metropolitan region centered on Dallas and Fort Worth. Since the early 1970s, MPOs have had the responsibility of

developing and maintaining a MTP. The MTP is federally mandated; it serves to identify transportation needs; and guides federal, state, and local transportation expenditures.

ISTEA strengthened the role of the MTP and made it the central mechanism for the decision-making process regarding transportation investments. The passage of the TEA-21 in 1998 continued this emphasis. The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) was signed into law on August 10, 2005. SAFETEA-LU addresses the challenges on our transportation system such as improving safety, reducing traffic congestion, improving efficiency in freight movement, increasing intermodal connectivity, and protecting the environment. Both SAFETEA-LU and the CAAA impose certain requirements on an urbanized area's long-range transportation plan.

Transportation plans such as Mobility 2030 – Amended 2009, approved August 31, 2009, according to SAFETEA-LU metropolitan planning regulations, must be “fiscally constrained,” that is, based on reasonable assumptions about future transportation funding levels. Because the Dallas-Fort Worth area is designated as a nonattainment area for the eight-hour ozone standard, the CAAA require the transportation plan to be in conformity with the SIP for air quality to demonstrate that projects in the MTP meet air quality goals. Mobility 2030 – Amended 2009, approved August 31, 2009 specifically addresses regional ozone in addition to its studies of general regional air quality and the final result showed that the regional roadway network (including toll roads and managed lanes) would show a decrease in nitrogen oxides and emissions of volatile organic compounds.

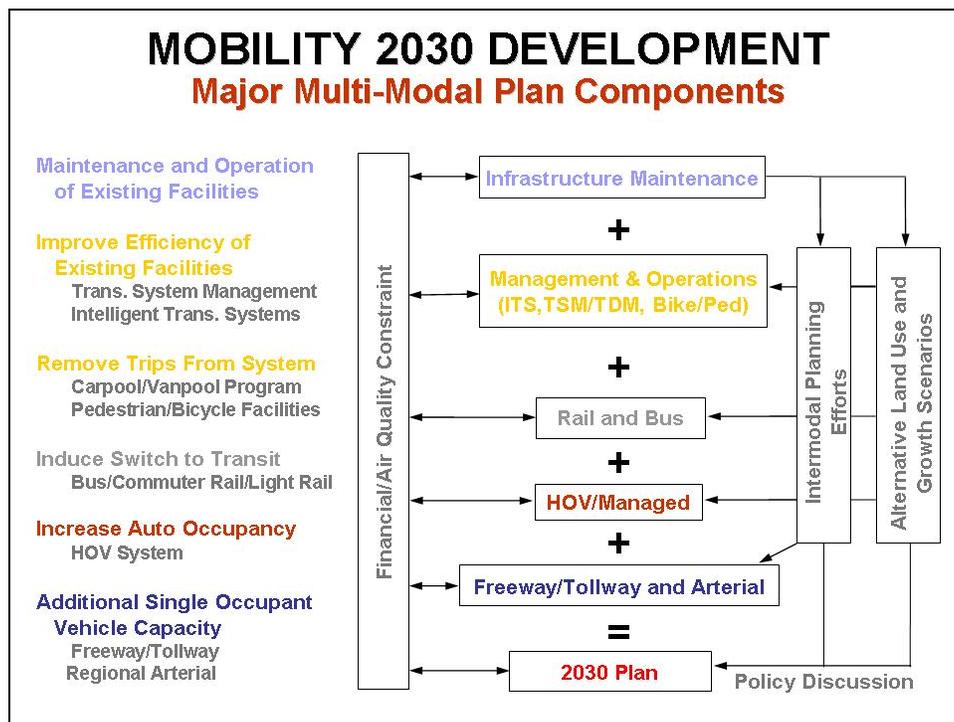
Transportation conformity is a process, which ensures federal funding, and approval goes to transportation activities that are consistent with air quality goals. Transportation activities that do not conform to state air quality plans cannot be approved or funded.

The CAAA established specific criteria, which must be met for air quality non-attainment areas. The criteria are based on the severity of the air pollution problem. Transportation conformity is a CAAA requirement that calls for the EPA, U.S. Department of Transportation (U.S. DOT), and various regional, state, and local government agencies to integrate air quality and transportation planning development processes. Transportation conformity supports the development of transportation plans, programs, and projects that enable areas to meet and maintain national air quality standards for ozone, PM, and CO, which impact human health and the environment. Through the SIP, the air quality planning process ties transportation planning to the conformity provisions of the CAAA. This ensures that transportation investments are consistent with state and local air quality objectives. The NCTCOG is responsible for the conformity analysis in the Dallas-Fort Worth area. If the criteria are not met, EPA can then impose sanctions on all or part of the state. Sanctions include stricter industrial controls and the withholding of federal highway and transit funds.

Tarrant and Dallas Counties have been designated as part of a nine-county nonattainment area for eight-hour ozone by the EPA. In accordance with the metropolitan planning regulations, Mobility 2030 – Amended 2009, approved August 31, 2009 must include a CMP to systematically address congestion.

The evaluation of additional transportation system improvements beyond the committed system began with a detailed assessment of transportation improvements that would not require building additional facilities for SOV. Various improvements/modes including congestion management strategies, bicycle and pedestrian facilities, rail facilities, HOV lanes, managed lanes, and toll road facilities were investigated prior to determining the need for additional freeway capacity improvements. **Figure VIII-4** shows the implementation of these resources and how they are integrated into the MTP.

**Figure VIII-4: Mobility 2030 – 2009 Amendment
Transportation Plan Components**



Transportation system performance information was developed as a product of the Dallas-Fort Worth Regional Transportation Model (DFWRTM) travel model throughout the MTP development process. This information guided development of the system alternatives and indicated the impact of various improvements. The improvements recommended in Mobility 2030 – Amended 2009, approved August 31, 2009 include regional congestion management strategies, bicycle and pedestrian facilities, managed HOV lanes, light/commuter rail and bus transit improvements, ITS technology, freeway and tollway lanes, and improvements to the regional arterial and local thoroughfare system such as intersection improvements and signal timing. Because Mobility 2030 – Amended 2009, approved August 31, 2009 is financially and air quality constrained, other more cost effective methods are reviewed before SOV lanes (freeways and toll roads) are added into the roadway system. ITS, mass transit, and Managed/HOV lanes are ways to meet regional transportation demands under the financially constrained MTP while improving regional air quality.

The additional introduction of priced facilities into the existing roadway network would not cause any cumulative impacts to air quality. The regional priced facility system would provide additional travel capacity to the roadway network, which would allow a greater flow of traffic throughout the region, decreasing the amount of cars traveling at lower speeds or idling conditions. This would result in less fuel combustion and lower emissions including MSATs, CO, and ozone. As noted in the direct and indirect analysis discussions, EPA's vehicle and fuel regulations, coupled with fleet turnover, are expected to result in substantial reductions of on-road emissions, including MSATs, CO and ozone precursors.

F.4 Water Quality

Water quality is regulated on the state level by TCEQ. TCEQ monitors all major water bodies (rivers, lakes and streams) and reports the conditions of these streams in a biennial Texas Water Body Inventory report. Section 303(d) of this report details those water bodies TCEQ has identified as impaired due to water contamination.

The 303(d) list identifies five major water systems as impaired with pollutants and bacteria in the MPA. These major water bodies are the Upper Trinity River, the West Fork Trinity River, the East Fork Trinity River, the Elm Fork Trinity River, and the Clear Fork Trinity River. The construction of the proposed priced facility system would cross and impact these water bodies at multiple locations and could cause water quality impacts.

As stated previously, TCEQ regulates water quality through SW3P, MS4, and BMPs. All construction of these priced facilities would follow these water quality permits that would prevent further pollution to these impaired waters and to waters that are not impaired. Additionally any indirect land use development that would occur from the construction of these facilities would follow TCEQ's regulations for water quality through SW3P and MS4. Therefore, the regional priced facility network would not have a cumulative impact to water quality.

F.5 Waters of the U.S.

The USACE regulates waters of the U.S. in the state of Texas. The MPA is under the jurisdiction of the Forth Worth District of the USACE. Fill of any jurisdictional waters of the U.S. is required to be permitted through the USACE.

While the USACE has specific guidelines for identifying waters of the U.S., several methods exist to preliminary identify these waters. USGS topography maps and TCEQ's Water Quality Inventory database provides information for the location of larger rivers and streams that would fall under the USACE jurisdiction. The National Wetlands Inventory maps created and maintained by the USFWS

attempts to identify potential wetlands through the use of infrared aerial photography (Digital Ortho Quarter Quads). The current status for the National Wetland Inventory maps for the MPA consist digital formats and hard copy formats; some areas are currently not mapped.

Although this data is incomplete, it only serves as a background for the identification of waters of the U.S. Government and private developments must permit any fill into waters of the U.S. and the identification of these waters of the U.S. is completed at the project level with field surveys.

From the available data, the regional priced facility system would impact and cause fill to waters of the U.S., both streams and potential wetlands. These roadway projects would be required to comply with permitting and mitigation for the fill of these waters of the U.S. Any land use change or development that would occur from this regional priced facility system would also be required to permit and mitigation for fill and loss of waters of the U.S.

Through the permitting and mitigation process the USACE has implemented a “no net loss” policy for permanent impacts to wetlands and waters of the U.S. This ensures that loss of these waters would require mitigation that is equal or greater than the loss. Because the USACE would regulate and require mitigation for loss of these waters of the U.S., the priced facility network would not cause a cumulative impact to waters of the U.S.

F.6 Vegetation

An inventory of regional vegetation is not available for the MPA. General vegetation descriptions identifying regions and ecological areas are available from many resources. These resources (e.g., the Vegetation Types of Texas, etc.) vary in description of areas of regions and do not update their descriptions from the original publications. Project specific vegetation descriptions are the best method to map the vegetation that would be affected by a project.

Currently, the MPA lies in the Blackland and Cross Timbers prairies ecological regions identified by TPWD. The construction of most of the proposed priced facility system would occur in areas already developed and contain urban type vegetation. The projects outside the urban areas could impact natural vegetation and the changes in land use and development that may be caused by these facilities would impact vegetation surrounding these projects.

The NCTCOG does not address impacts to vegetation or mitigation for loss of vegetation in the MTP. TxDOT districts can mitigate for loss of vegetation based on the MOU and MOA with TPWD, which focuses on special habitat types of wildlife and protected species. Wetlands are under the jurisdiction of the USACE and mitigation for the loss of these wetlands (which includes the vegetation) would occur through the permitting process. The USFWS can regulate and require mitigation for loss of vegetation that is designated habitat for a threatened or endangered species. Finally, cities can implement ordinances to protect trees, natural land, or open green spaces.

Although impacts to vegetation would occur from the priced facility system, these impacts would be regulated at the project level for each individual roadway project. Because of this project mitigation, there would be no cumulative impacts to vegetation from the priced facility system.

F.7 Conclusion

The regional priced facility system would cause minor impacts to some of the identified resources in this section. Regional mitigation for some of these resources would be addressed by the NCTCOG. As part of Mobility 2030 – Amended 2009, approved August 31, 2009, NCTCOG will specifically address two issues: air quality and environmental justice populations. The Transportation Planning Process, at a regional level, provides ways to mitigate for any potential impacts that could occur. The priced facility projects would be consistent with the STIP/TIP and MTP, and the STIP/TIP and MTP would conform to the State Implementation Plan (SIP). This ensures each project is in compliance with the STIP/TIP and MTP for air quality under CAAA and environmental justice under Title VI of the Civil Rights Act of 1964 and Executive Order 12898.

Land use impacts are not mitigated at a regional level, but at a municipality level because these entities have direct control over land use. These municipalities would work with NCTCOG to address regional infrastructure changes in their comprehensive plans. State and federal regulatory agencies that have jurisdiction over natural and cultural resources would be responsible for requiring avoidance, minimization and mitigation from any entity whose proposed project (transportation or other type) has a direct impact to any of these resources.

Finally as required by NEPA, mitigation for impacts would occur at the project level. Because of these potential mitigation measures, the regional proposed priced facility system would not have a cumulative impact to these resources.

THIS PAGE INTENTIONALLY LEFT BLANK

IX. PUBLIC INVOLVEMENT

This section describes in detail the public involvement process to date. As the public involvement process (e.g., public meetings, coordination, and community advisory group meetings) for this project began in 1993 prior to the signing of the EO 13166, the public involvement process was initiated in English only. However, all public notices for future meetings and the future public hearing will be advertised in both English and Spanish speaking newspaper(s) that circulate within the project area; and a Spanish interpreter will be available at all future public meeting(s) and the public hearing. Refer to **Table IX-1** for a summary of dates for all public involvement meetings held thus far.

A. PUBLIC MEETINGS

To date, three public meetings have been held to inform the public, local businesses, and organizations about the project and afford them the opportunity to participate in the public process.

A.1 First Public Meeting - August 4, 1993

The first public meeting was held at the Brookside Convention Center in Hurst on August 4, 1993. A total of 170 citizens and officials of the Cities of North Richland Hills, Hurst, Bedford, and Euless attended the meeting. Exhibits illustrating three proposed alternatives and their corresponding typical sections were put on display prior to the start of the meeting for the attendees to view. The public was also able to view the displays during the meeting. A presentation, given by a TxDOT representative, describing the following items: the three proposed alternatives, the documentation process (including environmental studies), geometrics layouts, the administrative actions necessary for the project, and an overview of the engineering, environmental and public involvement factors essential for the projects completion, as well as the State and Federal procedures governing ROW acquisitions, real estate purchases and relocation assistance. In addition, a thorough description was provided for each proposed alternative. Two of these alternatives included the addition of HOV (i.e., express) lanes to respond to a need for improved air quality and to reduce traffic congestion. The designs were planned to meet demands of future year 2010 projected traffic volumes. The alternatives were as follows:

- Alternative 1 (Plan 1) provided 10 main lanes (five in each direction), an auxiliary lane each direction in the vicinity of entrance and exit ramps, and one-way frontage roads (three lanes in each direction). Frontage roads would be mostly continuous with the exception of the westbound frontage road from the limits Norwood Drive to Precinct Line Road (FM 3029). Squeezing ramps and using full-height retaining walls between the main lanes and frontage roads minimized displacements. The typical ROW width was 350 feet.
- Alternative 2 (Plan 2) provided eight to 10 main lanes (four to five in each direction), an auxiliary lane each direction in the vicinity of entrance and exit ramps, one-way frontage roads (three lanes

in each direction), and two express lanes. Full-height retaining walls were proposed, minimizing displacements. The typical ROW width was 400 feet.

- Alternative 3 (Plan 3) provided eight to 10 main lanes (four to five in each direction), an auxiliary lane each direction in the vicinity of entrance and exit ramps, one-way frontage roads (three lanes in each direction), and two express lanes. Full-height retaining walls were very limited. The typical ROW width was 500 feet.

Attendees were encouraged to provide any comments or ask any question they might have during a question and answer period at the end of the presentation. Based on the question the proper representative would, to the best of their ability, provide a response. The primary concerns expressed by the citizens at the first public meeting included: noise and air pollution; ground vibrations caused by large trucks; concerns regarding increases in traffic and exhaust; insufficient entrance and exit ramps; proposed ROW takings and compensation; and overall reservations about the proposed designs. The most significant and frequent comment made was a request that improvements to the SH 121/SH 183 interchange near Central Drive (i.e., the SH 121/SH 183 diverge) be separated early from the overall Airport Freeway improvements as a special project. At the end of the meeting attendees were encouraged to leave any letters, written resolutions, or comments at the sign-in desk.

A.2 Second Public Meeting - November 15, 2001

Due to uncertainty about advanced planning provisions in the Intermodal Surface Transportation Efficiency Act OF 1991 (ISTEA), design work was suspended in July of 1994. Design work resumed in January of 2000, and a second public meeting was held at the First Baptist Church of Euless - Campus West Building in Euless on November 15, 2001. A total of 322 citizens and officials of the Cities of North Richland Hills, Hurst, Bedford, and Euless attended the open house, “come and go” meeting. Exhibits illustrating proposed design schematics, the various proposed alternatives, existing and proposed ramp configurations, and the existing and proposed typical sections were also displayed. The proposed design plans from the 1993 public meeting were also presented for comparison. The second meeting’s design plans continued with the proposed addition of reversible HOV lanes, again due to the DFW area’s air quality attainment status and traffic demands.

Three additional alternatives along the freeway alignment were presented at the 2001 public meeting for the limits extending from Norwood Drive to Precinct Line Road (FM 3029). These alternatives were:

- Alternative A - This plan removed the HOV drop ramp at Hurstview Drive, therefore requiring slightly less ROW. This plan included the westbound frontage road at this location and required the home at 305 Plainview Drive to be displaced.
- Alternative C - The westbound frontage road and HOV drop ramp from Hurstview Drive were omitted. The major widening of the ROW was proposed to be to the north side of the existing freeway. This plan required displacement of the home at 305 Plainview Drive.

- Alternative D - The westbound frontage road and HOV drop ramp were omitted and the major widening of the ROW was to the south of the existing freeway. This plan required acquisition of a portion of the back yard at 305 Plainview Drive, but not displacement of the home.

Attendees were encouraged to fill out comment forms, send their comments electronically by e-mail, or create an oral recording of their comments for TxDOT. TxDOT engineers, consulting engineers, and environmental consultants were present to assist the public in viewing the schematics and answer general and specific design and potential impact questions. TxDOT ROW personnel were available to answer questions regarding ROW acquisition and relocation issues. The TxDOT ROW Division's pamphlet *State Purchase of Right of Way* and TxDOT's *Building Barriers to Traffic Noise* were provided to interested citizens. Respectively, these pamphlets explain in layman's terms the policies and procedures TxDOT is required to follow in acquiring ROW and determining what noise impact a proposed facility may have on the adjacent neighborhoods, as well as mitigation measures. The primary concerns expressed by the citizens at this meeting included the following: a desire for sound barriers (i.e., noise walls); concerns regarding future increases in traffic and exhaust; proposed ROW takings; compensation for ROW takings, insufficient entrance and exit ramps (i.e., access points, which TxDOT has worked closely with various city officials to address); safety issues posed by increases in traffic; and preferences towards specific alternatives. Based on comments received at the 2001 meeting, general purpose lane access points were identified and carried forward as the starting point for general purpose lane access evaluation when the project resurfaced again in 2005.

A.3 Third Public Meeting - May 25, 2006

Schematic development continued on SH 121/SH 183 as a reversible HOV facility after the November 2001 public meeting. Work on the schematic was slowed substantially after TxDOT received an unsolicited proposal to develop IH 820 and SH 121/SH 183 from Mark IV Parkway (IH 820) to Dallas (SH 121/SH 183) in April of 2004 as a CDA. For the next several months, TxDOT evaluated developing the corridor as a managed (toll) lane facility given limited funding. Once the decision was made to pursue the project as a CDA, schematic development began to convert the reversible HOV facility to a managed (toll) lane facility.

The third public meeting was held at the First Baptist Church of Euless - Campus West Building in Euless on May 25, 2006. A total of 301 citizens and 11 elected public officials of the Cities of North Richland Hills, Hurst, Bedford, and Euless attended the meeting. An open house, "come and go" format was again employed for the meeting. Exhibits were provided for viewing, including the Proposed Build Alternative schematics (with managed (toll) lane design), Typical Sections, an Access Point Summary Table, and an informational, looping PowerPoint presentation. Attendees were encouraged to fill out comment forms and submit them that evening or mail them to TxDOT. TxDOT engineers, consulting engineers, and environmental consultants were present to assist the public in viewing the schematics and answer general and specific design and potential impact questions. TxDOT ROW personnel were available to answer questions regarding ROW acquisition and relocation issues. TxDOT's *State Purchase of Right of Way*

and *Building Barriers to Traffic Noise* were provided to interested citizens. Concerns expressed by the citizens at the third public meeting included the following: an opposition to a proposed bridge at Cavender Drive and a desire to leave the existing pedestrian bridge (this request has since been accommodated by TxDOT in the project design); a desire for sound barriers (i.e., noise walls); concerns regarding future increases in traffic and exhaust; proposed ROW takings; insufficient entrance and exit ramps (i.e., access points, which TxDOT has worked closely with various city officials to address); and a general opposition to toll roads.

B. OTHER PUBLIC INVOLVEMENT MEETINGS

Since the onset of the recent and rapid development of the project alternatives described in this document, additional separate meetings have been held between TxDOT and various city and Tarrant County officials and the HEB ISD, as well as the HEB Chamber of Commerce, to give government and school district officials and businesses the opportunity to review the project design and managed (toll) lane/access system, ask questions, and review various issues with TxDOT. Dates of these meetings are summarized in **Table IX-1**.

B.1 Joint Public Officials Meetings

Two joint public officials meetings primarily for the Cities of North Richland Hills, Bedford, Hurst, and Euless, as well as the County Commissioner were held on November 9, 2005 and March 20, 2006. These meetings were held in the City of Hurst at City Hall and the Community Center, respectively. The County Commissioner opened the November 2005 meeting. There was no official sign-in sheet to provide an exact number of attendees, but by visual count an estimated 35 people attended the meeting. TxDOT and its consulting engineer presented the access points along Airport Freeway for Alternatives 3, 4, and 5. The Commissioner asked that TxDOT prepare a table presenting all of the existing and proposed access points along Airport Freeway. The attendees were then given an opportunity to review the displays more closely and ask questions. Upon reconvening, the cities requested that TxDOT have individual meetings/workshops with the various city councils, rather than joint meetings. Other issues discussed included slip ramps, public involvement, and the status of the project.

At the March 2006 meeting, 48 people signed in, including representatives from Fort Worth and Haltom City. The County Commissioner again opened the meeting, and TxDOT presented and discussed the status of Alternative 6, which had developed from the incorporation of the comments from the November 2005 Joint Meeting, as well as various individual city meetings held since that time. TxDOT indicated that the alternative was a good compromise and noted that traffic models were still being run; therefore, minor changes could still be made. The main access recommendations made by TxDOT were managed (toll) lane access to and from Bedford-Euless Road, Brown Trail, Industrial Boulevard (FM 157), and W. Euless Boulevard (SH 10), which have remained in the design. Copies of a ROW/Displacement alternative analysis summarizing the effects by city and for the entire corridor were distributed to those interested. Other issues discussed included: (1) slip ramps, their ROW requirements, and their inherent

hazards in a facility the size of the proposed Airport Freeway; (2) proposed cul-de-sacs in North Richland Hills; (3) safety issues such as incident and emergency response access to the managed (toll) lanes and the use of concrete traffic barriers (CTB); and (4) the status of the project and the roll of obtaining environmental clearance.

B.2 Individual City Meetings

Two individual city meetings were held with each of the city councils of North Richland Hills, Bedford, Hurst, and Euless on the dates indicated in **Table IX-1**. A third meeting was held with the City of Euless. Representatives from TxDOT, their consulting engineers, and city council representatives met in an informal, round-table discussion format. The general purpose of these meetings was to give city leadership the opportunity to review the current alternative(s) and the managed (toll) lane system, discuss the status of the project, and discuss issues with TxDOT. The current alternative was displayed at each meeting, and project features were pointed out to show where recent alignments and/or access points may have changed since the last time schematics had been seen. The main topics of concern at these meetings were the locations of access points to and from the general purpose and managed (toll) lanes, the amount of ROW taking, utility relocation and who would be responsible for the cost, and the project schedule.

B.3 HEB ISD Meetings

Three HEB ISD meetings were held in 2006 at the HEB ISD Administration complex to discuss potential Airport Freeway project impacts on ISD operations and various ISD properties, including Shady Oaks Elementary School, L.D. Bell High School, Euless Junior High School, and the Administration Complex on Central Drive. The ISD representatives expressed concern about the proposed ROW impacts at the Administration Complex. In addition, from these meetings it was decided that the pedestrian bridge near Cavender Drive would be replaced, while the one near Euless Junior High School (Ector Drive) would be removed and not replaced, due to lack of demand. Discussions occurred regarding the Section 4(f) status of the L.D. Bell High School property and the ISD's requests for some fencing improvements to mitigate for the proposed property taking (i.e., mitigation).

Two additional HEB ISD meetings were held in 2007 to discuss the Section 4(f) mitigation issue at L.D. Bell High School. At an August 9, 2007 meeting held at L.D. Bell High School, previous concerns regarding whether the City of Bedford would have set back requirements for the fence were relieved when the City presented TxDOT a memo stating that there would be no such requirements for a fence or wall. HEB ISD then agreed to place the proposed fence on school property along the proposed ROW line. The school district asked when TxDOT would provide funding for the district to construct the fence. TxDOT responded that it would be at the time of ROW acquisition, which would not begin until the public hearing is conducted for the proposed Airport Freeway project and the environmental document and schematic are approved. HEB ISD understood that the Section 4(f) issue needed to be resolved in order for the document approval and concurred with TxDOT's request to draft a letter of concurrence to be presented to the school board on August 14th for its signature.

On August 14, 2007 the HEB ISD Board of Trustees called to order its work session with its members, staff, visitors, and TxDOT representatives. Upon commencement of the meeting, held at the HEB ISD Administration Complex, it was announced that the meeting had been duly posted in accordance with the Texas Open Meetings Act, Texas Government Code Chapter 551. During the meeting, TxDOT presented the construction of the fence as mitigation to separate L.D. Bell High School's recreation fields from the proposed improvements to SH 121/SH 183. The board adjourned to closed session for discussions and returned for voting on several issues. The board voted unanimously to approve the Letter of Understanding with TxDOT mitigating the Section 4(f) issue at L.D. Bell High School (see **Appendix G** for correspondence with HEB ISD).

B.4 HEB Chamber of Commerce Meetings

On March 30, 2006, a meeting was held at the HEB Chamber of Commerce Building to commence public involvement with the HEB Chamber of Commerce and discuss potential project impacts on commercial activities. Attendees included members of the Chamber of Commerce, as well as an unexpected, large number of residents from the general public. An estimated total of approximately 150 attendees participated in the meeting. An overview of the project and features of the managed (toll) lane system were presented. Generally, attendees wanted to know if they would be impacted by the project, and TxDOT explained that the project schematic presented was preliminary and that the ROW could still change before becoming finalized. Other issues briefly discussed were noise/sound walls, utility relocation, and the environmental assessment process.

Table IX-1 SH 121/SH 183 Public Involvement Meetings			
Public Meetings	Joint Public Officials Meetings	Individual City Meetings	HEB ISD / HEB Chamber of Commerce Meetings
1. August 4, 1993 2. November 15, 2001 3. May 25, 2006	1. November 9, 2005 2. March 20, 2006	<i>City of North Richland Hills</i> 1. December 12, 2005 2. March 6, 2006 <i>City of Bedford</i> 1. November 30, 2005 2. March 1, 2006 <i>City of Hurst</i> 1. December 1, 2005 2. March 10, 2006 <i>City of Euless</i> 1. November 30, 2005 2. December 14, 2005 3. March 7, 2006	<i>HEB ISD</i> 1. March 30, 2006 2. April 3, 2006 3. November 2, 2006 4. August 9, 2007 5. August 14, 2007 <i>HEB Chamber of Commerce</i> 1. March 30, 2006

Through this pro-active interaction with the public and the various city governments and organizations, TxDOT has been able to develop an alternative which minimizes ROW requirements while still meeting the objectives of the project and meeting access needs as much as possible, as expressed by county and city officials.

X. RECOMMENDATION OF THE PREFERRED ALTERNATIVE

The rationale for recommendation of the preferred alternative is provided in this section. This is followed by a list of the mitigation and monitoring which would be necessary with the implementation of the preferred alternative.

A. IDENTIFICATION AND RATIONALE FOR THE PREFERRED ALTERNATIVE

A.1 Preferred Alternative

TxDOT recommends the Build Alternative, as described in **Sections III - A and V - B.2** as the preferred alternative.

A.2 Support Rationale

If constructed, the Build Alternative would fulfill the public need for improved mobility, and enhanced access, which would reduce traffic congestion along existing SH 121/SH 183. It would also satisfy the need to improve safety along a roadway, which has historically had a notable accident rate. **Table X-1** compares the alternatives’ ability to satisfy the objectives of the proposed project.

Table X-1 Alternatives’ Ability to Achieve the Project Objectives		
Project Objectives	No-Build Alternative: Continue to Use and Maintain Existing SH 121/SH 183	Build Alternative: SH 121/SH 183 (Airport Freeway) Reconstruction and Widening
<i>To Improve Mobility, Enhance Access, and Reduce Congestion on SH 121/SH 183</i>		
Enhance local access to the facility.	Would not achieve objective	Achieves objective
Provide a managed (toll) lane facility, which increases capacity (improving mobility) and reduces traffic congestion (and aids in achieving regional air quality conformity).	Would not achieve objective	Achieves objective
Provide compatibility with other proposed and on-going SH 121/SH 183 corridor projects, including managed (toll) lane facilities.	Would not achieve objective	Achieves objective
Provide transportation improvements consistent with regional goals presented in the MTP.	Would not achieve objective	Achieves objective
<i>To Improve Safety and Reduce Accidents on SH 121/SH 183</i>		
Improve frontage roads and ramps to provide adequate visibility and merging distances.	Would not achieve objective	Achieves objective
Provide improvements that would upgrade the highway, including shoulders, to current standards.	Would not achieve objective	Achieves objective
Improve lane widths, bridge deck clearances, and entrance/exit ramp geometry.	Would not achieve objective	Achieves objective

Implementing the Build Alternative would improve SH 121/SH 183 by enhancing access. In addition it would retain the three general purpose lanes in each direction and add one between SH 360 and SH 161. Three managed (toll) lanes would also be added to the facility, which would increase capacity, improve mobility, and reduce congestion. The proposed project would be compatible with other proposed and on-going SH 121/SH 183 corridor projects, including managed (toll) lane facilities. In addition, the project would provide transportation improvements consistent with regional goals presented in the MTP.

It is anticipated that implementation of the Build Alternative would also increase safety along Airport Freeway, and reduce the number of accidents per vehicle miles traveled. Decreasing the concentration of vehicles per lane, per mile, improving frontage roads and ramps, upgrading the facility to current standards, and improving lane widths, bridge deck clearances, and ramp geometry would all contribute to increased safety within the corridor. Achievement of these project objectives addresses public comments provided during project development.

The No-Build Alternative, in which the existing SH 121/SH 183 would continue to be used and maintained in its current configuration, would not fulfill local transportation needs between IH 820 and SH 161. Traffic congestion would continue to worsen as vehicles (cars, trucks, and heavy trucks) travel on SH 121/SH 183 between North Richland Hills and Irving. As growth continues in the surrounding area, Airport Freeway would continue to exhibit congestion, increases in traffic delays, and an overall inconvenience to the traveling public. There is also the likelihood that accidents would increase proportionally along the corridor. The concentration of vehicles per lane, per mile, would continue to increase, slowly reducing the level of service of the facility. Furthermore, implementation of the No-Build alternative does not satisfy the needs and desires of the community and its elected officials, as previously discussed in this EA.

B. MITIGATION AND MONITORING COMMITMENTS

Under the Build Alternative, a Storm Water Pollution Prevention Program would be implemented. It would include temporary erosion and sedimentation control items (i.e., BMPs) to be used as directed by the Engineer in response to changing field conditions as well as by the Contractor for construction activities within State ROW. These temporary erosion and sedimentation control structures would be in place before initiation of work and maintained throughout the duration of the project. The Contractor would take appropriate measures to prevent, minimize, and control the spill of hazardous materials in staging areas. All materials removed and/or disposed of by the Contractor would be done in accordance with state and federal laws and by approval of the Engineer.

Permanent erosion and water-pollution controls would be implemented in all areas disturbed by the Contractor's equipment to comply with TCEQ's Section 401 requirements.

Clearing of vegetation throughout the project corridor would be avoided and minimized, where possible, during the construction of the proposed project and the establishment of clear zones. Although impacts to riparian habitat would be minimal, compensatory mitigation for impacts at Bear Creek (i.e., 1.68 acres) is proposed.

If hazardous materials are discovered during ROW acquisition or construction, they would be mitigated and disposed of as appropriate in accordance with applicable federal, state, and local regulations.

If evidence of archaeological deposits is encountered during construction, work in the immediate area would cease and TxDOT archaeological staff would be contacted to initiate accidental discovery procedures under the provisions of the First Amended PA-TU between TxDOT, the THC, FHWA, and the Advisory Council on Historic Preservation.

Impacts from borrow and fill areas would be assessed, mitigated, and monitored as appropriate once these locations and impacts are identified.

C. ALTERNATIVE SELECTION AND RECOMMENDATION OF A FONSI

Based upon the systematic interdisciplinary approach followed in this document, the results of related studies, relevant documents, and technical reports, coordination with resource and regulatory agencies, and public involvement, TxDOT recommends implementation of the Build Alternative.

TxDOT requests that FHWA find that implementing the Build Alternative would not be a major federal action significantly affecting the quality of the human environment and thus issue a Finding of No Significant Impact (FONSI) for this project.

THIS PAGE INTENTIONALLY LEFT BLANK