Collin County Outer Loop
From South Dallas Parkway to East of SH 289
Collin County, Texas

December 2015

TABLE OF CONTENTS

APPENDICES

LIST OF FIGURES

LIST OF TABLES

1.0 INTRODUCTION

The Collin County Toll Road Authority (CCTRA) has undertaken the preparation of this environmental document for Segment 3a of the proposed Collin County Outer Loop. This document presents the potential social, economic, and environmental effects for this new three-mile section of the Collin County Outer Loop located between the South Dallas Parkway [future Dallas North Tollway (DNT)] and east of State Highway (SH) 289 (Preston Road). This document analyses the first phase of development of Segment 3a, which includes the purchase and preservation of right-of-way for the ultimate roadway facility and the construction of a two-lane access road from South Dallas Parkway to east of SH 289 (see Figure 1).

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 2035: The Metropolitan Transportation Plan for North Central Texas – 2014 Amendment* (*Mobility 2035 – 2014 Amendment*) (http://www.nctcog.org/trans/mtp/2035/2014Amendment.asp). The Collin County Outer Loop is a planned roadway facility that would provide a necessary east-west link in the county and is expected to help relieve congestion on other roadways and provide economic development opportunities for northern Collin County. The full loop would provide access from the extension of the DNT, SH 121, US 75, US 380, and enhance access to Rockwall County. The ultimate facility could be a 10-lane limited access corridor with a toll component. An initial section of the loop from US 75 to SH 121 is open to traffic as a two-lane access road and the ultimate right-of-way has been purchased. Though planned as a part of the larger facility in Collin County, Segment 3a has independent utility because the project would function as a usable roadway, does not require the implementation of other projects to operate, and would not restrict the consideration of other foreseeable transportation improvements.

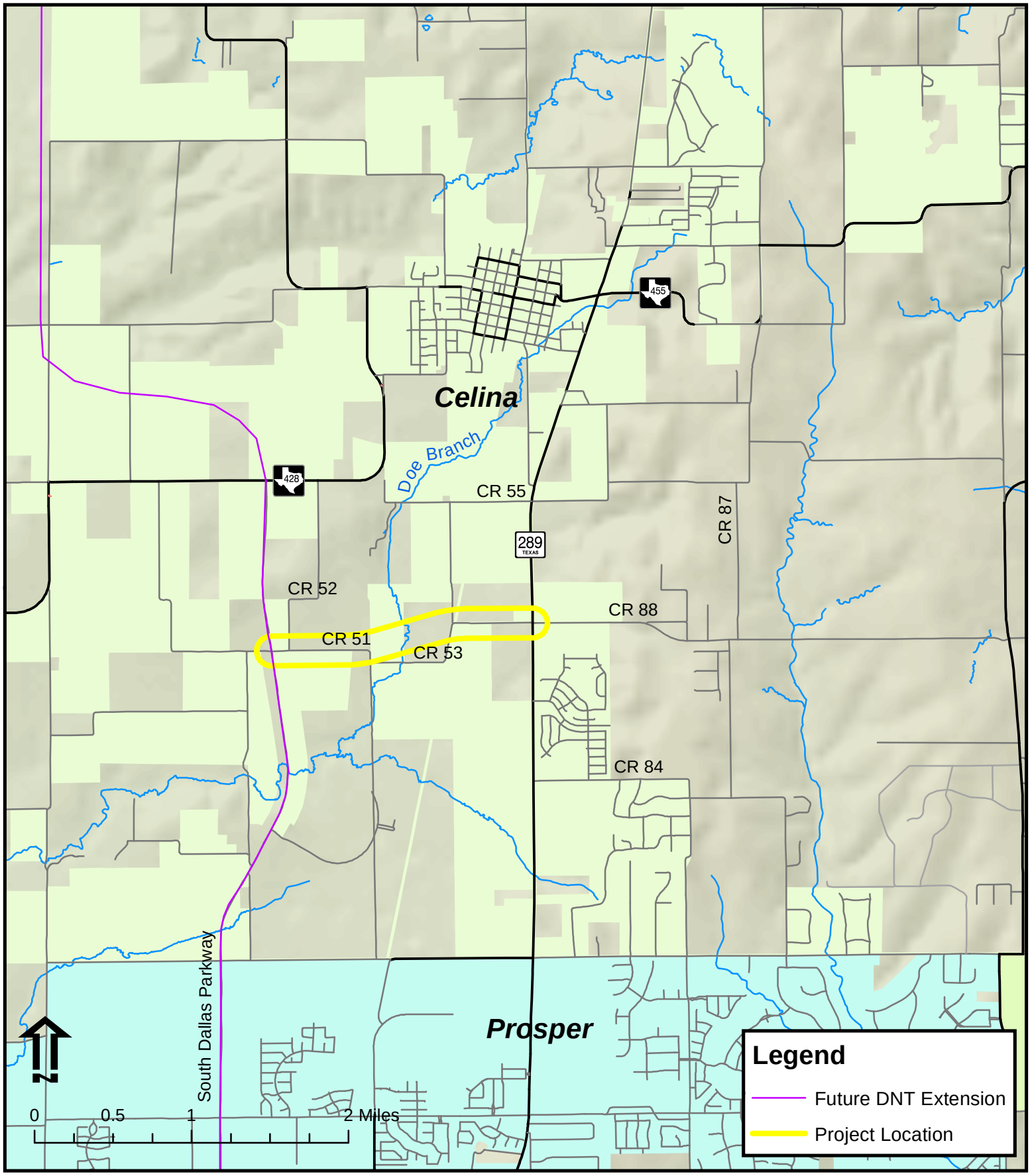
The purpose of this document is to provide the public and decision makers with adequate and appropriate information regarding the need and purpose of this project; alternatives considered; and the social, economic, and environmental effects. The final approval of the project would be made by CCTRA after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

2.0 NEED FOR PROPOSED ACTION

The need for a new roadway from the South Dallas Parkway (future extension of the DNT) to east of SH 289 is to help address population and employment growth, support economic opportunities, and improve connectivity.

2.1 REGIONAL 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, a 23.5 percent increase in population since the 2000 Census (see Table 1). The MPA includes 12 counties (Collin, Dallas, Denton, Ellis, Hood, Hunt, Johnson, Kaufman, Parker, Rockwall, Tarrant, and Wise Counties).



Collin County Outer Loop Segment 3a

Local Environmental Document

Project Location Map

South Dallas Parkway to east of SH 289

Figure 1

COLLIN COUNTY

North Central Texas Council of Governments

Map Date: October 2015

Table 1. Population Growth

	1970[1]	1980[1]	1990[1]	2000[1]	2010[1]	Projected 2035[2]
Dallas-Fort Worth MPA	2,425,927	3,030,053	4,013,418	5,197,317	6,417,724	9,833,378
Change		604,126	983,365	1,183,899	1,220,407	3,415,654
% Change		25%	32%	29%	23%	53%
Collin County	66,920	144,576	264,036	491,675	782,341	1,404,149
Change		77,656	119,460	227,639	290,666	674,400
% Change		116%	83%	86%	59%	86%
Celina	1,272	1,520	1,737	1,861	6,028	N/A
Change		248	217	124	4,167	N/A
% Change		19%	14%	7%	224%	N/A
Prosper	501	675	1,018	2,097	9,423	N/A
Change		174	343	1,079	7,326	N/A
% Change		35%	51%	106%	349%	N/A

Source: (1) US Census Bureau, (2) *NCTCOG 2040 Demographics*
N/A = Information not available

The project is located in the City of Celina and near the Town of Prosper, both, experiencing increased growth since 1990. The City of Celina has grown three percent over the past year and approximately 11 percent since the 2010 census. The Town of Prosper was ranked as the 4th fastest growing city in the Dallas-Fort Worth region for 2013 with a growth rate of 10 percent and 56 percent since the 2010 census.

As population increases, employment levels are expected to increase accordingly. Table 2 shows the 2011 and forecasted 2035 employment for the Dallas-Fort Worth MPA and Collin County. It is projected that employment in Collin County will increase by 61 percent between 2013 and 2035 compared to 44 percent 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.

Table 2. 2013 and 2035 Employment

Location	Employment		% Employment Increase 2013 to 2035
	2013	Forecasted 2035)	
Dallas-Fort Worth MPA	4,292,516	6,177,016	44%
Collin County	389,617	628,349	61%

Source: *NCTCOG 2040 Demographics*

The county continues to attract new industry and businesses. The associated increases in population and employment will create a strain on existing transportation systems. Business and economic development is needed to keep pace with and support the fast growth from the surrounding cities. Segment 3a would provide a link between two major north-south roadways within the area and provide opportunity for development along this corridor.

2.2 TRANSPORTATION SYSTEM LINKAGES

Within northern Collin County, there are very few major transportation facilities (see Figure 1). Today, travel choices are limited to one controlled-access facility (US 75) and numerous smaller, rural roadways which provide limited mobility and access choices.

- US 75 runs generally north-south east 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 is scheduled to be widened to six-lane from County Road (CR) 275 (Telephone Road) to CR 375 (County Line Road) located at the Collin/Grayson County line.
- On the west end of the study corridor, the South Dallas Parkway is a two-lane facility that travels north and south. The DNT is expected to extend to Farm-to-Market (FM) 121 (Grayson County Line) as a full six-lane tolled facility with frontage roads on both sides.
- Bisecting the study corridor, SH 289 (Preston Road) is a four to six-lane roadway that travels north and south. This roadway is has been recently widened within the past year.
- The nearest major east-west roadway is US 380, which is approximately five miles to the south. It is a four/six-lane facility lane. There are no current plans to widen this facility due to right-of-way constraints.
- The study corridor is also served by several county roads; however, none are continuous between the future extension of the DNT and east if SH 289.

As mentioned in Section 2.1, the study corridor is seeing significant population growth, but improvements to the roadway infrastructure have not kept pace and are constrained by limited availability of funding for transportation projects. As mentioned previously, the Collin County Outer Loop is included in the *Collin County Thoroughfare Plan, 2014 Update* and the *Mobility 2035 - 2014 Amendment*. The loop is also included in the *2013 City of Celina Comprehensive Plan*. The Collin County Outer Loop is a planned roadway facility that would provide a necessary east-west link in the county and spur economic development in the area. The loop would provide access to the future extension of DNT, SH 121, and US 75 and provide an alternate route to US 380.

3.0 PURPOSE OF THE PROPOSED ACTION

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 3a 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 that accommodates varied travel demands or modes as warranted

4.0 ALTERNATIVES

As mentioned in Section 2.1, Collin County ranks as one of the top growth areas in the state and the nation and is the fastest growing county in the 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

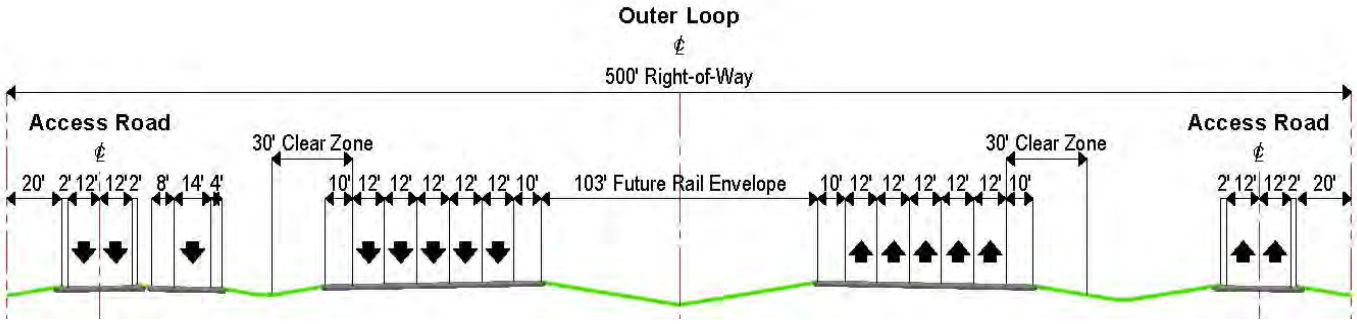
The Collin County Outer Loop was first identified in the 2002 update to the *Collin County Mobility Plan* as "Multimodal Transportation Corridor Preservation." The 53-mile loop was divided into five segments based on priorities to preserve right-of-way and construct the facility. The segments are:

Segment 1: From US 75 to SH 121
Segment 2: From FM 6 to Rockwall County Line
Segment 3: From the Dallas North Tollway to US 75
Segment 4: From US 380 to FM 6
Segment 5: From SH 121 to US 380

In the fall of 2000, Collin County initiated a study to potential corridors in Segment 3 of the Collin County Outer Loop. The study concentrated on the identification of the corridor for further study and included various east-west corridors from southern Collin County to northern Collin County. In June 2002, the Collin County Commissioners Court selected "Corridor A" and authorized further study on alignments within the corridor. After "Corridor A" was selected, three major alignment alternative, with sub alternatives comprising of eight different alignments were identified during the alternative planning process. On December 12, 2006, a technically preferred alternative was selected for Segment 3 by the Collin County Commissioners Court.

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). 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 2). The typical 500-foot wide right-of-way could be wider at intersections, ramps, and where cuts or fills result in increased widths of side slopes.

Figure 2. Collin County Outer Loop Ultimate Typical Cross Section



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. After the series of public meetings in 2012, Segment 3 was then divided into shorter sections for schematic, environmental, and engineering development.

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 that local revenues alone would be insufficient to complete final engineering, obtain environmental approval, acquire right-of-way, and construct the ultimate facility prior to the year 2040.

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 3a 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 as programmed in *Mobility 2035 - 2014 Amendment,* capital improvement plans for the cities and counties, and the *2015-2018 Transportation Improvement Program* (TIP). The No Build Alternative includes improvements to several other roadways that traverse or run along the study corridor. Table 3 lists the projects currently planned or being constructed that are listing in the current TIP in or near the study corridor. Additionally, the No Build Alternative includes a range of congestion management process projects 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.

Table 3. Planned Transportation Improvement

Project IDs	Street/Limits	Type of Project	Year Funded	Total Project Costs (in Millions)
20070 0918-24-160	BNSF Passenger Rail from Denton/Collin County Line to North Frisco (Collin County Section)	Phase 1 – Rail Transit (Passenger Tail)	2011	$0.3
20203 0091-04-055	SH 289 from North of FM 1461/BUS 289D to FM 455 in Celina	Reconstruct and widen 2 lane rural highway to 4 lane divided urban (ultimate 6 lanes)	2011	$36.3
83023	DNT from US 380 to FM 428	New location – 0/2/2	2008	$8.5

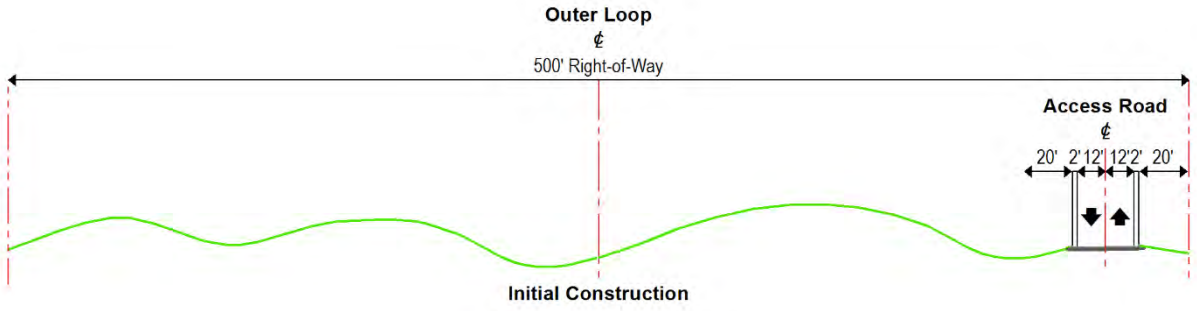
Source: *2015-2018 TIP, TIPINS*; NCTCOG, October 2015

4.2.2 Build Alternative

The Build Alternative would construct the portion of Segment 3 from the South Dallas Parkway to east of SH 289 (known as Segment 3a). As shown in Figure 2, the ultimate typical section includes access roads, tolled 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.

The initial construction planned for Segment 3a is the construction of the ultimate two-lane eastbound access road from South Dallas Parkway (future DNT) to east of SH 289 (see Figure 3 and Figure 4). This roadway would operate as a non-tolled, two-way roadway until the westbound access road and/or the mainlanes are built. In addition right-of-way would be purchased east of SH 289 for future extension of the facility to the east and for the potential interchanges at the DNT and SH 289. 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 eastbound 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 3. Segment 3a Initial Typical Section



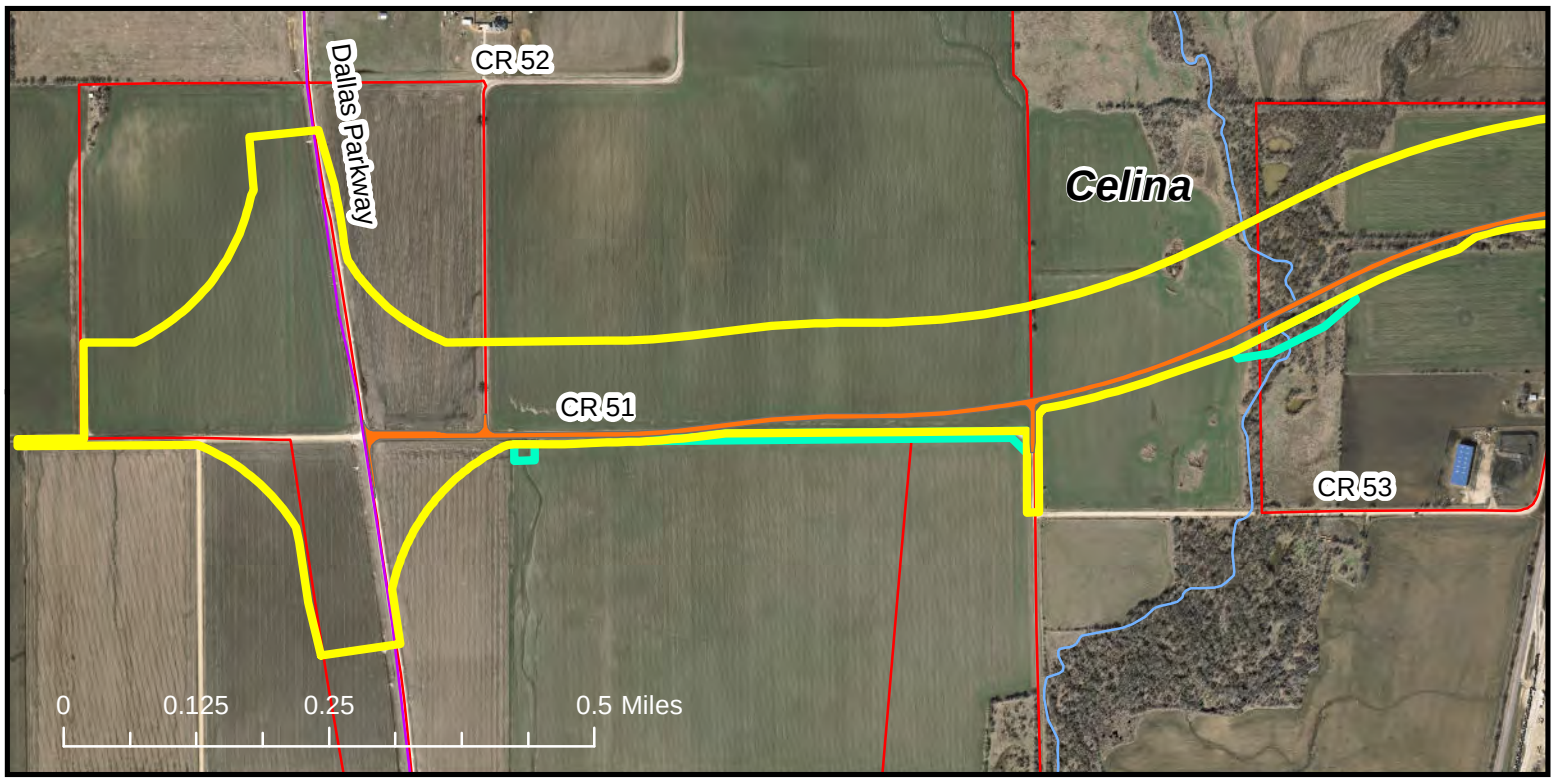
Source: Colin County Outer Loop Segment 3, August 2012

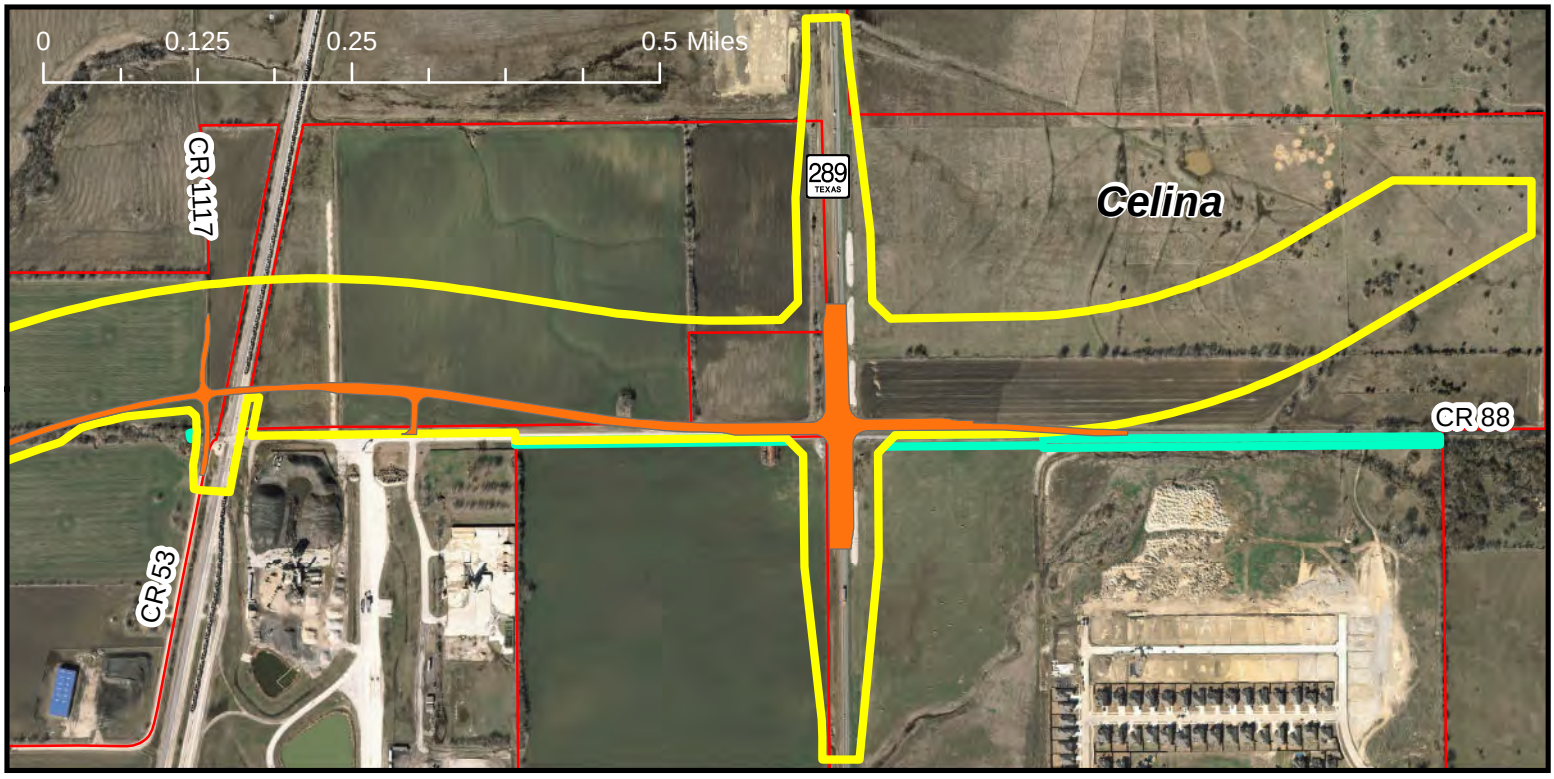
4.3 PUBLIC AND AGENCY COORDINATION

The study for the Collin County Outer Loop has been 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 Colin 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 has been an important component in the study of the Collin County Outer Loop. Throughout the study, several communication tools were used to keep the interested persons informed about upcoming public meetings and the project status. Since 2004, various meetings and presentations have been held for Segment 3 (DNT to US 75).





Legend

- Proposed Construction
- Proposed Right-of-way
- Proposed Easements
- City Limits
- Future DNT Extension

Collin County Outer Loop Segment 3a
Local Environnmental Document
Build Alternative Map
South Dallas Parkway to east of SH 289
Figure 4

North Central Texas Council of Governments

Map Date: October 2015

Bilingual postcards announcing public meetings were mailed to individuals on the mailing list, and display advertisements announcing upcoming public meetings were placed in local newspapers. News releases and letters to elected officials were prepared and distributed prior to each public meeting. Information about the project was also posted on the web site at http://www.co.collin.tx.us/mobility/pages/outerloop.aspx. Meeting reports, including sign-in sheet, copies of the handouts and presentations, comments and transcripts are available for review at the Collin County Engineering Office.

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 Dallas North Tollway 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 area corridor and alignment alternatives. Exhibits consisted of a project study area map, two environmental constraints map, and the proposed west-east alignment for evaluation for the study area.

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 Dallas North Tollway 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 area 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 area 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 had been 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 show 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 August 25, August 26, and September 3, 2015 Meeting with Adjacent Property Owners

Meetings with affected property owners (MAPOs) were conducted over multiple days at the Engineering Department for Collin County. Thirty property owners were contacted with an option for in-person meetings at the Collin County offices. Thirteen property owners attended personal meetings at the Collin County offices. Project information and potential right-of-way acquisition of Segment 3a were discussed. The majority of the comments involved right-of-way acquisition and the project schedule.

4.3.1.12 October 27, 2015, Open House/Public Meeting

An open house/public meeting was held at Collin County Administration Building in the Commissioners Court Room on October 27, 2015. The purpose was to discuss the final design on Segment 3a from the South Dallas Parkway to east of SH 289, including right-of-way purchases at the future interchanges at the South Dallas Parkway/DNT and SH 289. Approximately 14 interested person attended. Four written comments were mailed to Collin County after the meeting. Two comments were against the final alignment and two comments were regarding contact preference for any future coordination for the project.

4.3.2 Agency Involvement

From the onset of the study, development of the project has been 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 North Texas Tollway Authority (NTTA), the Texas Department of Transportation (TxDOT), the City of Celina, the Town of Prosper, and NCTCOG.

5.0 ENVIRONMENTAL RESOURCES, EFFECTS, AND MITIGATION

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: land use, right-of-way, relocations, community cohesion, economic, public facilities and services, utilities, visual, demographics, farmland, vegetation, threatened and endangered species, wildlife, migratory birds, water quality, floodplains, wetlands, waters of the US, regulated/hazardous materials, air quality, noise, cultural resources, parkland, open spaces, and indirect and cumulative impacts. The effects of the Build Alternative are compared to the No Build Alternative (see Section 4.2.1).

In the following section, the terms proposed right-of-way and study corridor are used. The proposed right-of-way is defined as the land needed (500-foot wide) for the ultimate typical section as discussed in Section 4.1 and shown in Figure 2. 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 cohesion, demographics, cultural resources, indirect impacts, and cumulative effects, different study areas of potential effects were used and are defined under the resource methodology.

5.1 SOCIAL AND ECONOMIC

This section describes the social and economic setting of the study corridor that could potentially be affected by the Build Alternative. The No Build Alternative is brought forward in the analysis as a baseline for comparison purposes.

5.1.1 Land Use

Based on field observations of land use conducted in April 2014, NCTCOG 2010 land use data, and review of 2013 aerial photographs, the existing land use within the proposed right-of-way is approximately 79 percent farmland, 18 percent timberland, and less than five percent each of railroad, improve acreage, utilities, roadway, and education (see Figure 5). Approximately 50 percent of the study corridor passes through unincorporated areas that are 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.

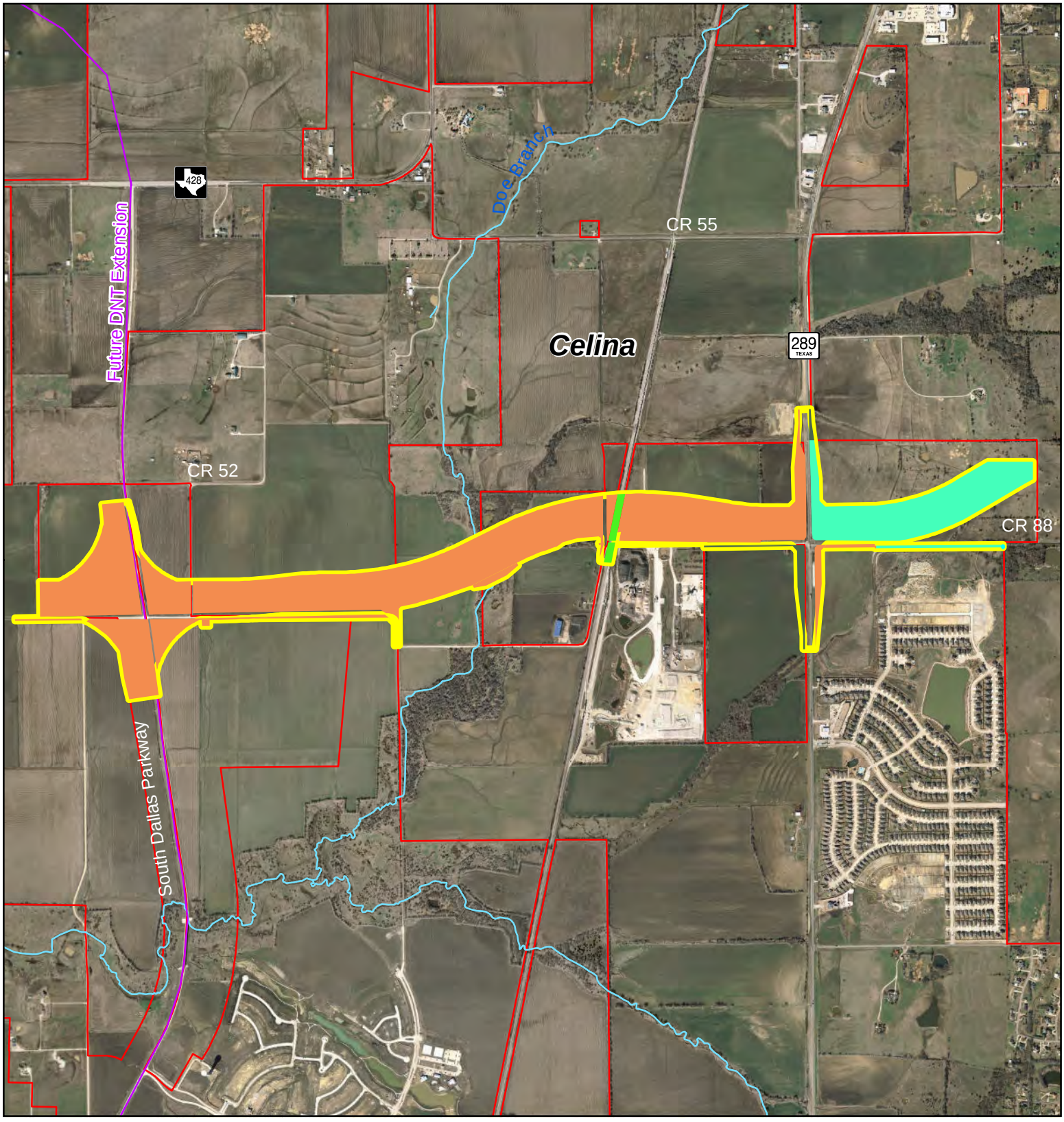
Under the Build Alternative, approximately 217.7 acres of land and easements would be acquired and/or eventually converted to transportation use. The first phase of the project includes the purchase of ultimate right-of-way and construction of a two-lane roadway adjacent to the southern boundary of the proposed right-of-way from the South Dallas Parkway to east of SH 289. The Build Alternative would impact approximately five percent (11 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.

5.1.2 Right-of-Way and Relocations

The ultimate Collin County Outer Loop would require a typical right-of-way width of 500 feet (see Figure 2). However, the right-of-way could be wider at intersections, ramps, and where cuts or fills result in increased widths of side slopes.

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

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.



Collin County Outer Loop Segment 3a

Local Environmental Document

2010 Land Use

South Dallas Parkway to east of SH 289

Figure 5

N

0 0.25 0.5 1 Miles

Map Date: October 2015

North Central Texas Council of Governments

Legend

Institutional
- Education

Infrastructure
- Roadway
- Utilities
- Railroad

Undeveloped
- Timber Land
- Farm Land
- Improved acreage

5.1.3 Community Cohesion

Based on field observations conducted in April 2014, NCTCOG 2010 land use data, and review of 2013 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. No other community facilities are within a one-mile of the proposed project.

The No Build Alternative would not negatively impact community cohesion, but it would not improve access to other community resources.

During the development of alternatives, the alignment for the Build Alternative was designed to avoid negative impacts to community cohesion. No residences are located within the proposed right-of-way. The one identified community near the proposed project was 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. By improving connections between existing roadway facilities of the South Dallas Parkway and SH 289, access to community facilities for residents near and along the Build Alternative would be improved by providing a direct east-west route in this area of Collin County.

5.1.4 Economic

A review of the economic conditions in the study corridor was based on field observations conducted in April 2014, NCTCOG 2010 land use data, and review of 2013 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. A TXI cement plant is located adjacent to the proposed project right-of-way west of SH 289; no right-of-way would be acquired from this facility. No major employers are located near the proposed project.

Under the No Build Alternative, no properties or structures would be impacted; thus, there would be no economic impacts to adjacent property owners.

Some agricultural lands would be converted to transportation uses in the Build Alternative. The exact economic impact is difficult to quantify and could vary widely between properties. As stated in Section 2.1, 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 3a would provide a link between two major north-south roadways within the area and provide opportunity for development along this corridor.

During construction, there would be 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 and improved safety from utilizing the new facility that would provide new access within the area.

5.1.5 Public Facilities and Services

A review of the public facilities and services in the study corridor was completed based on field observations conducted in April 2014, NCTCOG 2010 land use data, and NCTCOG feature datasets. There are no public facilities within one-mile of the study corridor. The nearest public facility is the Celina Elementary school in the City of Celina.

An existing railroad line crosses the proposed facility just west of SH 289. This rail line is operated by the BNSF Railway Company and offers limited freight rail service that connects customers in the City of Celina and the Town of Prosper to freight rail lines as well as cities farther to the north and south.

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; however, an agreement to cross the BNSF Railway owned would be required. 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.

5.1.6 Utilities

Based on field observations conducted in April 2014, review of 2013 aerial photographs, and data provided by Collin County, there are several existing utility lines within the study corridor. Several small overhead electrical lines run parallel to study corridor at various locations. One major utility easement for an Atmos gas line runs parallel to the proposed project south of the proposed right-of-way. A buried Atmos gas line crosses the corridor east of the South Dallas Parkway.

Under the No Build Alternative, no new right-of-way would be acquired; thus it would not be necessary to relocate any utilities.

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 that no substantial interruptions would take place while these adjustments are being made.

5.1.7 Visual

Visual and aesthetic resources within the study corridor were identified through review of aerial photographs and field study. 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.

A field 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. The roadway would cause a minor change to the visual character of the residents of the 59 homes within 0.25 miles from the proposed construction facility (Table 4). The affected homes are all located within the Carter Ranch subdivision east of SH 289 and south of the proposed project.

Table 4. Visual Impacts

Distance from Proposed Right-of-Way	Residences Facing Facility	Residences Not Facing Facility	Total Residences
0 to 100 feet	0	0	0
101 to 500 feet	0	0	0
501 feet to 0.25 miles	0	68	68
TOTAL	0	68	68

Source: NCTCOG Aerial Orthophotos, 2013, NCTCOG Research and Information Services.

The initial construction planned for Segment 3a is the construction of the ultimate two-lane eastbound 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.

5.1.8 Demographics

As cited in Section 2.1, in 2010, the Dallas-Fort Worth MPA grew to 6,417,724 persons, a 24 percent increase in population since the 2000 Census. Table 5 demonstrates substantial growth in population through 2010. The Dallas-Fort Worth MPA has experienced considerable and consistent population growth over the last 30 years. By 2035, the Dallas-Fort Worth urban area population is expected to be approximately 9.8 million persons, an increase of 53 percent over 2010. On average, the region is anticipated to add population at a rate of approximately 135,000 persons per year.

The population in north central Collin County has grown steadily during the last few decades. The City of Celina, the only municipality within the proposed right-of-way and the nearby Town of Prosper have both grown considerably since 1990. One of the needs for the Collin County Outer Loop project is to accommodate this population increase and the expected increase in population for both northwest Collin County and the Dallas-Fort Worth MPA. The historical and projected population within the three NCTCOG transportation survey zones (TSZs) that encompass the proposed right-of-way and within nearby cities is included in Table 5. TSZs are generally aggregations of census block groups used in for NCTCOG demographic and transportation models.

Table 5. Population Growth around the Study Corridor

	Historical					Projected
Location	1970	1980	1990	2000	2010	2035
TSZ # 3022	N/A	N/A	N/A	695	2,716	6,887
TSZ # 3027	N/A	N/A	N/A	106	102	10,017
Study Corridor TSZs	N/A	N/A	N/A	801	2,818	16,904
City of Celina	1,272	1,520	1,737	1,861	6,028	N/A
Town of Prosper	501	675	1,018	2,097	9,423	N/A
Collin County	66,920	144,576	264,036	491,675	782,341	1,404,149
Dallas-Fort Worth MPA	2,425,926	3,030,053	4,013,418	5,197,307	6,417,724	9,833,378

Sources: US Census Bureau Census: 1970-2010; NCTCOG 2040 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 6 shows the employment estimates from the two TSZs that include the study corridor, Collin County, and the Dallas-Fort Worth urban area (employment data was not available for cities). The number of jobs in the TSZs that encompass the study corridor is expected to grow by an average of approximately 35 percent per year between 2000 and 2035. The total number of jobs is projected to be 1,210 percent higher in 2035 than in 2000 for the study corridor TSZs.

Table 6. Employment Growth around the Study Corridor

Location	2000	2010	2035	Percent Change (2000 to 2035)
TSZ # 3022	186	358	544	193%
TSZ # 3027	36	687	2,365	6,469%
Study Corridor TSZs	222	1,045	2,909	1,210%
Collin County	202,606	361,297	628,349	210%
Dallas-Fort Worth Urban Area	3,191,576	4,045,726	6,177,016	94%

Source: NCTCOG 2040 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 5.8.

5.1.8.1 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. Census data from 2010 for census block groups that encompass or are located along the study corridor (census tract 0303.05, block groups 1 and 3) were analyzed to determine minority (minority includes both race and ethnicity). Low-income characteristics in the study corridor. A total of 3,523 persons were recorded in the two census block groups. 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 that the proposed action does not subject these populations to a "disproportionately high and adverse effect."

Using the 2010 Census data, the inclusive blocks 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 (CEQ) 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

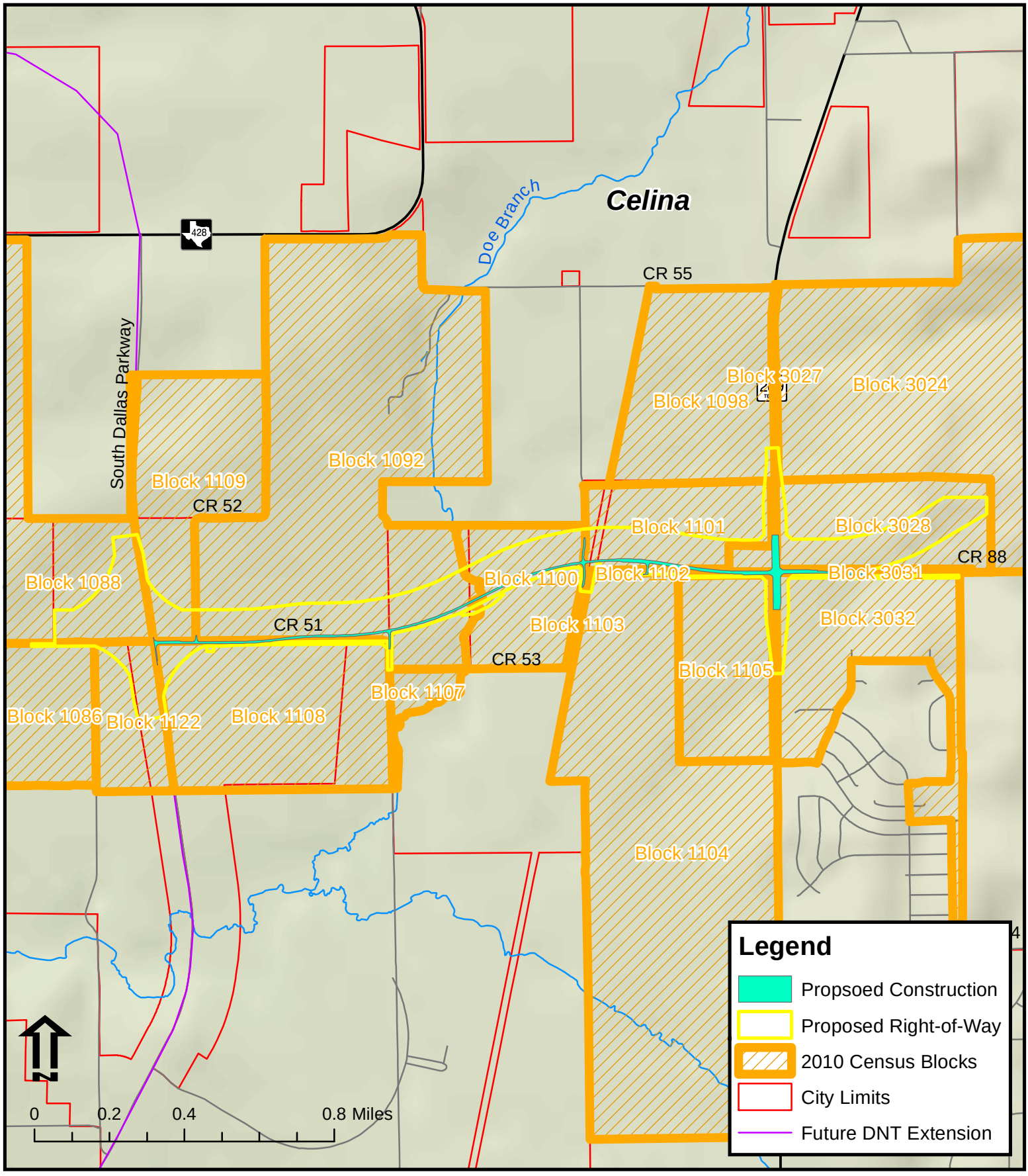
The race distribution within the two census block groups and the six non-zero census blocks that intersect the study corridor is presented in Table 7. The locations of the blocks and block groups are shown on Figure 6.

Table 7. 2000 Census Racial Distribution Characteristics of Study Corridor

Location	Total Population (1)	Population/Percentage						
		White	Black	Hispanic or Latino (2)	American Indian, Eskimo, or Aleut	Asian	Pacific Islander	Other (3)
Census Tract 0303.05 Block Group 1	814	714 87.7%	27 3.3%	122 15.0%	8 1.0%	5 0.6%	0 0.0%	60 7.4%
Block 1086	7	7 100.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
Block 1088	2	2 100.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
Block 1092	16	13 81.3%	0 0.0%	3 18.8%	0 0.0%	0 0.0%	0 0.0%	3 18.8%
Block 1109	14	14 100.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%	0 0.0%
Census Tract 0303.05 Block Group 3	2,709	2,499 92.2%	85 3.1%	259 9.6%	10 0.4%	28 1.0%	0 0.0%	87 3.2%
Block 3024	57	56 98.2%	0 0.0%	7 12.3%	1 1.8%	0 0.0%	0 0.0%	0 0.0%
Block 3032	161	137 85.1%	20 12.4%	14 8.7%	1 0.6%	0 0.0%	0 0.0%	3 1.9%
Block Group Total	3,523	3,213 91.2%	112 3.2%	381 10.8%	18 0.5%	33 0.9%	0 0.0%	147 4.2%
Block Total	257	229 89.1%	20 7.8%	24 9.3%	2 0.8%	0 0.0%	0 0.0%	6 2.3%

Source: 2010 US Census. American Fact Finder.
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) 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.
(3) Other is defined as "some other race" category defined by the US Census Bureau.

As shown in Table 7, no block groups or blocks encompassing the study corridor have a minority population above 50 percent. No blocks in the study corridor were identified to have meaningfully greater percent minority populations than the immediate general area (block groups). Because the smallest unit for demographic data is the block-level, the impacts (e.g., displacements and/or right-of-way impacts, noise impacts) to these affected units are assumed to be proportional to the entire demographic profile of the affected block.



Collin County Outer Loop Segment 3a

Local Environmental Document

Census 2010 Block Locations

South Dallas Parkway to east of SH 289

Figure 6

North Central Texas Council of Governments

Map Date: October 2015

Table 8 provides the 2013 American Community Survey (ACS) five-year estimates for median incomes of households and families, per capita income, and percent below poverty at the census tract level area in the study corridor in addition to Collin County and the MPA. Collin County had a poverty level at 7.8 percent in 2013 based on the 2013 ACS five-year estimates, and 14.7 percent for the MPA.

Table 8. 2013 American Community Survey Income Characteristics

Location	Median Income in 2012 Dollars		Total Per Capita Income in 2013 Dollars	Percent Below Poverty
	Households	Families		
Census Tract 0303.05, Block Group 1	$89,688	$113,251	$51,409	8.8%
Census Tract 0303.05, Block Group 3	$103,814	$112,250	$40,127	10.0%
Collin County	$82,762	$98,297	$37,839	7.8%
Dallas-Fort Worth MPA	$62,599	$72,352	$26,563	14.7%

Source: 2013 ACS five-year estimates. American Fact Finder.

Based on Federal Highway Administration (FHWA) Order 6640.23, a low-income population was defined as any population that has a median household income below the US Department of Health and Human Services (HHS) defined poverty guideline for a family of four. The 2013 HHS poverty guideline for a family of four ($23,550) was compared to the census tract located within the study corridor to determine if low-income populations were present.

As shown in Table 8, the median household incomes for the census block groups within the study corridor are $89,688 and $103,814. These are higher than the median household income for Collin County and the Dallas-Fort Worth MPA. While the poverty level for both census block groups is above the average for Collin County, it is not considered meaningful greater (twice the percent compared to the greater population) and is below the region average. The median household income of both census block groups within the study corridor was higher than the 2013 HHS poverty guideline of $23,550. 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 in the study corridor.

No residential displacements would occur from the proposed project due to construction or right-of-way acquisition. Because the 2010 Census and 2013 American Community Survey identified no minority or substantial low-income populations in these geographies or anywhere within the study corridor, neither the No Build Alternative nor Build Alternative would adversely impact minority and low-income populations. The impacts on those populations would not be disproportionately high and adverse compared to the general population.

5.1.8.2 Limited English Proficiency

Information regarding English language proficiency within the study corridor is based on the 2013 ACS five-year estimates from the census tract that intersect it. No identified limited English proficiency (LEP) populations were identified within the study corridor. Table 9 shows the LEP population by census block group, Collin County, and the Dallas-Fort Worth MPA that speak English “not well” or “not at all.” No indications of an LEP population were present during the field investigations, including street or commercial signs in a foreign language.

Table 9. 2013 ACS Five-Year Estimates Limited English Proficiency

Location	Total Population*	Speak English "not well" or "not at all"	Percent Speak English "not well" or "not at all"
Census Tract 0303.05, Block Group 1	515	0	0.0%
Census Tract 0303.05, Block Group 2	931	0	0.0%
Collin County	753,141	30,029	4.0%
Dallas-Fort Worth MPA	6,069,583	453,706	7.5%

Source: 2013 ACS 5-year estimates. American Fact Finder.
*Only includes population older than five years old per the US Census Bureau

Neither the No Build Alternative nor the Build Alternative would adversely impact or discriminate against LEP populations. As mentioned in Section 5.1.3, neither alternative would bisect any communities and would not sever or alter the social interaction of the communities along the corridor. The No Build would not improve access to other community resources. The Build Alternative would improve accessibility in the area.

Reasonable steps have been, and would continue to be taken, to ensure LEP populations have meaningful access to programs, services, and information Collin County provides. Public notices stated that 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.

5.2 NATURAL RESOURCES

This section describes the natural resources of the study corridor that could potentially be affected by the Build Alternative. The No Build Alternative is brought forward in the analysis as a baseline for comparison purposes.

5.2.1 Farmland

The US Department of Agriculture (USDA) 2013 Crop data identified approximately 89 percent of the proposed right-of-way as in agricultural use. The most common crop grown was winter wheat. Table 10 list the identified agricultural uses and land cover within the proposed right-of-way.

Table 10. 2013 USDA Crop Land Use

Land/Crop Type	Acres*	Percent*
Agricultural Use		
Corn	11.5	5.3%
Fallow/Idle Cropland	0.7	0.3%
Grass/Pasture	28.1	12.9%
Other Hay/Non Alfalfa	12.6	5.8%
Sorghum	18.9	8.7%
Sunflower	0.8	0.4%
Winter Wheat	120.9	55.5%
Non-Agricultural Use (National Land Cover Database)		
Deciduous Forest	9.2	4.2%
Developed/Low Intensity	5.4	2.5%
Developed/Med Intensity	1.0	0.4%
Developed/Open Space	8.6	4.0%
Total	**217.7**	**100%**

Source: 2013 USDA Crops
*Numbers may be different due to rounding

The No Build Alternative would not impact farmland or ranchland.

The Build Alternative would convert existing farmland into transportation use. Of the 217.7 acres of right-of-way and easements to be acquired, only 11 acres would be directly converted to transportation use with the construction of the access road. The majority of the construction area, approximately 98 percent, is considered prime farmland as defined by the Natural Resource Conservation Service, which would permanently be changed to transportation use.

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 could 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 could 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 construction. Impacts to farmlands would be addressed when this would occur.

5.2.2 Vegetation

According to *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 April 2014 confirmed the area consisted of farming operations.

Dominant herbaceous vegetation identified included Canada wildrye (*Elymus canadensis*), little bluestem (*Schizachyrium scoparium*), Texas wintergrass (*Nassella leucotricha*), giant ragweed (*Ambrosia trifida*), henbit deadnettle (*Lamium amplexicaule*), silver bluestem (*Bothriochloa saccharoides*), tall fescue (*Schedonorus phoenix*), little bluestem (*Schizachyrium scoparium*), 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*).

No large trees, those defined as over 12 inches diameter at breast height (dbh), were noted within the proposed right-of-way. The largest trees identified, 12 inches dbh, were located along the fencerows and creeks only. 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 (11 acres) or a conversion to a maintained roadway right-of-way (206 acres). Approximately five acres of woody vegetation could be removed by the Build Alternative. These woody areas include small and large woody species, with approximately 4.7 acres (94 percent) riparian woody vegetation.

The primary impact to vegetation resulting from right-of-way preparation and construction of the Build Alternative would be the removal of existing vegetation within the proposed right-of-way. Existing vegetation would be preserved wherever possible. Vegetation communities would be directly impacted by heavy machinery such as bulldozers. Adjacent vegetation can 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 (BMP) such as silt fencing during construction. Vegetation areas that would not be re-vegetated would re-vegetate naturally.

5.2.3 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 Texas Parks and Wildlife Department (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.

One federally listed species and 13 state listed species were identified for Collin County. Table 11 list 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.

Table 11. Threatened and Endangered Species in Collin County

Species	Federal Status	State Status	Description of Habitat	Habitat Present	Species Effect
Birds					
American Peregrine falcon (*Falco peregrinus anatum*)	*	T	Resident of Trans-Pecos region and migratory on the Texas coast. Prefers open areas, meadows, mudflats, beaches, marshes, and lakes	No	No Impact
Bald Eagle (*Haliaeetus leucocephalus*)	*	T	Nest and winters near rivers, lakes, and along coasts; nest in tall trees or cliffs near large bodies of water	No	No Impact
Interior Least Tern (*Sterna antillarum athalassos*)	**	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	Wintering migrant along Gulf Coast beaches. Prefers sandy beaches and lakeshores	No	No Affect
Red Knot	**	N/A	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
Mammals					
Red Wolf (*Canis rufus*)	**	E	Extripated; formerly throughout eastern half of Texas in brushy forest edges as well as coastal prairies	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	No	No Impact
Texas Heelsplitter	*	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	No	No Impact

Table 11. Threatened and Endangered Species in Collin County - Continued

Species	Federal Status	State Status	Description of Habitat	Habitat Present	Species Effect
Reptiles (continued)					
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
Timber/Canebrake Rattlesnake (*Crotalus horridus*)	*	T	Swamps, floodplains, upland woodlands, riparian zones, abandoned farmland; prefers dense ground cover	Yes	May Impact

Source: US Fish and Wildlife Service (USFWS) and TPWD, February 2010
Notes: E – Endangered
T – Threatened
* – Not listed by US Fish and Wildlife Service
** – A listed species by the US Fish and Wildlife Service, but not occurring in Collin County

During an April 2014 field visit, no additional species or habitats were identified in the study corridor. A Natural Diversity Database (NDD) search was conducted in April 2013. The results located two protected plant series, two state threatened species, and two species of concern within a 10-mile radius of the study corridor. Both series are little bluestem-Indian grass series. The state threatened species include the bald eagle and the Texas heelsplitter. The species of concerned were identified as the Texas garter snake and the sandbank pocketbook. All of these records were recorded at the fringe of the 10-mile radius from the study corridor.

The identified mussels from the NDD database (the Texas heelsplitter and the sandbank pocketbook) were located downstream near Lake Lewisville. Because these species could have occurred upstream and traveled, a mussel survey was conduction on January 14, 2014, for the proposed project. No live mussels were discovered during the survey, and nine mussel shells were discovered in the survey areas. It was determined that the absence of live mussels and the site conditions showing large, fast moving flows, that the presence of live mussels, including those listed by TPWD, would not occur within the study corridor.

None of these plant series or animals were observed in the study corridor. Little bluestem was identified in the study corridor, but was not found in combination with Indian grass. No effect is expected to the bluestem-Indian grass series because it is outside the study corridor. Any additional remnant of this series in the study corridor has been removed due to the heavy amount of agricultural and ranching activities.

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. The state threatened timber/canebrake rattlesnake (*Crotalus horridus*) was found to have suitable habitat in the study corridor riparian areas and fallow fields. The Build Alternative may impact the timber/canebrake rattlesnake. Because the species is mobile, it may move outside the proposed right-of-way once construction starts. Suitable habitat exists for the snake 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.

5.2.4 Wildlife and Migratory Birds

Several laws and regulations govern impacts to wildlife resources, most notably the Migratory Bird Treaty Act (MBTA) of 1918 and the Endangered Species Act of 1973. The MBTA affords protection to virtually all migratory birds, including their parts, nests, or eggs. The MBTA affords protection to over 800 species in total.

Several wildlife species were observed during the field investigations in December 2009. The species observed were stripped skunk (*Mephitis mephitis*), Red-tailed Hawk (*Buteo jamaicensis*), and Turkey Vulture (*Cathartes aura*). Several other species of wildlife could 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 could 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 that utilize 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 as a result of road and other linear projects have been well documented. It reduces the value of adjacent habitats in several ways, primarily by creating multiple smaller habitats that are 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 Doe Branch. Various wildlife species are known to use bridge-spanned riparian corridors and culverts to travel under roads. While the bridges and 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., road kill) affects virtually all types of wildlife, but particularly impacts terrestrial species who are crossing from one habitat patch to another.

The MBTA affords protection (from killing or capture) to the vast majority of bird species that could occur along the study corridor, including their nests and eggs. Because adult birds are for the most part mobile, the largest potential for impacts to MBTA-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 that 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 that 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.

5.2.5 Water Quality

Various water bodies cross the study corridor (see Figure 7). One large stream, Doe Branch, was identified crossing the study corridor. The water from these streams and other various water systems flow into Lewisville Lake identified by Texas Commission on Environmental Quality (TCEQ) 2012 Water Inventory List. This document describes the quality status of Texas' natural waters based on historical data and identifies water bodies that are not meeting standards set for their use.

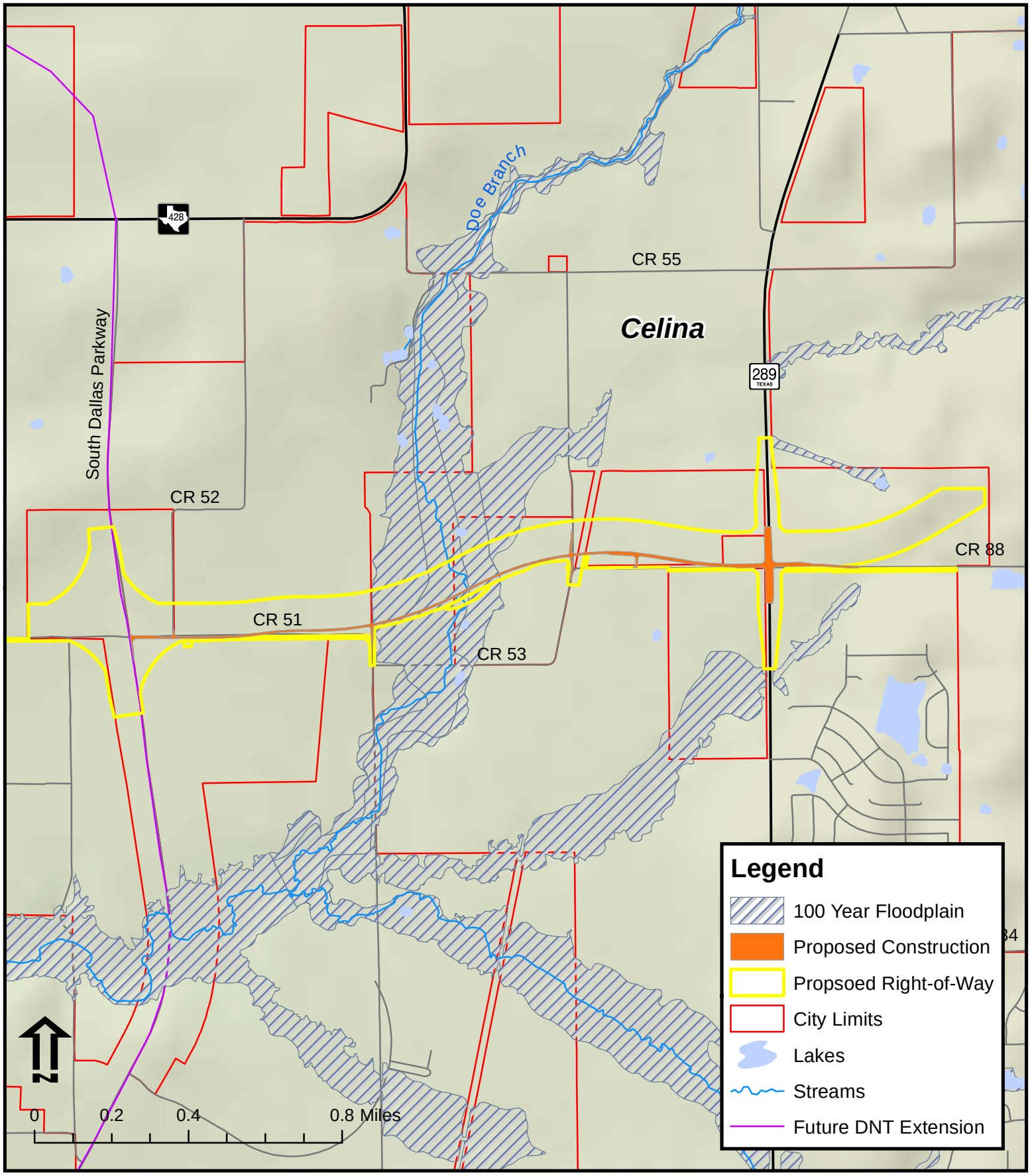
Doe Branch, segment ID 0823D, is an unclassified water body by TCEQ, transverses the proposed project. Doe branch flows into Lake Lewisville, Segment ID 0823. No identified impaired waters listed on the 2012 Clean Water Acts Section 303(d) list are located within the study corridor. In addition, no impaired waters were identified five miles upstream of the proposed project. Stream location is shown in Figure 7.

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 11 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 (CWA) (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 (MS4s) permit. The TPDES permit would also require the preparation of a Notice of Intent (NOI) and a storm water pollution prevention plan (SW3P) prior to the initiation of grading activities. The SW3P would be based on BMP 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 NOI to the TCEQ.

5.2.6 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 24.6 acres of the proposed right-of-way and easements are mapped as Zone A or AE (100-year floodplain). This floodplain is associated with Doe Branch. Figure 7 details the floodplains in the study corridor.



Collin County Outer Loop Segment 3a

Local Environmental Document

Water Resources

South Dallas Parkway to east of SH 289

Figure 7

North Central Texas Council of Governments

Map Date: October 2015

The Build Alternative would not increase the base flood elevation to a level that would violate applicable floodplain regulations and ordinances. A hydraulic report has been produced for the Build Alternative design. The results recommended three upgraded culverts and one bridge crossing at Doe Branch.

Informal coordination with the local floodplain administrator would be required for the Build Alternative. Collin County and the City of Celina are participants in the National Flood Insurance Program. In cooperation with FEMA, Collin County would conform to the standard for temporary and permanent fill set by Flood Insurance Rate Maps (FIRM). The study corridor falls FEMA FIRM map 48085C0120J with an active date on June 2, 2009.

5.2.7 Wetlands/Waters of the US

A detailed wetlands and waters investigation was conducted in April 2014. Two potential jurisdictional waters of the US were identified in the proposed right-of-way (see Figure 7); no wetlands were identified. A total of 0.2 acres of waters of the US were identified (see Table 12) within the proposed right-of-way and easements.

Table 12. Potential Waters of the US

Feature	Feature Name	Acres in Proposed Right-of-Way/Easements	Potential Impacts (Acres)	Anticipated USACE Permit
Water 1	Doe Branch	0.13	0.01	NWP 14
Water 2	Tributary to Doe Branch	0.02	<0.01	NWP 14
Totals		0.15	0.01	

Source: April 2014 Field Investigations

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

The Build Alternative would impact an estimated 0.01 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 CWA. 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 a 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 (TSS) control devices from the TCEQ Section 401 Tier 1 Water Quality BMP 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 TSS 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.

5.3 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 April 2014. 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 July 31, 2014. 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 that 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.

5.4 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.

The 1990 Clean Air Act Amendments (CAAA) established specific requirements which must be met for each area that does not achieve the NAAQS (non-attainment areas). The requirements are based on the severity of the air pollution problem. Transportation conformity is a CAAA requirement that calls for the EPA, US Department of Transportation (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 that enable 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 CAAA because each regionally significant transportation project is required to conform to the EPA approved SIP. This ensures that 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 ten-county 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 2035 – 2014 Amendment*. The US DOT found the *Mobility 2035 – 2014 Amendment* to conform to the SIP on May 29, 2015.

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. However, 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 (ADT) in the design year (2035 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 23,400 ADT in 2035 and would therefore be under the 140,000 ADT required for an air quality analysis.

Dispersion studies have shown 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 (MSATs) 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.

5.5 NOISE

The FHWA traffic noise modeling software was used to calculate existing and predicted traffic noise levels [Traffic Noise Model (TNM) 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 that might be impacted by traffic noise
- Prediction of future noise contours
- Identification of possible noise impacts
- 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 would 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. Traffic data utilized were results from the regional transportation model showed a projected ADT of 23,400 vehicles per day in 2035 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 (NAC) for various land use activity areas are used as one of two means to determine when a traffic noise impact would occur (Table 13).

Table 13. 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 NAC. "Approach" is defined as one dBA below the NAC. For example, a noise impact would occur at a Category B residence if the noise level is predicted to be 66 dBA or above. 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 14. 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. The results table concluded only receivers on the south side of the proposed roadway would receive noise impacts since impacts to the north side would not occur beyond the purchased right-of-way.

Table 14. Noise Contour Table

Activity Category	dBA Leq Criteria	dBA Leq Absolute Criterion	Noise Contour (feet from edge of pavement)
A	57 (exterior)	56 (exterior)	303
B	67 (exterior)	66 (exterior)	82
C	72 (exterior)	71 (exterior)	40
D	None	None	N/A
E	52 (interior)	51 (interior)	40

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 would 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.

5.6 CULTURAL RESOURCES

The Antiquities Code of Texas (ACT) states that 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 THC was made the legal custodian of the ACT and therefore, all cultural resources, historic and prehistoric, within the public domain of the State of Texas. Such diverse resources may be designated as State Archeological Landmarks (SALs) by the THC.

A cultural resource survey was conducted in December 2013 (under Texas Antiquities Permit Number 6723). The Area of Potential Effects (APE) used for this survey was defined as 500 feet (proposed right-of-way) and historic-age resources were based on structures that would be 50 years of age or older from the performed study; this date was identified as 1963. Five previously identified sites were identified through archival research located within 0.8 miles from the APE. These sites were reviewed during field visits to ascertain if cultural resources were located in the APE from these sites. Four new archeological resources and nine historic-age architectural resources were identified within the APE. None of these sites were determined to be eligible for listing in the National Register of Historic Properties (NRHP) or SAL. Therefore, neither the No Build Alternative nor the Build Alternative would impact cultural resources.

5.7 PARKLANDS

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 that 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.

5.8 INDIRECT IMPACTS

Sections 5.1 through 5.7 of this document have described the environs and the direct effects the Build Alternative could 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 that occur 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.

5.8.1 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).

5.8.2 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 City of Celina, the Town of Prosper, and Collin County were contacted.

Project Attributes and Regional Context

The current location of Segment 3a 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. SH 289 is the major north-south roadway in the study corridor and the South Dallas Parkway is currently a minor north-south roadway. Development consist of small rural farms and industrial. Some rural and exurban communities exist in the greater surrounding area. The purpose of 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 roadway. Additionally, the roadway would support anticipated population growth and economic development opportunities.

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 3a of the proposed Collin County Outer Loop is not bounded by any roadway facilities or major developments that could be 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 could occur that would be a product of the proposed roadway. Figure 8 shows the AOI, totaling 6,172 acres.

Time Frame

A temporal frame of reference is needed to address the range of future impacts that may be caused by the Build Alternative. Based on the horizon year for the *Mobility 2035 – 2014 Amendment* and the planning horizon of the Collin County Mobility Plan, 2014 Update; Celina Comprehensive Plan; and the 2012 Comprehensive Plan for the Town of Prosper, the year 2035 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 15 summarizes the questions included in the risk assessment checklist and confirmed the need to conduct the induced development analysis.

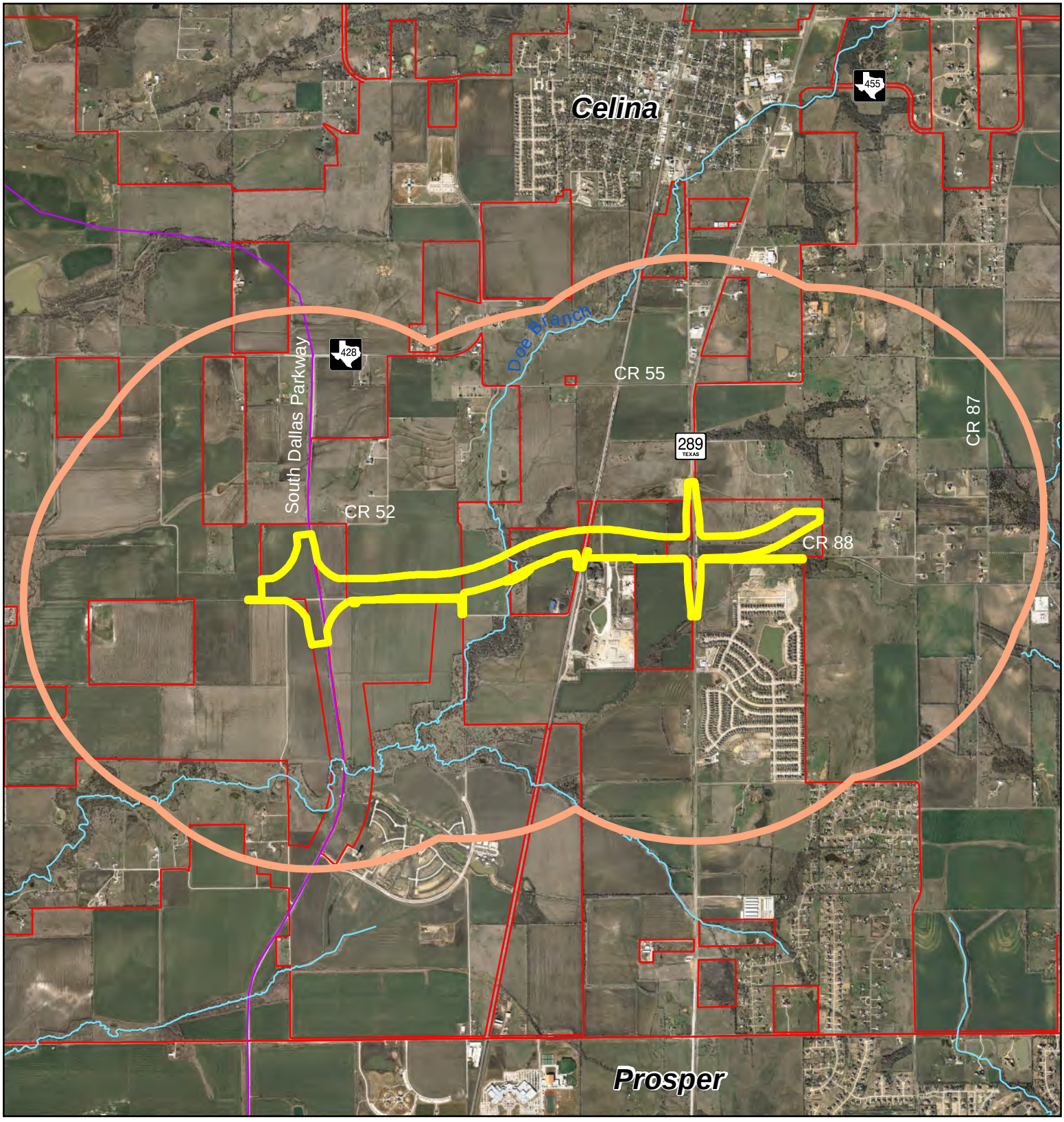
Table 15. Risk Assessment Screening Tool – Induced Development

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

5.8.3 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.



Collin County Outer Loop Segment 3a
Local Environmental Document
Area of Influence
South Dallas Parkway to east of SH 289
Figure 8

0 0.375 0.75 1.5 Miles

Legend
- Area of Influence
- Proposed Right-of-Way
- City Limits
- Future DNT Extension

North Central Texas Council of Governments

Map Date: October 2015

5.8.3.1 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 allocation in North Central Texas. The forecast is conducted for the 12 counties that comprise the Dallas-Fort Worth MPA. By 2035, the MPA is expected to reach a population of nearly 10 million and have over six million jobs. Local municipalities worked with NCTCOG staff to ensure that local government land use and comprehensive plans were included in the 2040 Demographic Forecast. Detailed population and employment data are shown in Tables 5 and 6 in Section 5.1.8.

5.8.3.2 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 City of Celina, Town of Prosper, 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 and the AOI is presented in Table 16. In summary, 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.

Table 16. Planning Documents for Local Governments in the AOI

Planning Document	Description
Collin County Mobility Plan, 2014 Update	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 within the AOI include service (office and commercial), mixed use non-residential and retail.
City of Celina Comprehensive Plan – 2013	The City of Celina has identified the Collin County Outer Loop as an "Overlay District," an area currently undeveloped that the city wants to monitor and control growth. The area is also designated as commercial/mixed use.
Town of Prosper Comprehensive Plan – 2012	Only a small portion of the southern area of the AOI is within the Town limits of Prosper. The comprehensive plan does not address the Collin County Outer Loop, but those areas within the AOI identify future land use as low and medium density residential and the tollway district.

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 AASHTO guidance, potential impacts to "sensitive resources" that have 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 that are 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 that 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 17 lists the resource considered, direct impacts, potential for encroachment impacts due to the Build Alternative, an assessment of if the resource is a risk, and a recommendation of if the resource should be included in further analysis. Resources that have been investigated in more detail for potential indirect impacts are identified in the table with a "yes" in the right column. Resources that either have no direct effects or no substantial potential to result in indirect impacts, and that are therefore not analyzed in detail in this analysis are indicated with a "no."

Table 17. 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 Doe Branch and its tributary would be authorized 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 CWA.	Yes
Floodplains	No	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 11 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

Table 17. Resources Analyzed for Indirect Induced Growth Impacts - Continued

Resource	Direct Impacts?	Encroachment Impacts?	Is the Resource at Risk?	Resource Included for Further Analysis?
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 occurrence for each Texas County.	No
Farmland/ Ranchland	Approximately 11 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
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 17, 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.

5.8.4 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, and accessibility within the proposed study corridor and provide more direct links to existing highways. It is expected that the effects of the construction of Segment 3a of the Collin County Outer Loop would improve mobility and accessibility throughout the AOI.

5.8.5 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.

The evaluation of whether the proposed project is likely to result in project-induced land use change is patterned after the procedures in the National Cooperative Highway Research Program Report 25-25. 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 City of Celina, the Town of Prosper, and Collin County was obtained to help assess the potential for project-induced land use impacts.

<u>City of Celina</u>

The City of Celina staff is in full support of the proposed Collin County Outer Loop Segment 3a. The new roadway would provide greater mobility for the industrial facilities near the BNSF railroad and SH 289 as well as to provide a direct connection to the South Dallas Parkway (and future DNT) for both personal and freight vehicles. The city has future plans for general commercial and residential development within the AOI but no projects are currently planned and no development is contingent on the construction of Segment 3a. The city has greater focus and concentration on the future DNT extension.

<u>Town of Prosper</u>

Although the Town of Prosper is within the AOI of the proposed project, it has not developed any plans around the future Collin County Outer Loop Segment 3a. Segment 3a would only serve as a minor travel corridor because US 380, a major east-west corridor is within the southern portion of the city limits. The city is primarily focused on the future extension of the DNT. The construction of Segment 3a would not affect their land use and development plans.

<u>Collin County</u>

Collin County has identified the construction of Segment 3a as an essential east-west corridor that would become part of a larger limited access tolled facility across the entire county. The two main goals identified by Collin County staff for this corridor are to provide a reliable east-west facility and to facilitate economic development and growth with the area. Although a prime objective of the proposed project is economic development, Collin County staff could not identify any reasonably foreseeable development in the AOI.

5.8.6 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 City of Celina and Collin County identified the corridor and the surrounding AOI as a potential for development, no current foreseeable plans were known. The Town of Prosper did not feel Segment 3a would induced growth in their community.

Based on these discussions, it was determined no potential induced growth impacts would occur from the Build Alternative. No reasonable 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.

5.8.7 Assess Potential Minimization and Mitigation Measures

The overall consensus is that the Build Alternative would not influence any reasonable 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 USFWS and USACE have policies in place to mitigation potential impacts to the resources they oversee.

5.9 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 that are 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

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

5.9.1.1 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 18 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 that are 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 18. 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 a NWP 14. Water resources are protected by existing regulations that apply 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 BMPs. Any other potential growth would also be regulated and require a SW3P.
Vegetation and Wildlife Habitat	Yes	Yes	Yes	The proposed project would impact approximately 11 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 11 acres, the majority of the construction area, would impact 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 2035-2014 Amendment and 2015-2018 TIP.
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 18, the resources for which the proposed project may potentially have cumulative impacts are biological resources (vegetation, wildlife habitat, farmland/ranchland). Therefore, the remainder of the cumulative impacts analysis will focus only on biological resources.

5.9.1.2 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 that is 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 8) and consists of mostly undeveloped parcels of ranchland, farmland, and fallow fields. The southern portion of the AOI has a few suburban and exurban residential areas. The size of the RSA is approximately 6,172 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 2035, which is the horizon year for *Mobility 2035 – 2014 Amendment*.

The biological resources RSA is located within the Blacklands Prairie Ecoregion, an ecosystem that was 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 that have been able to adapt 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 19, which 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 19. Agricultural and Land Cover within the RSA

Land/Crop Type	Acres
Agricultural Use	
Corn	104.0
Fallow/Idle Cropland	22.5
Grass/Pasture	2,092.1
Oats	21.7
Other Hay/Non Alfalfa	463.8
Sorghum	951.4
Sunflower	76.2
Winter Wheat	1,829.8
Non-Agricultural Use (National Land Cover Database)	
Barren	2.0
Deciduous Forest	238.7
Developed/High Intensity	16.4
Developed/Low Intensity	113.1
Developed/Med Intensity	64.0
Developed/Open Space	8.6
Evergreen Forest	0.9
Open Water	18.2
Woody Wetlands	0.2
Total	**6,171.6**

Source: 2013 USDA Crops, including the National Land Cover Database (2011)

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

As discussed in Section 5.0 and Tables 17 and 18, the Build Alternative would directly covert approximately 11 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 that the Build Alternative could contribute to an accelerated pace of development within the AOI, although no reasonable foreseeable actions were identified in the AOI.

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

Since 1970, several actions have 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. A majority of the RSA is undeveloped.

Based on discussions with the City of Celina, Town of Prosper, and Collin County, it was concluded that at the present time, no reasonably foreseeable development plans exist within the biological resources RSA. Three transportation projects were listed in the *2015-2018 TIP* (see Table 3) for the AOI/RSA. These could induced additional growth, but it would be evaluated when these projects are completed.

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

Approximately 217.7 acres of additional right-of-way and easements would be required for the proposed project, including 11 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 that occurs 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 has 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.

5.9.5 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 City of Celina and Town of Prosper 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 that 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

Project Photographs

#1 Eastern terminus of proposed project

#2 Typical Fence Line Vegetation

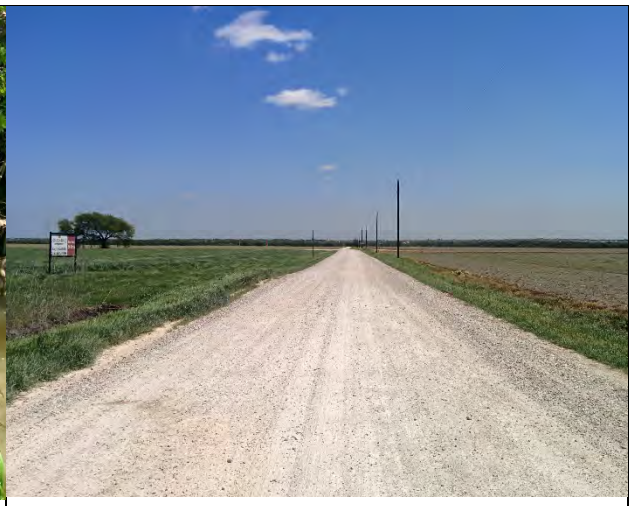
#3 TXI Plant Entrance

#4 Railroad Crossing of UPRR

#5 Tributary to Doe Creek

#6 Undeveloped Property

#7 Doe Creek



#8 Western Terminus of the Project

#9 Typical Agricultural Field

#10 Typical Fallow Field