Collin County Outer Loop
From State Highway 289 to United States Highway 75
Collin County, Texas

September 2021

TABLE OF CONTENTS

APPENDICES

LIST OF FIGURES

LIST OF TABLES

AASHTO	American Association of State Highway and Transportation Officials
ACS	American Community Survey
ACT	Antiquities Code of Texas
AOI	Area of Influence
APE	Area of Potential Effect
CCTRA	Collin County Toll Road Authority
dbh	Diameter at Breast Height
DNT	Dallas North Tollway
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
FM	Farm-to-Market
GIS	Geographic Information System
IH	Interstate Highway
MPA	Metropolitan Planning Area
NAAQS	National Ambient Air Quality Standards
NCTCOG	North Central Texas Council of Governments
NRHP	National Register of Historic Properties
NWP	Nationwide Permit
RSA	Resource Study Area
SAL	State Archeological Landmarks
SH	State Highway
TAC	Texas Administrative Code
TCEQ	Texas Commission on Environmental Quality
TIP	Transportation Improvement Program
TPWD	Texas Parks and Wildlife Department
TxDOT	Texas Department of Transportation
US	United States
USACE	US Army Corps of Engineers
USC	US Code
USDA	US Department of Agriculture
USFWS	US Fish and Wildlife Service

1.0 INTRODUCTION

The Collin County Toll Road Authority (CCTRA) has undertaken the preparation of this local environmental document for Segment 3 of the proposed Collin County Outer Loop. Segment 3 is a proposed new location roadway connecting State Highway (SH) 289 (Preston Road) and United States (US) Highway 75, Collin County, Texas (see Figure 1).

The purpose of this document is to provide the public and decision makers with adequate and appropriate information regarding the purpose and need of this project; alternatives considered; and the potential social, economic, and environmental effects. The final approval of the project will be made by CCTRA after the effects and comments on this document, including those the from the public, are evaluated.

1.1 BACKGROUND

The Collin County Outer Loop is a planned 53-mile roadway facility (see Figure 2) that would provide a necessary linkage to other major transportation corridors in Collin County, help manage travel demand on other roadways, and provide economic development opportunities in northern and eastern Collin County. The facility is designed to connect to the proposed Denton County Loop (Greenbelt Parkway) in Denton County and to Interstate Highway (IH) 30 in Rockwall County. When completed, the loop would provide access to/from IH 35, US 377, the extension of the Dallas North Tollway (DNT), SH 289 (Preston Road), US 75, SH 121, US 380, and IH 30. The Collin County Outer Loop is included in the *Collin County Mobility Plan, 2014 Update* (http://www.collincountytx.gov/mobility/Pages/mobility_plan.aspx) and the *Mobility 2045: The Metropolitan Transportation Plan for North Central Texas* (*Mobility 2045*) (https://www.nctcog.org/trans/mtp/2045/index.asp).

The ultimate facility potentially includes a 10-lane limited access roadway (mainlanes) with entrance and exit ramps, two three-lane access roads on either side of the mainlanes, and interchanges. The corridor design includes a wide median that could accommodate a future passenger rail. The ultimate roadway right-of-way section is 500 feet wide. Additionally, the mainlanes may be tolled; the decision to toll would be made later through a public process.

The Collin County Outer Loop is being planned and developed as a staged facility because the ultimate roadway is not needed immediately. Staging or phasing the roadway allows the facility to be developed as needed and as funding is available. Though the facility would be staged, the ultimate right-of-way needed would be purchased to preserve the corridor and allow for appropriate land use planning adjacent to the facility. Further environmental studies need to be conducted for additional lanes and road work beyond the initial two-lane access road.

The initial section (Segment 1) of the Collin County Outer Loop between US 75 to SH 121 opened to traffic in October 2012 as a two-lane access road and the ultimate right-of-way was purchased. The construction of a two-lane access road for Segment 3a (from DNT to SH 289) began in late 2019 and is expected to be complete by 2021. This effort includes a grade separated crossing at the BNSF railroad located west of SH 289.

1.2 LOGICAL TERMINI AND INDEPENDENT UTILITY

Though planned as a part of the larger system in Collin County, Segment 3 has independent utility because the project would function as a usable roadway, does not require the implementation of other projects to operate, and does not restrict the consideration of other foreseeable transportation improvements.

Figure 1. Project Location Map

Collin County Outer Loop Project Location

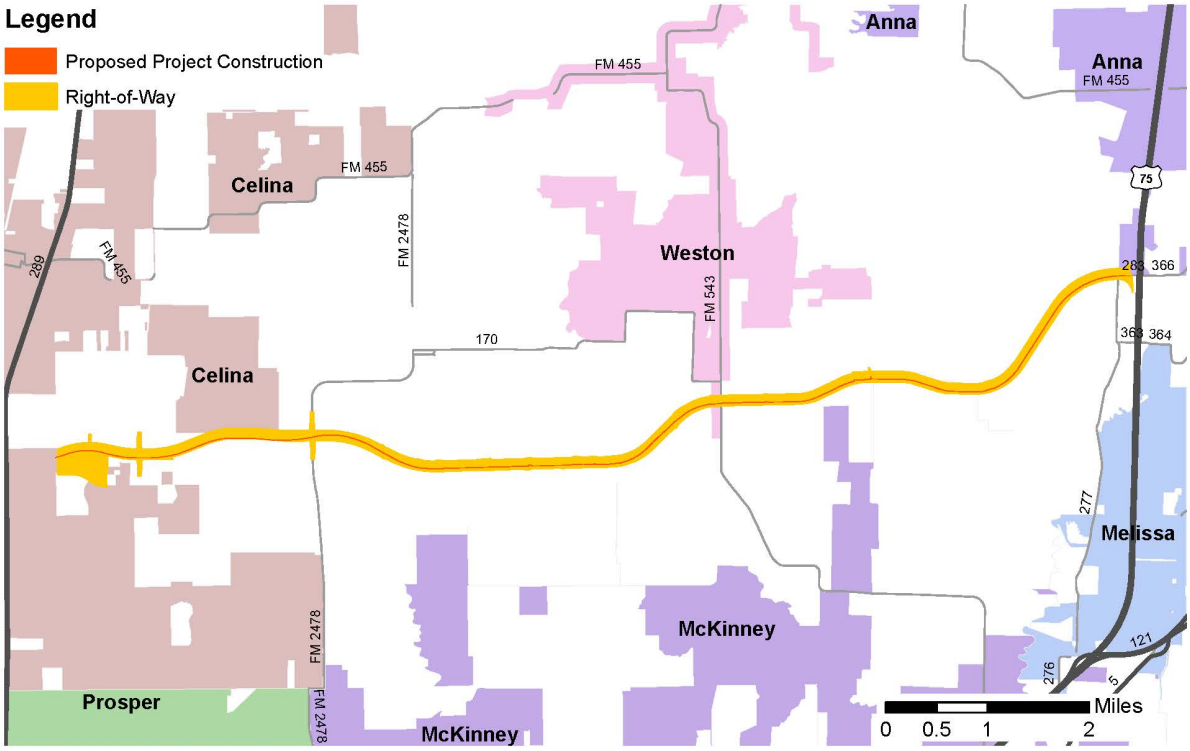
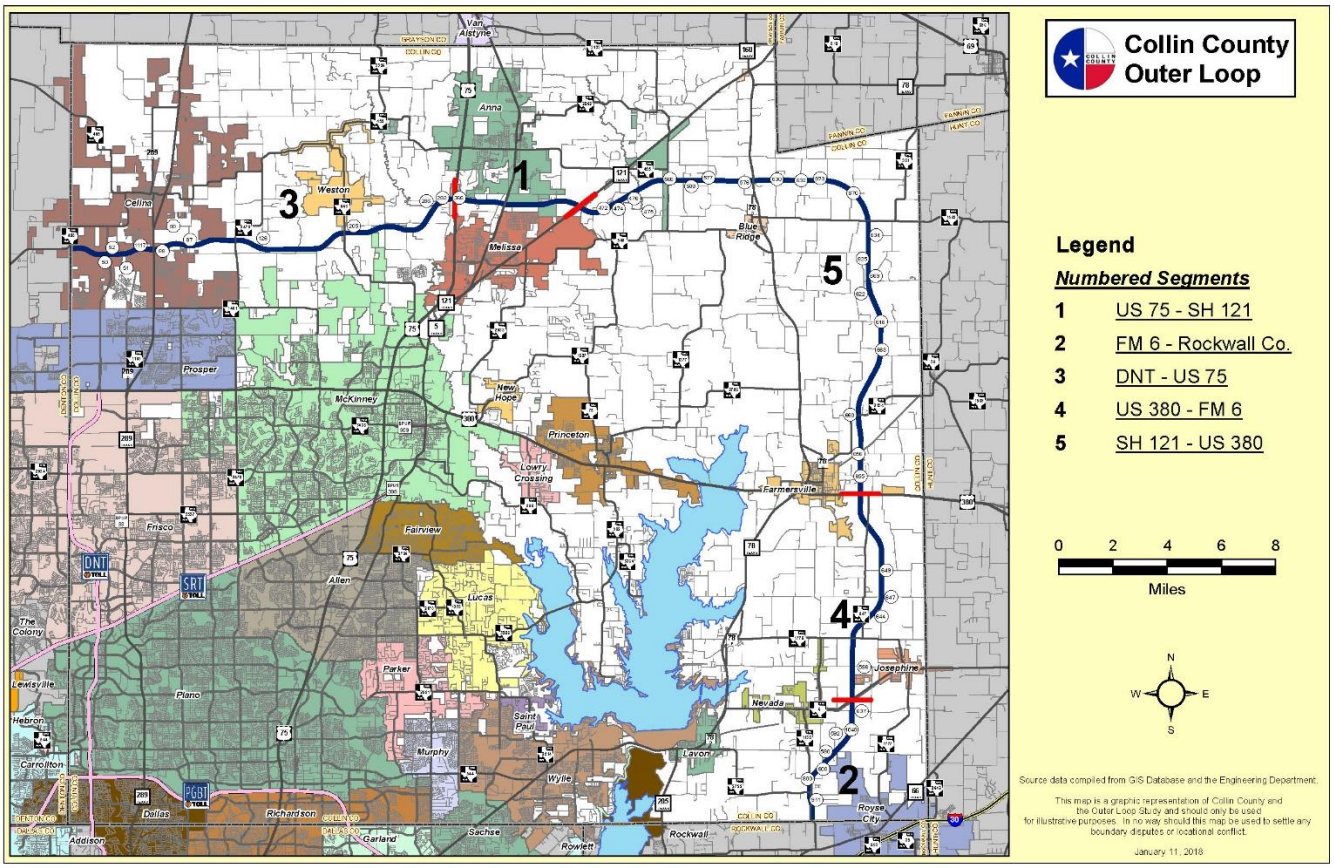


Figure 2. Collin County Outer Loop



Source: Collin County, January 2018

2.0 PROJECT DESCRIPTION

The proposed Segment 3 of the Collin County Outer Loop is approximately 11.7 miles long, beginning at SH 289 (Preston Road) in Celina, and is a continuation of Segment 3a (from the DNT and SH 289) to the west. From SH 289, the proposed alignment continues to the east generally parallel to and north of County Roads 88 and 125 until Honey Creek. On the west side of the creek, the alignment begins to curve to the northeast and generally parallels County Roads 205 and 281 to the south until the East Fork of the Trinity River. On the west side of the river, the alignment curves to the northeast and parallels County Road 283 to tie into US 75 and align with the existing Collin County Outer Loop (Segment 1), east of US 75.

The new roadway corridor would include intersections at SH 289, County Road 87, Farm-to-Market (FM) Road 2478 (Custer Road), County Road 126, FM 543, County Road 205, County Road 206, County Road 286, County Road 286, County Road 277, and the US 75 southbound frontage road. The project includes bridge crossings of Wilson Creek, Honey Creek, and the East Fork of the Trinity River.

Generally, the proposed right-of-way width of the corridor is 500 feet to preserve the corridor for the ultimate facility and allow for appropriate land use planning adjacent to the facility. The total amount of right-of-way needed is almost 624 acres (see Section 5.1). Additionally, 8.5 acres of easements (i.e., slope, temporary construction) would be needed to construction the project.

The proposed project would construct one two-lane access road and acquires the ultimate right-of-way needed. The access road would operate as a non-tolled, two-way roadway until the second access road and/or the mainlanes are built.

3.0 PURPOSE AND NEED

The Collin County Outer Loop is an essential element of the *Collin County Thoroughfare Plan, 2014 Update* that would aid in addressing economic and transportation issues in the county. The purpose of the Segment 3 project is to:

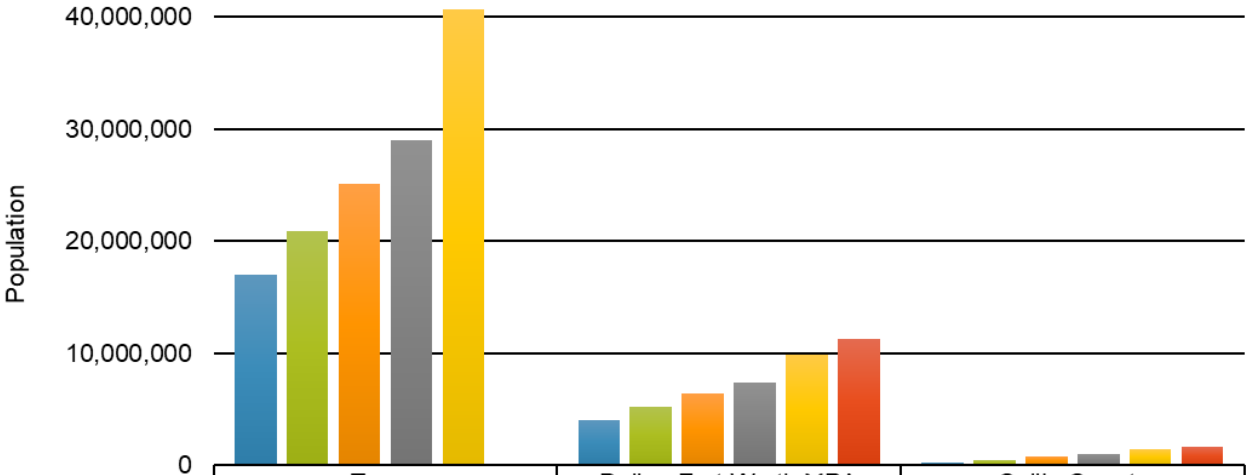
- Help establish and preserve a transportation corridor to manage travel demand from rapid population and employment growth and development
- Increase the economic development opportunities in northern Collin County
- Provide roadway capacity, mobility, and accessibility for developing areas by providing more direct links to existing major radial highways
- Provide the basic transportation infrastructure necessary to allow for expansion accommodating varied travel demands or modes as warranted

The need for a new roadway from SH 289 (Preston Road) to US 75 is to help address population and employment growth, support economic opportunities, and improve connectivity. These needs are discussed in more detail in the following sections.

3.1 REGIONAL AND COMMUNITY GROWTH

Historically, Texas has been one of the 10 fastest growing states in the nation. According to the US Census Bureau, Texas added 4.3 million persons between 2000 and 2010, a 21 percent increase in population. By comparison, the US population grew by 27.3 million persons between 2000 and 2010, an increase of 10 percent. During this same time period, the Dallas-Fort Worth Metropolitan Planning Area (MPA) grew to 6,417,724 persons, almost a 24 percent increase in population since the 2000 Census. The MPA includes 12 counties (Collin, Dallas, Denton, Ellis, Hood, Hunt, Johnson, Kaufman, Parker, Rockwall, Tarrant, and Wise Counties). In 2010 Census, Collin County recorded a population of 782,341 persons, a 59 percent increase in population since the 2000 Census (see Figure 3). Estimates for 2019 show the county population is over one million. These regional and community trends are predicted to continue with MPA expected to reach a population of over 11.2 million people by 2045 and Collin County increasing to almost 1.7 million.

Figure 3. State, Regional, and County Population Growth



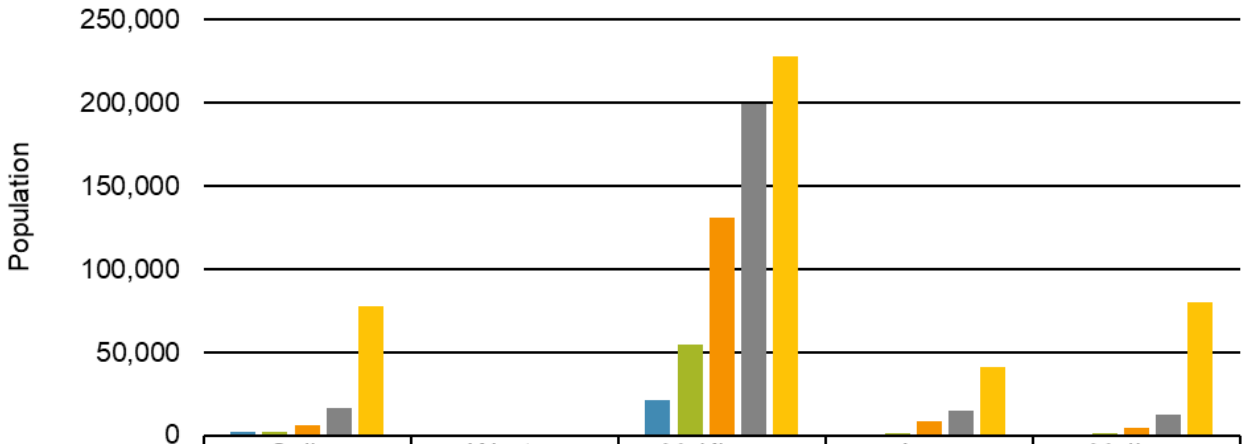
	Texas	Dallas-Fort Worth MPA	Collin County
1990	16,986,335	4,013,418	264,036
2000	20,851,820	5,197,317	491,675
2010	25,145,561	6,417,724	782,341
Estimated 2019	28,995,881	7,414,810	1,034,730
Projected 2040	40,686,490	9,833,378	1,404,149
Projected 2045	not available	11,246,531	1,689,168

Sources: 1990, 2000, and 2010 data from US Census Bureau. Texas and Collin County 2019 data from US Census Bureau. Texas 2040 data from Texas Demographic Center. Dallas-Fort Worth MPA 2019, 2040, and 2045 data from NCTCOG Demographic Forecasts.

As part of the *Addendum to the Collin County Mobility Plan 2014 Update* (https://www.collincountytx.gov/mobility/Documents/mobility_plan/2016AddendumCCMobilityPlan.pdf), the study developed two build-out scenarios for the county beyond 2045. Under the 2.1M Build-Out Scenario, the county is projected to reach a population almost 2.1 million by 2054. Under the 3.4M Build-Out Scenario, the county population would be estimated at over 3.4 million by 2077.

In general, Collin County is developing or growing from the southwest (e.g., Dallas, Plano, and Richardson) to the northeast/east portion of the county (e.g., Anna, Melissa, Blue Ridge, Farmersville, and Josephine). The project is primarily located within unincorporated portions Collin County and near the cities of Celina, Weston, McKinney, Anna, and Melissa. Four of the cities (Celina, McKinney, Anna, and Melissa) experienced an increase in growth since 1990 (see Figure 4). From 2000 to 2010, the cities of Celina, McKinney, Anna, and Melissa grew 224 percent, 141 percent, 573 percent, and 248 percent, respectively. Based on 2019 population estimates, these cities continue to experience strong growth with growth rates ranging from 52 to 170 percent between 2010 and 2019. The 2040 population projections indicate these four cities are expected to experience significant population growth. The City of Weston has not undergone similar growth because of a substantial decrease in the land area from a reduction of city limits in 2009.

Figure 4. Population by City



	Celina	Weston	McKinney	Anna	Melissa
1990	1,737	362	21,283	904	557
2000	1,861	635	54,369	1,225	1,350
2010	6,028	563	131,117	8,249	4,695
Estimated 2019	16,299	540	199,177	15,000	12,117
Projected 2040	77,710	not available	227,522	41,195	80,000

Sources: 1990, 2000, 2010, and 2019 data from US Census Bureau. 2040 data from Texas Water Development Board draft 2021 Regional Water Plan.

3.2 ECONOMIC OPPORTUNITIES

As the population of the area increases, retail and commercial development and employment levels are expected to increase accordingly. Table 1 shows the estimated 2017 and forecasted 2045 employment for the Dallas-Fort Worth MPA and Collin County; future employment estimates are not available at the city level. It is projected employment in Collin County will increase by 54 percent between 2017 and 2045, which is similar to the increase expected for the region. Much of this growth can be attributed to the region being a leader in the creation of new jobs, corporate relocations, and growth in the technology and service-based industries. The associated increases in population and employment will create a strain on existing transportation systems.

Table 1. Employment

Location	2017	Forecasted 2045	% Increase 2017 to 2045
Dallas-Fort Worth MPA	4,584,235	7,024,227	53%
Collin County	542,493	835,342	54%

Source: NCTCOG

Under the 2.1M Build-Out Scenario included in the *Addendum to the Collin County Mobility Plan 2014 Update*, the county is projected to have an employment of almost 1.2 million by 2055. Under the 3.4M Build-Out Scenario, the county employment is population is estimated at 1.6 million.

Both the region and county continue to attract new industry and businesses. Business and economic development is needed to keep pace with and support the fast growth from the

surrounding cities. Segment 3 would provide a regional transportation link in northern Collin County. The inclusion of access road along will provide opportunity for development along this corridor.

3.3 TRANSPORTATION SYSTEM LINKAGES

Within northern Collin County, there are very few major transportation facilities (see Figure 1). The study corridor is served by several east-west county roads; however, none are continuous between SH 289 and US 75. Typically, these county roads are two-lane roadways with limited to no shoulders. Today, travel choices are limited to two major north-south controlled-access facility and numerous smaller, rural roadways which provide limited mobility and access choices and is some cases, circuitous routes. The following lists the major roadways within the study corridor.

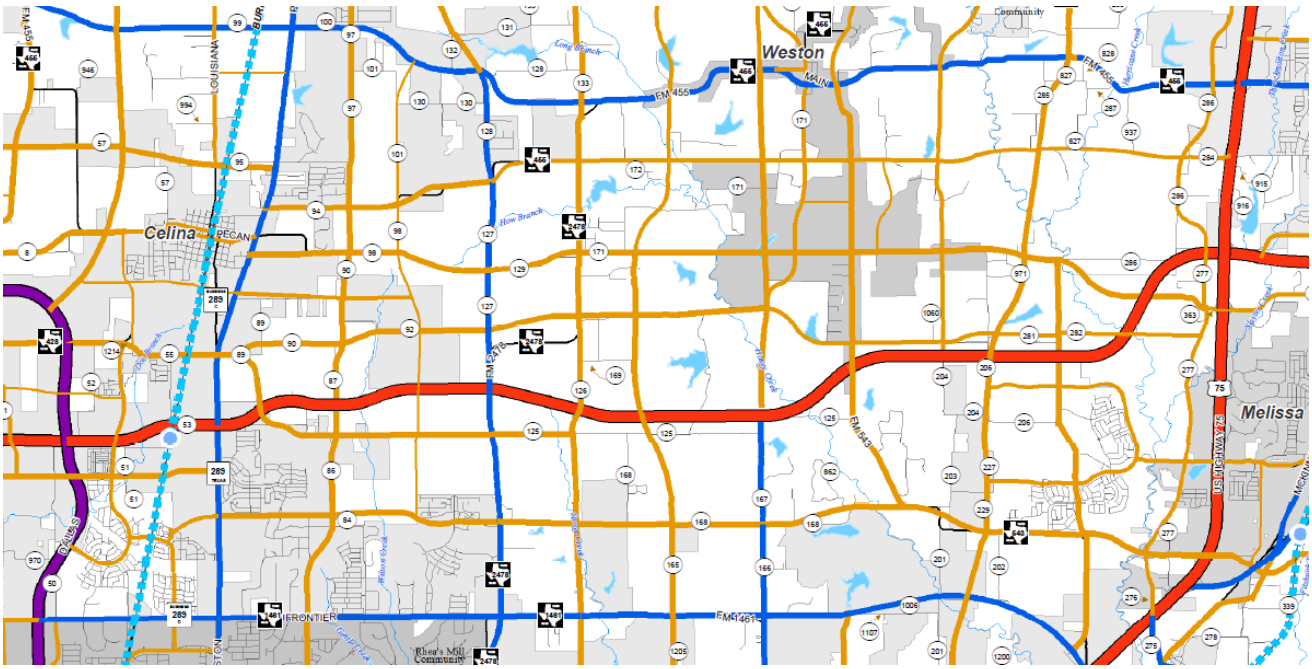
- Existing Major East-West Roadways
  - The nearest major east-west roadway is US 380, which is approximately five miles to the south. The roadway is currently four to six-lanes. The *Collin County Thoroughfare Plan* shows US 380 as a six-lane divided principal arterial. A feasibility study (http://www.keepitmovingdallas.com/sites/default/files/docs/AECOMM%20US%20380%20Feasibility%20Study%20Report%20and%20Appendices.pdf) completed by TxDOT in 2016 concluded upgrading US 380 to a freeway would improve mobility and safety but could have negative environmental and economic impacts that could potentially outweigh the benefits; the study recommended additional studies. The study has continued with numerous public meetings in 2019.
- Existing Major North-South Roadways
  - SH 289 (Preston Road) is a four to six-lane roadway
  - FM 2478 (Custer Road) is currently a two-lane rural roadway. The *Collin County Thoroughfare Plan* shows FM 2478 as a future six-lane divided principal arterial.
  - FM 543 (Weston Road) is currently a two-lane rural roadway. The *Collin County Thoroughfare Plan* shows FM 543 as a future six-lane divided principal arterial.
  - US 75 runs generally north-south on the east side of the study corridor. Currently, US 75 is a four to eight-lane controlled-access facility with two, three-lane frontage roads on either side of the mainlanes. The road section between Melissa Road to FM 455 was recently reconstructed and widen to six mainlanes with two, two-lane one-way frontage roads on either side.

Because of the tremendous growth anticipated for Collin County, comprehensive and/or transportation plans have been developed to accommodate the projected population and employment increases. The *Collin County Thoroughfare Plan* (*https://www.collincountytx.gov/mobility/ Documents/CCThoroughfarePlan.pdf*) identifies future roadway development in Collin County. The plan includes the Collin County Outer Loop and well as numerous proposed roadways intersecting and/or cross Segment 3 of the Collin County Outer Loop (see Figure 5). These include:

- SH 289 as a six-lane roadway with a three level-interchange with the Collin County Outer Loop.
- County Road 86/87 (extension of Coit Road) as a six-lane divided roadway
- County Road 98 (Roseland Parkway) as a four-lane undivided roadway
- County Road 126 as a six-lane divided roadway
- County Road 165 as a six-lane divided roadway
- County Road 167 as a six-lane divided roadway

- County Road 206 as a six-lane divided roadway
- County Road 281 as a six-lane divided roadway
- County Road 282 as a four-lane divided roadway
- County Road 206 as a six-lane divided roadway
- County Road 277 as a four-lane divided roadway

Figure 5. Future Roadways



Source: Excerpt from Collin County Thoroughfare Plan, November 2019

The City of Celina Thoroughfare Plan (March 2016, https://www.celina-tx.gov/DocumentCenter/View/113) shows County Road 125 (Choate Parkway) being widened to a four/six-lane divided roadway with realignment to tie into the south side of the Collin County Outer Loop. Additionally, a new north-south roadway, Roseland Parkway, is proposed just to the west of Custer Road. Roseland Parkway is shown as a four-lane divided roadway south of the Collin County Outer Loop and two lanes to the north.

The City of McKinney Master Thoroughfare Plan (https://www.mckinneytexas.org/DocumentCenter/View/477) shows five proposed major north-south arterials crossing and/or tie into the Collin County Outer Loop. These roadways are listed as six-lane divided arterials within a 124-foot right-of-way.

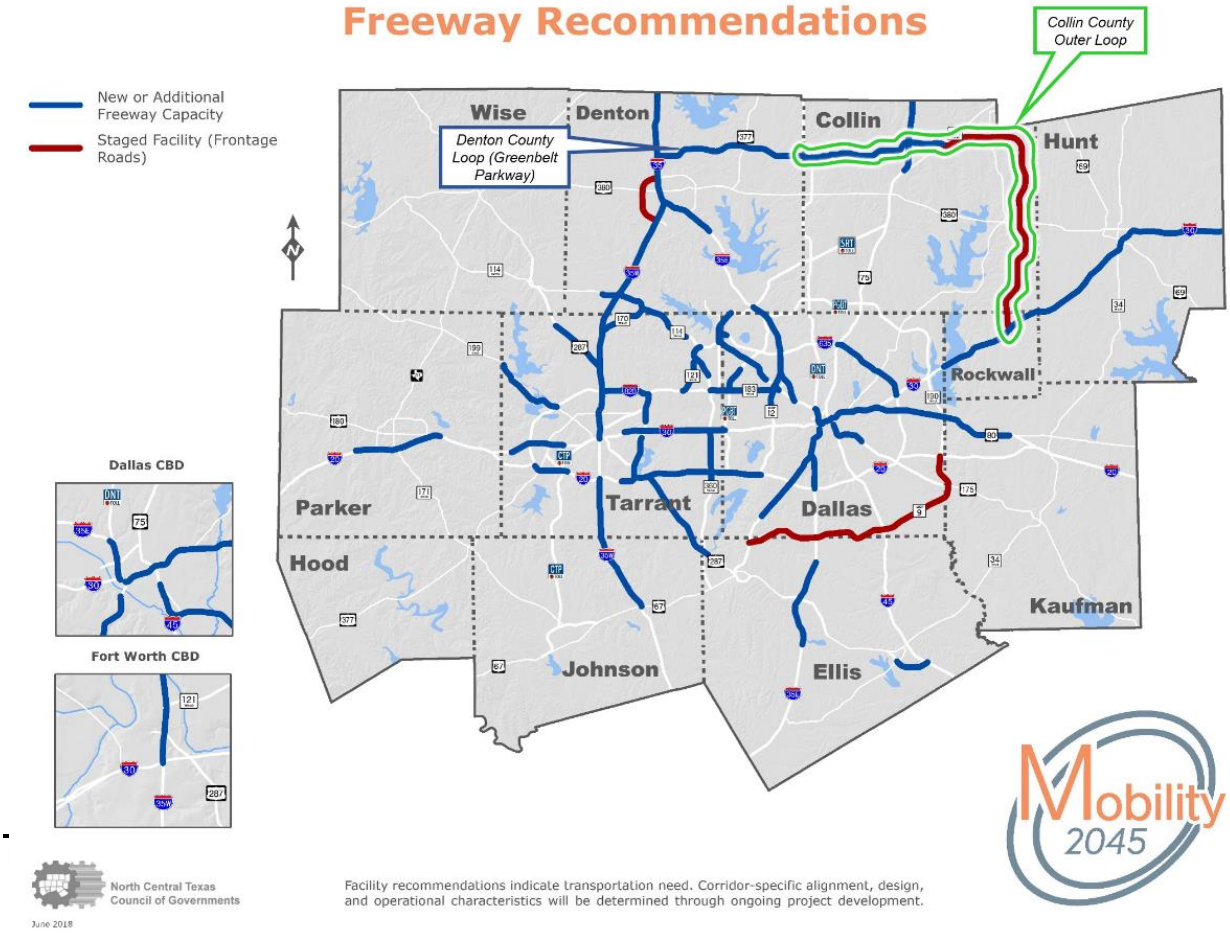
- Stonebridge Drive (just east of County Road 156)
- Ridge Road
- Lake Forest Drive (just west of County Road 125)
- Hardin Road (just west of County Road 206)
- Trinity Falls Parkway

Segment 3 is part of a larger planned 53-mile roadway facility that would connect to the proposed Denton County Loop (Greenbelt Parkway) in Denton County and to IH 30 in Rockwall County (see Figure 6). Regionally, transportation goals for mobility, quality of life, system

sustainability, and implementation are defined in *Mobility 2045*. The Collin County Outer Loop supports many of these goals by improving the availability of transportation options for people and goods. Additionally, the proposed improvements support numerous policies and programs included in Mobility 2045 such as:

- Encourage the early preservation of right-of-way in recommended roadway corridors (Policy FT3-008);
- Encourage the preservation of right-of-way in all freeway/tollway corridors to accommodate potential future transportation needs (Policy FT3-009);
- Evaluate and implement all reasonable options to maximize corridor capacity, functionality, accessibility, and enhancement potential utilizing existing infrastructure assets and right-of-way (Policy FT3-014);
- Utilize project staging and phasing of metropolitan transportation plan recommendations to maximize funding availability and cash flow (Policy F3-004);
- Support the Congestion Management Process, which includes explicit consideration and appropriate implementation of travel demand management, transportation system management, and intelligent transportation systems strategies during all stages of corridor development and operations (Policy TDM3-001);
- Foster regional economic activity through safe, efficient, reliable freight movement while educating elected officials and the public regarding freight's role in the DFW region's economy (Policy FP3-001); and,
- Corridor and environmental studies should be conducted with consideration for the region's air quality and financial constraints (Policy FT3-012).

Figure 6. Regional Transportation System Map – Freeway Recommendations



In addition to providing an east-west roadway for local travel, when completed, Segment 3 of the Collin County Outer Loop will provide access to/from the extension of the DNT, SH 289 (Preston Road), US 75, and SH 121. Segment 3 would provide a regional transportation link to existing and proposed local roadways within northern Collin County and improve linkages to other major freeways and tollways in Collin County.

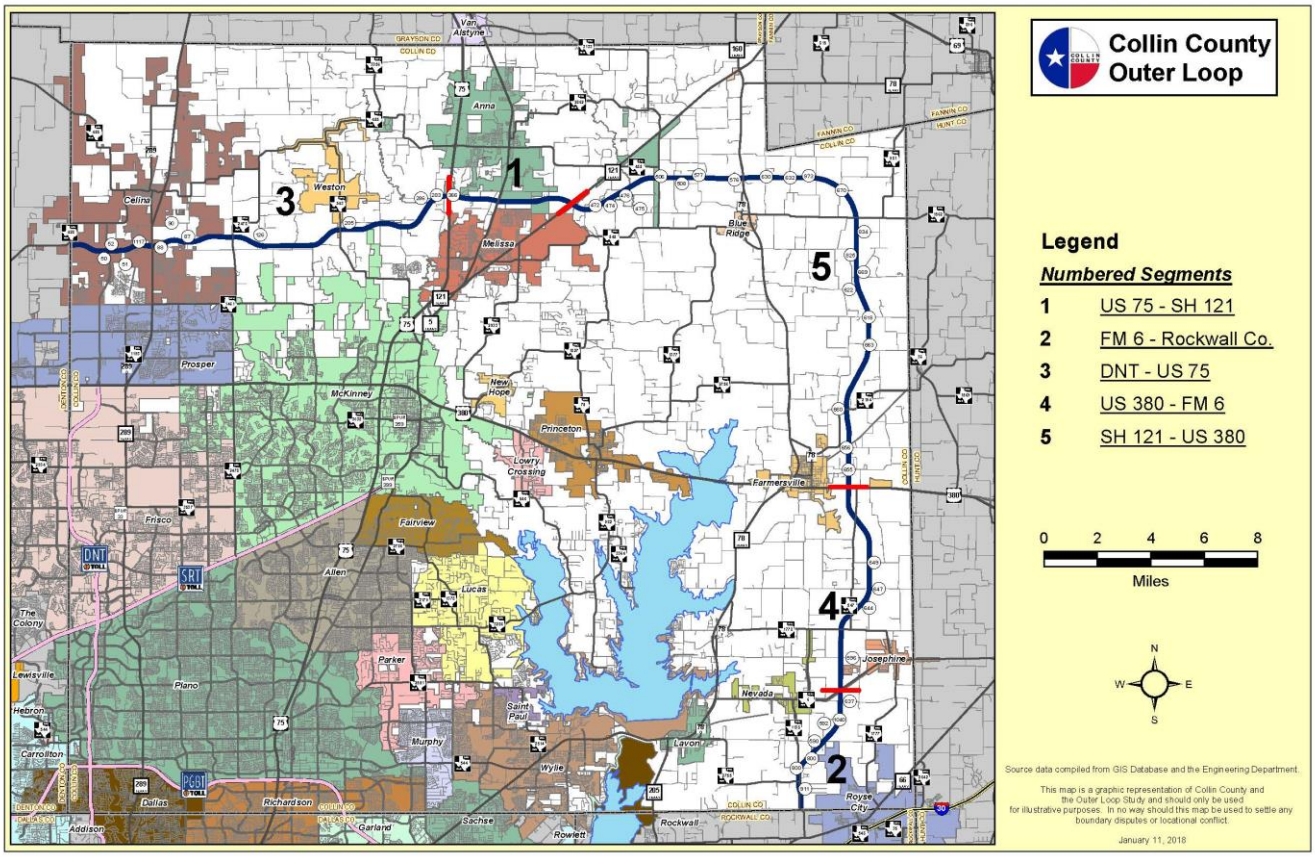
4.0 ALTERNATIVES

As mentioned in Section 3.0, Collin County has been one of the top growth areas in the state and region. To accommodate the expected future population and employment growth and mitigate regional congestion, Collin County Commissioners approved the preparation of study of the Collin County Outer Loop. This section describes the planning process, alternative development, selection of a preferred alignment, and the alternatives studied in this document.

4.1 PLANNING AND ALTERNATIVE DEVELOPMENT PROCESS

Because of the strong and continued population and employment growth in the county (see Section 3.1), Collin County officials saw a need to evaluate and prepare for the next major outer loop thoroughfare to provide transportation routes. Studies began in 2000 and led to inclusion of the Collin County Outer Loop in the 2002 update to the *Collin County Mobility Plan* as "Multimodal Transportation Corridor Preservation." The 53-mile loop was divided into five segments (see Figure 7) based on priorities to preserve right-of-way and construct the facility.

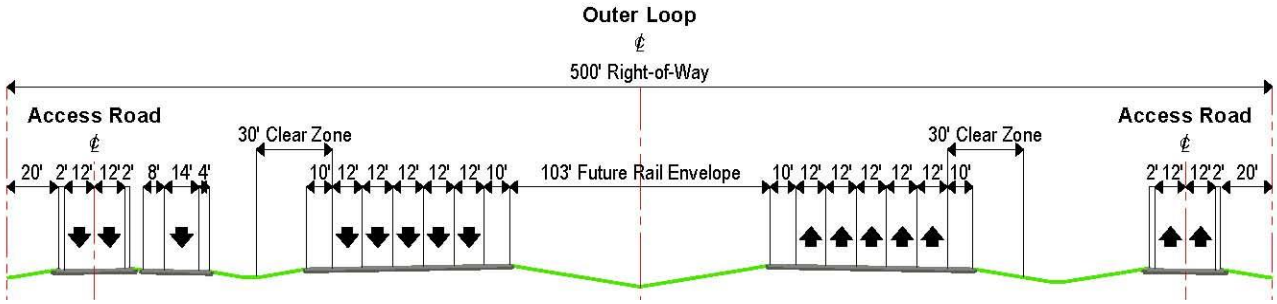
Figure 7. Collin County Outer Loop Segments



Source: Collin County, January, 2018

To allow for future flexibility in the design and mode, an ultimate cross section was developed based on a 70-mile per hour design speed with adequate right-of-way to allow for a 10-lane urban controlled-access roadway with access ramps, access roads, and a wide median to allow for future passenger or freight rail (see Figure 8). The typical 500-foot-wide right-of-way may be wider at intersections, ramps, and where cuts or fills result in increased widths of side slopes.

Figure 8. Collin County Outer Loop Ultimate Typical Cross Section



The Collin County Outer Loop is being planned and developed as a staged facility because the ultimate roadway is not needed immediately. Staging or phasing the roadway allows the facility to be developed as needed and as funding is available. The following describes the potential phases.

- Phase 1: Purchasing the entire proposed right-of-way needed for the future ultimate facility to preserve and construction of one two-lane access road.
- Phase 2: Construction of a second frontage road and conversion of the Phase 1 access road to one-way operations.
- Phase 3: Construction of grade separations at high-volume intersections, as needed.
- Phase 4: Construction of continuous mainlanes in both directions.

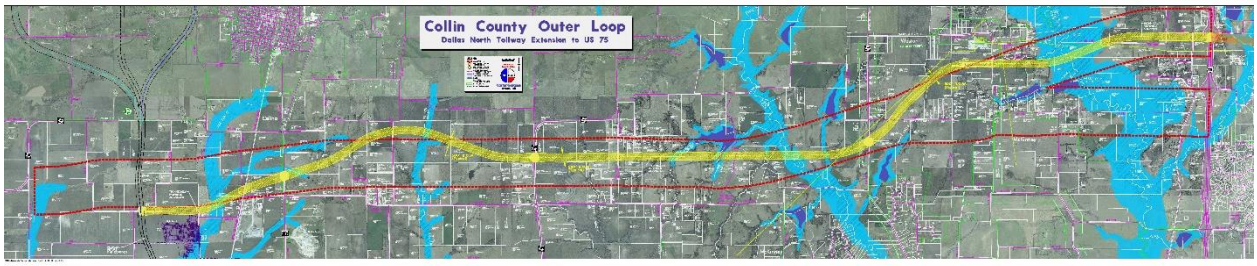
The study of Segment 3 (from DNT to US 75) for the Collin County Outer Loop began in the fall of 2000. The study concentrated on the identification of the corridor for further study and included various east-west corridors. In June 2002, Corridor A was selected as the locally preferred corridor from DNT to US 75 (see Figure 9).

Figure 9. June 2002 Segment 3 Corridors

Source: Corridor Alternatives map http://www.collincountytx.gov/mobility/pages/historical_outerloop.aspx

Based on this selected, Collin County began a study of Corridor A in December 2002. This study identified three major alignment alternatives with alternative variations. On December 12, 2006, a technically preferred alternative (see Figure 10) was selected for Segment 3 by the Collin County Commissioners Court.

Figure 10. December 2006 Technically Preferred Alternative



Source: Technically Preferred Alignment map, http://www.collincountytx.gov/mobility/pages/historical_outerloop.aspx

A refinement of the technically preferred alternative for Segment 3 was initiated in 2010 with public meetings occurring in 2011 and 2012 (see Section 4.3). The process of identifying a preferred alignment for Segment 3 involved data collection and review and developing and evaluating alignment alternatives. The four alignments alternatives (green, orange, blue, and brown) were developed to minimize, to the extent possible, the potential for impact to the social, economic, and natural environment and to address public concerns. The CCTRA Outer Loop Segment 3 Public Hearing Report dated May 16, 2011, documents the study process (see http://www.collincountytx.gov/mobility/Documents/outer_loop/CCOL3_Combined_Final.pdf).

Based on public and agency comments, the Segment 3 alignment alternatives were further refined with the majority of the alignment on the western and eastern end established. The center portion of the remaining alignment was determined to need further studies. The

approved Collin County Outer Loop locally preferred alignment for Segment 3 was also formally incorporated into the *Collin County Mobility Plan, 2014 Update* thoroughfare plan recommendations and the document was officially adopted by the Collin County Commissioners Court in August 2014. The Collin County Outer Loop locally preferred alignment was classified in the thoroughfare plan recommendations as a tollway with the recognition local revenues alone are insufficient to complete final engineering, obtain environmental approval, acquire right-of-way, and construct the ultimate facility prior to the year 2040.

Because of rate of development occurring in the western end of Segment 3 and with consensus on the alignment, Segment 3a [DNT to SH 289 (Preston Road)] was advanced to preserve the right-of-way. A public meeting was held on October 27, 2015. Subsequently, the CCTRA approved the design and local environmental document on December 14, 2015.

In 2017, additional refinements were made to the alignment from SH 289 (Preston Road) to US 75 to reduce impacts to properties, enhance the horizontal curvature to better accommodate a 70 mph design speed, and improved intersection design. A public meeting was held on October 2, 2017, to discuss the proposed alignment revisions. The project received approval from CCTRA and construction started in December 2019 with anticipated completion in 2021.

4.2 DESCRIPTION OF ALTERNATIVES EVALUATED IN THIS DOCUMENT

Based on the results of previous studies and input from agencies and the public, a locally preferred alternative was developed to minimize, to the extent possible, the potential for impact to the social, economic, and natural environment. This locally preferred alternative is the basis for the Build Alternative evaluated in this document. Additionally, the No Build Alternative is being studied in this document as a point of comparison.

4.2.1 No Build Alternative

The No Build Alternative assumes Segment 3 of the Collin County Outer Loop is not constructed. The No Build Alternative is considered the baseline alternative for comparison to the Build Alternative. The No Build Alternative does include other transportation improvements listed in *Mobility 2045,* capital improvement plans, and thoroughfare plans for the cities and counties, and the *2021-2024 Transportation Improvement Program*. The No Build Alternative includes improvements to several other roadways that traverse or run along the study corridor (see Section 3.3). Currently, looking at *TxDOT Project Tracker* (https://apps3.txdot.gov/apps-cq/project_tracker), there are no major roadway improvements that cross or parallel the project corridor; all scheduled or funded roadway improvements involve only maintenance type activities.

Additionally, the No Build Alternative includes a range of congestion management process projects and programs aimed at improving air quality as a result of nonattainment status by the US Environmental Protection Agency (EPA). These include travel demand management, transportation systems management, intelligent transportation systems/advanced transportation management, transit, and bicycle and pedestrian improvements. While improvements in these categories are aimed to reduce travel demands, none are currently located in the immediate study corridor.

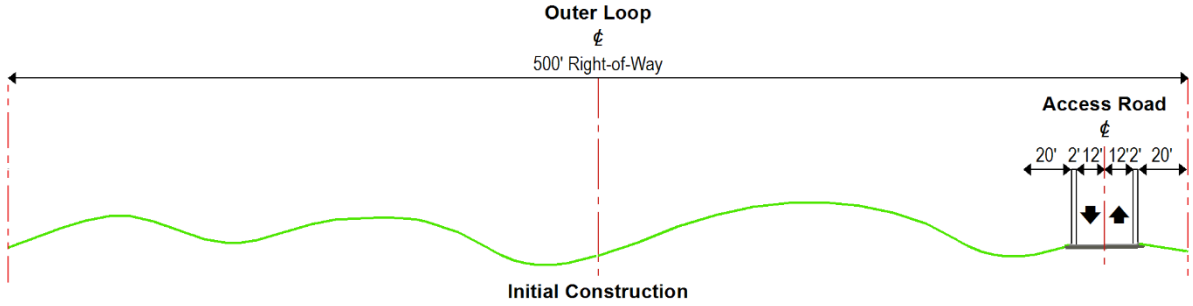
4.2.2 Build Alternative

The Build Alternative would construct the portion of Segment 3 from SH 289 to US 75 (see Figure 1). As shown in Figure 8, the ultimate typical section includes access roads, mainlanes, and access ramps; however, the Collin County Outer Loop is being planned and developed as a

staged facility because the ultimate roadway would not be needed immediately. Staging or phasing the roadway allows the facility to be developed as needed and as funding is available. Though the facility would be staged, the ultimate right-of-way needed would be purchased to preserve the corridor and allow for appropriate land use planning adjacent to the facility. Additionally, the mainlanes could be tolled; the decision to toll would be made later through a public process.

The initial roadway facility planned for Segment 3 is the construction of the ultimate one two-lane access road from SH 289 (Preston Road) to US 75 (see Figure 11). This roadway would operate as a non-tolled, two-way roadway until the second access road and/or the mainlanes are built. From SH 289 (Preston Road) to FM 2478 (Custard Road), the initial construction would built the south access road (ultimate eastbound) and the north access road (ultimate westbound) from FM 2478 (Custard Road) to US 75; therefore, for the purpose of this environmental study, the Build Alternative is defined as the purchase of the typical ultimate right-of-way (typical 500 feet wide with more at the interchanges) and the construction of the access road with dedicated turn lanes at roadway intersections. Further environmental studies will be conducted for additional lanes and road work beyond the initial two-lane access road.

Figure 11. Segment 3 Initial Typical Section



Source: Colin County Outer Loop Segment 3, August 2012

4.3 PUBLIC AND AGENCY COORDINATION

The study for the Collin County Outer Loop was conducted in an open, proactive, participatory process to allow the public and agencies to gain knowledge and provide input throughout the study. This section summarizes the public and agency involvement and coordination efforts. As mentioned in Section 4.1, Collin County conducted several studies on the entire Collin County Outer Loop as well as the other segments from US 75 to the Rockwall County Line (Segments 1, 2, 4, 5).

4.3.1 Public Involvement

Public involvement is an important component in the study of the Collin County Outer Loop. Various meetings and presentations have been held for Segment 3 (SH 289 to US 75) to keep interested persons informed about upcoming public meetings and the project status. The following is a brief summary of public meetings related to Segment 3. More detailed information from each meeting, including public meeting exhibits and summaries, are available at: http://www.collincountytx.gov/mobility/pages/outerloop.aspx.

4.3.1.1 September 4, 9, and 16, 2004, Open House/Public Meetings

This was a series of three open house/public meetings for the Collin County Outer Segment 3 from the DNT to US 75. The locations were First Baptist Church in the Town of Prosper on September 4, 2004, Weston City Hall in the City of Weston on September 9, 2004, and Anna High School in the City of Anna on September 16, 2004. Legal notices were placed in the local newspapers and announcements were mailed to property owners identified along the project and to local and state government officials of Collin County. The objective of this meeting was to present project background information, study process, and schedule as well as to provide attendees the opportunity to offer input into the proposed study corridor and alignment alternatives. Exhibits consisted of a project study corridor map, two environmental constraints map, and the proposed west-east alignment for evaluation for the study corridor.

Two hundred ninety-nine people attended the open house and meetings. The majority attendance occurred at the Weston City Hall meeting with 125 attendees. During the open house, persons wrote comments on the alignment alternatives regarding potential alignments routes and known constraints (e.g., wetlands, cemeteries). Fifty-seven verbal comments were made during the public meetings and eight written comments were submitted. On the preliminary alternative alignment exhibits, half of the comments favored or disfavored a specific alternative alignment location, the remaining comments located various constraints. Written comments were almost entirely related to a selection of a preferred alternative, with one comment discussing various issues with the study, impacts to quality of life, and funding. The verbal comments regarded the process for the study, how the current study corridors were chosen, how right-of-way acquisition and land donation would occur, utility impacts and implementation, and other various environmental related corridor items.

4.3.1.2 October 6, 2006, Open House/Public Meeting

An open house/public meeting was held for the Collin County Outer Loop (from the DNT to US 75) at Celina High school on October 6, 2005. The intent of the meeting was to present the public with the technically preferred alignment within Corridor A and to gather public comments. During the open house, persons wrote comments on the alignment alternatives regarding the technically preferred alignment and known constraints (e.g., wetlands, cemeteries).

Thirteen verbal comments were made during the public meetings and 13 written comments were submitted. On the preliminary alternative alignment exhibits, half of the comments favored or disfavored a specific alternative alignment location, the remaining comments located various constraints. Written comments were almost entirely related to a selection of a preferred alternative, with one comment discussing various issues with the study, impacts to quality of life, and funding. The verbal comments focused on the process for the study and how right-of-way acquisition and land donation would occur.

4.3.1.3 December 12, 2006, Public Hearing

A public hearing was held for the Collin County Outer Loop (for both segments from DNT to US 75 and US 75 to Rockwall County Line) at the Collin County Government Center, McKinney, Texas, on December 12, 2006. The objective of the meeting was to present the Technically Preferred Alternative to the public for comment and request the Collin County Commissioners to adopt the alignment. Exhibits consisted of a project study corridor map, environmental constraints map, study timetable, and alternative alignments/corridor maps.

4.3.1.4 April 8, August 26, and October 14, 2010, Meetings

Meetings were held at various locations for Segment 3 of the Collin County Outer Loop (from the DNT to US 75). The locations included Celina Junior High School (April 8, 2010), Weston City Hall (August 26, 2010), and McKinney North High School (October 14, 2010). The purpose of these meetings was to update the public on the status of Segment 3.

4.3.1.5 April 11, 2011 CCTRA Meeting

Collin County staff provided an update to members of the CCTRA on the development and evaluation of alignment alternatives for Segment 3 on April 11, 2011. The CCTRA approved a motion to set a public hearing date to gain public comment on the alignment.

4.3.1.6 May 16, 2011, Public Hearing

An open house/public meeting was held for the Collin County Outer Loop (from the DNT to US 75) at the Jack Hatchell Collin County Administration Building on May 16, 2011. The objective of the meeting was to provide an update to Segment 3 and gather public comments on the changes to the technically preferred alignment to present a preferred alignment to the CCTRA. Exhibits consisted of a project study corridor map, environmental constraints map and alternative alignments map. Over 90 people attended the public hearing.

Twenty-six written comments were submitted for the public hearing. Written comments related to the donation of right-of-way, alignment preferences, impacts to property values, impacts to residences, and impacts to the unincorporated area of Chambersville. Seven verbal comments were given at the public meeting. Verbal comments were related to the process of the study with public input and transparency, alignment choices, and right-of-way acquisition.

4.3.1.7 August 1, 2011, CCTRA Meeting

Collin County staff presented the technically preferred alignment alternatives for Segment 3 to the CCTRA on August 1, 2011. Staff provided a brief history of the project, an overview of the alignment alternatives, evaluation of alternatives, and public comment received at the May 16, 2011, public hearing. The CCTRA asked for public comments and several members of the community spoke in support of various alignments and/or expressed concerns. Based on the analysis and public comments, the CCTRA selected an alignment as the technically preferred alignment and requested staff to look at refining the alignment to help address public comments.

4.3.1.8 October 24, 2011, CCTRA Meeting

Collin County staff provided an update to the CCTRA on the technically preferred alignment for Segment 3 on October 24, 2011. An alignment was adopted at the August 1, 2011, meeting but members of the CCTRA had directed staff to look at a route that would combine two alternatives. Several members of the community spoke in support of various alignments.

4.3.1.9 May 10, 2012, Open House/Public Meeting

An open house/public meeting was May 10, 2012, at the Celina Middle School. The purpose of the meeting was to solicit public comment on the alignment options for Segment 3 from SH 289 to FM 2478. Fifty-five people were in attendance and eight written comments were submitted. Displays included aerial schematics that showed the different alignment options. All comments were directly related to an alignment preference.

4.3.1.10 August 6, 2012, Public Hearing

An open house/public hearing for the Collin County Outer Loop Segment 3 from SH 289 to FM 2478 was held at the Jack Hatchell Collin County Administration Building on August 6, 2012.

The purpose of the meeting was to present the final alignment choices from SH 289 to FM 2478 and obtain public input and have the Collin County Commissioners select an alignment. Approximately 40 interested persons attended. Three written comments were received. Two additional written comments were received after the meeting. Two written comments were related to the value of their property, and one comment was related to an alignment preference.

4.3.1.11 October 2, 2017, Public Meeting

An open house/public hearing for the Collin County Outer Loop Segment 3 from Denton/Collin County Line to US 75 was held at the Collin County Administration Building on October 2, 2017. The purpose of the meeting was to present the proposed changes to the alignment from SH 289 (Preston Road) to US 75 and obtain public input and have the Collin County Commissioners select an alignment. Approximately 76 interested persons attended. Four verbal comments were had during the meeting and six written comments were received. Two additional written comments were received after the meeting. Comments were related to the support of the proposed alignment changes, opposition to the proposed alignment changes, and a request to make allowances for sidewalks.

4.3.2 Agency Involvement

From the onset of the study, development of the project was coordinated with the local agencies to confirm existing constraints identified during the data collection, identify future constraints, and to obtain public perception. These agencies included not only those required for environmental analysis, but local, regional, and state agencies including the Texas Department of Transportation (TxDOT); the cities of Celina, Weston, McKinney, Anna, and Melissa; and NCTCOG. Celina, McKinney, Anna, Melissa, and NCTCOG have included the Collin County Outer Loop is their respective planning documents.

5.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This section presents the environmental resources, effects, and potential mitigation associated with the Build Alternative (purchase of ultimate right-of-way and construction of a two-lane access road) as described in Section 4.2.2. Issues evaluated include right-of-way, relocations, utilities, land use, access and travel patterns, farmlands, local plans and policies, community cohesion, economic, public facilities and services, visual, demographics, cultural resources, parklands, vegetation, threatened and endangered species, wildlife, migratory birds, water quality, floodplains, wetlands, waters of the US, regulated/hazardous materials, air quality, traffic noise, and indirect and cumulative impacts.

The effects of the Build Alternative are compared to the No Build Alternative (see Section 4.2). In the following sections, the terms proposed right-of-way and study corridor are used. The proposed right-of-way is defined as the land to be purchased (approximately 500-foot wide) for the ultimate typical section as discussed in Section 4.1 and shown in Figure 8. In general, the study corridor has been defined as the proposed right-of-way needed and the properties adjacent to the right-of-way. For some subject matters such as community impacts, cultural resources, indirect impacts, and cumulative effects, different study areas were used and are defined under the specific resource.

5.1 RIGHT-OF-WAY AND RELOCATIONS

The No Build Alternative would not impact any properties or require the acquisition of right-of-way, leaving the current properties and structures intact.

The Build Alternative would require approximately 800 acres. Because the project crosses numerous other transportation facilities, it would utilize 176 acres of existing transportation facilities; therefore, the amount of right-of-way to be acquired is 624 acres. A total of 44 properties would have right-of-way acquired. Temporary construction easements, totaling approximately 1.5 acre, would be required at two locations. Permanent drainage easements, totaling approximately seven acres, would be required in several locations. Table 2 outlines the proposed easements for the project.

Table 2. Proposed Easements

Easement Type	Water Feature	Roadway	Location
Temporary	Tributary to Honey Creek (1)	West of Colmena Road	north side
Temporary	Tributary to Honey Creek (3)	East of Colmena Road	north side
Permanent	Honey Creek	CR 125	north and south side
Permanent	Tributary to East Fork Trinity River	Southwest of CR 286	north and south side

The Build Alternative has been designed to avoid and minimize impacts to structures and properties to the greatest extent possible. There is the potential for two structures to be displaced and/or relocated because of the proposed project: one residential and one non-residential structure. No commercial structures would be displaced. Table A-1 list all the properties to be acquired for the proposed project.

Right-of-way acquisition would be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended. Relocation resources would be made available to all property owners without discrimination.

5.2 UTILITIES

Based on a review of 2019 aerial photographs and project schematic, there are numerous existing utility lines within the study corridor. Utilities consisted of water, sanitary sewer, overhead electrical, fiber optic, and high-voltage overhead electric transmission lines. The proposed project would cross 24 different utilities along the corridor. Table 3 list all the utilities that cross the right-of-way.

Table 3. Utilities

Utility	Locations
Water & Sewer Easement (20')	At CR 87
Overhead Transmission Line Easement (100')	west of CR 87, west of CR 206, at CR 286
Overhead Transmission Line Easement (150')	west of FM 543
Overhead Transmission Line Easement (200')	at CR 286
Overhead Electrical	east of Private Road 5151, at FM 543, at CR 206, at Trinity Falls Parkway, at CR 282, east of CR 282, at CR 286, at CR 277
Fiber Optic	east of CR 125, at FM 543, west of CR 206, at CR 206, at Trinity Falls Parkway, at CR 286, east of CR 286
Water Line	at FM 543, at CR 206, at Trinity Falls Parkway

Under the No Build Alternative, no new right-of-way would be acquired and would not require any utilities to be relocated.

Under the Build Alternative, utility adjustments would be required. Utility companies with affected utilities in the area would be contacted prior to construction to coordinate relocation or adjustments where necessary. The adjustment and relocation of any utilities would be handled so no substantial interruptions to services would take place while these adjustments are being made.

5.3 LAND USE

Based on field observations of land use conducted in September 2020, NCTCOG 2015 land use data, and review of 2019 aerial photographs, the existing land use within the proposed right-of-way is approximately 79 percent farmland and eight percent each residential acreage and single family (see Figure 12). Approximately 50 percent of the study corridor passes through unincorporated areas under county jurisdiction and are not zoned, the remaining approximately 50 percent are within the limits of the City of Celina.

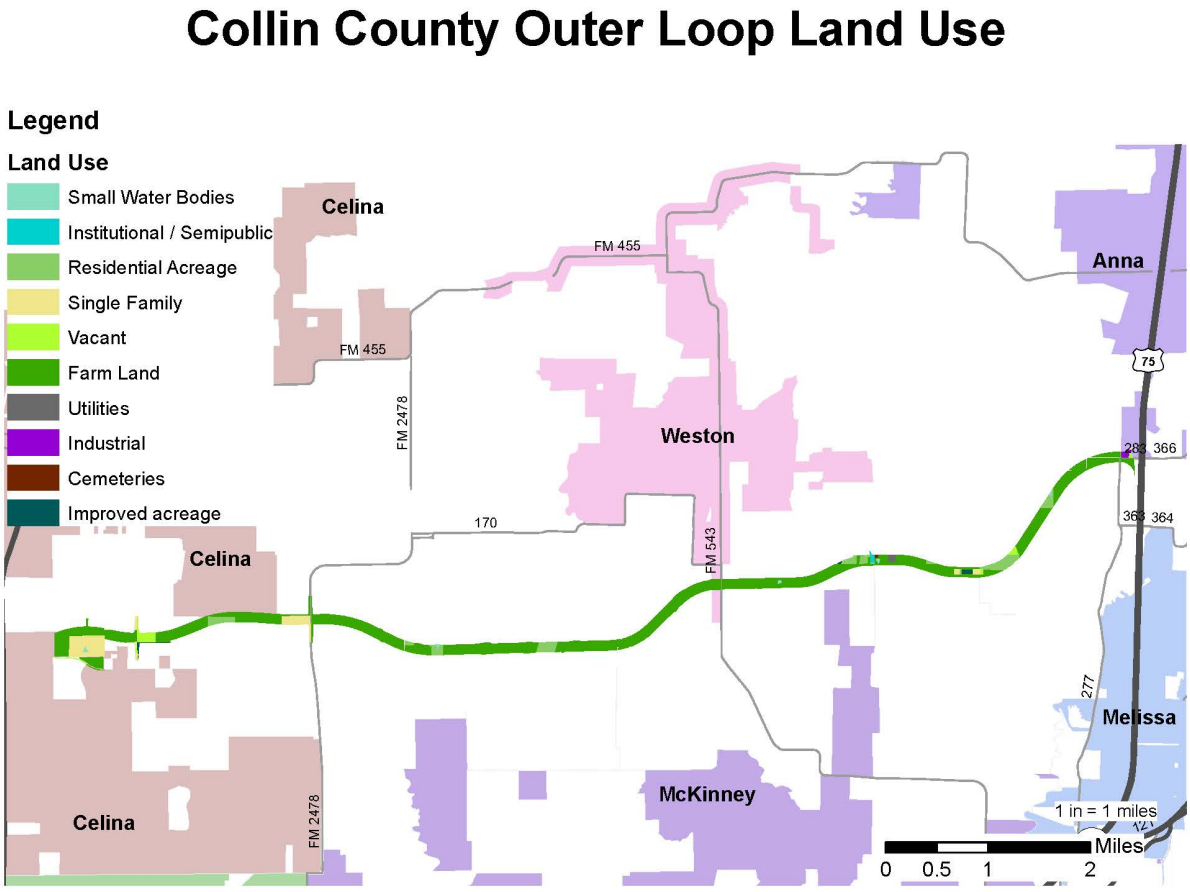
The No Build Alternative would not impact the land use within the study corridor.

Under the Build Alternative, approximately 624 acres of land would be acquired and converted to transportation use. Most of the land use is classified as farmland (79%) and single family and residential acreage (16%). The first phase of the project includes the purchase of ultimate right-of-way and construction of a two-lane roadway adjacent to the southern boundary of the proposed right-of-way from SH 289 (Preston Road) to FM 2478 (Custer Road) and then transition to the northern side of the right-of-way from FM 2478 to US 75. The Build Alternative would impact approximately 13 percent (105 acres) of the proposed ultimate right-of-way and would directly be converted to transportation use. Current land uses could be maintained in the remainder of the right-of-way until the full facility is constructed. Once the proposed full facility improvement is constructed, the entire right-of-way would be dedicated to transportation use.

5.4 ACCESS AND TRAVEL PATTERNS

The No Build Alternative would not change roadway access or travel patterns within the study corridor.

Figure 12. Land Use



5.4.1 Roadway Access

Construction of a new location roadway (Build Alternative) could change access and alter travel patterns. The proposed project would provide new access to properties within the study corridor. The roadway may also improve roadway connections between SH 289 (Preston Road) and US 75. Access to community and medical facilities, employment, and shopping for residents near and along the Build Alternative would be improved by providing a direct east-west route in this portion of Collin County.

5.4.2 Bicycle and Pedestrian

Within the study corridor, the Collin County Regional Trails Master Plan (http://www.collincountytx.gov/parks/Documents/RegionalTrailsPlan.pdf) includes proposed hard surface trails along Wilson Creek, Stovers Creek, and Honey Creek. A proposed trail is also shown along County Road 283 between the East Fork Trinity River and Throckmorton Creek. Additionally, the Collin County Outer Loop is shown as a draft trail corridor.

The bridges along the Segment 3 access road would be designed to accommodate a trail crossing underneath the roadway and along the Wilson Creek, Stovers Creek, and Honey Creek. Because of the rural nature of the corridor and lack of development, sidewalks are not proposed to be built during Phase 1.

5.4.3 Transit

None of the cities in or adjacent to the study corridor have fixed route transit service; however, the city of Celina participates in the Collin County Transit Program through the McKinney Urban Transit District. Collin County Transit provides a subsidized taxi program within Collin County. Residents must be 65 years of age or older, meet one of seven other criteria (e.g., deaf, non-ambulatory without assistance, legally blind), or have an income below established income requirements.

The roadway could improve this service by providing a more direct east-west connection between SH 289 (Preston Road) and US 75 and intersecting roadways. As a result, access to community and medical facilities, employment, and shopping for transit users could be improved.

5.5 FARMLANDS

The US Department of Agriculture (USDA) 2013 Crop data identified approximately 79 percent of the proposed right-of-way as in agricultural or pasture use. The most common crop grown was winter wheat. Table 4 list the identified agricultural uses and land cover within the proposed right-of-way.

Table 4. 2013 USDA Crop Land Use

Land/Crop Type	Acres*	Percent*
Agricultural Use		
Corn	19.2	2.4%
Cotton	0.1	0.0%
Fallow/Idle Cropland	119.5	15.0%
Grass/Pasture	360.3	45.1%
Oats	4.6	0.6%
Other Hay/Non Alfalfa	50.1	6/3%
Pecans	1.0	0.1%
Sorghum	5.9	0.7%
Soybeans	0.4	0.1%
Winter Wheat	74.3	9.3%
Non-Agricultural Use (National Land Cover Database)		
Deciduous Forest	113.5	14.2%
Developed/Low Intensity	10.1	1.3%
Developed/Med Intensity	0.8	0.1%
Developed/Open Space	31.5	1.3%
Herbaceous Wetlands	0.3	0.0%
Open Water	0.2	0.0%
Shrubland	6.8	0.8%
Total	**798.6**	**100%**

Source: 2019 USDA Crops
*Numbers may be different due to rounding and data source

The No Build Alternative would not impact farmland or ranchland.

The Build Alternative would convert existing farmland into transportation use. Of the approximately 800 acres in the proposed right of way, 624 acres of right-of-way to be acquired and only 105 acres would be directly converted to transportation use with the construction of Phase 1. Approximately half of the right of way, 57 percent, is considered prime farmland as defined by the Natural Resource Conservation Service, which would permanently be changed to transportation use now or in future construction.

Avoidance and minimization of impacts to farmlands occurred during the planning and feasibility phase of the study for the Collin County Outer Loop (see Section 4.1). Impacts to farmlands were one of the environmental items considered during this process. To the extent possible, the alignment utilized the edges and boundaries of farms and properties to prevent bisection. Continued avoidance and minimization can occur during the design phase of the project by minimizing division of existing farmlands and hindrance of farmland access.

The Build Alternative could increase access to some farmland or ranchland. Access would be restored to all affected properties, but in some instances, travel across a formerly undivided parcel may be hampered, or remaining property may be uneconomical for farming or grazing purposes. In some of these cases, farm businesses may be eligible for compensation through the right-of-way acquisition process. Mitigation measures can also include the construction of crossings under the roadway for farming or grazing purposes. Mitigation of potential impacts to adjacent remaining farmland could include soil erosion control and invasive plant species control to preserve the remaining farming property. The remaining acquired right-of-way could

continue farming operations until the ultimate facility is constructed. Impacts to farmlands would be addressed when this would occur.

5.6 TRAFFIC NOISE

The FHWA traffic noise modeling software was used to calculate existing and predicted traffic noise levels (Traffic Noise Model 2.5). 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.

Sound from highway traffic is generated primarily from a vehicle 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." In addition, 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 used for this analysis included the following elements:

- Identification of land use activity areas potentially impacted by traffic noise
- Prediction of future noise contours
- Identification of possible noise impacts; and,
- Consideration and evaluation of measures to reduce noise impacts.

Noise contours were used versus a specific receiver based analysis due to the availability of data. Without a detailed traffic analysis and report, specific traffic numbers for ingress/egress movements, peak hour factor, and other noise related traffic components were unknown. The noise contours provide a base for future development while maintaining the ability to assess potentially impacted noise receivers. Noise contours were modeled as a worst case scenario. The traffic data utilized were the results from the regional transportation model and showed a projected a peak average daily traffic volume of 24,400 vehicles per day in 2045 for the Build Alternative. This would represent the “worst case” scenario, and if traffic would be less, noise impacts would be reduced.

Established noise abatement criteria for various land use activity areas are used as one of two means to determine when a traffic noise impact would occur (Table 5).

Table 5. 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.

Source: FHWA
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.

An absolute criterion impact for noise would occur when the predicted noise level at a receiver approaches, equals, or exceeds the noise abatement criteria. "Approach" is defined as one dBA below the noise abatement criteria. For example, a noise impact would occur at a Category B residence if the noise level were predicted to be 66 dBA or above. When a traffic noise impact occurs, noise abatement measures should be considered. A noise abatement measure is any positive action taken to reduce the impact of traffic noise on an activity area.

The No Build Alternative would have a no effect on existing or future noise levels.
The results of the noise analysis for the Build Alternative are shown in Table 6. The noise contours were assessed along both the north and south side of the proposed roadway right-of-way. Potential receivers on the south side of the right-of-way would receive the greatest sound impacts since they are the closest to the new proposed roadway before FM 2478. The results table concluded only receivers closest to the proposed roadway would receive noise impacts since impacts to the opposite side would not occur beyond the purchased right-of-way.

Table 6. Noise Contour Table

Activity Category	dBA Leq Criteria	dBA Leq Absolute Criterion	Noise Contour (feet from edge of pavement)
A	57 (exterior)	56 (exterior)	317
B	67 (exterior)	66 (exterior)	80
C	72 (exterior)	71 (exterior)	37
D	None	None	N/A
E	52 (interior)	51 (interior)	37

Source: NCTCOG, 2014

No noise receivers are within the impacted noise contours for the proposed project; therefore, no mitigation is proposed for project. These noise contours can be used as a guideline by municipalities and local governments to shape future growth to avoid any potential noise impacts.

A comprehensive traffic noise analysis will be performed in all subsequent environmental documents for other segments the Collin County Outer Loop, including the completion of Segment 3. On the date of approval of this document and any subsequent documents by the implementing agency (Date of Public Knowledge), the implementing agency is no longer responsible for providing traffic noise abatement measures for new development adjacent to the facility if the land use is incompatible with projected noise contours.

5.7 COMMUNITY IMPACTS

A community impacts analysis was performed for the proposed project and consists of analyses of local plans and policies, growth, community cohesion, Limited English Proficiency population impacts, and environmental justice population impacts. As part of the analyses, methodology and potential effects specific to each topic are discussed separately in the following sections collectively determine the potential social and economic effects of the proposed project.

5.7.1 Local Plans and Policies

A variety of plans exist to promote, guide, and monitor various development activity ranging from regional transportation infrastructure to residential, commercial, or industrial activities. The project passes through the cities of Celina, Weston, and Anna. The cities of Celina, Anna, and Weston and Collin County have long range planning documents and/or regulations providing for future development and the protection of lands from arbitrary development. A brief description of the local plans in relation to the Collin County Outer Loop is presented in Table 7. In summary, the proposed project is consistent with future land use plans established for the study corridor by local municipalities.

Table 7. Local Planning Documents

Planning Document	Description
Collin County Mobility Plan, 2014 Update, 2016 Addendum	Collin County has identified the Collin County Outer Loop as a major limited access facility toll road east-west connector through the county. Future land use identified near the within the study corridor includes service (office and commercial), mixed use non-residential, and retail.
City of Celina Comprehensive Plan – 2021	The City of Celina has identified the Collin County Outer Loop as a division line between their “East” and “Southeast” sectors. The “East” sector identified as being preparing for development, while the “Southeast” sector is identified as ripe for development. The area is also designated as regional mixed-use.
City of Anna 2050 Comprehensive Plan	Future land use identified within the study corridor includes commercial, park, single-family, employment center district, and medium density residential.
City of Weston Comprehensive Plan/FLUP (2006) & Thoroughfare Plan (2020)	Collin County Outer Loop is identified as a freeway on the thoroughfare plan with current land use identified as agriculture. Future land use is identified as mostly commercial/retail and low density residential.

5.7.2 Growth

As cited in Section 3.1, the population of Dallas-Fort Worth MPA has increased by almost 24 percent since the 2000 Census. The population of Collin County has increase by 59 percent

during the same time frame (see Figure 3). These trends are predicted to continue with MPA expected to reach a population of over 11.2 million people by 2045 and Collin County increasing to over 1.6 million. From 2000 to 2010, the cities of Celina and Anna grew 220 percent and 573 percent, respectively (see Figure 4). Based on 2020 population estimates, these cities continue to experience strong growth. The City of Weston has not undergone similar growth because of a substantial decrease in the land area of the city because of a reduction of city limits in 2009.

The historical and projected population within the four NCTCOG transportation survey zones (TSZs) encompassing the proposed right-of-way and within nearby cities is included in Table 8. TSZs are generally aggregations of census block groups used in for NCTCOG demographic and transportation models. Based upon the TSZ's, the corridor is expected to grow by more than 340 percent from 2020 to 2045.

Table 8. Population Growth around the Study Corridor

	Historical					Projected
Location	**1980**	**1990**	**2000**	**2010**	**2020**	**2045**
TSZ # 3013	N/A	N/A	N/A	N/A	1,582	10,887
TSZ # 3017	N/A	N/A	N/A	N/A	337	1,867
TSZ # 3022	N/A	N/A	N/A	N/A	4,118	9,245
TSZ # 3028	N/A	N/A	N/A	N/A	1,554	11,572
Study Corridor TSZs	N/A	N/A	N/A	N/A	7,591	33,571
City of Anna	855	904	1,225	8,249	15,000	N/A
City of Celina	1,520	1,737	1,861	6,028	21,430	N/A
City of Weston	405	362	635	563	N/A	N/A
Collin County	144,576	264,036	491,675	782,341	1,039,540	1,689,168
Dallas-Fort Worth MPA	3,030,053	4,013,418	5,197,307	6,417,724	7,580,390	11,246,531

Sources: US Census Bureau Census: 1980-2010; NCTCOG 2045 Demographic Forecast, NCTCOG Research and Information Services

The employment growth in the Dallas-Fort Worth urban area and near the study corridor is expected to continue. Table 9 shows the employment estimates from the four TSZs including the study corridor, Collin County, and the Dallas-Fort Worth MPA (employment data was not available for cities). The number of jobs in the TSZs encompassing the study corridor is expected to grow by an average of approximately 20 percent per year between 2020 and 2045. The total number of jobs is projected to be 503 percent higher in 2045 than in 2020 for the study corridor TSZs.

Table 9. Employment Growth around the Study Corridor

Location	2020	2028	2045	Percent Change (2020 to 2045)
TSZ # 3013	393	748	1,379	251%
TSZ # 3017	150	713	1,058	605%
TSZ # 3022	173	506	1,016	487%
TSZ # 3028	187	1,952	4,362	2,233%
Study Corridor TSZs	1,295	3,919	7,815	503%
Collin County	582,687	618,522	835,342	43%
Dallas-Fort Worth MPA	4,917,395	5,455,956	7,024,227	43%

Source: NCTCOG 2045 Demographic Forecast, NCTCOG Research and Information Services.

Because future demographics are established independent of the transportation planning process, the population and employment growth in the area surrounding the study corridor is expected to be the same in the Build and No Build Alternatives. For a discussion of potential indirect impacts on the distribution of population and employment that could result from the Build Alternative see Section 5.14.

5.7.3 Community Cohesion

Based on field observations conducted in September 2020, NCTCOG 2015 land use data, and review of 2019 aerial photographs, the area near the study corridor is predominantly rural. There are isolated residences surrounded by farmland, pastures, open grasslands, and lightly forested areas. A suburban-type community is south of the proposed corridor just east of SH 289 and west of US 75. No other community facilities are within a one mile of the proposed project.

The No Build Alternative would not negatively impact community cohesion; however, it would not improve access to employment or community resources.

During the development of alternatives, the alignment for the Build Alternative was designed to avoid negative impacts to community cohesion. One rural residential structure is located within the proposed construction. The two identified communities near the proposed project were avoid during the planning process to prevent residential and community cohesion impacts.; therefore, the Build Alternative would not sever or displace any neighborhoods or community facilities.

5.7.4 Economic

A review of the economic conditions in the study corridor was based on field observations conducted in September 2020, NCTCOG 2015 land use data, and review of 2019 aerial photographs, NCTCOG major employer data, and NCTCOG activity center data. Much of the economic activity in the area is agricultural with croplands, pastures, and farm animals occupying most of the land in and around the study corridor. No major employers are located near the study corridor.

Under the No Build Alternative, no properties or structures would be impacted; thus, there would be no loss of businesses or employment.

Some agricultural lands would be converted to transportation uses in the Build Alternative. The economic impact of this conversion is difficult to quantify and can vary widely between properties. As stated in Section 3.1, Collin County continues to attract new residents, industry,

and businesses. The Collin County Outer Loop would help the county to keep pace with and support the fast growth from the surrounding cities. Segment 3 would provide local access, provide a link between two major north-south roadways (e.g., SH 289 and US 75), and provide opportunities for development along this corridor. As stated in Table 7, the cities along the corridor designated much of the future land use along the Segment 3 as commercial, office, and non-residential mixed use.

During construction, there is the potential for short-term economic gain to the area due to new job opportunities and a temporary boost to the local economy. It is anticipated that road users would receive long-term economic benefits resulting from lower vehicle operating costs due to a more direct facility and improved safety from utilizing the new facility that would provide new access within the area.

5.7.5 Public Facilities and Services

A review of the public facilities and services in the study corridor was completed based on field observations conducted in September 2020, NCTCOG 2015 land use data, and NCTCOG feature datasets. There are two public facilities within one mile of the study corridor: Collin College Celina Campus (0.1 miles) and Donny O'Dell Elementary (0.6 miles). Both facilities are located at the western terminus south of the proposed project area in the Carter Ranch subdivision.

Under the No Build Alternative, no properties or structures would be impacted; thus, there would be no impacts to public facilities and services.

No public facilities or services would be impacted by the Build Alternative. The two public facilities were avoided along with the Carter Ranch subdivision. The Build Alternative would provide increased accessibility for this portion of Collin County to various religious, educational, medical, and recreational facilities. Emergency public services would have a more efficient facility to use.

5.7.6 Visual

Visual and aesthetic resources within the study corridor were identified through review of aerial photographs and field investigations. Photographs of the study corridor are included in Appendix A. Generally, substantial visual and aesthetic resources within the study corridor consist of undeveloped open space/natural areas. In addition, potential sensitive visual receptors (i.e., areas or users affected by changes in the visual and aesthetic character of the study corridor) have been identified. Sensitive visual receptors of primary concern are residential areas facing and immediately adjacent to the Build Alternative construction. The primary viewers impacted by the proposed facility are single-family residents, motorists, and farm workers. Generally, the existing visual quality of the area ranges from moderate to high with visual and aesthetic resources including farmland, open pastures, forested land, and residential housing.

The No Build Alternative would leave the existing visual setting unchanged; there would be no adverse visual effects.

An evaluation was performed to determine the potential visual impacts resulting from the Build Alternative. The Build Alternative construction would introduce a new element into the study corridor. It would create a new transportation corridor in a predominantly rural area. No homes were identified with severe visual impacts. Minor impacts would occur to 21 homes along the

corridor as these homes would directly face the new facility. The roadway would cause a minor change to the visual character of the residents of the 89 homes within 0.25 miles from the proposed construction facility (Table 10). Some of the affected homes are located within the Carter Ranch subdivision east of SH 289 and south of the proposed project with the remainder scattered along the project length. Although the project would introduce a new roadway element, numerous two-lane county roads cross and parallel the corridor adding a similar roadway element that already exist for the impacted homes and reducing the overall impact the new facility would add to the surrounding visual environment. Therefore, no substantial visual impact would occur from the proposed project.

Table 10. Visual Impacts

Distance from Proposed Roadway	Residences Facing Facility	Residences Not Facing Facility	Total Residences
0 to 100 feet	0	0	0
101 to 500 feet	3	16	19
501 feet to 0.25 miles	18	52	64
Total	21	68	89

Source: NCTCOG Aerial Orthophotos, 2019, NCTCOG Research and Information Services.

The initial construction planned for Segment 3 is the construction of the ultimate two-lane access road. This project would include seeding and placement of sod within the construction site. The ultimate design of the facility could include landscaping treatments and aesthetic elements to help integrate the roadway with adjacent communities. These elements would be developed during final design. The implementation of some aesthetic elements would require local government participation and cost sharing to fund the improvements.

5.7.7 Demographics

5.7.7.1 Environmental Justice

Environmental justice refers to an equitable distribution of both burdens and benefits to groups such as racial minorities or residents of economically disadvantaged areas. Environmental injustice occurs when minority or low-income communities and individuals are burdened with more than their share of environmental risks, while enjoying fewer of the benefits of environmental regulation than non-minority or non-low-income communities and individuals. In accordance with Title VI of the Civil Rights Restoration Act of 1987, data on the presence of and effects to minority and low-income populations were analyzed to ensure the proposed action does not subject these populations to a "disproportionately high and adverse effect."

The study areas for minority and low-income population analyses are based on US Census boundaries traversing the study corridor. This includes seven census tract block groups and 41 blocks. Race and ethnicity data is available at the block group and block level based on the 2010 Census. Estimated income data and English proficiency are available at the block group level and are based on the 2012-2016 American Community Survey (ACS).

Minority Characteristics

Using 2010 Census data, the inclusive 41 blocks encompassing or are located along the study corridor were analyzed for percent minorities. In addition, these blocks were compared to a larger reference area (block groups) for minority populations to determine if any meaningful greater populations of minorities were present. For purposes of this document, the definition of minority populations was based on the Council on Environmental Quality guidance document

Environmental Justice Guidance under the National Environmental Policy Act. Based on this guidance, minority populations are identified as either:

- The minority population of the affected area exceeds 50 percent; or
- 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 and who are members of the following population groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, Other, not of Hispanic origin; or Hispanic.

The total population of the 41 census blocks is 816 persons. The race distribution within the census block groups and blocks is presented in Table A-2 in Appendix A and the locations shown on Figure A.1 in Appendix A. Overall, minority populations represent 13 percent of the total population, which does not indicate a presence of a minority environmental justice population.

One block (tract 302.03, block group 2, block 2021) has a minority population of 50 percent; however, the total population of this block is two. No other block groups or blocks have a minority population above 50 percent. Two blocks (tract 302.03, block group 2, block 2021 and tract 303.05, block group 2, block 2025) were identified as having meaningfully greater percent minority populations than the immediate general area (block groups).

Income Characteristics

Based on FHWA Order 6640.23, a low-income population is defined as any population that has a median household income below the US Department of Health and Human Services defined poverty guideline for a family of four. The 2016 US Department of Health and Human Services poverty guideline for a family of four ($24,300) was compared to ACS five-year (2012 to 2016) estimated the census block groups located within the study corridor to determine if low-income populations were present. Table A-3 in Appendix A provides the 2016 estimates for median household incomes, number of households, and percent below poverty. The table also included the same information for Collin County and the Dallas-Fort Worth-Arlington metro area.

As shown in Table A-3, the median household incomes for the census block groups within the study corridor ranges from $65,833 to $198,555. The median household income within three of the block groups is lower than the average for Collin County but all are higher than the median household income for the Dallas-Fort Worth-Arlington metro area. Although the poverty level for two of the census block groups (tract 302.02, block group 1 and tract 303.02, block group 2) is above the average for Collin County, it is not considered meaningful greater (twice the percent compared to the greater population of Collin County). The median household income of both of these census block groups within the study corridor was higher than the 2016 US Department of Health and Human Services poverty guideline of $24,300. Because the median household income is above the poverty level and there is not a meaningful greater percent of the population below the poverty level, it was determined no substantial low-income populations are within the study corridor.

Potential Environmental Justice Population Impacts

- Right-of-Way – One residential displacement was identified from the proposed project and would occur from a non-environmental justice census block. Numerous residential homes were avoided along the proposed project.

- Access – As stated in Section 5.4.1, construction of Build Alternative would introduce a new roadway to the area and could provide new access and alter travel patterns. The roadway may also improve roadway connections between SH 289 (Preston Road) and US 75 and improve travel to community facilities, employment, and shopping by providing more a direct east-west route.
- Aesthetics – The aesthetics view would change for some residences along the proposed project. Those impacts would occur to both environmental justice and non-environmental justice populations. Although some impacts would occur, the proposed project would not significantly change the general aesthetics of the proposed project area that comprises of rural roads and rural residences.

In summary, though the analysis identified minority populations within the study corridor, neither the No Build Alternative nor Build Alternative would adversely impact minority or low-income populations. The impacts on minority or low-income populations would not be disproportionately high and adverse compared to the general population.

5.7.7.2 Limited English Proficiency

US Department of Transportation (US DOT) guidance requires persons with limited English proficiency have meaningful access to transportation programs and activities. ACS data was used to identify potential limited English proficiency populations within the block groups in the study corridor. Table A-4 in Appendix A shows the limited English proficiency population by census block group, Collin County, and the Dallas-Fort Worth-Arlington Metro Area speaking English "not well" or "not at all." The data indicates only one percent of the population in the block groups speaks English less than "Very Well." Of those persons who do not speak English "Very Well" the predominate language spoken was Spanish. No indications of a limited English proficiency population were present during the field investigations, including street or commercial signs in a foreign language.

Reasonable steps were, and would continue to be taken, to ensure limited English proficiency populations have meaningful access to programs, services, and information Collin County provides. Public notices stated the meeting would be conducted in English and gave a contact number to request special communication accommodations. No one requested Spanish translation prior to or during the meetings. The Collin County website, which hosted the public notices, is offered in Spanish.

5.8 CULTURAL RESOURCES

The Antiquities Code of Texas (ACT) states it is public policy and in the public interest to locate, protect, and preserve all sites, objects, buildings, pre-twentieth century shipwrecks, and locations of historical, archeological, educational, or scientific interest. In 1995, the Texas Historical Commission was made the legal custodian of the ACT and therefore, all cultural resources, historic and prehistoric, are within the public domain of the State of Texas. Such diverse resources may be designated as State Archeological Landmarks by the Texas Historical Commission.

A cultural resource survey was conducted between June 2018 and July 2020 (under Texas Antiquities Permit Number 8470). The direct Area of Potential Effects (APE) used for this survey was defined as 500 feet (proposed right-of-way). The indirect APE was defined as 300 feet beyond the proposed right-of-way for historic resources.

5.8.1 Archeology

Within one mile of the APE, eight previously recorded archeological sites were identified through archival research of the Texas Archeological Sites Atlas. No previously recorded cultural resources were identified within the APE; however, the background review (geology, soils, and topographic maps) indicated portions of the APE had a high potential for containing previously unidentified cultural resources. Shovel testing within the APE was conducted in June 2018. Though four new archeological resources were identified within the APE, none of the sites are recommended for National Register of Historic Places inclusion or State Antiquities Landmark designation under any of the applicable criteria. Additionally, deep testing (trenching) was performed between September 2019 and July 2020 at Stover Creek, Honey Creek, and the Elm Fork Trinity River but no archeological deposits were identified. No artifacts were collected; project records and photographs will be curated at the Texas Archeological Research Laboratory.

5.8.2 Historic Resources

Historic-age resources were defined as structures 45 years of age or older; constructed prior to 1973. Archival research uncovered five historic-age cemeteries and four Official Texas Historical Marker are located within one-mile from the APE.

A field survey was conducted in July 2018 to document all buildings, structures, objects, districts, etc. The survey was performed solely from public right-of-way and roads accessible at the time of the survey. Fifteen historic-age resources on nine properties located within the APE were identified. All the sites are located within the indirect APE and would be not directly impacted (displaced) by the project. The majority of these are domestic or agricultural resources dating to the mid- to late twentieth century. None appear to have retained sufficient integrity or maintain significant historic associations or design distinction. As a result, these resources are not recommended for National Register of Historic Properties inclusion or designation as State Archeological Landmarks. No further consideration of impacts to those properties is recommended under the ACT or Section 106 of the National Historic Preservation Act.

Therefore, neither the No Build Alternative nor the Build Alternative would impact cultural resources.

5.9 PARKLANDS AND OPEN SPACES

Texas Parks and Wildlife Department (TPWD) Code, Title 3, Chapter 26 contains regulations concerning the acquisition and/use of dedicated park and recreational lands. TPWD restricts the use or acquisition of any public land designated and used as a park (recreation area, scientific area, wildlife refuge, or historic site) unless the department, agency, political subdivision, county, or municipality within responsibility for it determines there is no feasible and prudent alternative, and the project/program includes all reasonable planning to minimize harm to the land.

Using geographic information system (GIS), parks were identified in the Collin County area. No parklands or protected open spaces were identified in the study corridor or near the study corridor; therefore, neither the No Build Alternative nor Build Alternative would impact any parklands or open spaces.

5.10 BIOLOGICAL RESOURCES

5.10.1 Vegetation

According to the TPWD *Vegetation Types of Texas*, the study corridor is classified as "Crops." Crops are identified as "cultivated cover crops or row crops providing food and/or fiber for either man or domestic animals. This type may also portray grassland associated with crop rotations." Field observations conducted in September 2020 confirmed the area consisted of farming operations. Dominant herbaceous vegetation identified included Canada wildrye (*Elymus canadensis*), little bluestem (*Schizachyrium scoparium*), Texas winter grass (*Nassella leucotricha*), giant ragweed (*Ambrosia trifida*), henbit deadnettle (*Lamium amplexicaule*), silver bluestem (*Bothriochloa saccharoides*), tall fescue (*Schedonorus phoenix*), western ragweed (*Ambrosia psilostachya*), Texas broomweed (*Amphiachyris amoena*), spider milkweed (*Asclepias asperula*), catchweed bedstraw (*Galium aparine*), litttleleaf sensitive briar (*Mimosa* microphylla) common green brier *(Smilax* rotundifolia), and poison ivy (*Toxicodendron radicans*). Dominant woody species included sugarberry (*Celtis laevigata*), box elder (*Acer negundo*), green ash (*Fraxinus pennsylvanica*), and American elm (*Ulmus americana*).

A few large trees, those defined as over 12 inches diameter at breast height (dbh), were noted within the proposed right-of-way. These trees were located at the crossings of Honey Creek and East Fork Trinity River. These trees were approximately 14 inches dbh, 75% canopy cover and consisted of post oak (*Quercus stellata*), cedar elm (*Ulmus crassifolia*), and American elm (*Ulmus americana*). During construction, the contractor will attempt to preserve these trees if feasible not directly in the roadway construction. Other large trees of similar type existed along these rivers outside the right-of-way, and they do not display any unique qualities from the surrounding arboreal vegetation. The City of Celina has a tree ordinance with required mitigation for removal of trees of specific sizes and species; however, all transportation projects in the thoroughfare plan are exempt from this ordinance.

The No Build Alternative would not impact vegetation.

The Build Alternative would permanently convert these vegetation communities to transportation use, either a conversion to pavement (105 acres) or a conversion to a maintained roadway right-of-way (624 acres). Approximately seven acres of woody vegetation may be removed by the Build Alternative. These woody areas include small and large woody species, with approximately six acres (86 percent) riparian woody vegetation.

The primary impact to vegetation would be the removal of existing vegetation resulting from right-of-way preparation and construction of the Build Alternative. Existing vegetation would be preserved wherever possible. Vegetation communities would be directly impacted by heavy machinery such as bulldozers. Adjacent vegetation may be affected by dust, erosion, and/or sedimentation. Impacts to vegetation communities adjacent to the proposed right-of-way would be minimized through an efficient construction phasing and the implementation of best management practices such as silt fencing during construction. Vegetation areas that would not be re-vegetated would re-vegetate naturally.

5.10.2 Threatened and Endangered Species

The Endangered Species Act of 1973, as amended, protects federal threatened and endangered species and their habitat. The Bald and Golden Eagle Protection Act [16 US Code (UCS) 668-668d] of 1940, as amended, gives protection to Bald and Golden Eagles (*Haliaeetus leucocephalus* and *Aquila chrysaetos*) similar to the endangered species act. Somewhat similar

legislation [i.e., Section 65.171-176 and 69.01-69.9 of the Texas Administrative Code (TAC)] has been passed by the State of Texas. The TPWD has the responsibility of listing threatened and endangered species within the state. In addition, the TPWD Code, Chapters 68 and 88, contains the regulations of endangered species and plants. Both the state and federal laws afford protection to the organism from "direct taking"; however, state laws do not include prohibitions on impacts to habitat, only to activities that would directly impact a listed species.

Five federally listed species and six additional state listed species were identified for Collin County. Table A-5 in Appendix A lists the state and federal listed species in Collin County, their status, habitat, and species effect. Federal species effects are classified as no affect, may affect but not likely to adversely effect, may affect but likely to adversely affect, and would affect. State listed species are listed as no impact, may impact, or would impact.

A cursory review determined potential mollusk habitat in the proposed project area for two state-listed threatened mollusks: Louisiana pigtoe (*Pleurobema riddellii*) and the Texas heelsplitter (*Potamilus amphichaenus*). A mollusk surveys was conducted in June 2018 and June 2020 (East Fork Trinity River only) and resulted in no findings of state threatened mollusk.

During the September 2020 field visit, habitat for the alligator snapping turtle (*Macrochelys temminckii)* and bald eagle was identified at the East Fork Trinity River. No species were observed during the visit and no bald eagle nest were located.

The No Build Alternative would have no effect to threatened and endangered species.

All federal and state listed species identified were found to have no effect or no impact by the Build Alternative with the exception of one state listed species and bald eagles. The state threatened alligator snapping turtle was found to have suitable habitat in the East Fork Trinity River. The Build Alternative may impact alligator snapping turtle. Because the species is mobile, it may move outside the proposed right-of-way once construction starts. Suitable habitat exists for the turtle outside the proposed right-of-way. Only injured or young would have the greatest chance of being impacted by the Build Alternative.

During construction, efforts would be made to avoid impacts to threatened or endangered species. If a threatened or endangered species is identified, construction would cease until further investigation is conducted to avoid potential impacts.

5.10.3 Wildlife and Migratory Birds

Several laws and regulations govern impacts to wildlife resources, most notably the Migratory Bird Treaty Act of 1918 and the Endangered Species Act of 1973.

Several wildlife species were observed during the field investigations in October 2020. The species observed were eastern cottontail (*Sylvilagus floridanus*), fox squirrel (*Sciurus niger),* Mourning Dove (*Zenaida macroura*), Common Crackle (*Quisaclus quiscula*), Red-tailed Hawk (*Buteo jamaicensis*), and Turkey Vulture (*Cathartes aura*). Several other species of wildlife may be present in the study corridor given the existing habitat. These could include deer, small rodents such as rabbit and field mice, a variety of herps, and numerous insects and other small animals.

The No Build Alternative would not impact wildlife or migratory birds.

Potential impacts under the Build Alternative would be similar to threatened and endangered species. Most species are mobile and would move to similar habitat outside the proposed right-of-way. Only injured and young would be susceptible to impacts from the Build Alternative. While no nest or young were observed in the study corridor, a potential for nesting migratory birds and/or their young may be present in the study corridor. The removal of large trees, particularly along the streams in the corridor, could impact nesting birds and other wildlife utilizing these areas as habitat. In addition, ground nesting birds prevalent in farmland and prairie areas, would suffer similar impacts to their removal of habitat for nesting and foraging.

Habitat fragmentation can result from the partitioning of existing habitats by land conversion from human activities or geological processes to make the existing habitat discontinuous. Human induced habitat fragmentation was observed throughout the study corridor, identified with aerial photography, and confirmed through field observations. Areas of relatively undisturbed habitat are sparse and broken up by numerous human land use activities tied to crops, pasturelands, and developed areas.

In addition to habitat destruction during construction, roads and traffic result in noise and air pollution, spread of invasive species, and habitat fragmentation. The effects of habitat fragmentation because of road and other linear projects have been well documented. Habitat fragmentation reduces the value of adjacent habitats in several ways, primarily by creating multiple smaller habitats bisected by a dangerous or impassable obstacle. The result is a decrease in carrying capacity of adjacent habitats. Bridges or culverts would be required for the Build Alternative including structures at the major stream crossing of Wilson Creek, Stover Creek, Honey Creek, and East Fork Trinity River. Various wildlife species are known to use bridge-spanned riparian corridors and culverts to travel under roads. While culverts would not be specifically designed for wildlife movement, larger culverts would likely facilitate wildlife movement. The bridges used to span the larger water bodies would allow greater wildlife movement of larger species. While habitat fragmentation is expected from the Build Alternative, the area was observed to exhibit habitat fragmentation from area roads and land use practices from agriculture. Vehicular collisions with wildlife would also result from the increasing habitat fragmentation. Mortality due to vehicles (i.e., roadkill) affects virtually all types of wildlife, but particularly impacts terrestrial species who are crossing from one habitat patch to another.

The Migratory Bird Treaty Act affords protection (from killing or capture) to the vast majority of bird species (800 species) potentially occurring along the study corridor, including their nests and eggs. Because adult birds are for the most part mobile, the largest potential for impacts to Migratory Bird Treaty Act-listed species would occur during the nesting season (generally spring through summer). Migration patterns would not be affected by the Build Alternative. In the event migratory birds are encountered on-site during project construction, contractors would avoid “taking” protected birds, active nest, eggs, and/or young. The contractor would remove old migratory bird nests from September 1 through the end of February from any structure where work would be done. In addition, the contractor would be prepared to prevent migratory birds from building nests between March 1 and August 31. If project construction is to begin between March 1 and August 31, it is recommended a qualified biologist conduct a survey of the study corridor to determine the presence or absence of migratory bird species in advance of any construction.

5.11 WATER RESOURCES

5.11.1 Water Quality

A total of 12 water bodies cross the study corridor (see Figure 13). Four large streams were identified to cross the corridor: Wilson Creek, Stover Creek, Honey Creek, and East Fork Trinity River. Two of these streams, Wilson Creek and East Fork Trinity River, are identified by TCEQ as major stream segments. The water from these streams and other various water systems flow into Lake Lavon, a lake identified by Texas Commission on Environmental Quality (TCEQ) 2020 Water Inventory List. This document describes the quality status of Texas' natural waters based on historical data and identifies water bodies not meeting standards set for their use.

Wilson Creek and East Fork Trinity River, segment IDs 0821C and 0821D respectively, are unclassified water bodies by TCEQ and transverse the proposed project. Both water bodies flow into Lake Lavon, Segment ID 0821. Both Wilson Creek and East Fork Trinity River are listed in TCEQ's 2020 303d list as impaired waters. Both streams have bacteria as a listed impairment for recreational use. During the build phase of the project, the construction team will be required to use Best Management Practices (BMPs) to reduce the amount of pollutants that would flow into these stream segments.

The No Build Alternative would not impact water quality. The No Build Alternative would involve no additional construction activities and would not require a Texas Pollutant Discharge Elimination System (TPDES).

As previously stated, the Build Alternative would disturb 13 acres of land due to construction. Compliance with the TPDES General Permit for Construction Activity in accordance with Section 402(b) of the Clean Water Act (Public Law 95-217) and Section 405(p) of the Water Quality Act of 1987 (Public Law 100-4) would be required because construction activities would disturb more than one acre. Additionally, Collin County has a TPDES small municipal separate storm sewer systems permit. The TPDES permit also requires the preparation of a notice of intent and a storm water pollution prevention plan prior to the initiation of grading activities. The storm water pollution prevention plan would be based on best management practices and include techniques to reduce the amount of total suspended solids from entering streams. Proposed construction activities for the Build Alternative would disturb more the five acres; therefore, Collin County would be required to submit a notion of intent to the TCEQ.

5.11.2 Floodplains

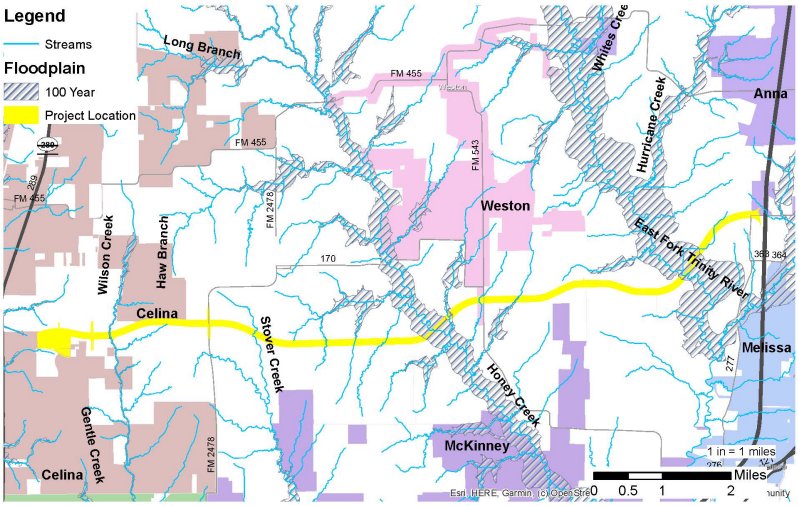
According to the Federal Emergency Management Agency (FEMA), portions of the study corridor are located in the Regulatory Floodway Zone of the 100-year floodplain. Approximately 59.7 acres of the proposed right-of-way and easements are mapped as Zone A or AE (100-year floodplain). These floodplains are associated with Wilson Creek, Honey Creek, Tributaries to Honey Creek, and East Fork Trinity River. Figure 13 details the floodplains in the study corridor.

The Build Alternative would not increase the base flood elevation to a level that would violate applicable floodplain regulations and ordinances. A hydraulic report was produced for the Build Alternative design. The results recommended four bridges at Wilson Creek, Honey Creek, Tributary to Honey Creek (4), and East Fork Trinity River with the remainder crossings resulting in culverts.

Informal coordination with the local floodplain administrator would be required for the Build Alternative. Collin County, Cities of Celina, Weston, and Anna are participants in the National

Figure 13. Waters and Floodplains

Collin County Outer Loop Streams and Floodplain



Flood Insurance Program. In cooperation with FEMA, Collin County would conform to the standard for temporary and permanent fill set by the Flood Insurance Rate Map. The study corridor falls FEMA Flood Insurance Rate Map 48085C0120J, 48085C0140J, 48085C0145J, 48085C0155J, and 48085C0165 all with active dates on June 2, 2009.

5.11.3 Wetlands/Waters of the US

A detailed wetlands and waters investigation was conducted in September 2020. Twelve potential jurisdictional waters of the US were identified in the proposed right-of-way (see Figure 13); no wetlands were identified. A total of 1.8 acres of waters of the US were identified (see Table 11) within the proposed right-of-way and easements.

Table 11. Potential Waters of the US

Feature	Feature Name	Acres in Proposed Right-of-Way/Easements	Potential Impacts (Acres)	Anticipated USACE Permit
Water 1	Wilson Creek	0.152	0.007	NWP 14
Water 2	Tributary to Wilson Creek	0.005	0.001	NWP 14
Water 3	Stover Creek	0.128	0.005	NWP 14
Water 4	Tributary to Honey Creek (1)	0.035	0.002	NWP 14
Water 5	Tributary to Honey Creek (2)	0.028	0.004	NWP 14
Water 6	Tributary to Honey Creek (3)	0.078	0.010	NWP 14
Water 7	Honey Creek	0.448	0.023	NWP 14
Water 8	Tributary to Honey Creek (4)	0.045	0.002	NWP 14
Water 9	Tributary to Honey Creek (5)	0.092	0.004	NWP 14
Water 10	Tributary to Honey Creek (6)	0.100	0.004	NWP 14
Water 11	East Fork Trinity River	0.673	0.025	NWP 14
Water 12	Tributary to East Fork Trinity River	0.044	0.002	NWP 14
Totals		1.828	0.089	

Source: September 2020 Field Investigations

The No Build Alternative would not impact any waters of the US.

The Build Alternative would impact an estimated 0.09 acres of potential waters of the US during construction activities and permanent impacts. The placement of temporary or permanent dredge or fill material into waters of the US, including wetlands is regulated by Section 404 of the Clean Water Act. The US Army Corp of Engineers (USACE) has regulatory power over impacts to Section 404 waters. Under the USACE Nationwide Permit (NWP) program, all impacts would be authorized under an NWP 14 without a preconstruction notification. Any impacts that would exceed the NWP 14 threshold of 0.10 acres or if impacts would include any wetlands, a preconstruction notification would be required. Any temporary fill would be returned to their pre-existing conditions. The contractor would be responsible for complying with the General Conditions of the NWP 14 during construction.

As a result of impacts to waters of the US associated with the construction of the Build Alternative, erosion control, sedimentation control, and post construction total suspended solids control devices from the TCEQ Section 401 Tier 1 Water Quality best management practices list would be required. 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 Build Alternative. Post-construction total suspended solids control devices would be implemented upon completion of the Build Alternative.

The Build Alternative would not cross any navigable waters, therefore no permits under Section 9, 10, and 14 (33 USC 408) under the Rivers and Harbors Act of 1899 through the US Coast Guard would be required.

5.12 REGULATED/HAZARDOUS MATERIALS

The hazardous materials investigation consisted of a visual survey of the study corridor and a regulatory records review. The visual survey was conducted in September 2020. The survey included a visual observation of properties located along and immediately outside the proposed right-of-way to identify the release of or threatened release of petroleum products or other hazardous substances. No potential hazardous materials sites were identified during the field survey. A review of the regulatory database was conducted on November 17, 2020. A review of the results did not identify any sites in the half-mile radius search of the Build Alternative.

Neither the No Build Alternative nor Build Alternative would impact any regulated/hazardous material sites.

It is not anticipated any hazardous materials would be encountered during construction; however, any unanticipated hazardous materials encountered during construction would be handled according to applicable federal, state, and local regulations. The construction contractor should take appropriate measures to prevent, minimize, and control the spill of hazardous materials in the construction staging area(s). The use of construction equipment within sensitive areas should be minimized or eliminated entirely. All construction materials used for the project should be removed as soon as work schedules permit.

5.13 AIR QUALITY

The 1970 Clean Air Act granted the EPA authority to establish National Ambient Air Quality Standards (NAAQS) for criteria air pollutants that may reasonably be anticipated to endanger public health or welfare. EPA has promulgated NAAQS for six criteria pollutants: ozone, carbon monoxide, particulate matter, nitrogen dioxide, sulfur dioxide, and lead. The NAAQS represent maximum allowable concentrations for the criteria pollutants, which are requisite to protect the public health and welfare with an adequate margin of safety. The EPA has identified standards for these six criteria pollutants based on specific time criteria.

5.13.1 Air Quality Conformity

The 1990 Clean Air Act Amendments established specific requirements which must be met for each area not achieving the NAAQS (non-attainment areas). The requirements are based on the severity of the air pollution problem. Transportation conformity is a Clean Air Act Amendments requirement calling for the EPA, US 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 enabling areas to meet and maintain NAAQS for ozone, carbon monoxide, and particulate matter. Through the State Implementation Plan (SIP), the air quality planning process ties transportation planning to the conformity provisions of the Clean Air Act Amendments because each regionally significant transportation project is required to conform to the EPA approved SIP. This ensures transportation projects are consistent with state and local

air quality objectives. The NCTCOG is responsible for the conformity analysis in the Dallas-Fort Worth area.

The Build Alternative is located in Collin County, which is part of the EPA designated 2008 ten-county serious non-attainment area for the eight-hour standard and the 2015 nine-county marginal non-attainment area for the eight-hour standard for the pollutant ozone; therefore, the transportation conformity rule applies. The Build Alternative is consistent with the financially constrained long-range *Mobility 2045*. The US DOT found the *Mobility 2045* to conform to the SIP on November 21, 2018.

The primary pollutants from motor vehicles are volatile organic compounds, carbon monoxide, and nitrogen oxides. Volatile organic compounds and nitrogen oxides can combine under the right conditions in a series of photochemical reactions to form ozone. Because these reactions take place over a period of several hours, maximum concentrations of ozone are often found far downwind of the precursor sources. Thus, ozone is a regional problem and not a localized condition. The modeling procedures of ozone require long-term meteorological data and detailed area wide emission rates for all potential sources (industry, business, and transportation) and are normally too complex to be performed within the scope of an environmental analysis for a highway project. For the purpose of comparing the results of the NAAQS, ozone concentrations are modeled by the regional air quality planning agency for the SIP.

5.13.2 Carbon Monoxide Assessment

Concentrations for carbon monoxide are readily modeled for highway projects and are required by federal regulations. Using guidelines for a Traffic Air Quality Analysis established by TxDOT, any facility having traffic less than 140,000 average daily traffic in the design year (2045 for the Build Alternative) would not exceed the carbon monoxide threshold for the NAAQS. Based on this testing standard, the Build Alternative would only have 24,400 average daily traffic in 2045; and would therefore be under the 140,000 average daily traffic required for an air quality analysis.

5.13.3 Mobile Source Air Toxics Assessment

Dispersion studies show that the roadway air toxics decrease at approximately 328 feet. By 1,640 feet, most studies found it very difficult to distinguish the roadway from the background mobile source air toxic concentrations in any given area. An examination of the study corridor and areas within 328 and 1,640 feet from the study corridor did not reveal any air quality sensitive receivers such as schools, hospitals, assisted-living facilities, and licensed daycare facilities.

5.13.4 Congestion Management Process

The congestion management process is a systematic approach for managing congestion. This process is mandated by federal regulations for metropolitan areas with a population over 200,000. It helps provides information on transportation system performance and on alternative strategies for alleviating congestion and enhancing the mobility of persons and goods to levels that meet state and local needs.

In an effort to reduce congestion and the need for single-occupant vehicle lanes in the region, Collin County and NCTCOG will continue to promote appropriate congestion reduction strategies. This would help alleviate congestion in the SOV study boundary, but would not eliminate it; therefore, the proposed project is justified. The CMP analysis for added SOV

capacity projects in the Transportation Management Area (TMA) is on file and available for review at NCTCOG.

In July 2013, the RTC also adopted a policy requiring the review and application of congestion mitigation strategies to correct corridor deficiencies identified in the CMP when performing corridor and environmental studies and report findings back to NCTCOG. The analysis requires completion of the Project Implementation Form, and, if warranted, the Roadway Corridor Deficiency Form and Corridor Analysis Fact Sheet. The results of this analysis are attached in Appendix C.

5.14 INDIRECT IMPACTS

Sections 5.1 through 5.13 of this document have described the existing environs and the direct effects the Build Alternative may have on the environment. Direct effects are predictable and are a direct result of the building a project.

In addition to direct effects, major transportation projects may also have indirect effects on land use and the environment. Indirect effects are impacts occurring later in time or farther removed in distance from the project 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.

5.14.1 Methodology

This analysis was conducted based on guidelines for indirect impacts established by TxDOT and the American Association of State Highway and Transportation Officials (AASHTO).

5.14.2 Scoping

The scope of the analysis is defined by considering the potential indirect impacts and the possible geographic range of those impacts. By evaluating the proposed design and context of the Build Alternative, the study corridor, and time frame of transportation and comprehensive plans, the level of effort and approach needed to complete the analysis can be determined. Additionally, part of establishing the scope for potential indirect impacts is coordination with municipal and other local government planners who are most familiar with the characteristics of the community and future plans for growth. Accordingly, to obtain input relevant to defining the scope of the analysis, as well as current planning documents, proposed development projects, and other data relevant to the analysis, the Cities of Anna, Celina, McKinney, Melissa, and Weston and Collin County were contacted.

Project Attributes and Regional Context

The current location of Segment 3 of the proposed Collin County Outer Loop is a rural community dominated by farmland and ranchland. The county road system serves as a discontinuous east-west movement within the area. FM 2478 is the major north-south roadway in the study corridor. Both US 75 and SH 289, major north-south roadways are adjacent to the study corridor. Development consists of small rural farms and industrial developments. Some rural and exurban communities exist in the greater surrounding area. The purpose of the Build Alternative is to establish and preserve an east-west transportation corridor by constructing a two-lane roadway and acquiring right-of-way for the ultimate facility. Additionally, the roadway would support anticipated population growth and economic development opportunities in the area.

Geographic Boundary

An area of influence (AOI) is designated as the area within which all substantial project-related impacts, both direct and indirect, are expected to occur. As the assessment of direct project impacts generally stops at the limits of the construction area within existing and proposed right-of-way/easements, an AOI extends the area of consideration to the point where all impacts are expected to diminish to a negligible level or where other infrastructure constituted a greater impact on development compared to the proposed project.

Segment 3 of the proposed Collin County Outer Loop is not bounded by any roadway facilities or major developments potentially attributed to another influence. Because the area has minimal development and land for potential development, the AOI was set at one mile from the proposed right-of-way where any potential development may occur as a product of the proposed roadway. Figure 14 shows the AOI, totaling 18,190 acres.

Time Frame

A temporal frame of reference is needed to address the range of future impacts potentially caused by the Build Alternative. Based on the horizon year for the *Mobility 2045* and the planning horizons of the Collin County Mobility Plan, 2016 Update, the Celina Comprehensive Plan 2013, ONE McKinney 2040 Comprehensive Plan, City of Melissa 2015 Comprehensive Plan Update, City of Weston Comprehensive Plan/FLUP (2006), and the 2010 Comprehensive Plan for the City of Anna, the year 2045 was determined to be an appropriate time frame for the analysis.

Additionally, the risk assessment checklist for indirect induced growth provided in the TxDOT Environmental Compliance Toolkit was used to determine if indirect induced growth impacts analysis is required. Table 12 summarizes the questions included in the risk assessment checklist and confirmed the need to conduct the induced development analysis.

Table 12. Risk Assessment Screening Tool – Induced Development

Question	Project Answer
Does the purpose and need include economic development, or is the project proposed to serve a specific development?	Yes
Are economic development or new opportunities for growth/development cited as benefits of the project?	Yes
Is land in the project area available for development and/or redevelopment?	Yes
Does the project add capacity?	Yes
Is the project located in a rural area outside of the MPO boundary?	No
Does the project substantially increase access or mobility in the project area?	Yes
Is the project area experiencing population and/or economic growth?	Yes

Source: *Risk Assessment for Indirect Impacts*, TxDOT, April 2014

5.14.3 Development Trends and Context within the AOI

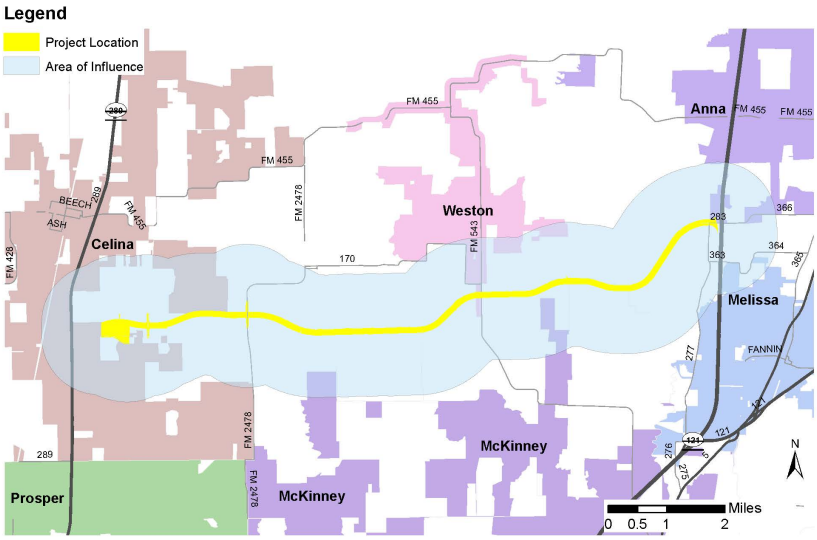
This discussion presents information on general demographic, economic, social, and ecological trends within the AOI, in addition to goals of the community as reflected in local plans.

5.14.3.1 Regional and Local Trend Data

The NCTCOG demographic forecast provides long-range, small area population, household, and employment projections for use in intra-regional infrastructure planning and resource

Figure 14. Area of Influence

Collin County Outer Loop Area of Influence



allocation in North Central Texas. The forecast is conducted for the 12 counties comprising the Dallas-Fort Worth MPA. By 2045, the MPA is expected to reach a population of 11 million and have over seven million jobs. Local municipalities worked with NCTCOG staff to ensure local government land use and comprehensive plans were included in the 2045 demographic forecast. Detailed population and employment data are shown in Tables 8 and 9 in Section 5.7.2.

5.14.3.2 Local Plans

A variety of plans exist to promote, guide, and monitor various development activity ranging from regional transportation infrastructure to residential, commercial, or industrial activities. The Cities of Anna, Celina, McKinney, Melissa, and Weston, and Collin County have long range planning documents and/or regulations providing for future development and the protection of lands from arbitrary development. The proposed project would implement a portion of local transportation plans in accordance with future land use plans established for the study corridor by local municipalities.

Through interviews with local officials and GIS analysis, a majority of the land within the AOI is available for induced development as a result of the Build Alternative. Based on TxDOT guidance, potential impacts to "sensitive resources" having a high likelihood of being adversely affected as a result of indirect induced growth impacts can be categorized as:

- Sensitive species and habitats – Ecologically valuable species and habitat, and/or those vulnerable to impacts. Sensitive species and habitats include state and federally listed threatened and endangered species and their habitats.
- Valued environmental components – Characteristics or attributes of the environment society seeks to use, protect, or enhance such as a protected park or a conservation easement.
- Relative uniqueness, recovery time, and unusual landscape features – Concepts intended to aid the analyst in identifying a resource that may be in decline in the AOI. Relative uniqueness refers to how many comparable examples of the element exist at different levels of scale. Recovery time refers to how long it would take to replace the landscape element if it were disturbed or destroyed.
- Vulnerable elements of the population – Includes the elderly, children, persons with disabilities, minority groups, or low-income groups. These populations may be more susceptible to environmental conditions, more dependent on non-vehicular forms of transportation, or underrepresented in the decision-making process.

Any of these factors or a combination of these factors can exist in the AOI and may warrant detailed analysis. Table 13 lists the resource considered, direct impacts, potential for encroachment impacts due to the Build Alternative, an assessment if the resource is at risk, and a recommendation if the resource should be included in further analysis. Resources investigated in more detail for potential indirect impacts are identified in the table with a "yes" in the right column. Resources either having no direct effects or no substantial potential to result in indirect impacts, and are therefore not analyzed in detail in this analysis are indicated with a "no."

Table 13. Resources Analyzed for Indirect Impacts

Resource	Direct Impacts?	Encroachment Impacts?	Is the Resource at Risk?	Resource Included for Further Analysis?
Waters of the US, including Wetlands	Yes. The placement of temporary and permanent fill material into all 12 streams would fall under Nationwide Permit 14 non-PCN.	Potential fill and degradation of waters of the US from induced development.	The USACE regulates the discharge of dredged and fill material into wetlands and other waters of the US under Section 404 of the Clean Water Act.	Yes
Floodplains	Yes, fill in the floodplains around the larger streams would affect the floodplains	Minimal; potential increases in storm water runoff due to changes in land use and increased development.	No; FEMA regulates impacts to the 100-year floodplain to maintain conveyance of water without altering the existing 100-year levels.	No
Water Quality	No. Required permits to control erosion during construction are expected to result in minimal temporary degradation.	Erosion and sedimentation would be minor/temporary from development	TCEQ monitors the discharge of runoff into impaired bodies of water according to the 303(d) list.	No
Vegetation and Wildlife Habitat	Yes. Approximately 105 acres of undeveloped land would be converted to transportation use with the initial construction of the access road.	Impacts to vegetation and wildlife habitat are anticipated due to increased development.	Vegetation types observed within study corridor include farmland, ranchland and some suburban/exurban development. No special habitat features occur within the study corridor.	Yes
Threatened/ Endangered Species	No	Limited indirect effects to the threatened/ endangered species that may occur in Collin County.	The Endangered Species Act affords protection for federally listed threatened/ endangered species and their habitats; USFWS and TPWD maintain lists of potential occurrences for each Texas County.	No
Farmland/ Ranchland	Approximately 14 acres of farmland would be converted to transportation use with the initial construction of the access road.	Further development would continue to covert the surrounding farmland and ranchland to other uses.	No	Yes
Air Quality	No	None	No	No
Community Resources	No	Beneficial changes in travel patterns and access and potential development	No	No
Parklands	No	None	No	No
Environmental Justice/Limited English Proficiency Populations	No	Beneficial changes in travel patterns and access and potential development	Collin County follows principles in Title VI to provide protection to vulnerable populations.	No

Table 13. Resources Analyzed for Indirect Induced Growth Impacts - Continued

Resource	Direct Impacts?	Encroachment Impacts?	Is the Resource at Risk?	Resource Included for Further Analysis?
Historic-Age Properties	No	None	NRHP listed or eligible historic resources are protected by the THC.	No
Archeological Resources	No	None	The ACT requires notification (to THC) if public agencies sponsor ground-disturbing activity on public land. NRHP listed or eligible archeological resources are protected by the State	No

Based on the results of Table 13, waters of the US, including wetlands, vegetation and wildlife habitat and farmland and ranchland will be analyzed in more detail for potential substantial induced growth impacts.

5.14.4 Assess the Potential for Increased Accessibility

The Build Alternative would increase mobility and improve access and circulation for existing and future traffic in the AOI. By providing a new roadway facility, the project would alter the current traffic patterns within the area and allow greater access to some undeveloped parcels within the AOI. As stated in Section 3.0, the purpose of the Build Alternative is to provide roadway capacity, mobility, accessibility, and economic development within the proposed study corridor and provide more direct links to existing highways and preserving the corridor for future development. It is expected the effects of the construction of Segment 3 of the Collin County Outer Loop would improve mobility and accessibility throughout the AOI.

5.14.5 Assess the Potential for Induced Growth

Undeveloped land and potential sites for development are present throughout the entire AOI. The proposed project is anticipated to result in improvements to mobility that, along with forecasted growth, could influence property values and the overall supply and demand for goods and services within the AOI.

Project-induced land use change can include project-induced development, the redevelopment of already developed land, or a change in the rate of development/redevelopment. 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 methodology seeks to make reasonable judgments about potential project-induced impacts based on information gained from the opinions and experience of professionals, through literature review, and through an assessment of existing and forecasted local conditions. Additionally, input from the cities and county was obtained to help assess the potential for project-induced land use impacts.

All the cities in the AOI and Collin County were contacted and interviewed about the proposed project. While all these entities support the proposed project, they recognize it would serve future transportation and development needs and have included the proposed project in their comprehensive and future transportation plans. No entity had any direct known developments as a result of the proposed project.

5.14.6 Assess the Potential for Impacts on Sensitive Resources

Because a major purpose of the proposed project is economic development, it was assumed the Build Alternative would be a contributing factor to induced growth within the AOI. While the cities and county identified the corridor and the surrounding AOI as a potential for development, no current foreseeable plans were known.

Based on these discussions, it was determined no potential induced growth impacts would occur from the Build Alternative. No reasonably foreseeable actions were identified. Future expansion within the corridor to the ultimate facility may cause induced growth, but this would be addressed in another environmental investigation.

5.14.7 Assess Potential Minimization and Mitigation Measures

The overall consensus is the Build Alternative would not directly influence any reasonably foreseeable future development patterns within the AOI; however, this does not preclude future develop from occurring at a later time or after further construction of the ultimate facility is completed. Any effects from future transportation expansions would be determined in the environmental investigations of those projects. Because the Build Alternative did not identify any negative impacts due to indirect impacts or induced growth, no minimization or mitigation is proposed. Additionally, other agencies such as the US Fish and Wildlife Service (USFWS) and USACE have policies in place to mitigate potential impacts to the resources they oversee.

5.15 CUMULATIVE IMPACTS

Cumulative effects are defined as effects which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. 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 independent of the proposed project, but which are likely to affect the same resources in the future. Environmental and social resources are evaluated from the standpoint of relative abundance among similar resources within a larger geographic area.

The evaluation of cumulative impacts discussed in this document follows the five steps of a cumulative effects analysis as outline in TxDOT guidance.

- Step 1: Resource study area, conditions, and trends
- Step 2: Direct and indirect effects on each resource from the proposed project
- Step 3: Other actions – past, present, and reasonably foreseeable – and their effect on each resource
- Step 4: The overall effects of the proposed project combined with other actions
- Step 5: Mitigation of cumulative effects

5.15.1 Step 1: Resource Study Area, Conditions, and Trends

5.15.1.1 Identification of Resources

According to TxDOT guidance, if a project does not cause direct or indirect impacts on a resource, it would not contribute to a cumulative impact on that resource. Table 14 describes direct and indirect impacts for each resource category and whether the resource is in poor or declining health or at risk. This analysis focuses on those resources substantially impacted by the project or those currently in poor or declining health or at risk, even if project impacts (either

direct or indirect) are relatively small; only those resources meeting these criteria are brought forward for further analysis of cumulative effects.

Table 14. Resources Analyzed for Cumulative Impacts Analysis

Resource	Will the Resource have Direct or Indirect Impacts?	Is the Resource Scare or in Poor /Declining Health?	Included in the Cumulative Impacts Analysis	Explanation for Inclusion or Exclusion from Cumulative Impact Analysis
Waters of the US, including Wetlands	No	Yes	No	Excluded because potential direct impacts from the proposed project would be authorized as an NWP 14. Water resources are protected by existing regulations applying to both public and non-public projects.
Floodplains	No	No	No	Excluded because the hydraulic design would not disrupt the current 100-year floodplain within the study corridor.
Water Quality	No	No	No	Excluded because project level impacts would be mitigated through best management practices. Any other potential growth would also be regulated and require a storm water pollution prevention plan.
Vegetation and Wildlife Habitat	Yes	Yes	Yes	The proposed project would covert approximately 105 acres of undeveloped land to transportation use.
Threatened/ Endangered Species	No	Yes	No	Excluded because there are no adverse impacts to state of federally listed species.
Farmland/ Ranchland	Yes	Yes	Yes	Approximately 105 acres would be converted from a majority of farmland and ranchland. Additionally, any additional growth that would occur would impact the surrounding farmland and ranchland.
Air Quality	No	No	No	Excluded because the proposed project is consisted with Mobility 2045 and 2021-2024 Transportation Improvement Program.
Community Resources	No	No	No	Excluded because no community resources were impacted from the proposed project.
Parklands	No	No	No	Excluded because no parklands were impacted from the proposed project.
Environmental Justice/Limited English Proficiency Populations	No	No	No	Excluded because no identified LEP populations are within the study corridor and steps were taken to address potential LEP process during the public involvement. No disproportionately high or adverse impacts to minority or low-income populations are anticipated from the proposed project.
Historic-Age Properties	No	No	No	Excluded because the proposed project is not expected to adversely affect historical resources.
Archeological Resources	No	No	No	Excluded because the proposed project is not expected to adversely affect archeological resources.

As shown in Table 14, the resources for which the proposed project may potentially have cumulative impacts are biological resources (vegetation and wildlife habitat and farmland/ranchland). Therefore, the remainder of the cumulative impacts analysis will focus only on biological resources.

5.15.1.2 Resource Study Areas and Resource Conditions/Trends

Cumulative impacts analysis requires an evaluation of the sustainability of each resource of interest as viewed from the perspective of a geographic context larger than the study corridor for the project. This spatial frame of reference is referred to as a resource study area (RSA). The RSA for the resource evaluated for cumulative impacts was established using the criteria in TxDOT guidance. The RSA represents a geographic area of sufficient size to sustain the long-term vitality of a given resource, and defining the RSA is largely 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. In addition, the resource was given a general temporal boundary to better define the time period considered.

Biological Resources

The RSA evaluated for biological resources is identical to the indirect impacts area of influence (AOI) previously discussed (see Figure 14) and consists of mostly undeveloped parcels of ranchland, farmland, rural housing, and fallow fields. The southern portion of the AOI at the west and east end of the proposed project has some residential neighborhood areas. The size of the RSA is approximately 18,190 acres.

Urbanization and its effects on the largely agricultural landscape began circa 1970, which has affected the availability of wildlife habitat, wildlife populations, ranchland, and farmland; therefore, 1970 was selected as the early temporal boundary for assessing cumulative impacts to biological resources. The ending temporal boundary was established as 2045, which is the horizon year for *Mobility 2045*.

The biological resources RSA is located within the Blacklands Prairie Ecoregion, an ecosystem initially dominated by a diversity of prairie grasses interspersed by riparian woodlands and upland savannas and forests. Since the 1970's urban expansion has converted many agricultural and ranching lands and much of the native areas to residential, commercial, and other urban uses. Consequently, only wildlife species adapted to the impacts of these human encroachments have survived in the area, and species abundance and diversity have declined (and would be expected to decline further) as forested and wetland resources are replaced by urban developments. Only smaller ranchland and farmland have remained during the urban development as portions are converted or subdivided for different use.

To further describe characteristics of the biological RSA, GIS mapping was used to delineate the various land cover types based on farmland and land cover according to the USDA crop data. The summary of land cover in the RSA is presented in Table 15, provides the acreage and relative amount of crops, vegetation, and habitat within this larger frame of reference. The health of farmland, ranchland, vegetation, and wildlife habitat within the RSA and, in turn threatened/endangered species habitat should it exist, is generally considered stable.

Table 15. Agricultural and Land Cover within the RSA

Land/Crop Type	Acres
Agricultural Use	
Corn	883.0
Cotton	6.6
Fallow/Idle Cropland	2,883.6
Grass/Pasture	6,940.2
Oats	56.0
Other Crops	0.7
Other Hay/Non Alfalfa	1,161.6
Peanuts	0.2
Peas	1.1
Pecans	5.3
Rice	0.1
Sod/Grass Seed	1
Sorghum	217.3
Soybeans	63.3
Spring Wheat	1.8
Triticale	4.3
Winter Wheat	1,064.2
Non-Agricultural Use (National Land Cover Database)	
Barren	21.2
Deciduous Forest	3,069.5
Developed/High Intensity	35.3
Developed/Low Intensity	380.0
Developed/Med Intensity	258.9
Developed/Open Space	670.9
Evergreen Forest	34
Open Water	163.3
Shrubland	179.9
Woody Wetlands	59.9
Total	**18,189.7**

Source: 2019 USDA Crops, including the National Land Cover Database (2016)

5.15.2 Step 2: Direct and Indirect Impacts on Each Resource from the Proposed Project

As discussed in Section 5.3, the Build Alternative would directly covert approximately 105 acres of undeveloped land (including farmland and ranchland) to transportation use. All of this land, either undisturbed vegetation or being used for agricultural or ranching uses may provide habitat for various species of wildlife.

Based on historical and existing conditions in the indirect impacts AOI (i.e., widespread habitat fragmentation and loss due to agricultural practices and urbanization), and the presence of various zoning and planning regulations calling for continued urbanization while preserving parks and floodplains to the extent practicable (and thereby valuable upland and riparian habitat), encroachment-alteration impacts are not anticipated to result from the proposed improvements. It is presumed the Build Alternative may contribute to an accelerated pace of development within the AOI, although no reasonable foreseeable actions were identified in the AOI.

5.15.3 Step 3: Other Actions – Past, Present, and Reasonably Foreseeable

Since 1970, several actions occurred in the water and biological resources RSA that would likely contribute to cumulative impacts. These actions include residential, commercial, and public facility development along with transportation improvements, which are described in this step. Most of the RSA is rural in nature.

Based on discussions with the Cities of Anna, Celina, McKinney, Melissa, and Weston, and Collin County, it was concluded at the present time, no reasonably foreseeable development plans exist within the biological resources RSA. Two major transportation projects were listed in the *2011-2024 Transportation Improvement Program* for the AOI/RSA: expansion of SH 289 from FM 1461 to FM 455 to a 4-lane divided roadway and a new passenger rail line on the existing BNSF railroad. These could induce additional growth, but that would be evaluated when these projects are completed.

5.15.4 Step 4: Overall Effects of the Proposed Project Combined with Other Actions

Approximately 624 acres of additional right-of-way and easements would be required for the proposed project, including 105 acres of direct impacts to vegetation, agricultural, and ranchland providing wildlife habitat located within the proposed right-of-way. The loss of vegetation, habitat, farmland, and ranchland would occur as undeveloped land is converted to developed uses. The land use types and vegetation occurring on them in the study corridor are found in large quantities throughout Collin County and the greater Dallas-Fort Worth region. Because development in the area occurred at a moderate pace, and the large abundance of undeveloped land, including farm and ranchland, cumulative impacts to vegetation and wildlife habitat are not substantial.

5.15.5 Step 5: Mitigation of Cumulative Effects

Municipal governments have the authority to avoid, minimize, and mitigate the impacts of private property development to habitat within their jurisdictions through application of regulations that guide the intensity, type, and location of new development. The zoning and land use regulations of the all the cities in the AOI/RSA are designed to minimize the adverse effects of growth and urbanization.

Based on the limited amount of impacts to biological resources and the common characteristics of other undeveloped land in the AOI/RSA, and assuming appropriate implementation of regulated avoidance, minimization, and mitigation strategies for vegetation and habitat impacts, the proposed project would not contribute to substantial cumulative impacts to the vegetation and habitat, therefore no mitigation is proposed.

6.0 CONCLUSION

The engineering, social, economic, and environmental investigations conducted thus far indicate the construction of the Build Alternative would result in no significant impacts on the quality of human health or the environment; therefore, the Build Alternative is recommended for advancement through the design and construction phase. Further environmental studies would be conducted for additional lanes and road work beyond the two-lane access road.

Appendix A

Supporting Information

Table A-1. Right-of-Way Acquisitions

Parcel Number / Strip Map Number	Physical Property Address	Acreage Needed	Easements Needed			Number of Structures Displaced	Notes
			Drainage	Slope	Temporary Construction		
29	Celina, TX 75009	1.301					Property has been acquired
30	County Road 88 Celina, TX 75009	2.610					Property has been acquired
31	County Road 88 Celina, TX 75009	0.342					Property has been acquired
32	Choate Pkwy Celina, TX 75009	1.575					Property has been acquired
33	Hackberry Cir Celina, TX 75009	9.541					Property has been acquired
34	800 Choate Pkwy Celina, TX 75009	0.666					Property has been acquired
35	Celina, TX 75009	9.524					Property has been acquired
36	5363 Hackberry Cir Celina, TX 75009	0.865					Property has been acquired
37	5415 County Road 87 Celina, TX 75009	0.336					Property has been acquired
38	County Road 87 Celina, TX 75009	19.208					Property has been acquired
39	County Road 87 Celina, TX 75009	10.987					Property has been acquired
40	Choate Pkwy Celina, TX 75009	54.937					Property has been acquired
41	9047 County Road 92 Celina, TX 75009	17.140					Property has been acquired
42	Choate Pkwy Celina, TX 75009	5.326					Property has been acquired
43	County Road 92 Celina, TX 75009	1.976					Property has been acquired
44	9333 FM 2478 Celina, TX 75009	12.937				1 (House)	Property has been acquired
45	FM 2478 Celina, TX 75009	2.591					Property has been acquired
1	FM 2478 Celina, TX 75009	3.159					
2	FM 2478 Prosper, TX 75078	35.837					
3	County Road 126 Celina, TX 75009	4.475					Property has been acquired
4	N/A	0.776					Property has been acquired
5	N/A	14.593					
6A	5272 County Road 126 Celina, TX 75009	0.773					Property has been acquired

Parcel Number / Strip Map Number	Physical Property Address	Acreage Needed	Easements Needed			Number of Structures Displaced	Notes
			Drainage	Slope	Temporary Construction		
6B	5272 County Road 126 Celina, TX 75009	0.504					Property has been acquired
7	N/A	6.407					
8	Celina, TX 75009	9.059					Property has been acquired
9	7030 County Road 125 Celina, TX 75009	6.76			1.106	1	
10	County Road 125 Celina, TX 75009	179.911		5.125	0.239		Property has been acquired
11	E Cottage Hill Pkwy McKinney, TX 75071	54.02					Property has been acquired
12	N/A	7.146					
13	E Cottage Hill Pkwy McKinney, TX 75071	32.499					
	E Cottage Hill Pkwy McKinney, TX 75071	0.099					
14	9145 Trinity Falls Pkwy McKinney, TX 75071	0.543					
	1504 Littrell Ln McKinney, TX 75071	18.207					
15	1441 County Road 282 McKinney, TX 75071	9.54					
16	N/A	3.821					
17	N/A	0.07					
18	N/A	0.129					
19	County Road 282 McKinney TX 75071	29.297		1.843			Ownership has changed
20	County Road 282 McKinney TX 75071	8.941		0.154			Ownership has changed
21A	7780 County Road 286 Anna, TX 75409	1.512					
21B / 23	County Road 286 Anna, TX 75409	21.619					
24	County Road 286 Anna, TX 75409	1.338					
24	N/A	21.02					
	Totals	**623.917**	**0.000**	**7.122**	**1.345**	**2**	

Figure A.1. 2010 Census

Collin County Outer Loop Area of Influence

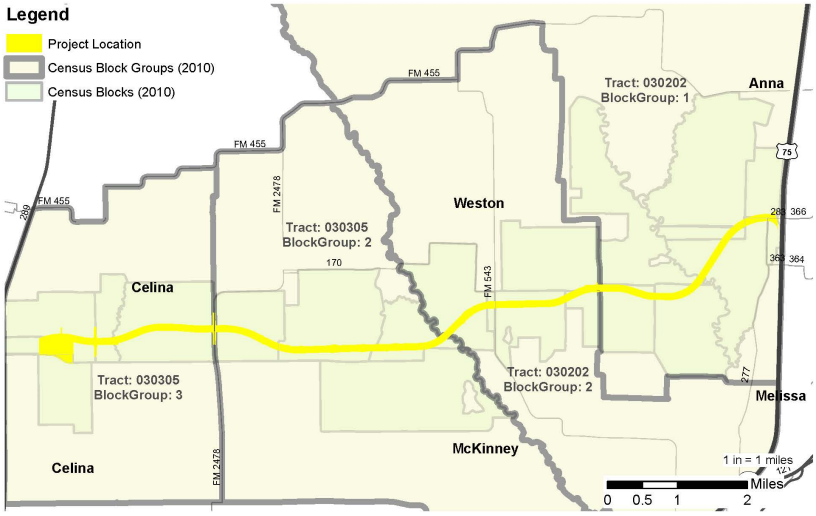


Table A-2. 2010 Census Racial Distribution Characteristics of Study Corridor

Location	Total Population [1]	Population/Percentage						
		White	Black	American Indian and Alaska Native	Asian	Native Hawaiian and Other Pacific Islander	Other [2]	Hispanic or Latino [3]
Block Group 1, Census Tract 302.02	1,299	1,181 90.9%	4 0.3%	4 0.3%	3 0.2%	1 0.1%	11 0.8%	95 7.3%
Block 1062, Block Group 1, Census Tract 302.02	0	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
Block 1063, Block Group 1, Census Tract 302.02	0	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
Block 1065, Block Group 1, Census Tract 302.02	0	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
Block 1066, Block Group 1, Census Tract 302.02	43	37 86.0%	0 0.0%	1 2.3%	0 0.0%	0 0.0%	0 0.0%	5 11.6%
Block 1068, Block Group 1, Census Tract 302.02	2	2 100.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
Block 1123, Block Group 1, Census Tract 302.02	4	4 100.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
Block 1124, Block Group 1, Census Tract 302.02	37	37 100.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
Block 1136, Block Group 1, Census Tract 302.02	0	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
Block 1145, Block Group 1, Census Tract 302.02	0	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
Block 1146, Block Group 1, Census Tract 302.02	0	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
Block 1147, Block Group 1, Census Tract 302.02	5	5 100.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
Block 1148, Block Group 1, Census Tract 302.02	45	42 93.3%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	3 6.7%
Block 1150, Block Group 1, Census Tract 302.02	33	30 90.9%	3 9.1%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
Block 1151, Block Group 1, Census Tract 302.02	24	22 91.7%	0 0.0%	0 0.0%	1 4.2%	0 0.0%	0 0.0%	1 4.2%

Location	Total Population [1]	Population/Percentage						
		White	Black	American Indian and Alaska Native	Asian	Native Hawaiian and Other Pacific Islander	Other [2]	Hispanic or Latino [3]
Block Group 2, Census Tract 302.02	951	826 86.9%	15 1.6%	3 0.3%	1 0.1%	0 0.0%	14 1.5%	92 9.7%
Block 2033, Block Group 2, Census Tract 302.02	68	64 94.1%	3 4.4%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	1 1.5%
Block 2035, Block Group 2, Census Tract 302.02	2	2 100.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
Block 2041, Block Group 2, Census Tract 302.02	4	3 75.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	1 25.0%
Block 2044, Block Group 2, Census Tract 302.02	0	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
Block 2048, Block Group 2, Census Tract 302.02	0	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
Block 2049, Block Group 2, Census Tract 302.02	3	3 100.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
Block Group 2, Census Tract 302.03	2,243	1,838 81.9%	84 3.7%	22 1.0%	12 0.5%	0 0.0%	22 1.0%	265 11.8%
Block 2021, Block Group 2, Census Tract 302.03	2	1 50.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	1 50.0%
Block 2022, Block Group 2, Census Tract 302.03	0	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
Block Group 4, Census Tract 302.03	3,815	2,663 69.8%	238 6.2%	41 1.1%	37 1.0%	3 0.1%	86 2.3%	747 19.6%
Block 4049, Block Group 4, Census Tract 302.03	34	18 52.9%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	16 47.1%
Block 4076, Block Group 4, Census Tract 302.03	0	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
Block 4077, Block Group 4, Census Tract 302.03	0	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
Block Group 1, Census Tract 303.05	814	648 79.6%	26 3.2%	7 0.9%	5 0.6%	0 0.0%	6 0.7%	122 15.0%

Location	Total Population [1]	Population/Percentage						
		White	Black	American Indian and Alaska Native	Asian	Native Hawaiian and Other Pacific Islander	Other [2]	Hispanic or Latino [3]
Block 1098, Block Group 1, Census Tract 303.05	0	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
Block 1101, Block Group 1, Census Tract 303.05	0	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
Block 1104, Block Group 1, Census Tract 303.05	0	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
Block 1105, Block Group 1, Census Tract 303.05	0	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
Block Group 2, Census Tract 303.05	595	539 90.6%	3 0.5%	4 0.7%	5 0.8%	0 0.0%	2 0.3%	42 7.1%
Block 2016, Block Group 2, Census Tract 303.05	38	37 97.4%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	1 2.6%
Block 2019, Block Group 2, Census Tract 303.05	0	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
Block 2020, Block Group 2, Census Tract 303.05	197	177 89.8%	0 0.0%	0 0.0%	1 0.5%	0 0.0%	1 0.5%	18 9.1%
Block 2023, Block Group 2, Census Tract 303.05	5	5 100.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
Block 2025, Block Group 2, Census Tract 303.05	17	11 64.7%	0 0.0%	0 0.0%	4 23.5%	0 0.0%	0 0.0%	2 11.8%
Block Group 3, Census Tract 303.05	2,709	2,286 84.4%	85 3.1%	9 0.3%	28 1.0%	0 0.0%	42 1.6%	259 9.6%
Block 3016, Block Group 3, Census Tract 303.05	31	31 100.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
Block 3017, Block Group 3, Census Tract 303.05	4	4 100.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
Block 3024, Block Group 3, Census Tract 303.05	57	49 86.0%	0 0.0%	1 1.8%	0 0.0%	0 0.0%	0 0.0%	7 12.3%
Block 3027, Block Group 3, Census Tract 303.05	0	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%

Location	Total Population [1]	Population/Percentage						
		White	Black	American Indian and Alaska Native	Asian	Native Hawaiian and Other Pacific Islander	Other [2]	Hispanic or Latino [3]
Block 3028, Block Group 3, Census Tract 303.05	0	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
Block 3031, Block Group 3, Census Tract 303.05	0	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
Block 3032, Block Group 3, Census Tract 303.05	161	126 78.3%	20 12.4%	0 0.0%	0 0.0%	0 0.0%	1 0.6%	14 8.7%

Source: 2010 US Census, P2-PL 94-171 Summary Files
Notes: (1) Total population is the summation of all race categories reported from the US Census Bureau consisting of White, Black, American Indian and Alaska native, Asian, native Hawaiian and other Pacific islander, some other race, and two or more races.
(2) Other is defined as "some other race" category defined by the US Census Bureau.
(3) Total of persons reporting as Hispanic or Latino ethnic origin. As race and ethnic origin are two separate and distinct concepts, these persons may be of any other race.

Table A-3. 2016 American Community Survey Income Characteristics

Location	2016 Median Household Income [1]	Total Number of Households	Households Below Poverty Level	Percent Below Poverty
Census Tract 302.02, Block Group 1	$65,833	460	64	13.9%
Census Tract 302.02, Block Group 2	$69,205	381	36	9.4%
Census Tract 302.03, Block Group 2	$116,509	964	0	0.0%
Census Tract 302.03, Block Group 4	$83,280	1,242	29	2.3%
Census Tract 303.05, Block Group 1	$159,635	371	15	4.0%
Census Tract 303.05, Block Group 2	$198,555	264	0	0.0%
Census Tract 303.05, Block Group 3	$119,375	1,330	83	6.2%
Collin County	$86,188	314,918	22,140	7.0%
Dallas-Fort Worth MPA	$61,330	2,451,163	307,997	12.6%

Source: US Census Bureau, 2012-2016 American Community Survey Five-Year Estimates, Tables B19013 and B17017

Table A-4. 2013 ACS Five-Year Estimates Limited English Proficiency

Location	Total Population[1]	Speak English "not well" or "not at all"	Percent Speak English "not well" or "not at all"
Census Tract 302.02, Block Group 1	1,270	9	0.7%
Census Tract 302.02, Block Group 2	930	25	2.7%
Census Tract 302.03, Block Group 2	3,101	38	1.2%
Census Tract 302.03, Block Group 4	3,664	69	1.9%
Census Tract 303.05, Block Group 1	1,062	0	0.0%
Census Tract 303.05, Block Group 2	645	0	0.0%
Census Tract 303.05, Block Group 3	3,854	6	0.2%
Collin County	828,110	31,932	3.9%
Dallas-Fort Worth MPA	6,454,975	465,996	7.2%

Source: US Census Bureau, 2012-2016 American Community Survey Five-Year Estimates, Table B16004
Notes: (1) Only includes population older than five years and over

Table A-5. Threatened and Endangered Species in Collin County

Species	Federal Status	State Status	Description of Habitat	Habitat Present	Species Effect
Birds					
Black Rail (*Laterallus jamaicensis)*	PT	T	Salt, brackish, and freshwater marshes, pond borders, wet meadows, and grassy swamps; nets in or along edge of marsh.	No	No Affect
Interior Least Tern (*Sterna antillarum athalassos*)	E	E	Nest along sand and gravel bars within braided streams and rivers; also known to nest on man-made structures	No	No Affect
Piping Plover (*Charadrius melodus*)	T	T	Wintering migrant along Gulf Coast beaches. Prefers sandy beaches and lakeshores	No	No Affect
Red Knot	T	T	Primarily seacoast on tidal flats, beaches, herbaceous wetland, and Tidal flat/shore	No	No Affect
White-Faced Ibis (*Plegais chihi*)	*	T	Prefers freshwater marshes, sloughs, and irrigated rice fields, but will attend brackish and saltwater habitats; nest in marshes, in low trees, on the ground in bulrushes or reeds, or on floating mats	No	No Impact
Whooping Crane (*Grus americana*)	E	E	Estuaries, prairie marshes, savannah grasslands, and cropland/pastures. Winter resident at Aransas Natural Wildlife Refuge, Aransas, and Matagorda	No	No Affect
Wood Stork (*Mycteria americana*)	*	T	Forges in prairie ponds, flooded pastures or fields, ditches, and other shallow standing water, including saltwater; usually roost communally in tall snags, mudflats, and other wetlands	No	No Impact
Mollusk					
Louisiana Pigtoe (*Pleurobema riddellii*)	*	T	Streams and moderate-size rivers, usually flowing water on substrates of mud, sand, and gravel; not generally know from impoundments; Sabine, Neches, and Trinity (historic) River basins	Yes	No Impact
Texas Heelsplitter (*Potamilus amphichaenus*)	*	T	Quiet waters in mud or sand and also in reservoirs. Sabine, Neches, and Trinity River basins	Yes	No Impact
Reptiles					
Alligator Snapping turtle (*Macrochelys temminckii*)	*	T	Perennial water bodies, deep water of rivers, canals, lakes, and oxbows; also swamps, bayous, and ponds near deep running water; usually in water with mud bottom and abundant aquatic vegetation	Yes	May Impact
Texas Horned Lizard (*Phrynosoma cornutum*)	*	T	Open, arid, and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush or scrubby trees; sandy to rocky soil	No	No Impact

Source: USFWS and TPWD, October 2020
Notes: E – Endangered
T – Threatened
PT – Proposed Threatened
* – Not listed by USFWS

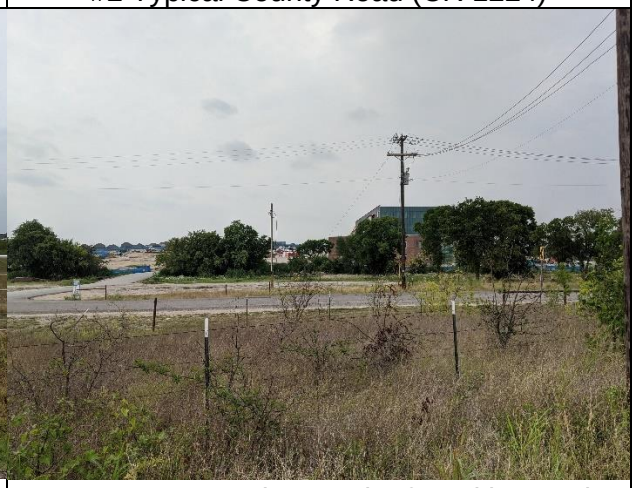
Appendix B

Project Photographs

#1 Western terminus of proposed project

#2 Typical County Road (CR 1224)

#3 Project area at near CR 1224



#4 New Construction south of Hackberry Cir.

#5 Typical roadside vegetation

#6 Typical fields and tree line

#7 Wilson Creek

#8 Project at FM 2478

#9 Honey Creek

#10 East Fork Trinity River

#11 Aerial East Fork Trinity River

#12 Eastern terminus of proposed project

Appendix C

Congestion Management Process Form

NCTCOG CMP
PROJECT IMPLEMENTATION FORM

Submitter Name: Nathan Drozd
Agency Name: NCTCOG
Agency Address: 616 Six Flags Drive, Arlington, TX 76005
Email: ndrozd@nctcog.org
Telephone Number: 817-704-5635

Date: 9/16/2021

Please answer the following questions

Project Name Collin County Outer Loop Segment 3
Project Limits (From) SH 289
Project Limits (To) US 75
CSJ Number N/A
Project Description (Including Travel Demand Management or Transportation System Management & Operations components)

Purchase right-of-way for the ultimate limited access facility and build a two-lane two-way frontage road as part of Phase 1.

2. Does this project add roadway capacity? (IF NOT, THIS FORM IS NOT REQUIRED)

YES

3. Are complementary Travel Demand Management (TDM) or Transportation System Management & Operations (TSM&O) projects within the corridor in the TIP?
If "yes," enter the project name(s), TIP Code(s) and/or CSJ number(s) in table below.
This information can be verified at the following link: Transportation Improvement Program Information System (TIPINS)
*For a list of TDM and TSM&O project types see: Appendix A - TDM and TSM&O Strategies

NO

Project Name	[Enter Here]	**TIP Code**	[Enter Here]	**CSJ#**	[Enter Here]
Project Name	[Enter Here]	**TIP Code**	[Enter Here]	**CSJ#**	[Enter Here]
Project Name	[Enter Here]	**TIP Code**	[Enter Here]	**CSJ#**	[Enter Here]
Project Name	[Enter Here]	**TIP Code**	[Enter Here]	**CSJ#**	[Enter Here]

3b. Are there any other projects not included in the TIP that may complement the project?
If "yes," enter the project name(s) and implementing agency in table below.

NO

Project Name	[Enter Here]	**Implementing Agency**	[Enter Here]
Project Name	[Enter Here]	**Implementing Agency**	[Enter Here]
Project Name	[Enter Here]	**Implementing Agency**	[Enter Here]
Project Name	[Enter Here]	**Implementing Agency**	[Enter Here]

4. Are the project limits within a corridor included in the current Metropolitan Transportation Plan?
This information can be verified in the Mobility Options found here: Freeways / Tollways / RSA's Non RAS's
If "yes," enter the MTP Reference #(s) in table below

YES

MTP Reference #	110.20.1
MTP Reference #	[Enter Here]
MTP Reference #	[Enter Here]
MTP Reference #	[Enter Here]

5. Are the project limits within a corridor included in the current CMP Corridor Analysis?
The complete inventory of corridor fact sheets can be found here: Appendix C - CMP Corridor Fact Sheet

NO

*If "yes," please proceed to question six.
*If "no," please evaluate corridor to determine if improvements are needed by completing the Fact Sheet Form in Step 2 in the tab below, before proceeding to question six.

6. Is the corridor identified as deficient in any category?

YES

*If "yes," please proceed to questions seven.
*If "no," please proceed to question 11.

7. Identify corridor deficiencies as specified in the current CMP Corridor Analysis or in the CMP Roadway Deficiency Form. (Check all that apply)

- [x] Alternative Roadway Infrastructure
- [x] Modal Options
- [ ] System Demand
- [x] System Reliability

8. Review Appendix A of the current CMP or other available resources to identify possible congestion mitigation strategies to correct the deficiency. (Check all that apply)
Appendix A - TDM and TSM&O Strategies

- [ ] Commuter Transportation Options
- [x] Sustainable Development Improvements
- [ ] Freight Management Activities
- [ ] System Management and Operations Improvements
- [ ] Incentive to Use Alternative Modes
- [ ] Transit System Efficiency Improvements
- [ ] In-Vehicle System Efficiency Improvements
- [ ] Traveler Information Services
- [x] Roadway Incident and Emergency Management Options
- [x] Work Zone/Construction Management Operations
- [x] Roadway Infrastructure Improvements

NCTCOG CMP
PROJECT IMPLEMENTATION FORM

9. Specify deficiency-correcting congestion mitigation strategy that will be implemented as part of the project.

Disaster Response and Recovery, Emergency Routing, Traffic Incident Management Training, Acess Management Improvemnts, Addition of New Lanes, Intersection Improvements, Bicycle and Pedestrian Facility Improvements, Work Zone Management and Safety Plans, Maintenance and Construction Activeity Coordination, Winter Maintenance.

10. If not implementing a congestion mitigation strategy, please explain reason.

[ENTER HERE]

11. Submit completed form to NCTCOG - CMP Team at: equintana@nctcog.org

*Submit button will auto generate email to NCTCOG with completed excel document attached.
Please finalize step by sending the email.

SUBMIT FORM

If you have questions, please contact Eric Quintana at **equintana@nctcog.org / 817-608-2381** or Natalie Bettger at **nbettger@nctcog.org / 817-695-9280**

CMP CORRIDOR ANALYSIS - FACT SHEET

ROADWAY NAME	Collin County Outer Loop Segment 3

HIGHWAY	LIMITS	LENGTH	DIRECTION	MAINLANES
Collin County Outer Loop	SH 289 to US 75	11.7	East-West	0

CORRIDOR FACTS (WITHIN 1 MILE)

Functional Class	7
HOV Lanes	No
Parrallel Freeways (within 5 miles)	No
Shoulders	Yes
Frontage Roads	Yes
Bike Options	Yes
Available Transit	No
Park and Ride	No

Direct Connections	No
Truck Lane Restriction	No
Hazmat Route	No
Population	7,591
Number of Employees	1,295
FIM Training Participants	99
Crash Rate (Use Most Recent Year)	[ENTER HERE]
Construction Status	NEPA

PARRALLEL ARTERIALS (ENTIRE LIMITS)

[ENTER HERE]

PARRALLEL ARTERIALS (PARTIAL LIMITS)

[ENTER HERE]

CORRIDOR SCORE (Results from Step 3 - CMP Deficiency Form)

ROADWAY	MODAL OPTIONS	SYSTEM DEMAND	SYSTEM RELIABILITY	SCORE
7	1	25	14	47

CONCLUSIONS/RECOMMENDATIONS

While the roadway has idenitifed deficiencies is several categories, improvements are not warranted. The proposed project is in a rural area where options (such as transit) are not options. Additionally, the ultimate project would address numerous issues identified as deficient.

DEFICIENCY FORM IS REQUIRED WITH THIS SHEET
PLEASE COMPLETE BY GOING TO TAB 3 (STEP 3. DEFICIENCY FORM)
CLICK HERE

Project Name:	Collin County Outer Loop Segment 3
Project Limits (From and To):	SH 289 to US 75
Agency Name:	NCTCOG
Submitter Name:	Nathan Drozd
Telephone:	817-704-5635
Email:	ndrozd@nctcog.org
Date Submitted:	09/21/21

Alternative Roadway Corridor Deficiency

The factors that influence alternative roadway infrastructure include the presence of parallel freeways, frontage roads, parallel arterials, and direct connections or interchanges.

	Click Cell To Select Answer	Score
1. Does the roadway facility have a parallel freeway or toll road within five miles?	No	0
2. Does the roadway facility include a frontage road system?	Yes, entire limits	7
3. Does the roadway facility have a parallel arterial within two miles?	No	0
4. Does the roadway network include a direct connection or non-signalized interchange to another highway?	No	0
Total Points Received in Alternative Roadway Infrastructure Category		7

If total score is 14 or below, then improvements are needed in this category. Please see Appendix A of the current CMP to identify possible congestion mitigation strategies to correct the deficiency.

Modal Options Deficiency

The factors that influence modal options include the presence of transit options (bus and/or rail), park-and-ride facilities, HOV/Managed Lanes, and bicycle/pedestrian options.

	Click Cell To Select Answer	Score
1. Does the roadway facility have established transit service?	No	0
2. Is a park-and-ride facility located along the roadway corridor?	No	0
3. Are HOV or Managed lanes available along the roadway corridor?	No	0
4. Are bike trails or other bike options available along the roadway corridor?	Yes, partial limits	1
Total Points Received in Modal Options Category		1

If total score is 14 or below, then improvements are needed in this category. Please see Appendix A of the current CMP to identify possible congestion mitigation strategies to correct the deficiency.

System Demand (Recurring) Deficiency

The factors that influence system demand include traffic volume, truck volume/percentage, number of employees along the roadway corridor block, and residential population.

	Click Cell To Select Answer	Score
1. Is the peak hour volume capacity above or below the current average Peak V/C of 0.692?	Below or Equal to the Average	10
2. Is the truck volume percentage along the corridor above or below the current average of 9%?	Below or Equal to the Average	7
3. Is the total number of employees along the corridor above or below the current average of 82,549 (by TSZ)?	Below or Equal to the Average	5
4. Is the population along the corridor above or below the current average of 74,611 (by TSZ)?	Below or Equal to the Average	3
Total Points Received in System Demand Category		25

If total score is 14 or below, then improvements are needed in this category. Please see Appendix A of the current CMP to identify possible congestion mitigation strategies to correct the deficiency.

System Reliability (Non-Recurring) Deficiency

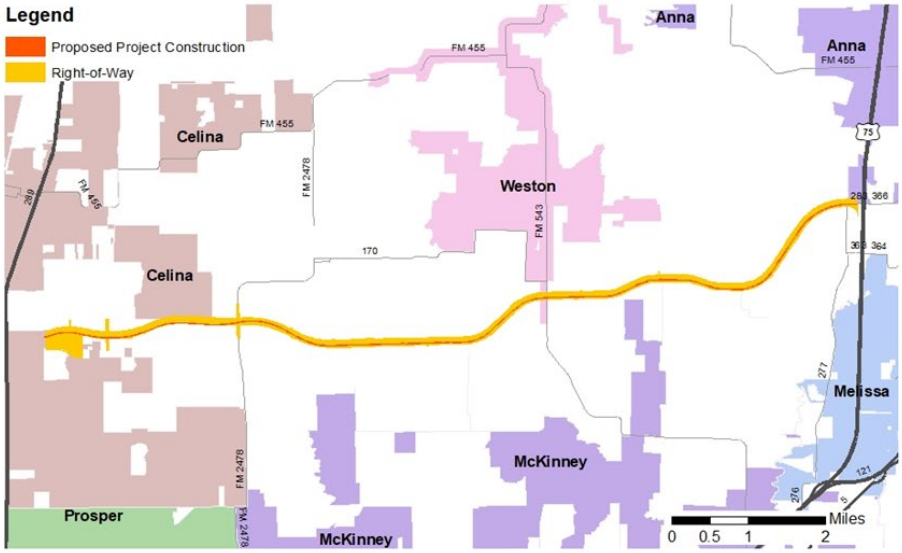
The factors that influence system reliability include facility crash rates, agencies that participate in incident management training, truck lane restrictions, roadway shoulders, and the presence of Intelligent Transportation Systems (ITS) technology.

	Click Cell To Select Answer	Score
1. Is the crash rate for the corridor below or above the current crash rate average of 75.19?*	Below or Equal to the Average	10
2. Does the roadway facility have paved shoulders?	Yes, one shoulder	1
3. Have emergency response agencies (police and fire) along the corridor participated in Freeway Incident Management (FIM) training?**	Yes, entire limits	3
4. Have truck lane restrictions been implemented along the corridor?	No	0
5. Is Intelligent Transportation Systems (ITS) technology being utilized along the corridor?	No	0
Total Points Received in System Reliability Category		14

If total score is 14 or below, then improvements are needed in this category. Please see Appendix A of the current CMP to identify possible congestion mitigation strategies to correct the deficiency.

Notes:
*Please use most recent crash year if available.
**FIM attendance information is maintained by NCTCOG Safety staff. Please call 817-695-9245 to request information.
CMP 2013 - Appendix A

Collin County Outer Loop Project Location



Screening Criteria

Construction	Under Construction and Funded Future Construction
Points Description	The maximum number of points a co functioning at a sufficient level based score, then improvements should be

Category	Inventory
Alternative Roadway Infrastructure (Services)	Parallel Freeway/Toll Roads[1] (5 mi)
	Frontage Roads[1]
	Parallel Arterials[1]
	Direct Connections (Interchanges)[1]
Modal Options (Services)	Transit[2]
	Park-and-Ride[3]
	HOV Lanes[1]
	Bike Options[3]
System Demand (Recurring)	Peak V/C[3]
	Truck Volume Percentage[3]

	Number of Employees (by TSZ)[4]
	Population (by TSZ)[4]
System Reliability (Non Recurring)	2012 Crash Rate[3]
	Shoulders[1]
	FIM Attendance/Training[3]
	Truck Lane Restrictions[3]
	Intelligent Transportation Systems[3]

This will be used as a screening process when assigning points to a corridor. If the corridor is under/planned construction then it can be exempt from being scored since a solution is currently being proposed.

rridor can receive is 100. This means that the corridor is on the four scoring categories. If the corridor receives a low considered in the four scoring categories.

Measure	Points	Max Number of Points
Yes	12	
None	0	
Entire Limits	7	
Partial Limits	3	
None	0	
Entire and Partial Limits	4	**25**
Entire Limits	3	
Partial Limits	1	
None	0	
Yes	2	
None	0	
Bus and Rail	10	
Rail	7	
Bus	5	
None	0	
Yes	7	
None	0	**25**
Yes	5	
None	0	
Entire Limits	3	
Partial Limits	1	
None	0	
Below or Average	10	
Average - 0.692		
Above	3	
Below or Average	7	
Average - 9%		
Above	1	**25**
Below or Average	5	

Average - 82,549	
Above	1
Below or Average	3
Average - 74,611	
Above	1
Below or Average	10
Regional Rate Average - 75.19	
Above	3
Full Outside and Inside	6
Partial Shoulders	3
One Shoulder	1
None	0
Entire Limits	3
Partial Limits	1
None	0
Entire Limits	3
Partial Limits	1
None	0
Entire Limits	3
Partial Limits	1
None	0

25