SH 121: FROM EAST OF MACARTHUR BLVD. TO THE DALLAS NORTH TOLLWAY

FONSI RE-EVALUATION FOR PROPOSED TOLL FACILITY

PREVIOUSLY APPROVED ENVIRONMENTAL ASSESSMENTS:

SH 121/IH 35E INTERCHANGE:
FROM EAST OF MACARTHUR BLVD. TO EAST OF IH 35E
CSJ: 0364-03-065 (Original)
Design & Construction CSJs: 3547-01-008, 3547-01-001 & 002

SH 121 BYPASS:
FROM EAST OF IH 35E TO 0.05 MILE EAST OF FM 423
CSJ: 0364-03-065 (Original)
Design & Construction CSJs: 3547-01-009 & 0364-03-066

SH 121:
FROM FM 423 TO U.S. 75
CSJs: 0364-03-067 (Original)
Design Construction CSJs: 0364-03-066 & 0364-04-038

DENTON AND COLLIN COUNTIES

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1.0 INTRODUCTION

The intent of this re-evaluation is to assess the implementation of tolling to the State Highway (SH) 121 facility currently under construction and identify any changes to the previously approved projects. This re-evaluation will specifically address the project from East of MacArthur Boulevard to the Dallas North Tollway (DNT) through the cities of Coppell, Lewisville, Carrollton, The Colony, Hebron, Plano, and Frisco (**Appendix A: Figure 1A**). The project distance is approximately 11 miles. No additional right-of-way (ROW), design changes, or changes to the footprint of the roadway would be required for the proposed tolling of SH 121. SH 121 is currently under construction as a six lane controlled access facility with three lane frontage roads. Although, the mainlanes of SH 121 are proposed for tolling, the frontage roads would remain as a non-toll alternative to the proposed toll facility.

On August 12, 2004, the Regional Transportation Council (RTC) of the North Central Texas Council of Governments (NCTCOG) approved the *Texas Metropolitan Mobility Plan* which includes this project as a toll facility.

This re-evaluation is based on the findings of three environmental assessments (EA) prepared for SH 121 which were approved by the Federal Highway Administration (FHWA). SH 121 is currently under construction as a non-toll facility by the approval of these EAs. In **Section 3.0**, these documents are discussed in further detail.

2.0 NEED AND PURPOSE

For the previously State approved non-toll SH 121 facility, the original need for SH 121 roadway improvements is responsive to considerable on-going growth of commercial and residential development along and near the SH 121 corridor that has and will continue to produce a major travel demand on this transportation system. The original purpose of SH 121 is to improve system linkage and mobility in the area.

The proposed implementation of tolling on SH 121 would support the original need for and purpose of the SH 121 facility by generating revenue for the operation and maintenance of SH 121 as well as funding additional near neighbor/near timeframe policy projects.

Under the Regional Transportation Council (RTC) of the North Central Texas Council of Governments (NCTCOG) near neighbor/near timeframe policy, when a previously planned tax supported highway is designated as a toll facility, the gas tax funds would be reallocated to projects that serve the same transportation system users, and the newly identified projects will be completed in comparable timeframes. The accelerated construction of additional transportation projects would also further improve system linkage and mobility in the area. This toll facility is proposed to be an electronic toll collection system. **Section 4.0** describes the electronic toll collection system and the neighbor/near timeframe policy in further detail.

Objectives of the Project

The primary objective of the proposed toll facility is to utilize new funding tools to further expedite the construction of the transportation network in this region by:

- Providing toll revenue as an additional funding source to pay for the capital cost, as well as operation and maintenance of the proposed corridor;
- Creating a revenue source to fund future capacity improvements along the SH 121 corridor;
- Allocating future excess toll revenue so that it would be reinvested in future (near timeframe) transportation projects in the local area (near neighbor);
- Accelerate future project construction schedules and help alleviate congestion; and
- Enhancing economic development and even accelerating the local tax-base growth.

3.0 PROJECT HISTORY

The planning, design, and current construction has been in development since the early 1990's. **Appendix A: Figure 1B** and **Table 3-1** depict the previously approved environmental documents for SH 121.

TABLE 3-1: SH 121 ENVIRONMENTAL HISTORY

Project Number*	Limits	Approval Date	Status
1	Denton Creek to FM 423	State FEIS 04/28/1993 (State ROD)	0.23 mile west of BU 121 to E. of MacArthur Blvd. is currently being evaluated as a stand alone EA. Portion to be considered as a toll facility and to be reviewed/approved by FHWA to Federalize the remaining State funded portion of the State FEIS.
2	East of IH 35E (Hebron Pkwy.) to 0.05 Mile East of FM 423	*Environmental Assessment* 09/09/2003 (FHWA FONSI)	1 of 3 EAs being re-evaluated to consider SH 121 as a toll facility.
3	East of IH 35E to Hebron Parkway	Non-Toll Mainlanes Open to Traffic	Constructed with State funds. Open to traffic and would not be considered as a future toll facility in compliance with current RTC policy.
4	SH 121/IH 35E Interchange: East of MacArthur Blvd. to East of IH 35E	*Environmental Assessment* 04/13/1990 (FHWA FONSI) *FONSI Re-Evaluation* 01/09/2003 (FHWA Approval)	1 of 3 EAs being re-evaluated to consider SH 121 as a toll facility.
5	FM 423 to U.S. 75	*Environmental Assessment* 11/22/1991 (FHWA FONSI) *Notice of Continuous Activity* 05/25/1999 (FHWA Approval) *FONSI Re-Evaluation* 10/17/2002 (FHWA Approval)	1 of 3 EAs being re-evaluated to consider SH 121 as a toll facility.

*see Appendix A: Figure 1B

The western portion of SH 121 (Project 1) was approved as a non-toll facility project by TxDOT under a State Final Environmental Impact Statement (FEIS). The limits of the State FEIS extended from 0.4 mile west of Denton Creek to 0.05 mile east of Farm-to-Market (FM) 423, a distance of approximately ten miles. The Record of Decision (ROD) for the State FEIS was received on April 28, 1993 (**Appendix B**). Due to funding constraints, the original State

Final Environmental Impact Statement (FEIS) was divided into several projects in the early 1990s and re-evaluated in order to receive Federal funds. This re-evaluation encompasses the three FHWA approved EAs (Projects 2, 4, & 5 in **Appendix A: Figure 1B** and **Table 2**) and their subsequent re-evaluations between the limits of East of MacArthur Blvd. to the DNT. Copies of the FHWA approvals are attached in **Appendix B.**

The eastern portion of SH 121 was originally part of a previously approved non-toll facility EA approved by FHWA (**see Project 5 Appendix A: Figure 1B**). The limits of this EA are from FM 423 to United States (U.S.) 75. This project received a Finding of No Significant Impact (FONSI) on November 22, 1991 (**Appendix B**). The eastern limit of this re-evaluation is the DNT. To date, SH 121 from the DNT to U.S. 75 has not been approved by the RTC as a toll facility.

A non-toll portion of mainlanes would occur within the project limits. This segment of SH 121 from east of IH 35E to Hebron within the limits of the Project 1 (**see Figure 1B**) was approved under the State FEIS and constructed without frontage roads utilizing State funds. This portion of the project is complete, open to traffic, and would not be tolled. The RTC policy currently states that no existing roadway lanes that have been open to traffic will be converted to toll facilities. This project is consistent with this RTC policy.

Toll Funding Initiatives

On August 12, 2004, the RTC of the NCTCOG approved the *Texas Metropolitan Mobility Plan* which includes this project as a toll facility and identifies the need for toll equity, which also state funds to be combined with other funding sources to finance toll facilities. The *Texas Metropolitan Mobility Plan* includes a framework for the allocation of future excess toll revenue in the North Central Texas region called the *Toll Revenue Sharing Policy*. This policy outlines the circumstances under which excess toll revenue would become available and distributed in the region. In the foreseeable future, the proposed SH 121 toll facility could substantially benefit communities in the project area by generating revenue for additional transportation projects that could also improve system linkage and mobility in the area. Copies of the subsequent NCTCOG resolutions approving the *Texas Metropolitan Mobility Plan* are included in **Appendix B**.

In cases such as S.H. 121 where a previously planned tax supported highway is programmed to a toll facility, the funds that are released are committed to projects along that same corridor using the RTC's "near neighbor/near timeframe" policy. Under this policy, when a

previously planned tax supported highway is shifted into a toll facility, those original gas tax funds will be reallocated to projects that serve the same transportation system users, and the newly identified projects will be completed in comparable timeframes. A detailed discussion of SH 121 near neighbor/near timeframe projects is in **Chapter 4.0**.

This proposed toll facility is consistent with the area's financially constrained Metropolitan Transportation Plan (MTP) known as Mobility 2025 Plan-Amended April 2005.

SH 121 Construction Update

There would be no changes to ROW, design or to the footprint of project currently under construction in order to implement an electronic toll collection system on SH 121. Right-of-way acquisition for the project has been ongoing since the previously approved EAs and is now 100-percent complete. **Table 3-2** lists the current SH 121 construction status. Sections of this project are estimated to be open to traffic during June 2006.

TABLE 3-2: SH 121 CONSTRUCTION UPDATE*

CSJ Number	Project Limits	Status	Estimated Percent Work Complete (%)
3547-01-008	**SH 121 Mainlanes and Direct Connectors:** From North of Denton Creek to East of IH 35E	**Under Construction** Bid Amount: $86.94 million Work Began: 05/01/2003	95%
3547-01-009	**SH 121 Mainlanes (Six Lanes):** From 0.26 mile west of Hebron Parkway (FM 544) to 0.17 mile east of FM 2281	**Under Construction** Bid Amount: $31.37 million Work Began: 02/05/2004	99%
0364-03-066 (0364-04-038)**	**SH 121 Mainlanes (Six Lanes)/Frontage Roads (Six Lanes):** From 0.17 mile east of FM 2281 to 0.23 mile west of DNT/Collin County Line	**Under Construction** Bid Amount: $103.41 million Work Began: 08/23/2004	42%
3547-01-001	**SH 121 Frontage Roads:** From Dallas/Denton Co. Line to Lake Vista Dr. (*only a portion of the work under this CSJ is within the project limits*)	Complete	100%
3547-01-002	**Frontage Roads:** Lake Vista Drive to East of IH 35E	Complete	100%

*See Appendix A: Figure 1B
**Original CSJ – Packaged in the same construction contract as this project

4.0 CHANGES TO PROPOSED PROJECT

4.1 Approach

This re-evaluation has been prepared in accordance with FHWA Texas Division Office policy memorandum, *Policy for Planning, Environment and Project Development for Toll Roads.* This toll re-evaluation is based on the previously approved EAs (see **Table 3-1**). The statements, studies, and conclusions documented in this re-evaluation have been examined and analyzed in three steps – the findings of each step are documented in this re-evaluation.

Step 1 entailed identifying changes to the project currently under construction due to the proposed tolling of SH 121. These changes are summarized in this section.

During Step 2, environmental conditions were analyzed to identify changes that occurred since issuance of the previous approvals.

Finally during Step 3, the environmental consequences of the current project under construction, as described in the previously approved EAs and subsequent re-evaluations, were analyzed in light of the proposed toll facility. The findings of these analyses are documented in **Section 5.0, Issues Studied in Detail** and **Section 6.0, Issues Eliminated from Further Study**. All resource categories addressed within the approved documents are discussed. **Section 7.0** documents the conclusions drawn from the re-evaluation process.

There is no additional ROW required, nor are there any design changes proposed; therefore, previously approved environmental evaluations remain unchanged. Some studies such as noise, air, the social and economic environment, visual effects of lighting needed for tolling, and indirect and cumulative impacts are being re-evaluated as part of this project. **Table 4-1** summarizes issues in **Sections 5.0 and 6.0** that were re-evaluated, modified or unchanged from the previously approved documents.

TABLE 4-1: SUMMARY OF TOLL RE-EVALUATION

Section	Summary of Assessment
5.1 Traffic Noise	New noise models were developed
5.2 Air Quality	New air models were developed
5.3 Socio-Economic Impacts	Re-evaluated to assess potential impacts to the socio-economic environment from proposed toll facility
5.4 Lighting and Visual Impacts	Re-evaluated based on the potential impacts of lighting associated with electronic toll equipment
5.5 Indirect and Cumulative Impacts	Evaluated based on potential indirect and cumulative impacts
6.14 Airway-Highway Clearance	Previous findings remain unchanged*
6.7 U.S. Coastguard Permits	Previous findings remain unchanged
6.1 Cultural Resources	Previous findings remain unchanged
6.14 Essential Fish Habitat	Previous findings remain unchanged
6.2 Farmlands	Previous findings remain unchanged
6.3 Floodplains	Previous findings remain unchanged
6.4 Hazardous Materials	Previous findings remain unchanged
6.5 Jurisdictional Waters and Wetlands	Previous findings remain unchanged
6.6 Land Use	Previous findings remain unchanged
6.8 Public Facilities and Services	Previous findings remain unchanged
6.9 Relocations and Displacements	Previous findings remain unchanged
6.10 Section 4(f) Properties	Previous findings remain unchanged
6.11 Threatened/Endangered Species	Previous findings remain unchanged
6.12 Vegetation	Previous findings remain unchanged
6.13 Water Quality	Previous findings remain unchanged

* Note: Previous findings refer to the conclusions made in the EAs listed on Page 1 and in Table 3-1.

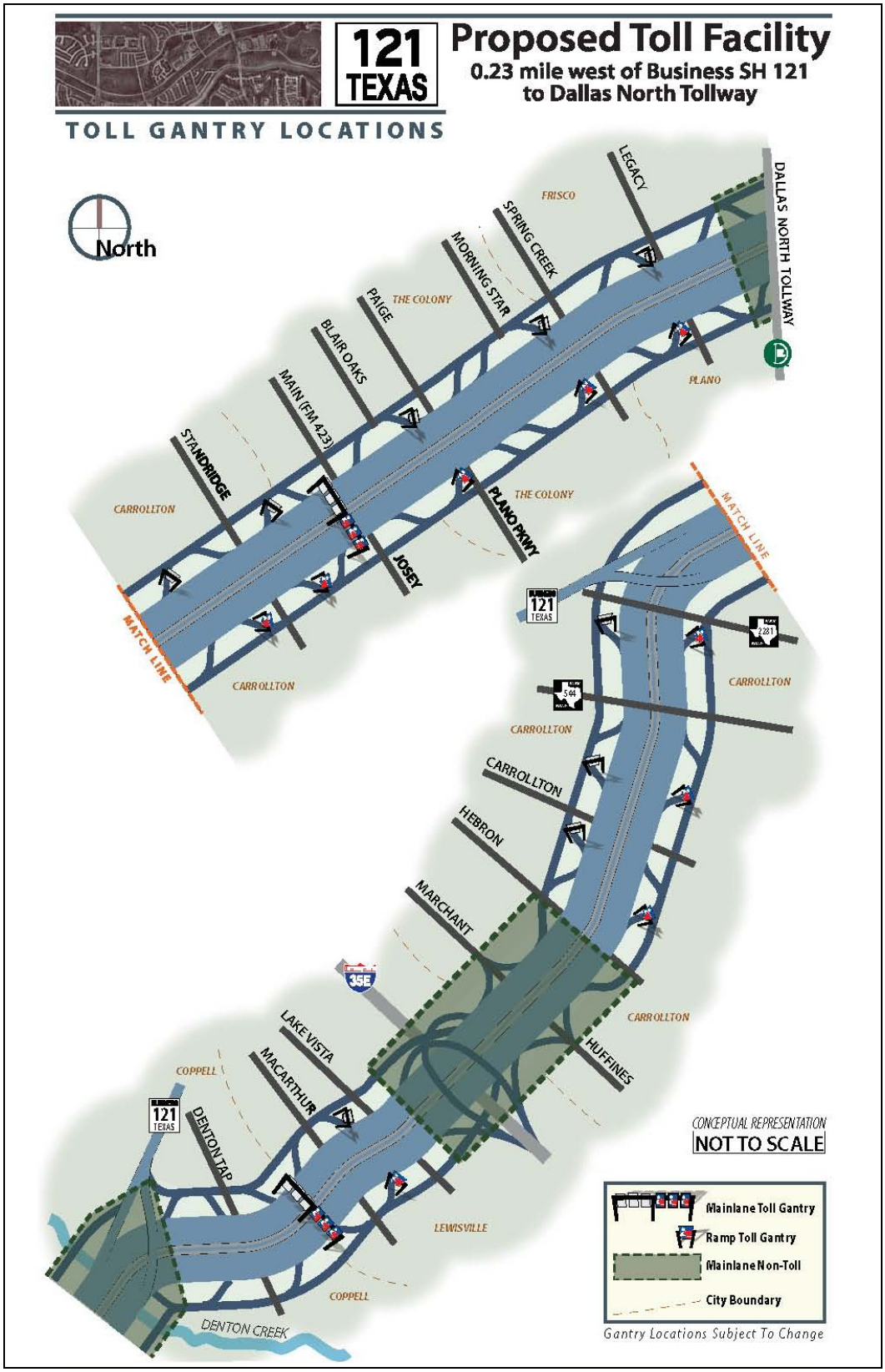
4.2 Toll Implementation

The concept of an electronic toll collection system is proposed for SH 121. As currently conceived, tolls would be collected using a completely electronic system; the system would not be able to accept cash. With an electronic toll collection concept, tolls would be collected through toll gantries positioned at certain mainlane and ramp locations. **Figure 4-1** is an artist rendering of a typical mainlane toll gantry. Proposed mainlane and ramp gantry locations for this project are depicted in **Appendix C: Conceptual Toll Plan**.

FIGURE 4-1: MAINLANE TOLL GANTRY

Each mainlane toll gantry would span both directions of travel on a structure similar to a typical sign bridge. The gantry would support electronic toll collection reader units, video enforcement system cameras, illumination devices, automatic vehicle identification antennae, communications gear, and other necessary equipment. This equipment would be supported approximately 20 ft above the roadway surface and would be used to collect electronic toll data. Ramp gantries would be similar to the mainlane gantries, except that they would only span the width of the particular entrance or exit ramp. The estimated cost of implementing the tolling components is $30 million as calculated on a per mile basis by the Texas Turnpike Authority (TTA). **Figure 4-2** provides the proposed toll gantry locations along SH 121.

FIGURE 4-2: PROPOSED SH 121 TOLL GANTRY LOCATIONS



A non-toll portion of mainlanes would occur within the project limits. This segment of SH 121 from east of IH 35E to Hebron is complete, open to traffic, and will not be evaluated as a toll facility (**See Figure 4-2)**. There are no existing or proposed frontage roads in this segment; therefore, traffic from the non-toll frontage roads would be required to enter the mainlanes. A toll would not be required and other non-toll entrance ramps within this segment would include:

- Westbound entrance ramp at Hebron Parkway
- Westbound entrance ramp at Marchant Boulevard
- Eastbound entrance ramp at Marchant Boulevard
- IH 35E eastbound exit ramp to SH 121
- Eastbound frontage road entrance east of IH 35E

Also within this segment, users would be able to exit without paying a toll. The locations of exit ramps within this segment where users would not be tolled include:

- IH 35E southbound direct connector from SH 121
- Westbound exit to frontage road at IH 35E
- Westbound exit to Marchant Boulevard
- Westbound exit to Hebron Parkway

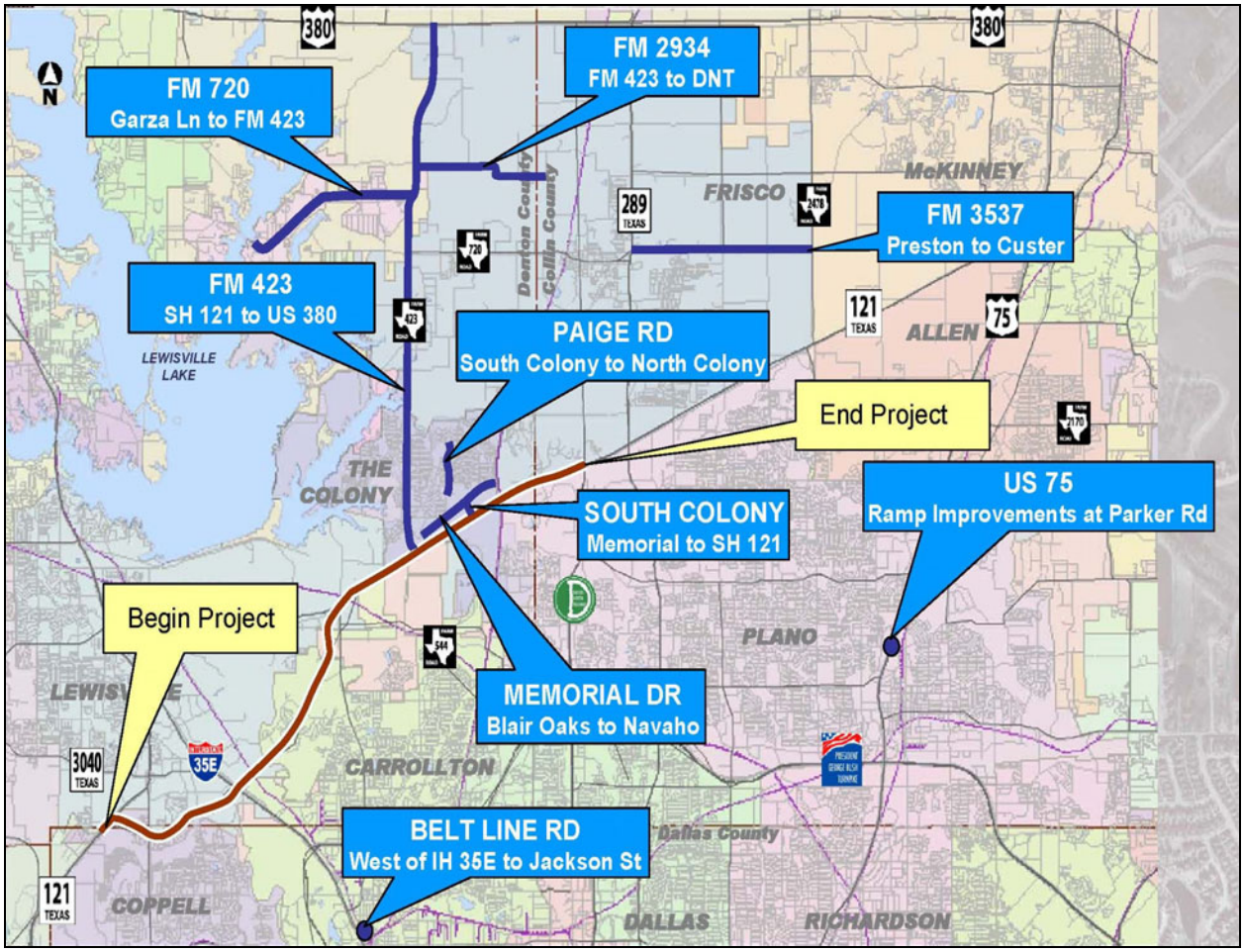
4.3 Near Neighbor/Near Timeframe Projects

Under the RTC's near neighbor/near timeframe policy, when a previously planned tax supported highway is shifted into a toll facility, those original gas tax funds are to be reallocated to projects that serve the same transportation system users, and the newly identified projects are to be completed in comparable timeframes. Under this policy, a Memorandum of Understanding (MOU) was signed by Denton County, Collin County, and the cities of The Colony, Lewisville, Carrollton, Coppell, Grapevine, Plano and Frisco regarding the SH 121 toll facility funding strategy (see **Appendix B**).

By partnering together, state and local officials can leverage additional state transportation funds, freeing existing allocations for critical, but otherwise unbudgeted, safety, capacity and air quality projects. This shift allows new projects that were originally budgeted through gasoline tax revenue, such as SH 121, to be built or opened as toll facilities to generate revenue. This revenue would then be used to build additional transportation facilities with accelerated construction schedules. By leveraging the tax supported capital investment in the proposed SH 121 corridor, estimated at approximately $300 million, TxDOT would be able to

develop a total program of over $700 million in new construction. The following figures (**Figure 4-3, Figure 4-4)** depict near neighbor/near timeframe projects proposed to be funded by tolling SH 121. None of these projects are proposed to be tolled.

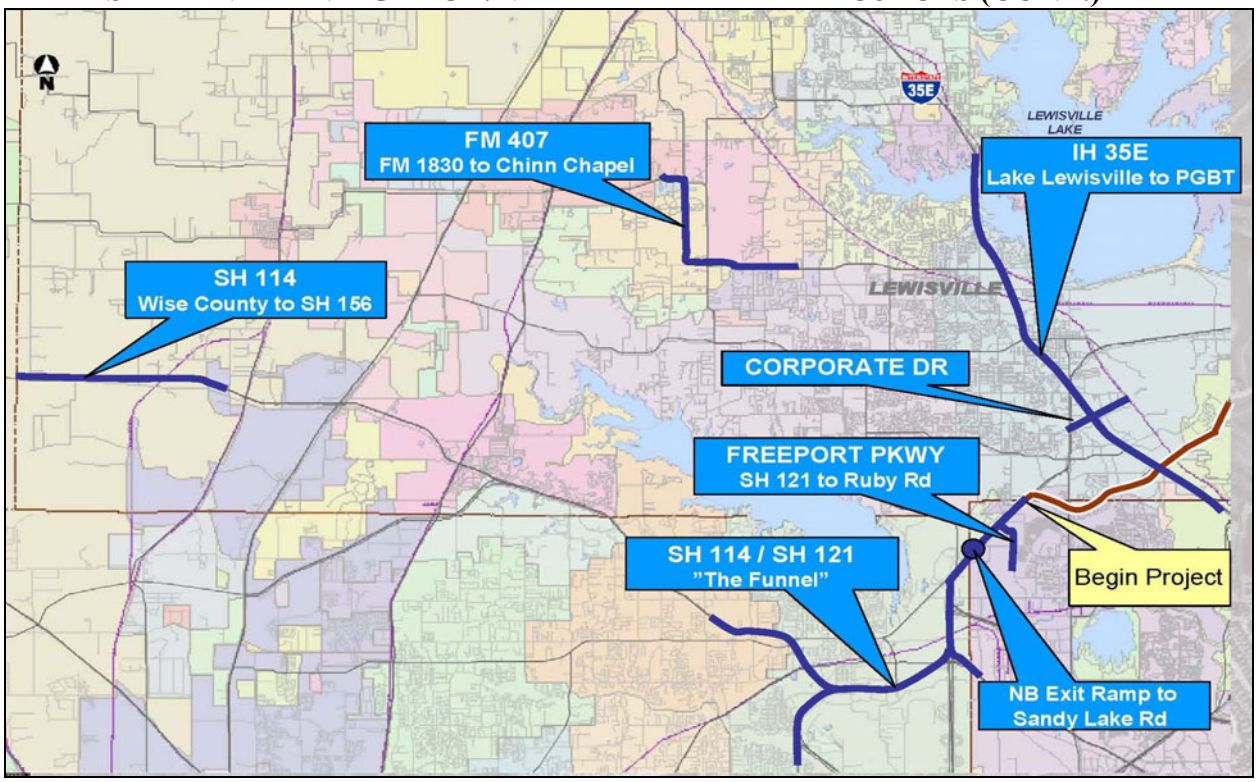
FIGURE 4-3
SH 121 NEAR NEIGHBOR/NEAR TIMEFRAME PROJECTS



- FM 720: From 0.2 mile west of Garza Lane to 0.1 mile west of FM 423
- FM 423: From SH 121 to US 380
- FM 2934: From FM 423 to the DNT
- FM 3537: From SH 289 (Preston Road) to FM 2478 (Custer Road)
- Paige Road: From South Colony Boulevard to North Colony Boulevard
- Memorial Drive: From Blair Oaks to Navaho
- South Colony Boulevard: From Memorial Drive to SH 121
- US 75 Ramp Improvements at Parker Road
- Belt Line Road: From Jackson Road to 1,000 feet west of IH 35E

- SH 114: From 0.3 mile east of Wise/Denton County Line to 2,100 ft. west of FM 156
- FM 407: From FM 1830 to Chinn Chapel Road
- IH 35E from Lewisville Lake to President George Bush Turnpike
- Corporate Drive
- Freeport Parkway: From SH 121 to Ruby Road
- Northbound Exit Ramp to Sandy Lake Road
- SH 114/SH 121 "The Funnel": From BU 114 to BU 121

FIGURE 4-4
SH 121 NEAR NEIGHBOR/NEAR TIMEFRAME PROJECTS (CONT.)



4.4 Public Involvement for the Proposed Toll Facility

Public meetings were held in the cities of Coppell and The Colony to inform the public of the proposed implementation of an electronic toll collection system on the SH 121 mainlanes currently under construction at the following locations:

June 14, 2005
Coppell High School
Gymnasium
185 W. Parkway Blvd.
Coppell, Texas 75019

June 16, 2005
The Colony High School
Performing Arts Center
4301 Blair Oaks
The Colony, Texas 75056

Approximately 50 citizens and four elected officials attended the meetings. Drawings of the conceptual toll plan were available for public review during the open house period from 5:00 p.m. to 6:30 p.m. The conceptual toll plan depicted the layout of the proposed facility, toll gantry locations, signage, and proposed noise barriers. The open house was followed by a presentation explaining the proposed toll evaluation approach and process. Eight citizens made verbal comments. Six written comments were also received. Issues of concern included noise barriers, implementation of a no-cash toll collection facility, alternative non-toll routes, and potential impacts to local economic development.

Public hearings were held in the cities of Coppell and The Colony to inform the public of the proposed toll facility and to solicit public comments regarding the environmental documents and conceptual toll plan. These hearings were held at the following locations:

January 17, 2006
Coppell Middle School-North
Cafeteria
120 Natches Trace
Coppell, Texas 75019

January 24, 2006
The Colony High School
Performing Arts Center
4301 Blair Oaks
The Colony, Texas 75056

Approximately 87 citizens and four elected officials attended the hearings. Drawings of the conceptual toll plan were available for public review during the open house periods from 6:00 p.m. to 7:00 p.m. The conceptual toll plan depicted the layout of the proposed facility, toll gantry locations, signage, and proposed noise barriers. The open houses were followed by formal presentations discussing the local, federal, and state relationships concerning the project, technical design, environmental issues, project schedule, and the ROW acquisition procedures and relocation assistance program. After a 20-minute recess, the hearings were open to public comments. A total of 22 people made verbal comments. A total of 19 written comments were also received during the public comment period. Issues of concern included noise barriers, air quality, potential impacts on low income residents, alternative non-toll routes, potential impacts to local economic development, and privatized toll funding.

Public meeting and public hearing summaries are available for review at the TxDOT Dallas District located at 4777 E. U.S. 80, Mesquite, Texas 75150.

5.0 ISSUES STUDIED IN DETAIL

This section includes the discussion of issues studied in detail with regard to new toll traffic projections, such as noise and air. Also, discussed in detail are socio-economic and visual and lighting aspects of the proposed electronic toll collection system.

5.1 Traffic Noise

NCTCOG modeled toll traffic for 2025 (see **Appendix C: 2025 Traffic Volumes**). As a result, a new noise analysis was conducted based on the toll traffic projections. 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 the following Noise Abatement Criteria (NAC) for various land use activity areas that are used as one of two means to determine when a traffic noise impact would occur (**Table 5-1**).

TABLE 5-1: 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 occurs 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.

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 (**Table 5-2** and **Appendix C: Conceptual Toll Plan**) that represent the land use activity areas adjacent to SH 121 that might be impacted by traffic noise and potentially benefit from feasible and reasonable noise abatement.

TABLE 5-2
TRAFFIC NOISE LEVELS (dBA Leq)

Representative Receiver	NAC Category	NAC Level	Existing 2005	Predicted 2025	Change (+/-)	Noise Impact
R12 Indian Creek Apts.*	E	52	47	50	3	N
R13 Church	E	52	48	50	2	N
R14 Church	E	52	45	47	2	N
R15 Meridian Apts.	E	52	44	47	3	N
R16 Church	E	52	44	47	3	N
R17 Residential	B	67	65	69	4	**Y**
R18 Residential	B	67	64	67	3	**Y**
R19 Residential	B	67	63	66	3	**Y**
R20 Residential	B	67	67	70	3	**Y**
R21 Residential	B	67	66	68	2	**Y**
R22 Residential	B	67	66	67	1	**Y**
R23 Cambina Apts.	E	52	43	45	2	N
R24 Coyote Ridge Sub.	B	67	63	66	3	**Y**
R25 Windance Apts.	E	52	44	46	2	N
R26 Church	E	52	43	45	2	N

***R12**: A playground area is located at this apartment complex; however, there is no indication this area is a "frequently used outdoor activity area" such as a school playground.

As indicated in **Table 5-3**, the proposed toll facility would result in traffic noise impacts, and the following noise abatement measures were considered: traffic management, alteration of horizontal and/or vertical alignments, acquisition of undeveloped property to act as a buffer zone and the construction of noise barriers.

Before any abatement measure can be proposed for incorporation into the project, it must be both feasible and reasonable. In order to be "feasible," the abatement measure must be able to reduce the noise level at an impacted receiver by at least five dBA; and to be "reasonable," it

must not exceed the cost-effectiveness criterion of $25,000 for each receiver that would benefit by a reduction of at least five dBA.

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

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

Based on the toll traffic numbers and development adjacent to SH 121 after the previously approved noise analysis was performed, noise barriers would be feasible and reasonable. As indicated in **Table 5-3**, there are three noise barriers proposed for incorporation into the project. Any subsequent project design changes after the proposed implementation of tolling 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 completion of the project design, utility evaluation and polling of adjacent property owners.

TABLE 5-3
NOISE BARRIER PROPOSAL (preliminary)

Barrier	Representative Receivers	Total # Benefited	Length (feet)	Height (feet)	Total Cost	$/Benefited Receiver
5	R17, 18, 19	3	297	14 ft. Exit Ramp Noise Barrier	$74,844	$24,948
6	R20, 21, 22	3	297	14 ft. Entrance Ramp Noise Barrier	$74,844	$24,948
7	R24, Coyote Ridge Subdivision	6	1000	8 ft. Southbound Mainlane Noise Barrier	$144,000	$24,000

To avoid noise impacts that may result from future development of properties adjacent to the project, local officials responsible for land use control programs should ensure, to the maximum extent possible, no new activities are planned or constructed along or within the following predicted (2025) noise impact contours.

LAND USE	IMPACT CONTOUR	DISTANCE from RIGHT of WAY
Residential	66 dBA	400 feet

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

5.2 Air Quality

Conformity Under the Clean Air Act (CAA)

NCTCOG modeled toll traffic for 2025 (see **Appendix C: 2025 Traffic Volumes**). As a result, a new air analysis was conducted based on the toll traffic projections.

The proposed North Central Texas project is in Denton and Collin Counties, which is part of EPA's designated eight-hour, nine county non-attainment area for the pollutant ozone, the transportation conformity rule applies. The proposed SH 121 toll facility is consistent with the area's financially constrained long-range, metropolitan transportation plan (MTP) known as Mobility 2025: The Metropolitan Transportation Plan - Amended April 2005 and the 2006-2008 Statewide Transportation Improvement Program/Transportation Improvement Program (STIP/TIP). The October 31, 2005 US DOT TIP finding was based on the conformity determination issued by US DOT for the 2025 MTP on June 16, 2005. Additionally, the project

comes from an operational Congestion Management System (CMS) that meets all requirements of 23 CFR Highways, Parts 450 and 500.

Analytical Approach

The primary pollutants from motor vehicles are volatile organic compounds (VOCs), carbon monoxide (CO) and nitrogen oxides. VOCs and nitrogen oxides can combine under the right conditions in a series of photochemical reactions to form ozone (O_3). Because these reactions take place over a period of several hours, maximum concentrations of ozone are often found far downwind of the precursor sources. Thus, ozone is a regional problem and not a localized condition.

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

The topography and meteorological conditions of the area in which the project is located would not seriously restrict dispersion of the air pollutants. The air quality was modeled at eight locations along the corridor. Exhibits in **Appendix C: Conceptual Toll Plan,** display the air receiver locations. The traffic data used in the analysis was obtained from NCTCOG.

The traffic volumes resulting in the highest CO emission readings are 99,349 vehicles per day (vpd) along the eastbound main lanes and 105,302 vpd along the westbound main lanes for 2008, the estimated time of completion (ETC). The traffic volumes resulting in the highest CO emission readings for 2028 are 108,560 vpd along the eastbound main lanes and 115,070 vpd along the southbound main lanes for the design year or ETC+20.

Using the CALINE3/MOBILE6 computer program and the aforementioned traffic data, CO concentrations were determined in accordance with the TxDOT Air Quality Guidelines. CO concentrations for the proposed toll facility were modeled using the worst-case scenario (adverse meteorological conditions and sensitive receptors at the ROW line) in accordance with the TxDOT Air Quality Guidelines. Local concentrations of CO are not expected to exceed national standards at any time.

Analysis Findings

CO background ambient concentrations of 3.7 parts per million (PPM) for a one hour average and 2.3 ppm for an eight hour average were used in all alternatives analyzed. The NAAQS for CO is 35.0 ppm for one hour and 9.0 ppm for eight hours. CO concentrations for this segment of SH 121 were modeled under the worst meteorological conditions (wind speed of 1 m/s, wind bearing of 90°, stability class of F, surface roughness of 100 cm, and mixing height of 1000m). Station number 2275+00 had the highest percent NAAQS for the existing year (2008) conditions and the projected year (2023) conditions as shown in **Table 5-4**.

TABLE 5-4
CARBON MONOXIDE CONCENTRATIONS

Year	Station Number	1HR CO (ppm) *	1 HR % NAAQS	8 HR CO (ppm) *	8 HR % NAAQS	Schematic Sheet No.
2008	2275+00	9.90	28.29%	6.02	66.89%	2
2028	2275+00	10.00	28.57%	6.08	67.56%	2

*The NAAQS for CO is 35 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.

Mobile Source Air Toxics

In addition to the criteria air pollutants for which there are National Ambient Air Quality Standards (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).

Mobile Source Air Toxics (MSATs) are a subset of the 188 air toxics defined by the Clean Air Act. 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.

The EPA is the lead Federal Agency for administering the Clean Air Act and has certain responsibilities regarding the health effects of MSATs. The 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-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, and acetaldehyde by 57 percent to 65 percent, and will reduce on-highway diesel PM emissions by 87 percent. As a result, EPA concluded that no further motor vehicle emissions standards or fuel standards were necessary to further control MSATs. The agency is preparing another rule under authority of CAA Section 202(l) that will address these issues and could make adjustments to the full 21 and the primary six MSATs.

The analysis of air toxics is an emerging field. The U.S. Department of Transportation (DOT) and EPA are currently working to develop and evaluate the technical tools necessary to perform air toxics analysis, including improvements to emissions models and air quality dispersion models. The MOBILE6.2 emissions factor model can generate MSAT emissions factors; however limitations with the existing modeling tools preclude performing the same level of analysis that is typically performed for other pollutants, such as carbon monoxide. FHWA's ongoing work in air toxics includes a research program to determine and quantify the contribution of mobile sources to air toxic emissions and the assessment of scientific literature on health impacts associated with motor vehicle toxic emissions.

FHWA acknowledges that the proposed project may result in increased exposure to MSAT emissions in certain locations, although the concentrations and duration of exposures are uncertain. Because of this uncertainty, the health effects from these emissions cannot be estimated.

Congestion Management System (CMS)

The Congestion Management System (CMS) is a systematic process for managing traffic congestion. The CMS 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 proposed roadway expansion project was developed from the NCTCOG operational CMS, which meets all requirements of CFR500.109.

Operational improvements and travel demand reduction strategies are commitments made by the region at two levels: the program level and the project implementation level. Program

level commitments are inventoried in the regional CMS and are included in the financially constrained MTP.

The CMS element of the plan carries an inventory of all project commitments detailing the type of strategy, implementation responsibilities, schedules, and expected costs. At the project implementation level, 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 Single Occupancy Vehicle (SOV) facility implementation and project specific elements.

Committed congestion reduction strategies and operational improvements considered to be beneficial to the SH 121 study area would consist of additional lanes, HOV, new roadway, signalization and intersection improvements. TxDOT, under the Congestion Mitigation and Air Quality Improvement Plan (CMAQ) program, would manage these projects, which are included in the regional CMS. Individual projects are listed in **Table 5-5**.

TABLE 5-5
OPERATIONAL IMPROVEMENTS IN THE TRAVEL CORRIDOR

Location	Type	Implementation Year	Funding Source	TIP #	Cost
Coit Rd from Parker Rd. to SH 121	Addition of Lanes	2000	Plano	2003.0000	$6,513,899
SH 121 from Denton Creek to DNT	Addition of Lanes	2004	TxDOT-Dallas	11239.0000	$150,402,000
FM 1171 from IH 35E to SH 121	Addition of Lanes	2002	TxDOT-Dallas	0196-04-011	$7,300,000
FM 423 from SH 121 to Stewarts Creek Rd.	Addition of Lanes	2007	TxDOT-Dallas	1567-02-020	$12,425,600
Sandy Lake Rd. from Denton Tap to SH 121	Addition of Lanes	2006	Coppell	DAC 208	$8,275,000
SH 121 at SH 289	Grade Separation	2004	Collin County	11008.0000	$7,713,170
IH 35E (Stemmons) from SH 121/Trinity Mills to IH 635	HOV	2000	TxDOT-Dallas / DART	2808.0000	$14,301,000
SH 121 from DNT to SH 289	New Roadway	2004	TxDOT-Dallas	11222.0000	$21,627,586
SH 121 from Dallas/Denton County Line to east of MacArthur Blvd.	New Roadway	2003	TxDOT-Dallas	3547-01-005	$7,548,427
SH 121 from east of MacArthur Blvd. to east of IH 35E	New Roadway	2003	TxDOT-Dallas	3547-01-008	$45,352,175
SH 121 from 0.26 miles west of Hebron Pkwy to 0.17 miles east of FM 2281	New Roadway	2004	TxDOT-Dallas	3547-01-009	$37,400,000

Location	Type	Implementation Year	Funding Source	TIP #	Cost
SH 121 from FM 544 to Collin County Line	New Roadway	2004	TxDOT-Dallas	0364-03-066	$74,800,000
SH 121 from Denton County Line to DNT	New Roadway	2004	TxDOT-Dallas	0364-04-038	$14,200,000
SH 121 at Valley View Dr.	Traffic Signal Improvements	1997	Lewisville	1820.0000	$79,750
SH 121 at Blair Oaks	Traffic Signal Improvements	1994	TxDOT-Dallas	2935.0000	$64,000
SH 121 at Bellaire/Bennett, SH 121 at Corporate Dr, SH 121 at SW Pkwy.	Traffic Signal Improvements	1994	TxDOT-Dallas	2936.0000	$175,000
SH 121 at Cider Rd., SH 121 at FM 423, SH 121 at FM 544, SH 121 at Holfords Prairie, SH 121 at Paige Rd/Plano Pkwy.	Traffic Signal Improvements	1994	TxDOT-Dallas	2937.0000	$163,000
SH 121	Traffic Signal Improvements	1995	TxDOT-Dallas	2941.0000	$198,000
Hebron Pkwy at east & west service roads of SH 121	Traffic Signal Improvements	2005	Carrollton	11007.0000	$859,396
Signals Region wide (Phase 2 – Optimization)	Traffic Signal Improvements	2002	Lewisville	11082.0000	$700,594
New Signal and Intersection Improvement Modifications	Traffic Signal Improvements	2003	Lewisville	11083.0000	$761,903
Hebron Pkwy at east & west service roads of SH 121	Traffic Signal Improvements	2007	Carrollton	11428.0000	$1,100,000

*Source: North Central Texas Council of Governments

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 CMS, and MTP.

5.3 Socio-Economic Impacts

This re-evaluation utilizes *Census 2000* data and other current and best available information. This analysis addresses the requirements of Executive Order (EO) 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations; EO 13166, Improving Access to Services for Limited English Proficiency (LEP); Title VI, Civil Rights Act of 1964; Civil Rights Restoration Act of 1987; and the Federal Aid Highway Act of 1970.

The project study area is comprised of portions of the cities of Coppell, Lewisville, Carrollton, Hebron, The Colony, Frisco, and Plano. These cities are located in Denton and Collin Counties. Census tract (CT) data provides the appropriate level of detail for an area that is sufficiently small to characterize the area of impact. The limits of this project are located within eight census tracts (see **Appendix A: Figure 3**).

Income

The median household income within the study area ranged from $46,043 to $87,220. The median household income of all census tracts in the study area is comparable to Collin and Denton Counties (see **Table 5-6**). For 2006, the weighted average poverty threshold for a four-person family is $20,000. A total of 3.9 percent (3,267 persons) within the study area exhibited 1999 incomes below the poverty level. Overall, the study area exhibits high median household incomes and low poverty levels which are not indicative of a low-income population presence.

Table 5-6
Median Household Income and Poverty Status

Area/Census Tracts	Population*	Median Household Income	Persons Below Poverty Level	
			Number	Percent
Collin County	488,777	$70,835	23,784	4.8
Denton County	423,375	$58,216	28,039	6.6
CT 305.01	9,594	$87,220	146	1.5
CT 316.44	3,043	$79,079	29	0.9
CT 215.06	10,615	$65,261	295	2.7
CT 215.08	5,842	$63,727	169	2.8
CT 216.01	7,875	$46,043	1,102	13.9
CT 216.03	14,244	$81,412	433	3.0
CT 216.04	10,149	$81,153	334	3.2
CT 217.10	22,151	$61,440	759	3.4
Total Study Area	83,513	NA	3,267	3.9

*Population for whom poverty status has been determined. Source: U.S. Census Bureau. *Census 2000.* http://factfinder.census.gov.

Environmental Justice

The potential effects of tolling SH 121 have been evaluated in accordance with the requirements of EO 12898. The project area is primarily White and Hispanic. Overall, the minority population of the project area represents 24.3 percent of the total population. Pacific Islanders represent the smallest racial minority, at 0.01 percent of the total project area population. Hispanics constitute 11.2 percent of the project area population. **Table 5-7** contains the racial and ethnic population for the project area.

TABLE 5-7
RACIAL AND ETHNIC COMPOSITION OF THE POPULATION

Area/ Census Tract	Total Population	Population of One Race / Not Hispanic or Latino					Hispanic or Latino of Any Race	Total Minority Population
		White	Black or African American	American Indian/ Alaska Native	Asian	Pacific Islander		
Collin County	491,675	400,481 81.4%	22,811 4.6%	2,521 0.5%	33,606 6.8%	248 0.05%	50,262 10.2%	109,448 22.2%
Denton County	432,976	353,699 81.6%	25,126 5.8%	2,825 0.6%	17,110 3.9%	202 0.04%	52,365 12.0%	97,628 22.5
CT 215.09	8,541	7,268 85.0%	479 5.6%	64 0.7%	141 1.6%	0 0.0%	983 11.5%	1,667 19.5%
CT 216.05	7,613	5,727 75.2%	709 9.3%	54 0.7%	515 6.7%	0 0.0%	815 10.7%	2,093 27.4%
CT 217.11	8,844	6,638 75.0%	830 9.3%	37 0.4%	318 3.5%	0 0.0%	1,696 19.1%	2,881 32.5%
CT 305.01	9,614	8,673 90.2%	287 2.9%	50 0.5%	352 3.6%	0 0.0%	457 4.7%	1,146 11.9%
CT 316.44	3,043	2,461 80.8%	162 5.3%	0 0.0%	346 11.3%	0 0.0%	96 3.1%	604 19.8%
CT 215.06	10,647	9,025 84.7%	378 3.5%	39 0.3%	266 2.4%	0 0.0%	1,476 13.8%	2,159 20.2%
CT 215.08	5,842	4,805 82.2%	266 4.5%	49 0.8%	186 3.1%	0 0.0%	934 15.9%	1,435 24.5%
CT 216.01	7,884	5,617 71.2%	575 7.2%	11 0.1%	205 2.6%	0 0.0%	2,214 28.0%	3,005 38.1%
CT 216.03	14,247	10,120 71.0%	795 5.5%	51 0.3%	2,306 16.1%	7 0.04%	1,587 11.1%	4,746 33.3%
CT 216.04	10,376	8,597 82.8%	566 5.4%	39 0.3%	784 7.5%	2 0.01%	631 6.0%	2,022 19.4%
CT 217.10	22,230	17,838 80.2%	1,702 7.6%	121 0.5%	1,432 6.4%	0 0.0%	2,064 9.2%	5,319 23.9%
Total Study Area	**83,883**	**67,136 80.0%**	**4,731 5.6%**	**360 0.4%**	**5,877 7.0%**	**9 0.01%**	**9,459 11.2%**	**20,436 24.3%**

Source: U.S. Census Bureau. *Census 2000.* http://factfinder.census.gov

The relatively high median household incomes of all census tracts in the study area are comparable to Collin and Denton Counties (see **Table 5-6**). As mentioned previously, the percentage of the population below the poverty level for the study area is 3.9 percent. It is not anticipated that there would be any disproportionate impacts to low-income populations.

The SH 121 frontage roads would provide all motorists a non-toll alternative to the tolled mainlanes. The use of frontage roads may result in a difference in time travel due to a lower posted speed limit and signalization. Travel time data would not be available until further traffic

and revenue studies are completed. Individual minority and/or low-income persons may choose to utilize the non-toll frontage roads specifically for cost savings measures. However, the proposed tolling of SH 121 would not disproportionately impact minority and/or low-income populations in the project area based on the analysis of the demographics of the project area.

Community Cohesion

The proposed tolling of SH 121 would not adversely affect community cohesion. Community cohesion refers to the aggregate quality of a residential area. The proposed toll facility is not anticipated to disturb local neighborhoods and businesses. The implementation of the proposed tolling facility would not affect, separate, or isolate any distinct neighborhoods, ethnic groups, or other specific groups.

Toll Pricing and Non-Toll Alternatives

It is anticipated that opening year tolls for automobiles using this facility would be consistent with the national average of 12 to 16 cents per mile. An investment grade traffic and revenue study is under development to determine a more detailed, appropriate pricing structure.

Alternative non-toll routes include the SH 121 frontage roads, which would include a total of six travel lanes (three in each direction), as well as local arterial roadways (i.e. Business SH 121, Hebron Parkway, Memorial Drive Expansion project). The use of frontage roads would provide non-tolled alternatives for motorists not wanting or able to afford to travel the tolled mainlanes. A portion of the project does not have frontage roads, from west of IH 35E to Hebron Parkway, and is currently open to traffic. This portion of the mainlanes would not be converted to toll. Motorists using the frontage road may experience longer travel times than motorists using the tolled mainlanes due to a lower posted speed limit and signilization. This difference in travel times between the tolled mainlanes and the non-tolled frontage roads would be the highest during peak hours of travel when traffic congestion within the SH 121 corridor would be greatest.

Conclusion

Based on the data gathered and analysis presented in this section, there does not appear to be disproportionate or adverse impacts to any minority and/or low-income populations as a result of the implementation of tolling on SH 121. No economic justice communities have been identified within the study area based on the income and minority population analysis previously presented in this discussion. Although some minimal effects of tolling may occur for roadway

users within the corridor, it is unlikely that tolling the SH 121 mainlanes would result in adverse socio-economic impacts to those roadway users or residents of the project study area.

5.4 Lighting and Visual Impacts

The toll gantries are an additional visual element associated with the proposed toll facility. The gantries would include various components of video enforcement equipment such as cameras, appropriate 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 lighting structures currently planned for the roadway currently under construction. Toll lighting impacts on adjacent neighborhoods are not anticipated as minimal residential land use exists adjacent to the proposed toll gantries. Existing land use adjacent to the proposed toll gantries primarily consists of commercial development and undeveloped land. The gantry lighting design, although not complete at this time, would be designed to minimize glare and ambient lighting for future adjacent residential development.

5.5 Indirect and Cumulative Impacts

The Council on Environmental Quality (CEQ) defines indirect effects as those which are caused by the action and are later in time and farther removed in distance, but are still reasonably foreseeable. They may include growth induced effects and changes in the pattern of land use, population densities, or growth rates and related changes in air, water, or other natural resources and ecosystems. These effects may not necessarily be restricted to just the project area.

The CEQ defines cumulative effects as those which result 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. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. As such, it may be difficult to understand the role that a proposed action may have in contributing to the overall or cumulative impacts to an area or resource.

In order to conduct the cumulative impact analysis, it was essential to build on information derived from the direct and indirect impacts analyses. Unlike direct impacts, quantifying cumulative impacts may be difficult, since a large part of the analysis requires an eye

to the future and what may happen in a project area. The methodology for the proposed project's cumulative impact analysis was approached by first identifying resources to consider in the analysis. **Table 5-8** summarizes the resources considered during direct, indirect, and cumulative analysis.

TABLE 5-8
SUMMARY OF INDIRECT & CUMULATIVE IMPACT ANALYSIS

Potential Impact	Category of Impact			Resource Study Area
	Direct	Indirect	Cumulative	
Increase in noise levels	X			Immediate adjacency along project limits
Degradation of regional air quality	X			Regional
Visual and lighting impacts – increase in glare and/or ambient lighting	X			Immediate adjacency along project limits
Increased traffic through adjacent neighborhoods		X		Adjacent neighborhoods
Congestion along frontage roads		X		Frontage roads along project limits
Public transit – impacts to bus stops and route times		X		Frontage roads along project limits
Increased/continued land development in surrounding area		X	X	Adjacent municipalities
Socio-economic conditions – impacts to minority and low-income groups			X	Adjacent census tracts
Addition of infrastructure improvements			X	Adjacent municipalities
Funding of near neighbor/near timeframe projects		X		Areas served by proposed projects
Future additional capacity associated with near neighbor/near timeframe projects			X	Areas served by proposed projects

Each of the resources identified in **Table 5-8** were analyzed in such a way that each resource represented a unique geographic affiliation, ranging from immediate adjacency to regional study areas. The historical context and current health of each resource was also considered during the evaluation of impact selection.

Indirect impacts were identified as those impacts that differ from those directly associated with the construction and operation of the proposed toll facility itself and are often caused by induced development that may indirectly result from the improvement to the transportation

facility. The indirect impacts discussed in detail below include increased traffic through adjacent neighborhoods, increased congestion along frontage roads, and impacts to bus stops and route times.

The proposed project's cumulative impacts were narrowed down by carrying forward the direct and indirect impacts that may contribute to a cumulative impact. Two major themes discovered during analysis of cumulative impacts were: land use impacts and socio-economic trends involving low-income and minority populations.

The following sections describe both the indirect and cumulative impacts derived from the analysis. Because of the uncertainties associated with the future forecasting of land development, travel patterns, and socio-economic trends, quantitative assessment of the effects of these impacts cannot be made at the project level. Resources such as zoning maps, future land use maps, *Census 2000* data, public transit plans, and the MOU outlining the SH 121 Funding Strategy allowed for the establishment of quantitative assumptions which were utilized to develop the findings discussed in the following sections. Given the predictive nature of indirect and cumulative impacts, it must be stated that qualitative assumptions were predominantly relied upon during analysis. Various qualitative assumptions used during analysis included anticipated travel patterns, increase of non-toll traffic distribution along frontage roads, recognized limitations to access for the economically disadvantaged, and willingness to drive along the non-tolled alternative routes.

Indirect Impacts

Tolling SH 121 may create some indirect social and economic impacts that result indirectly from the proposed improvements to the existing roadway. This corridor was previously planned, is currently under construction and any anticipated land use changes would occur regardless of the proposed tolling. However, it is anticipated that development opportunities would continue to increase within the study area if the proposed tolling facility is implemented. Undeveloped areas within and surrounding the project area would likely be developed primarily for residential and commercial use, particularly those areas serviced through future implementation of the near neighbor/near timeframe projects (See **Figures 4-3 and 4-4**). The projects listed in Figures 4-3 and 4-4 would be indirect impacts of the tolling of SH 121 because they would receive at least some of the revenue generated by the SH 121 toll facility. These areas include the cities of Coppell, Lewisville, The Colony, Grapevine, Carrollton, Frisco and Plano.

A likely indirect impact involves an increase of traffic through neighborhoods as a result of motorists trying to avoid the toll. The project is not expected to divert traffic through neighborhoods, as existing adjacent residential developments do not front arterial roadways that would provide links from the SH 121 facility to alternative routes. The majority of adjacent residential roadway systems tend to impede through-traffic due to their inherent design. Another factor to consider is the orientation of the SH 121 facility itself. The existing SH 121 facility is situated in a diagonal direction, generally southwest to northeast. While other major alternative routes exist for this facility, the use of immediately adjacent residential street routes is not an efficient means for travelers to avoid the tolled mainlanes of SH 121 (See **Appendix A: Figure 1B**).

The potential for increased congestion along frontage roads over time as the traffic demand for the non-toll option increases is also an indirect impact. The implementation of the proposed toll facility is anticipated to increase non-toll traffic demand along the frontage roads. This increase in demand along frontage roads may adversely affect travel time and access to adjacent businesses; however, impacts to public transit stops and route times is not anticipated because the area is not currently serviced by local public transit authorities such as DART (Dallas Area Rapid Transit) or the DCTA (Denton County Transportation Authority).

Cumulative Impacts

As identified in **Table 5-8**, two themes of cumulative impacts emerged from the indirect and cumulative analysis: land use impacts and socio-economic trends involving low-income and minority populations.

Cumulative impacts from roadway projects are usually associated with areas of land that may change from their previous land use. The extent that tolling SH 121 may contribute to these cumulative land use change impacts in an area is dependent upon many factors: distance from the project, real estate speculation, other anticipated and planned projects in the area, zoning regulations, municipal planning, size and closeness of the nearest metropolitan area, local and state regulations and the extent to which they are enforced, to mention a few.

Existing zoning and future land use plans produced by municipalities in proximity to the SH 121 corridor reveal commercial/industrial (mixed intensities), residential (both single and multi-family), and general business development as the main drivers of land development adjacent to the SH 121 facility. While the rate of population immigration and physical development in this area of North Texas has been quite high during the last decade compared to

state and national trends, municipalities such as Frisco and Lewisville still maintain the potential to continue development as long as vacant parcels are available for conversion to residential, commercial, or industrial land uses. Cities such as Frisco and Lewisville have collectively decided to allow for future development of vacant land along the SH 121 corridor through the establishment of zoning regulations and future land use plans.[1]

The construction or improvements of the near neighbor/near timeframe projects would also influence the continued development of the areas they are intended to service, such as the cities of Grapevine, The Colony, Plano, and Carrollton. The MOU outlines the agreement regarding the SH 121 funding strategy and provides sufficient details of the proposed state highway system improvements. As discussed in **Section 4.3**, the near neighbor/near timeframe projects would be funded by the reallocation of the traditional funding of SH 121. The improvements made to the systems illustrated in **Figures 4.3** and **4.4** are also expected to maintain or increase development opportunities in the areas for which they provide access. Documented examples (MOU) of the toll-free near neighbor/near timeframe projects that have foreseeable potential to stimulate land development include:

- **FM 423: from SH 121 to U.S. 380**. TxDOT/NCTCOG agreed to make every effort possible to accelerate FM 423 letting to permit it to be open to traffic near FM 720 completion and coordinate with the northern FM 423 segment. The City of The Colony would benefit from the construction of FM 423.
- **FM 2934: from FM 423 to the Dallas North Tollway**. TxDOT agrees to fund 100% of the construction costs for widening the existing two-lane facility to a six-lane divided facility. The City of Frisco would benefit from the widening of FM 2934.
- **FM 407: from FM 1830 to Chinn Chapel Road**. TxDOT/NCTCOG agreed to fund 90% of ROW and 100% of construction of this project to let FM 407 by 2006. Residents of Denton County would benefit from this proposed project.
- **Corporate Drive**. NCTCOG agrees to fund $8 million towards this local project. The City of Lewisville would benefit from this project and has agreed to fund the local match.

Over the last few years, the idea of user-fee based roadways has been growing in popularity and acceptance. 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.

[1] City of Frisco, Texas. *Future Land Use Plan*, January 2006. http://www.ci.frisco.tx.us/
City of Lewisville, Texas. *Official Zoning Map*, 2006. http://www.cityoflewisville.com/

However, population increases and traffic demand have outpaced the efficiency of this traditional finance mechanism.[2] As funding mechanisms evolve, the trend towards utilization of tolling facilities in this region may through time create "user impacts" as access to highway systems becomes an issue to the economically disadvantaged.

Cumulative impacts of tolling on low-income and minority populations is difficult to predict; however, tolling of the SH 121 mainlanes would be unlikely to result in disproportionate or adverse effects on minority and/or low-income populations as no environmental justice communities have been identified immediately within the study area. The populations located within the study area represent some of the higher median household incomes and lower poverty rates in the state of Texas, if not the nation. The SH 121 frontage roads would be non-tolled and would provide an alternative route for those who do not want to utilize the tolled mainlanes.

Existing tolling systems that factor into the cumulative impacts of the proposed tolling project include the DNT and the President George Bush Turnpike (PGBT). Linkage to these tolling systems would be available to users of SH 121 as well as the non-tolled alternatives associated with those existing toll facilities. Other foreseeable tolling projects in the area include the northward expansion of DNT from Gaylord Parkway to U.S. 380, construction of the Lake Lewisville Bridge, and managed lane improvements along the IH 635 corridor. The construction of Southwest Parkway, currently under consideration which would expand SH 121 from IH 30 to FM 1187, includes portions of tolled roadway. The RTC is also considering the tolling of SH 121 throughout Collin County. However, those who choose to avoid these toll systems would have the standing option to utilize either non-tolled frontage roads or alternative arterial roadways.

Some beneficial cumulative impacts may include the addition of infrastructure improvements constructed to support the increased development and commerce associated with SH 121 and economic growth in the immediate area. The future added capacity associated with the toll-free near neighbor/near timeframe projects would provide mobility and relieve traffic congestion for all motorists using the systems funded by the proposed tolling of SH 121. The near neighbor/near timeframe projects would comply with all applicable federal, state, and local requirements. If applicable, NEPA documentation would be prepared for the near neighbor projects.

[2] North Central Texas Council of Governments. *Mobility 2025: Amended 2005*. http://www.nctcog.org/

6.0 ISSUES ELIMINATED FROM FURTHER STUDY

The following issues were eliminated from further study since the proposed toll facility would not change the footprint of the roadway, additional ROW is not required, and there are no design changes. The previously approved assessment of these issues remains valid.

6.1 Cultural Resources

The previous environmental assessments included cultural resources surveys of the area of potential effects (APE) for the proposed project to determine if structures or buildings listed or eligible for listing on the National Register of Historic Places (NRHP) would be affected. For the previously approved project, the APE related to structures and buildings was determined to be 150 feet from either side of the proposed ROW. The proposed SH 121 toll facility does not warrant additional coordination with THC, since there is no change to the footprint or alignment to the SH 121 design currently under construction. Previous coordination remains valid. The following outlines the previous coordination with the Texas Historical Commission (THC).

The THC concurred on January 5, 1996, that the proposed SH 121 project would have no effect on NRHP eligible or listed properties or State Archeological Landmarks. Additional coordination occurred in 2002 as the result of additional ROW acquisition at that time. On November 20, 2002, the THC concurred that the proposed project would have no effect on NRHP eligible or listed properties or State Archeological Landmarks on SH 121 at IH 35E from east of MacArthur Blvd. to east of IH 35E. Also, tribal coordination was completed on October 28, 2002.

There are no cemeteries within or adjacent to the proposed project that would be affected by the construction of the proposed project.

In the unlikely event that archeological deposits are encountered during construction, work in the immediate area will cease and TxDOT archeological staff will be contacted to initiate accidental discovery procedures under the provisions of the Programmatic Agreement (PA) between TxDOT, THC, FHWA, and the Advisory Council on Historic Preservation and MOU between TxDOT and the THC.

6.2 Farmlands

The proposed tolling of SH 121 would not require additional ROW; therefore, the proposed project is exempt from the requirements of the Farmland Protection Policy Act (FPPA) and requires no coordination with the Natural Resources Conservation Service (NRCS).

6.3 Floodplains

The project lies within the 100-year floodplain of Elm Fork of the Trinity River. The hydraulic design of SH 121 is currently in accordance with the current TxDOT and FHWA policy standards. The proposed tolling of SH 121 would not increase the base flood elevation to a level that would violate applicable floodplain regulations and ordinances.

No changes have been made to Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps flood zone designations within the project area since the previous EAs were approved. No additional floodplain impacts would occur as a result of proposed toll facility. As a reference, the FEMA floodplains mapped for this project are listed in **Appendix A: Figure 2**).

A portion of this project is within the Trinity River Corridor Development Certificate Regulatory Zone. Compliance with all applicable regulations is occurring as appropriate, since the project is currently under construction. No coordination or Trinity River Corridor Development Certificate is required during this re-evaluation for proposed tolling.

6.4 Hazardous Materials

Under the previous EAs, a thorough investigation of public records and initial site assessments were performed for the project ROW to identify possible hazardous materials within the project limits. Based on the results received from the data base search and site assessments, there were no properties found within the limits of SH 121 that were considered "at risk". There are no anticipated hazardous material impacts from the proposed toll facility.

6.5 Jurisdictional Waters and Wetlands

There are no additional waters of the U.S. including wetlands that would be impacted by the proposed tolling of SH 121. All coordination and permitting was completed and disclosed in the previously approved EAs and subsequent re-evaluations. The following summarizes the results of these evaluations and coordination with the U.S. Army Corps of Engineers (USACE).

SH 121/IH 35E Interchange

A substantial portion of the area located north and east of IH 35E is within the 100-year floodplain of the Elm Fork Trinity River. TxDOT evaluated a variety of alternatives that would serve to minimize impacts to the aquatic system, yet still satisfy the transportation needs of the DFW area. TxDOT proposes the use of on-site wetland creation to mitigate for unavoidable losses to 0.31 acres of low quality wetlands in the project area. Approximately one (1) acre of bottomland hardwood will be created in an area adjacent to the IH 35E crossing of Timber Creek. Approximately 0.5 acres of mitigation land is located within TxDOT ROW and the remaining 0.5 acres is located on the city of Carrollton ROW. A 13 acre/foot flood storage space will also be provided for this project. The mitigation will provide a riparian zone for a portion of Timber Creek and will connect to an existing wooded ephemeral channel in the proposed Sports Complex. The plants and trees in the mitigation area will provide habitat as well as enhanced wetland function for this area.

Crossings of jurisdictional waters have been minimized to impact less than 0.1 acre in each case and will not be mitigated. TxDOT personnel initiated USACE coordination on October 10, 2002. The project will be authorized under Nationwide Permit (NWP) 14 - *Linear Transportation Crossings.*

SH 121 From East of IH 35E to 0.05 mile East of FM 423

This section crosses a small ephemeral stream; however to stream will be spanned and no lost of waters of the U.S. would occur. Coordination with USACE is not required.

SH 121 From FM 423 to DNT

This section of SH 121 crosses four jurisdictional waters and will require the filling of a 0.67 acre on-channel stock pond. An individual permit was required due to impacts at the pond which exceed the 0.5 acre threshold for NWP 14. The individual permit application was submitted to the USACE Fort Worth District on April 15, 2002. The project was assigned #200200254 and the public notice published June 11, 2002. No comments were received that required modification to the application.

The proposed project will meet the Clean Water Act Section 401 Water Quality Certification requirements by using one best management practice (BMPs) from each of the three Tier I categories. These will include block sod for erosion control, detention basins for sedimentation control, and vegetative filter strips for total suspended solids (TSS) controls. Previous Texas Commission on Environmental Quality (TCEQ) commitments on water quality certification remains valid. The proposed toll facility does not warrant additional commitments for Section 401 certification under Tier I guidelines.

6.6 Land Use

The project area has been subjected to previous disturbances associated with commercial and residential development, and previous and on-going construction of the SH 121 facility. Existing commercial and industrial land uses are likely to continue developing within the proposed toll facility.

6.7 Navigable Waters of the U.S.

SH 121 does not cross any navigable lakes, rivers, or streams. A navigational clearance under Section 9 (administered by the U.S. Coast Guard) of the 1946 Bridge Act and Section 10 (administered by the USACE) of the Rivers and Harbors Act of 1899 is not applicable. Coordination with the U.S. Coast Guard (for Section 9) and USACE (for Section 10) would not be required for the proposed toll facility.

6.8 Public Facilities and Services

The proposed tolling would not impact any public facilities or services, because access changes are associated with the proposed tolling of SH 121.

6.9 Relocations and Displacements

The proposed tolling of SH 121 requires no additional ROW acquisition; therefore, no displacement or relocations are anticipated.

6.10 Section 4(f) Properties

The construction of SH 121 does not require the use of any publicly owned land from a public park, recreation area or wildlife and waterfowl refuge or historic sites of national, state or local significance; therefore, a Section 4(f) statement would not be required. There are no Section 4(f) properties impacted by the proposed toll facility.

6.11 Threatened/Endangered Species

The approved EAs addressed species that were historically found within Denton and Collin Counties. It was noted that Denton and Collin Counties fall within the migration route of the whooping crane; however, because of the nature of the project, no effects are anticipated. The current status of federal and state listed and candidate species has not changed since available information at the time of the approved EAs. The project is currently under construction and U.S. Fish and Wildlife Service (USFWS) and Texas Parks and Wildlife Department (TPWD) coordination was previously completed. This assessment remains valid and no further coordination with USFWS or TPWD is necessary for the proposed tolling of the SH 121 mainlanes currently under construction.

6.12 Vegetation

The proposed tolling of SH 121 would not impact habitat that would be mitigated for in accordance with the MOU between TxDOT and the TPWD. No change to the footprint of the roadway is proposed; therefore, no additional impacts to woody vegetation are anticipated. No additional coordination with TPWD is required. The following summarizes the results of previously approved EAs and subsequent re-evaluations and coordination with the TPWD.

SH 121/IH 35E Interchange

This project is adjacent to the floodplain of the Elm Fork of the Trinity River. In an effort to minimize impacts to the adjacent habitat, retaining walls were used to reduce the needed ROW. In addition, an area of trees will be avoided near the southern terminus of the project. Overall, approximately 3 acres of habitat will be disturbed, of which less than 0.5 acres consist of mature trees. In accordance with the MOU between TxDOT and TPWD, TxDOT will consider compensatory mitigation for certain types of habitats (habitat for Federal candidate

species, rare vegetative species, bottomland hardwoods, native prairies, riparian sites, and locally significant habitat). In addition to the aforementioned avoidance and minimization, compensatory mitigation will be provided by planting approximately one acre of bottomland hardwood in an area adjacent to the IH 35E crossing of Timber Creek and will connect to an existing wooded ephemeral channel in the proposed Sports Complex. The plants and trees in the mitigation area will provide habitat as well as enhanced wetland function for this area. There is no additional compensatory mitigation warranted by the proposed SH 121 toll facility project.

SH 121 From East of IH 35E to 0.05 mile East of FM 423

No significant plant communities are located within the right-of-way. No removal of trees would be required in this segment.

SH 121 From FM 423 to DNT

Surveys in the early 1990's estimated that this project would disturb approximately eleven (11) acres of riparian habitat. As per the MOA between TxDOT and TPWD, planting eleven acres of trees at a nearby USACE Lake (Lake Lewisville or Lake Lavon) will make compensatory mitigation for the impacts. The trees to be planted will consist of the standard TxDOT Dallas District mix and ratio. It should be noted that in recent years development has greatly reduced the actual acreage of riparian habitat adjacent to the proposed ROW.

In accordance with EO 13112 on Invasive Species and the Executive Memorandum on Beneficial Landscaping, seeding and replanting with TxDOT approved seeding specifications that is in compliance with EO 13112 would be done where possible.

6.13 Water Quality

No surface or subsurface waters would be impacted by the proposed tolling of SH 121. Denton Creek is not listed as either threatened or impaired in the 2002 Clean Water Act Section 303(d) list, and the project is not within 5 miles upstream of a threatened or impaired water segment. The current construction of SH 121 did not warrant coordination with TCEQ for total maximum daily loads. The proposed tolling of SH 121 would not warrant coordination with TCEQ for total maximum daily loads.

6.14 Items of a Special Nature

Airway-Highway Clearance

The project corridor does not come within 20,000 ft. of any airport property. Aircraft Clearance issues are not associated with this project.

Coastal Zone Management Plan

SH 121 is not located within the Texas Coastal Zone Management Program boundary; therefore, this project is not subject to the guidelines of the associated plan.

Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act, as amended on October 11, 1996, directs that all Federal agencies, whose actions would impact fish habitat, must consult with the National Marine Fisheries Service regarding potential adverse effects. This requires any project that receives Federal funding must address potential impacts to essential fish habitat. Due to the nature and location of this project, essential fish habitat would not be impacted.

Wild and Scenic Rivers

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

6.15 Evaluation of Regulatory Changes

No environmental regulatory changes have occurred since approval of the EAs and subsequent re-evaluations that would affect the proposed tolling of SH 121. All coordination with regulatory agencies remains valid.

7.0 CONCLUSION

Since the time of the last environmental documentation for this project, there have been no changes in design or ROW requirements. The previously approved environmental assessments and subsequent re-evaluations were completed without the consideration of tolling. Two public meetings and two public hearings were held to inform the public about the proposed tolling of SH 121. There have been no changes in condition that have resulted in significant social, economic, indirect, or cumulative consequences not previously addressed. This re-evaluation details that project modifications assessed in this re-evaluation (tolling the proposed facility) would not result in impacts substantially different than those considered in the previously approved studies. Implementation of these changes would not appreciably increase the potential for impacts beyond those considered in these assessments. No further environmental documentation would be required.